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Frequency of Sexual Activity With Most Recent Male Partner Among Young, Internet-Using Men Who Have Sex With Men in the United States

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Abstract

Sex frequency, defined here as the number of oral or anal sex acts with the most recent partner in the past year, is a potential driver of risk for sexually transmitted infections. However, few data on sex frequency have been reported for men who have sex with men (MSM). Data from an Internet survey of MSM were used to describe sex frequency with most recent main and casual male partners and to estimate factors associated with higher sex frequency. Among 5,193 MSM, higher sex frequency was associated with younger age, shorter relationship duration, and reporting a main (vs. casual) partner; and lower sex frequency with male partners was associated with heterosexual or bisexual (vs. homosexual) identity or Black race (vs. non-Hispanic White). Secondary analyses of estimates of sex frequency from 2 publicly available nationally representative datasets comprised of primarily heterosexual survey respondents (the 2008 General Social Survey and the 1992 National Health and Social Life Survey) were performed. Sex frequency among MSM respondents was similar to that reported by heterosexuals.

Keywords

HIV/AIDS; MSM; sex frequency; STDs

Men who have sex with men (MSM) are at high risk of acquiring sexually transmitted diseases (STDs) relative to non-MSM in the United States, and STD incidence is increasing among U.S. MSM (Beltrami, Shouse, & Blake, 2005; Centers for Disease Control and

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Prevention [CDC], 1997, 1999, 2001, 2002, 2006; Ciesielski, 2003; K. K. Fox et al., 2001). In addition, diagnoses of HIV infections among MSM increased from 2001 to 2005 (P. S. Sullivan, Hamouda, et al., 2009), and even larger increases were reported among U.S. young and Black MSM. Of new HIV infections among MSM in 2006, 38% occurred in MSM aged 13 to 29 years and 52% among Black MSM (CDC, 2011; Prejean et al., 2011).

Efforts to understand the resurgent HIV epidemic and disparities by race/ethnicity are hampered by the lack of basic parameters of sexual behavior and risk in MSM, including overall and race-specific estimates and predictors of sex frequency. Few studies have estimated sex frequency among MSM in the United States, and only imprecise estimates can be calculated from the General Social Survey (GSS) and the National Health and Social Life Survey (NHSLS) due to small sample sizes of MSM in these probability samples. The 2008 GSS comprised just 19 men reporting sexual activity with another man in the past year (2.9% of male respondents) (Davis & Smith, 2009), whereas the NHSLS comprised 43 men reporting sexual activity with another man in the past year (2.8% of male respondents) (Laumann, Gagnon, Michael, & Michaels, 2000; NHSLS, 1995). A recently meta-analysis of seven studies, including the GSS and NHSLS, similarly estimated the proportion of U.S. men engaging in same-sex behavior in the past year to be 2.9% (95% confidence interval [CI] = 2.6, 3.2; Purcell et al., 2012).

Estimates of sex frequency, when combined with estimates of HIV infection risk per sexual act, are useful to model risk by sexual behaviors, in the design of public health prevention strategies, and to better understand HIV infection epidemiology (Boily et al., 2009; P. S. Sullivan, Salazar, Buchbinder, & Sanchez, 2009). In addition, estimates of sex frequency are used to calculate risk per sexual act (Boily et al., 2009). Higher HIV infection risk per sexual act is associated receptive anal sex between men (estimated to be 1.4% per sex act) relative to female to male (0.04% per sex act) in vaginal sex, male to female (0.08% per sex act) in vaginal sex, or receptive oral intercourse (0% per sex act; Baggaley, White, & Boily, 2008; Boily et al., 2009; Dosekun & Fox, 2010; J. Fox & Fidler, 2010). Improved estimates of sex frequency among MSM could help refine estimates of per sex act risk for MSM and aid in understanding the factors driving STD risk in MSM.

Race may be a cofounder in the relation between sex frequency and risk—there is a higher proportion of MSM who also have sex with women among Black men, and a significant proportion of Black MSM self-identify as heterosexual (CDC, 2000; Millett, Malebranche, Mason, & Spikes, 2005). Regarding sexual orientation, bisexual men have been reported to have riskier behaviors, including lower condom use intentions and awareness of HIV serostatus (Heckman et al., 1995).

In addition, little is known about sex frequency patterns related to partner type (main vs. casual partners) among MSM, although studies suggest most new HIV transmissions occur between main sexual partners (P. S. Sullivan, Salazar, et al., 2009). Here, a main partner was defined as “someone that you feel committed to above all others—this is someone you might call your boyfriend, significant other, life partner, or husband.” A casual partner was defined as “someone that you do not feel committed to above all others.”

One study found that among cohort of young MSM who seroconverted between 1994 and 2000, 67% of transmissions were from main sex partners (Davidovich et al., 2001). Similarly, a modeling study in five cities in the United States estimated that over two-thirds of incident HIV transmissions among MSM occurred between main sex partners (P. S. Sullivan, Salazar, et al., 2009). In P. S. Sullivan, Salazar, et al.'s (2009) analysis, frequency of sex with main versus casual partners was a key parameter in predicting the high relative contribution of new infections from main partners, likely due to the increased number of sex acts and riskier sexual behaviors (receptive anal intercourse and anal intercourse without a condom) observed with main versus casual partners. However, these sex frequency parameters were based on the small numbers of MSM in the GSS and NHSLs datasets described earlier. Thus, robust information about frequency of sex by partner type is of critical importance from a prevention perspective, and may help to frame future differential prevention messaging to MSM.

To estimate sex frequency among MSM, we calculated estimates of sex frequency and factors associated with sex frequency, including partner type, from a large, nationwide, online survey of MSM.

METHOD

Data Collection: MSM Online Survey

Data were collected between March and April 2009 from an online survey that recruited respondents from MySpace, a large social networking site. The methods have been previously described (P. Sullivan et al., 2011). Briefly, banner advertisements linking to the survey were displayed to MySpace users whose profiles indicated they were men; self-identified gay, bisexual, or unsure; and were 18 years of age. Further eligibility criteria included being a resident of the United States with at least one male sexual partner in the year before the interview. The study protocol was approved by the Emory University Institutional Review Board.

Measures: MSM Online Survey

Respondent sex frequency (defined as oral or anal sex) with the most recent partner was measured using a categorical scheme for number of sex acts in the previous year with the most recent male sexual partner. Derivations of the measures of sex frequency used in these analyses are described in Figure 1. In these analyses, sex frequency is presented in two primary ways: For descriptions of frequency and comparisons with previously published literature, we used an annualized measure of frequency of sex per year (see Figure 1, box 2); and for multivariable modeling, we used a categorical frequency classification as an ordinal modeling outcome (see Figure 1, box 3).

Calculating annualized sex frequency required information on both number of sex acts with the most recent partner and length of the respondent's relationship with that partner. Sex frequency was used as a metric to make sex frequency outcomes comparable across relationships of varying durations. First, we calculated midpoints of the reported sex frequency categories shown in Figure 1, which were used in the survey instrument. For

example, for the category “more than three times a week,” it was assumed that respondents engaged in sex an average of 4 to 7 times per week during past year, and a midpoint of 5.5 sex acts per week was used. Frequency of sex was then annualized depending on the length of the respondents' last relationship. For example, if a respondent reported having sex 1 time per year with their most recent male partner in a relationship of 1-month duration, the annualized sex frequency was 12 times per year. Implausibly high sex frequencies were rarely reported; to allow inclusion of these data, two assumptions were made: (a) If the most recent relationship was 1 week in duration, and the reported sex frequency was >60 times (0.2% of all observations), sex frequency was top-coded at 60 times per month; and (b) if the most recent relationship was <1 week, but the reported sex frequency was >15 times (0.2% of all observations), sex frequency was top-coded at 15 times per week. The resulting measure of annualized sex frequency is, thus, a pseudo-continuous variable, meaning that there were a discrete number of possible numerator and denominator values (see Figure 1) and, therefore, a discrete number of possible estimates of frequency. We present annualized sex frequencies because this is a construct that may be useful to other researchers, such as infectious disease modelers. Alternatives include reporting the self-reported number of sex acts with a partner, but this approach fails to account for varying durations of relationships.

Annualized values of sex frequency were then categorized into eight categories: 1 time per year, 2 to 5 times per year, 6 to 11 times per year, 12 to 23 times per year, 24 to 35 times per year, 36 to 51 times per year, 52 to 155 times per year, and >156 times per year (see Figure 1). For analyses of factors associated with sex frequency, the dependent (outcome) variable was ordinally modeled as increasing categories of annualized sex frequency. This was accomplished by assigning increasing numeric values of 1 through 8 to each of the eight categorical annualized sex frequency categories (see Figure 1). One unit increases were assigned to the annual sex frequency categories so as not to force a trend in the data that did not truly exist. Thus, interpretation of odds ratios (ORs) obtained when modeling this ordinal annual sex frequency variable is the change in odds for a given predictor per one-unit increase in annual sex frequency category.

The selection of sex frequency categories used as outcome variables was based on previously reported measures used in the GSS, and for comparability with the NHSLs, which captures these variables in similar categories (Davis & Smith, 2009; NHSLs, 1995). Independent variables were respondent age, race/ethnicity, education, length of last relationship, sexual orientation, and last male sexual partner type (main or casual). A main sex partner was defined as someone the respondent felt committed to above all others; a casual sex partner was someone the respondent did not feel committed to above all others (Sanchez et al., 2006). Other factors evaluated for association with sex frequency had been reported to be related to sex frequency (Rao & Demaris, 1995; Rosenberg, Sullivan, DiNenno, Salazar, & Sanchez, 2011; Stokes, Venable, & McKirnan, 1996; van Griensven et al., 2010). We hypothesized that higher sex frequency would be associated with mains versus casual partner and with shorter duration of relationship.

Statistical Analyses: MSM Online Survey

Respondent age, race/ethnicity, education, sexual orientation, length of last relationship, and annualized sex frequency were categorized and stratified by type of last male sexual partner (see Table 1). Differences between the distributions of annualized sex frequency categories by independent variables were determined via chi-square tests, and mean annualized sex frequency by partner type and key exposure variables were graphically depicted. Annualized sex frequency was tabulated by age, race/ethnicity, education, length of last relationship, sexual orientation, and last male sexual partner type.

We calculated crude ORs using ordinal logistic regression for the association between independent variables and ordinal categories of annualized sex frequency. Because we were concerned that observed associations of race with sexual frequency could be confounded by differences in sexual identity across racial groups, we also analyzed associations between race and sexual orientation identity.

All possible explanatory variables significant ($p < .05$) in crude analyses were entered as predictors into a multivariate ordinal logistic regression model using ordinal categories of annualized sex frequency as the outcome. All covariates were evaluated as potential interaction terms, but no significant interactions were found. We assessed for possible collinearity between exposure variables using condition indexes >30 and variance decomposition proportions >0.5 as cutoffs, but no collinearity issues were discovered.

Secondary analyses of estimates of sex frequency by respondent demographics from two publicly available nationally representative datasets comprised of primarily heterosexual survey respondents (the 2008 GSS and the 1992 NHSLs) were also performed, using an analytical approach similar to that described for primary analyses of annualized and categorical sex frequency.

Measures: National Health Surveys

Data collection methods have been reported previously for these surveys (Davis & Smith, 2009; NHSLs, 1995). The GSS defined sex as vaginal, oral, or anal sex, whereas the NHSLs defined sex more generally as any voluntary activity with another person involving genital contact and sexual excitement (even in the absence of intercourse or orgasm; Davis & Smith, 2009; NHSLs, 1995; see Figure 2). The 2008 GSS captured the independent variables of respondent age, race/ethnicity, education, sexual orientation, and last sexual partner type in categories similar to those used in our survey (Davis & Smith, 2009; NHSLs, 1995); the 1992 NHSLs captured the independent variables of respondent age, race/ethnicity, education, and sexual orientation in categories similar to those used in our survey (NHSLs, 1995). Both the GSS and the NHSLs ascertained sexual frequency as the categorical number of sex acts in the previous year (Davis & Smith, 2009; NHSLs, 1995).

Statistical Analyses: National Health Surveys

In our secondary analysis of sex frequency in the 2008 GSS, we excluded those responding “not at all,” “don’t know,” or “refused” to the question, “About how often did you have sex during the past 12 months?” or those missing a response to this question. Similarly, in the

1992 NHSLs, we excluded those responding “not at all,” “refusal,” or “don't know” to the question, “How often R [respondent] had sex in last year?,” or those missing a response to this question (see Figure 2).

We recoded age categories and educational categories for equivalency to those used in our survey and performed chi-square tests for crude associations between sex frequency in the last year and respondent age, race/ethnicity, education, and last sexual partner type. Using a similar midpoint calculation method as described earlier for the MSM online survey, we then calculated annualized sex frequency from the 2008 GSS and 1992 NHSLs, and repeated these sex frequency calculations in men 29 years of age.

RESULTS

MSM Online Survey

A total of 9,005 MSM consented and initiated the survey, and 5,193 (58%) completed relevant predictor and sex frequency questions. As previously described, many of those who did not respond to the outcome measures dropped out early in the survey; in general, those who dropped out of the survey were more likely to be younger, non-White, less educated, straight or bisexually identified, and of urban residence (P. Sullivan et al., 2011).

Respondent demographics by type of last sexual male partner are shown in Table 1. The median age of all respondents was 22 years. Almost 30% of respondents, regardless of partner type, reported engaging in sex with their most recent male partner 24 to 35 times per year over the previous year, 43% self-identified as White (non-Hispanic), and almost two-thirds had some level of post high school education. Almost 60% of respondents reported being in a relationship 6 months, and 77% identified as homosexual or gay. Of all respondents, 62% reported that their last sexual male partner was a main partner, whereas 38% reported that their last male partner was a casual partner.

Respondents' self-identified sexual orientation differed by race—80% of Whites and 77% of Hispanics in our study self-identified as homosexual or gay, whereas 70% of Blacks self-identified as such. In addition, 20% of Whites and 23% of Hispanics in our study self-identified as bisexual, whereas 30% of Blacks identified as such. These results were statistically significant ($p < .001$), with Blacks significantly less likely than Hispanics or Whites to self-identify as homosexual or gay, but significantly more likely than Hispanics or Whites to self-identify as bisexual. There were no significant differences in the proportion of respondents self-identifying as heterosexual by race (results not shown).

The mean annualized number of sex acts with the last sexual male partner in the previous year was 80.6 (102.0 for those whose last male partner was a main partner; 46.4 for those whose last partner was a casual partner). There were significant differences by chi-square tests ($p < .001$) between respondents whose last male partners were main versus casual partners for age, length of last relationship, sexual orientation, and categories of annualized sex frequency (see Table 1).

Mean annualized frequency of sex by age, race/ethnicity, education, sexual orientation, and length of last relationship are shown stratified by partner type in Figure 3. Differences

between distributions of annual sex frequency categories were also significant by a chi-square test for age ($p < .0001$) and length of relationship ($p < .0001$), although not for education level ($p = .78$). Differences between distributions of annual sex frequency categories were significant by chi-square tests for race/ethnicity ($p = .028$), sexual orientation ($p < .001$), and last partner type ($p < .0001$).

Ordinal logistic regression estimated the odds of a one-level increase in annualized sex frequency category for all exposure variables. Although the proportional odds assumption as assessed by the Score test was violated ($p < .001$), this test is not powerful and is anti-conservative in the sense that it often results in small, significant p values for ordinal models containing several exposures or continuous variables, and is sensitive to very large and small sample sizes. Therefore, it is not recommended to base decisions regarding the proportional odds assumption on this test alone, but to consider other, often graphical, methods (Gameroff, 2005; O'Connell, 2005; Scott, Goldberg, & Mayo, 1997). We graphically assessed whether the parameter estimates were the same across logits by looking for parallelism of the logit surfaces and concluded that the assumption of common slopes for each of the cumulative logits was not violated.

Being in a (incrementally) higher ordinal category of annualized sex frequency (with most recent male partner) was associated with younger age (OR = 1.1; 95% CI = 1.0, 1.1 per 5-year decrease in age), non-Hispanic White race/ethnicity (OR = 1.4; 95% CI = 1.2, 1.6), Hispanic ethnicity (OR = 1.3; 95% CI = 1.1, 1.5), and other race/ethnicity (OR = 1.2; 95% CI = 1.0, 1.5 [all vs. non-Hispanic Black]); shorter duration of last sexual relationship at the time of survey (OR = 1.03; 95% CI = 1.02, 1.03 per 3-month decrease), reporting about a relationship with a main partner (OR = 3.7; 95% CI = 3.4, 4.2 vs. reporting about a relationship with a casual partner), and identifying as heterosexual (OR = 0.5; 95% CI = 0.2, 1.0) or bisexual (OR = 0.8; 95% CI = 0.7, 0.9 [both vs. homosexual]; see Table 2).

National Health Surveys

Results from our secondary analysis showed that higher sex frequency (>96% of whom reported opposite-sex partners) in the past year was associated with having a main versus a casual partner (χ^2 test statistic = 21.10, $p < .0001$), younger age (χ^2 test for trend = 70.70, $p < .0001$), and non-Hispanic White versus other races/ethnicities (χ^2 test statistic = 5.80, $p = .02$) among sexually active respondents to the 2008 GSS survey. Median age in this survey was 41 years. Using a similar midpoint calculation method as described earlier, we calculated an average of 70.8 sex acts in 12 months prior to the interview among all participants, and an average of 89.2 sex acts in the 12 months prior to the interview among men 29 years of age (Davis & Smith, 2009; Laumann et al., 2000; NHSLs, 1995).

In the 1992 NHSLs, higher sex frequency in the past year was associated with younger age (χ^2 for trend = 49.50, $p < .0001$), and median age of respondents was 43 years. Using a similar midpoint calculation method as described earlier, we calculated an average of 77.7 sex acts in the 12 months prior to the interview among all participants, and an average of 92.3 sex acts in the 12 months prior to the interview among men 29 years of age (Davis & Smith, 2009; Laumann et al., 2000; NHSLs, 1995).

DISCUSSION

Current literature regarding sex frequency among MSM is limited and is based primarily on samples comprised of small numbers of MSM or derived from studies designed to address very specific aims (Amirkhanian et al., 2009; Davis & Smith, 2009; NHSLS, 1995; Satinsky et al., 2008; van Griensven et al., 2010). To our knowledge, this is the largest convenience sample of MSM for whom sex frequency and associated factors have been described.

Population surveys using probability samples have been used to generate generalizable estimates of sex frequency in the United States. Two such surveys utilized here are the 2008 GSS and the 1992 NHSLS. These national probability surveys are, expectedly, composed primarily of heterosexual (96% and 98%, respectively) men and women. To accrue large enough numbers of MSM to achieve stable estimates of sex frequency and to be able to report stratified results, we used an Internet recruitment method with national scope. In our study, MSM engaged in an average of 81 sex acts per year with their last male sexual partner (102 sex acts with a main partner; 46 sex acts with a casual partner). These results are similar to the estimates of sex frequency among primarily heterosexuals from the 1992 NHSLS and the 2008 GSS (Davis & Smith, 2009; Laumann et al., 2000; NHSLS, 1995). Annualized estimates of rates of sex with casual or sexual partners of short duration at time of interview may over-represent numbers of sex acts because these partnerships may not last for an entire year or represent behaviors over an entire year. The finding that MSM sex frequency was similar to estimates from heterosexual cohorts indicates that increased sex frequency alone does not account for increased HIV/STD risk among MSM.

Results from our convenience sample and the GSS and NHSLS probability samples of mostly heterosexual respondents share some common findings with respect to factors associated with sex frequency. Both our respondents and respondents to the 2008 GSS reported significantly higher sex frequency in the 12 months prior to interview with main versus casual partners (Davis & Smith, 2009). This finding is of particular relevance for MSM, who are significantly less likely to use condoms with main relative to casual partners (Amirkhanian et al., 2006; Mansergh et al., 2006; Sanchez et al., 2006; P. S. Sullivan, Salazar, et al., 2009) and is also notable given that most new transmissions among young Dutch and U.S. MSM arise between main sex partners (Davidovich et al., 2001; P. S. Sullivan, Salazar, et al., 2009). From a prevention perspective, our results support previous findings of higher HIV risk related to increased sex frequency among MSM with main partners, suggesting that MSM in main partnerships may benefit from targeted prevention messaging.

Similarly, our analysis of data from samples of MSM and the GSS and NHSLS analyses of data from mostly heterosexual respondents found that younger age was associated with higher sex frequency. We did not find that higher sex frequency was significantly associated with higher educational attainment among MSM, and neither the 2008 GSS nor the NHSLS found significant relations between sex frequency in the last 12 months and education (Davis & Smith, 2009; Laumann et al., 2000; NHSLS, 1995).

Various factors associated with sex frequency among MSM in our convenience sample were different from those associated with sex frequency in the predominately heterosexual population survey samples. In our survey of MSM, non-Hispanic Black race/ethnicity was associated with lower sex frequency. In contrast, the 2008 GSS found that higher sex frequency was significantly associated with White race versus all other races/ethnicities (Davis & Smith, 2009). We were concerned that race could be a marker for non-homosexual identity among our MSM respondents, and that MSM with both male and female sex partners might have systematically lower sex frequency with their male partners. Black MSM have been found more likely to self-identify as heterosexual and to report sex with both women and men relative to White MSM (Millett et al., 2005; Stokes et al., 1996), and this was also true in our convenience sample. However, the association of Black race and lower sexual frequency persisted after controlling for sexual orientation.

Our study was subject to several important limitations. A major concern with Internet surveys is the extent to which Internet respondents may not be reflective of broader communities of MSM. Because our respondents were recruited from a social networking site, their data are not generalizable to all MSM in the United States or to all Internet-using MSM. However, use of social networking sites is very common, especially among younger people: The 2009 Pew Research Center's Internet and American Life Project reported that 72% of young adults use social networking services such as Facebook® and MySpace (Lenhart, Purcell, Smith, & Zickuhr, 2010). This high coverage is on par with landline phone surveys, which are generally accepted as representative sampling frames, despite using a technology that currently represents roughly 75% of American households (Blumberg & Luke, 2010; Christian, Keeter, Purcell, & Smith, 2010). Also, the Internet offers the advantage of being able to include large numbers of men from diverse geographic locations, including rural and urban respondents, and men under 21 years of age who are not of legal age to attend bars and clubs that serve alcohol in the United States.

In addition, we acknowledge that there are limitations to using last sexual partner to estimate sex frequency, and that some other studies have used all partners. However, there is a strong precedent and scientific rationale for using last partner, and questions about behaviors with a last sex partner are valid proxies for understanding behaviors of populations over longer periods of time (Rietmeijer, Lansky, Anderson, & Fichtner, 2002; Younge et al., 2008). Further, asking about last sex reduces bias associated with increasingly inaccurate recall of more temporally distal partners, and the CDC recommends that last sex be used as a proxy for sexual history to reduce recall bias (CDC, 2003; Younge et al., 2008). We also note that oral sex was included in the definition of sex frequency, although oral sex plays a very minor role in HIV transmission. This is a particularly important limitation to the extent that men may differentially choose oral sex with certain types of partners (e.g., casual partners). There is a need for future studies to validate the sex frequency found in this study and to provide measures of frequency among MSM stratified by insertive and receptive anal sex. Another difficulty is that the NHSLs definition of sex ("genital contact and sexual excitement") is a more sensitive definition of sex, which might result in a relative over-reporting of sex, compared to our definition or data from the GSS (Davis & Smith, 2009; NHSLs, 1995).

Our results may also be subject to social desirability bias (Sackett, 1979) if respondents tended to report higher or lower levels of sex frequency due to the perceived desirability of having sex with men more frequently or infrequently. It is not possible to know in which direction this bias might influence our results. The low completion rate of our Internet survey may have also affected internal study validity, especially given that dropout was differential. We also recognize that our method of annualizing sex frequency does not result in a truly continuous measure of frequency that follows a conventional distribution and can be analyzed as a continuous variable. This is because the numerical frequencies assigned to each individual were midpoints of the categorical frequency bins used to collect data. We still believe that the categorical annualized measure, analyzed with an ordinal regression approach, is a useful metric. Annualized frequency is also an intuitive measure, and is an important parameter in modeling sexual risks.

Despite these limitations, our results provide the first estimates of annualized sex frequency with a last male sex partner by partner type from a large, nationwide convenience sample of young MSM, and describe factors associated with higher sex frequency. We expect that these estimates will be useful in understanding patterns of risk behaviors among subsets of high risk MSM and in modeling risk and risk reduction approaches for these populations. Based on our comparisons with age-stratified measures of sex frequency from two population surveys, young, Internet-using MSM in the United States may not have increased sex frequency relative to other Americans. Other factors, including per-episode risk of transmission (Varghese, Maher, Peterman, Branson, & Steketee, 2002), lack of condom use, and (possibly) numbers of sexual partners (Rosenberg et al., 2011) may be more important factors explaining high HIV incidence rates among MSM. On the whole, our data and analyses of population surveys suggest that patterns of sexual frequency between MSM and other Americans hold more similarities—in terms of relationship duration, race, and partner type—than differences.

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FIGURE 1. Measures of sex frequency derived from the men who have sex with men (MSM) online survey and used in the indicated analyses.

A	
SEXFREQ: Categorical (Single)	
About how often did you have sex during the past 12 months?	
Categories:	
{not_at_all}	Not at all
{once_or_twice}	Once or twice
{about_once_a_month}	About once a month
{two_or_three_times_a_month}	Two or three times a month
{about_once_a_week}	About once a week
{two_or_three_times_a_week}	Two or three times a week
{four_or_more_times_a_week}	Four or more times a week
{dontknow}	DON'T KNOW
{refused}	REFUSED
B	
variable Name: SEXFREQ	
Description: How often R Had sex in Last Year	
value	Description
0	Not at All
1	Once or Twice
2	About once Month
3	2or3 Times Month
4	About once week
5	2or3 Times week
6	4+ Times a week
7	Refusal
8	DK
9	Missing

FIGURE 2.

Survey ascertainment of sex frequency (SEXFREQ) from the 2008 General Social Survey (A) and the 1992 National Health and Social Life Survey (B). DK = don't know.

FIGURE 3.

Average annualized sex frequency (stratified for main vs. casual male partner) by race (A), categories of age (B), length of last relationship in months (C), education (D), and sexual orientation (E). GED = general equivalency diploma.

TABLE 1

Demographic Characteristics by Type of Last Male Sexual Partner Among 5,193 Sexually Active Young, Internet-Using Men Who Have Sex With Men in the United States

Variable	Partner type					
	Total (N = 5,193)		Main partner (n = 3,199)		Casual partner (n = 1,994)	
	n	%	n	%	n	%
Annualized sex frequency in previous year with last male partner, no. (%) ^a						
1 time per year	96	1.9	29	0.9	67	3.4
2–5 times per year	428	8.2	184	5.8	244	12.2
6–11 times per year	328	6.3	183	5.7	145	7.3
12–23 times per year	376	7.2	251	7.9	125	6.3
24–35 times per year	1,551	29.9	648	20.3	903	45.3
36–51 times per year	1,037	20.0	668	20.9	369	18.5
52–155 times per year	644	12.4	605	18.9	39	2.0
>156 times per year	733	14.1	631	19.7	102	5.1
Age, no. (%) ^a						
18–29	4,286	82.5	2,692	84.2	1,594	79.9
30–39	600	11.6	354	11.1	246	12.3
40–49	241	4.6	125	3.9	116	5.8
50–59	60	1.2	24	0.8	36	1.8
60–69	5	0.1	3	0.1	2	0.1
70+	1	0.0	1	0.0	0	0.0
Race/ethnicity, no. (%)						
Black (non-Hispanic)	735	14.2	453	14.2	282	14.1
White (non-Hispanic)	2,220	42.8	1,344	42.0	876	43.9
Hispanic	1,633	31.5	1,038	32.5	595	29.8
Other/unknown	605	11.7	364	11.4	241	12.1
Education						
High school or general equivalency diploma	1,845	35.5	1,123	35.1	722	36.2
Some college, associate's degree, technical school	2,445	47.1	1,499	46.9	946	47.4
College, post graduate, professional school	903	17.4	577	18.0	326	16.4
Length of relationship (months) ^a						
<1	1,679	32.3	566	17.7	1,113	55.8
1–6	1,359	26.2	929	29.0	430	21.6
7–12	604	11.6	459	14.4	145	7.3
13–24	628	12.1	480	15.0	148	7.4
25–36	309	6.0	264	8.3	45	2.3
>37	614	11.8	501	15.7	113	5.7
Sexual orientation (self-identified) ^a						
Homosexual, gay	3,982	76.7	2,527	79.0	1,455	73.0
Heterosexual, “straight”	21	0.4	14	0.4	7	0.4

Variable	Partner type					
	Total (N = 5,193)		Main partner (n = 3,199)		Casual partner (n = 1,994)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Bisexual	1,190	22.9	658	20.6	532	26.7

^aSignificant ($p < .001$) difference by chi-square between those with a main partner and casual partner.

TABLE 2

Ordinal Logistic Regression for Factors Associated With Ordinal Categories of Annualized Sex Frequency With Most Recent Male Partner Among 5,193 Sexually Active Young, Internet-Using Men Who Have Sex With Men in the United States

Variable	Odds ratio	95% confidence interval ^a
Age		
Per 5-year decrease	1.1	1.0, 1.1
Race/ethnicity		
Black/African American (non-Hispanic)	1.0	Reference
White/Caucasian (non-Hispanic)	1.4	1.2, 1.6
Hispanic	1.3	1.1, 1.5
Other	1.2	1.0, 1.5
Education		
High school or general equivalency diploma	1.0	Reference
Some college, associate's degree, technical school	1.0	0.9, 1.1
College, post graduate, professional school	1.1	1.0, 1.3
Length of relationship		
Per 3-month decrease	1.03	1.02, 1.03
Partner type		
Casual	1.0	Reference
Main	3.7	3.4, 4.2
Sexual orientation		
Homosexual, gay	1.0	Reference
Heterosexual, "straight"	0.5	0.2, 1.0
Bisexual	0.8	0.7, 0.9

^a Adjusted for all other covariates in the table.