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ORIGINAL PAPER

Sexually Explicit Media Use by Sexual Identity: A Comparative Analysis of Gay, Bisexual, and Heterosexual Men in the United States

Martin J. Downing Jr.[1] · Eric W. Schrimshaw[2] · Roberta Scheinmann[1] · Nadav Antebi-Gruszka[2] · Sabina Hirshfield[1]

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Abstract Advances in production and distribution of sexually explicit media (SEM) online have resulted in widespread use among men. Limited research has compared contexts of use and behaviors viewed in Internet SEM by sexual identity. The current study examined differences in recent SEM use (past 6 months) by sexual identity among an ethnically diverse sample of 821 men who completed an online survey in 2015. Both gay and bisexual men reported significantly more frequent use of Internet SEM compared to heterosexual men. Although most participants reported viewing SEM at home (on a computer, tablet, or smartphone), significantly more gay men reported SEM use at a sex party or commercial sex venue than either heterosexual or bisexual men. Sexual identity predicted viewing of high-risk and protective behaviors in separate logistic regression models. Specifically, compared to heterosexual men, gay and bisexual men had increased odds of viewing condomless anal sex (gay OR 5.20, 95 % CI 3.35–8.09; bisexual OR 3.99, 95 % CI 2.24–7.10) and anal sex with a condom (gay OR 3.93, 95 % CI 2.64–5.83; bisexual OR 4.59, 95 % CI 2.78–7.57). Compared to gay men, heterosexual and bisexual men had increased odds of viewing condomless vaginal sex (heterosexual OR 27.08, 95 % CI 15.25–48.07; bisexual OR 5.59, 95 % CI 3.81–8.21) and vaginal sex with a condom (heterosexual OR 7.90, 95 % CI 5.19–12.03; bisexual OR 4.97, 95 % CI 3.32–7.44). There was also evidence of identity discrepant SEM viewing as 20.7 % of heterosexual-identified men reported viewing male same-sex behavior and 55.0 % of gay-identified men reported viewing heterosexual behavior. Findings suggest the importance of assessing SEM use across media types and contexts and have implications for research to address the potential influence of SEM on sexual behavior (e.g., investigate associations between viewing condomless vaginal sex and engaging in high-risk encounters with female partners).

Keywords Sexually explicit media · Pornography · Internet · Sexual identity · Sexual orientation

Introduction

Advances in the production and distribution of sexually explicit media (SEM) have resulted in widespread availability and consumption on the Internet (Escoffier, 2009; Rosser et al., 2012; Weinberg, Williams, Kleiner, & Irizarry, 2010). Consistent with this greater availability of SEM online, data from the General Social Survey (GSS) have documented a steady increase in SEM consumption among US men since the 1970s (Wright, 2013). According to recent figures from TrafficJunky Media Kit (2015), a leading advertising network for adult content Web sites, their top three SEM Web sites receive a combined average of over 92 million daily visitors; visitors are overwhelmingly male (75 %), heterosexual (75 %), and age 18–44 (74 %). Not surprisingly, men are more likely than women to access SEM (Albright, 2008) and to do so more frequently (Hald & Štulhofer, 2016; Morgan, 2011; Paul, 2009; Weinberg et al., 2010). Nevertheless, much of what we know about SEM use among men pertains to their frequency of use, though emerging research attention is being paid to the types of media they consume (e.g., heterosexual, bisexual, gay, or lesbian), behavioral content and preferences, and contexts of use.

In a review of Internet-based SEM research conducted over a 10-year period, Short, Black, Smith, Wetterneck, and Wells

✉ Martin J. Downing Jr.
mdowning@healthsolutions.org

[1] Public Health Solutions, 40 Worth Street, 5th Floor, New York, NY 10013, USA

[2] Mailman School of Public Health, Columbia University, New York, NY, USA

(2012) noted that most of the studies published during this timeframe contained predominantly heterosexual samples or did not assess participants' sexual identity. To our knowledge, there are no U.S. studies that have compared the behavioral content of Internet SEM viewed by sexual identity or sexual orientation. Do men tend to view SEM that corresponds to their sexual identity or are they more diverse in what they watch? This is an important distinction to make as researchers consider the role of SEM in sexual behavior, particularly behaviors that increase one's risk for HIV and other sexually transmitted infections (STIs), and effective ways to reach SEM audiences with risk reduction messaging (e.g., Rosser et al., 2012). Peter and Valkenburg (2012) assessed the frequency of viewing Internet SEM featuring penetrative sex, group sex, sex with only men, and sex with only women among exclusively and nonexclusively heterosexual men in the Netherlands. However, it is not clear from their analyses whether the authors examined differences in content viewed by sexual identity. Hald and Štulhofer (2016) recently conducted exploratory factor analyses of pornography types by sexual orientation in a Croatian sample, noting similarities among heterosexual and non-heterosexual men in viewing group sex behaviors (e.g., bukkake, gang bang scenes featuring one woman and at least three men).

Given the importance of understanding cultural contributors to men's sexual aggression against women, much of the extant research on SEM content has focused on heterosexual media and the portrayal of violence toward women (Salmon & Diamond, 2012; Sun, Bridges, Johnason, & Ezzell, 2016; Wright & Tokunaga, 2016). Additional areas deserving attention are non-heterosexual media, comparisons of sexual content across media types, and specific sexual risk behaviors performed by SEM actors (i.e., condomless vaginal and anal sex), especially in light of recent cross-sectional evidence that viewing condomless sexual encounters in Internet SEM is predictive of engaging in high-risk sex (as discussed below). What remains unclear is whether men are differentially exposed to high-risk SEM content (i.e., attributed to sexual identity, context of SEM use, or viewing preferences), which has implications for targeting SEM-based HIV/STI prevention strategies. Nevertheless, some comparisons of sexual behaviors in gay and heterosexual DVD-based SEM have found that heterosexual videos were less likely to depict anal sex (Salmon & Diamond, 2012), condom use during anal sex (Grudzen et al., 2009), and external ejaculation (Salmon & Diamond, 2012). By the early 1990s, producers of gay male SEM committed to showing condoms during anal sex scenes for the occupational safety of performers and to model safer sex for viewers (Bishop, 2015). Although the heterosexual SEM industry never fully adopted this practice, it did implement a testing policy aimed at preventing acquisition and transmission of HIV and other STIs (Escoffier, 2009; Goldstein, Steinberg, Aynalem, & Kerndt, 2011).

It is critical to understand the content of SEM because a significant and growing body of research has suggested that viewing SEM, and specific behaviors in SEM, may influence real-life behavior among heterosexual and non-heterosexual viewers. Several studies have revealed potential benefits of viewing SEM. Specifically, some research has shown that viewing SEM is associated with having a more positive attitude about sex (Hald & Malamuth, 2008; Hald, Smolenski, & Rosser, 2013). Viewing of SEM also increases the appeal of certain behaviors (e.g., anal sex), regardless of gender or sexual orientation (Weinberg et al., 2010). Among heterosexuals, investigators have found that they use SEM to increase arousal before or during sex, to learn new sexual positions and activities, to relieve stress and sexual frustration, and to fantasize about having sex with the performers (Albright, 2008; Boies, 2002; Hare, Gahagan, Jackson, & Steenbeek, 2015; Paul & Shim, 2008; Sun et al., 2016; Traeen & Daneback, 2013). Perceived positive effects of SEM use by men who report same-sex encounters include an interest in trying new sexual behaviors or positions, enjoyment of sex, and understanding of one's sexual orientation (Hald et al., 2013; Nelson, Leickly, Yang, Pereira, & Simoni, 2014a).

Despite the potential benefits of SEM use, other research has raised concerns that viewing specific behavioral content may contribute to negative sexual health outcomes. The proliferation of SEM online has coincided not only with a rise in use, but also with reported decreases in safer sex behaviors among some viewers (Peter & Valkenburg, 2011a; Rosser et al., 2012; Wright, Tokunaga, & Kraus, 2016). Moreover, technological innovations have since led to an increase in production and distribution of amateur sexual content (Cronin & Davenport, 2001; Downing, Schrimshaw, Antebi, & Siegel, 2014b; Green, 2004). Amateur content, which is not subject to SEM industry HIV/STI testing or condom use policies (Griffith et al., 2012), has altered "the narrative and sexual expectations presupposed by most porn movies" (Escoffier, 2009, p. 347). While some have speculated that increased competition from a booming Internet-based amateur industry prompted gay male SEM studios to abandon their condom use policies (Hurley, 2009), producers of commercial bareback (i.e., condomless anal sex) videos argue that advances in HIV treatment and prevention (e.g., antiretroviral therapy, pre-exposure prophylaxis) have significantly lowered the risk of HIV transmission, making it possible to meet consumer demands (Kinser, 2014; Nichols, 2011). Indeed, there has been a substantial rise in sales of SEM featuring condomless sex (Escoffier, 2009). Furthermore, a recent content analysis of 302 gay male SEM videos on the Internet found depictions of condomless anal sex in 34 % of the sample (Downing et al., 2014b); this was considerably higher than that previously observed in DVD-based SEM (18 %) by Grudzen et al. (2009).

The expanded access to SEM online has perhaps had the greatest impact on gay, bisexual, and other men who have sex

with men (GBMSM). Limited research suggests that a greater proportion of GBMSM view Internet SEM than heterosexual men (Traeen, Nilsen, & Stigum, 2006). Several studies with online samples of GBMSM found a high prevalence of Internet SEM viewership in the past 3 months (>95 %) (Rosser et al., 2013; Stein, Silvera, Hagerty, & Marmor, 2012). GBMSM are also more frequent consumers of Internet SEM than heterosexual men (Duggan & McCreary, 2004; Peter & Valkenburg, 2011b). Although SEM may have positive effects on the sexual lives of GBMSM (Hald et al., 2013), widespread use may not be without adverse consequences. Videos that depict condomless anal sex are potentially problematic, as they may influence the intrapersonal sexual scripts of viewers (Štulhofer, Buško, & Landripet, 2010) and lead some men to engage in similar activities (Jonas, Hawk, Vastenburg, & de Groot, 2014; Wilkerson et al., 2012). Multiple studies to date have documented that GBMSM who viewed a greater proportion of SEM depicting bareback sex had increased odds of reporting recent anal sex without a condom (Nelson et al., 2014b; Rosser et al., 2013; Schrimshaw, Antebi-Gruszka, & Downing, 2016a; Stein et al., 2012). Furthermore, consumption of SEM featuring condomless anal sex may be most problematic for men who use it as a source of sexual information and therefore may normalize such behaviors (Kubicek, Beyer, Weiss, Iverson, & Kipke, 2010; Nelson et al., 2014a).

Within the literature on SEM use among GBMSM, however, researchers have primarily examined outcomes of interest within the full sample rather than examining potential differences by sexual identity (i.e., gay vs. bisexual). Most of the published studies that found associations between viewing condomless anal sex in SEM and engaging in recent anal sex without a condom included substantial proportions of gay-identified men (>80 %; Nelson et al., 2014b; Schrimshaw et al., 2016a; Stein et al., 2012), which likely accounts for the limited attention to potential sexual identity differences. Stein et al. (2012) reported that participants who did not provide data on their SEM viewing history were more likely to identify as bisexual. Bisexual men remain underrepresented, and perhaps unaccounted for, in studies of SEM use and subsequent behavioral impact. Similar concerns have been raised regarding the lack of differentiation between gay and bisexual men in other sexual health research (Schnarrs et al., 2012) as well as the relative absence of bisexual men in studies of disclosure and openness about one's sexual orientation and identity (Schrimshaw, Downing, & Cohn, 2016b) and those that examine associations between sexual orientation and mental health (Dodge et al., 2012; Schrimshaw, Siegel, Downing, & Parsons, 2013b). There is clearly a need for parity in sexual health research with heterosexual and non-heterosexual populations, particularly studies that investigate viewing of diverse SEM content and the potential influence of viewing on sexual behavior, including male and female partners.

Despite the increased attention to bareback sex in gay male SEM, there is a lack of equivalent research on the use of condoms in heterosexual and bisexual media. We found a single study that assessed attitudes toward condom use in SEM among male college students (Kraus & Rosenberg, 2016). The authors reported that gay men held more supportive attitudes toward condom use in SEM than heterosexual men. Yet, there were several limitations of that study including: the assessment of condom use attitudes without reference to specific sexual behaviors such as vaginal or anal sex; no assessment of the sexual behaviors (with and without condoms) that participants viewed in SEM; and the inclusion of small subsamples of gay ($n = 32$) and bisexual men ($n = 17$) compared to heterosexual men ($n = 155$). Thus, research is needed to address not only whether men are differentially exposed to high-risk SEM content (as a potential factor of how they sexually identify), but also to examine preferences for condom use during vaginal and anal sex scenes among heterosexual and bisexual viewers. Answers to these questions are needed *before* researchers can begin to address the potential behavioral impact of condomless sex in heterosexual and bisexual SEM.

Researchers have also called for more attention to venues of SEM use (Rosser et al., 2012). While it is reasonable to believe that most men access SEM at home, scant attention has been paid to other environments where SEM may be available or accessed. Beyond commercial sex venues where sexually explicit videos may be streaming for patrons (Holmes, O'Byrne, & Gastaldo, 2007; Rosser et al., 2012), there is reason to suspect that men are increasingly accessing Internet-based SEM at work (Albright, 2008; Kuchment & Springen, 2008; Perrin et al., 2008). Moreover, widespread access to the Internet via smartphones and tablets has likely contributed to greater use of SEM at home and in other venues. What remains unclear is whether or not viewing context differs by sexual identity.

The current paper reports on findings from an online survey of self-identified heterosexual, gay, and bisexual men who viewed Internet-based SEM in the past 6 months. This study aims to extend prior research by comparing frequency of SEM use, viewing contexts (where and how men access SEM; use of substances while viewing SEM; masturbation during SEM use), content of SEM viewed (vaginal and anal sex, with and without condoms), and viewer preferences for condom use during vaginal and anal sex scenes by sexual identity among an ethnically diverse sample. By taking a more inclusive approach to examining SEM use, researchers will be better prepared to address concerns about the influence of SEM on sexual behavior across media types (e.g., SEM that targets heterosexual, bisexual, and/or gay audiences).

Method

Participants

Interested individuals were asked to complete an online survey about their experiences with and preferences regarding SEM.

Eligible participants had to: (a) be 18 years of age or older; (b) be able to read and respond in English; and (c) reside within the U.S. or its territories. We excluded anyone who selected "Prefer not to answer" when asked about their recent sexual partners. Although the study was open to individuals of all gender types, the current report is based on data from 821 participants who identified their current gender as male, reported viewing Internet SEM in the past 6 months, and self-identified as straight/heterosexual, gay/homosexual, or bisexual. We focus on men as they are the primary users of SEM. Table 1 describes participant characteristics.

Recruitment activities occurred from January 23, 2015–November 1, 2015. To reach a diverse audience of SEM viewers, consistent with our eligibility criteria, study advertisements were posted online to social networking Web sites (e.g., Twitter), a sexual networking Web site (BGCLive.com), a GPS-based smartphone application for sexual partnering (Scruff), Craigslist (Volunteers), research-oriented Web sites (e.g., Social Psychology Network), and Amazon Mechanical Turk. Palm cards featuring the study logo and detailed description were distributed via LGBT (Lesbian, Gay, Bisexual, and Transgender) organizations and professional meetings. Study invitations were also sent to members of a national research participant registry affiliated with the lead author's institution. The study employed both general (e.g., online survey of viewer attitudes about sexual behaviors shown in sexually explicit videos on the Internet; "…study seeks to better understand attitudes of individuals who watch pornographic videos on the Internet"; "Researchers seek porn watchers") and specific recruitment language (e.g., "…study of viewer attitudes about PrEP in the Adult Film Industry"; "Do you like to watch bareback sex?" "Are you concerned about HIV testing standards in the pornography industry?"). Study advertisements posted to social networking Web sites incorporated relevant hashtags (#porn, #PrEP) to engage a broader audience. Online recruitment notices provided or embedded a link to access the survey. Where possible, recruitment notices indicated that participants should be 18 years of age or older, that the survey would take approximately 15–20 min to complete, and that there would be an opportunity to enter a random drawing for a $20 Amazon.com electronic gift card upon completing the survey.

There were a total of 2529 visits to the study landing page. Of those, 186 (7.4 %) broke off immediately, and 32 (1.3 %) chose not to consent to participate. Among the 2311 individuals who consented to participate, 1070 (46.3 %) provided only partial data.[1] We excluded 153 (12.3 %) completed surveys for providing disqualifying or duplicate data. The overall analytic sample included 1088 surveys. Of those, 821 male-identified participants indicated that they viewed Internet SEM in the past 6 months and reported their sexual identity as gay/homosexual (65.0 %), bisexual (18.6 %), or straight/heterosexual (16.3 %).

More than half (65.4 %) of the 821 men were recruited from sexual networking Web sites and GPS-based smartphone applications, 19.6 % through research-oriented Web sites or a research participant registry, 8.2 % from Amazon Mechanical Turk, 4.1 % from Craigslist, 1.6 % from social networking Web sites, and 1.1 % through study palm cards.

Procedure

The institutional review board at Public Health Solutions approved all study procedures. A waiver of documentation of written consent was obtained, given the Internet-based research approach. Potential participants accessed the study landing page by clicking on an online study banner advertisement or study invitation link. Palm cards directed anyone interested in participating to scan a QR code or visit the study URL. Participants provided informed consent online by reading the consent form

[1] We examined differences in participant characteristics and Internet SEM use between complete and partial cases. Several differences were noted after applying a Bonferroni correction. A greater proportion of bisexual-identified men had partial surveys (45.6 %) compared to heterosexual-identified men (32.4 %) ($p = .003$). No other sexual identity differences were noted. Men with complete surveys were significantly older ($M = 38.08$, $SD = 12.16$) than those with partial surveys ($M = 34.48$, $SD = 11.24$), $F(1, 1467) = 32.31$, $p < .001$. A greater proportion of men who identified their race as White (71.8 %) completed the survey compared to men who identified as Black (54.2 %, $p < .001$) or Asian, Pacific Islander, Native American or Alaska Native, Native Hawaiian or Other Pacific Islander, or Other (44.8 %, $p < .001$). Further, significantly fewer men reporting up to a high school degree or GED completed the survey (46.1 %) compared to men with some college, Associate's degree or Technical degree (59.3 %, $p < .001$), a 4-year college degree (67.8 %, $p < .001$), or a professional or graduate degree (68.6 %, $p < .001$). Significantly fewer men reporting an annual income of less than $10,000 completed the survey (50.0 %) compared to those who earned $40,000–$79,999 (63.1 %, $p = .002$), $80,000–$119,999 (73.2 %, $p < .001$), or $120,000 or more (68.7 %, $p = .003$). Similarly, significantly fewer men who preferred not to answer the item about annual income completed the survey (51.7 %) than men who reported earning $80,000–$119,999 per year (73.2 %, $p = .001$). A significantly greater proportion of men who reported a zip code corresponding to a US state in the West region completed the survey (73.3 %) compared to men in the Northeast (58.8 %, $p = .001$), Southeast (55.2 %, $p < .001$), and Midwest (60.4 %, $p = .001$) regions. There were no differences between complete and partial cases in relationship status, HIV status, current residence, or use of Internet SEM in the past 6 months (yes, no).

There were significantly more completed surveys among men who viewed SEM at home on a computer (67.6 vs. 40.3 % of men who did not view SEM at home on a computer, $p < .001$), at work on a computer (73.8 vs. 59.9 % of men who did not view SEM at work on a computer, $p < .05$), or while attending a commercial sex venue (72.4 vs. 58.5 % of men who did not view SEM while attending a commercial sex venue, $p < .001$). Further, there were significantly more completed surveys among men who viewed vaginal sex with a condom (87.9 vs. 54.4 % of men who did not view this behavior), vaginal sex without a condom (89.1 vs. 49.6 % of men who did not view this behavior), anal sex with a condom (87.9 vs. 39.3 % of men who did not view this behavior), and anal sex without a condom (89.3 vs. 26.2 % of men who did not view this behavior), p values $< .001$. Lastly, we observed no differences between complete and partial cases in the types of Internet SEM viewed in the past 6 months.

Table 1 Comparisons of participant characteristics and recruitment source by sexual identity

	Heterosexual (a) $n = 134$	Gay (b) $n = 534$	Bisexual (c) $n = 153$	χ^2	φ_c	Post hoc
Race and ethnicity ($N = 804$)				106.03***	0.26	
White or Caucasian	98 (73.1)	216 (41.5)	32 (21.3)			a > b, c; b > c
Black or African-American	19 (14.2)	240 (46.2)	109 (72.7)			a < b, c; b < c
Hispanic or Latino	11 (8.2)	47 (9.0)	3 (2.0)			b > c
Asian, Pacific Islander, Native American or Alaska Native, Native Hawaiian, or Other	6 (4.5)	17 (3.3)	6 (4.0)			
Relationship status ($N = 818$)				68.99***	0.20	
Single and not currently in a relationship	55 (41.0)	388 (72.9)	112 (73.7)			a < b, c
In a steady relationship	25 (18.7)	79 (14.8)	18 (11.8)			
Married or domestic partnership	54 (40.3)	65 (12.2)	22 (14.5)			a > b, c
Education ($N = 818$)				8.38	0.07	
≤High school graduate/GED	15 (11.3)	71 (13.3)	21 (13.7)			
Some college, Associate's degree/Technical degree	50 (37.6)	211 (39.7)	72 (47.1)			
College graduate (4 years)	42 (31.6)	144 (27.1)	43 (28.1)			
Professional or graduate degree	26 (19.5)	106 (19.9)	17 (11.1)			
Annual income ($N = 776$)				4.19	0.05	
<$10,000	15 (11.7)	70 (13.9)	20 (13.8)			
$10,000–$39,999	46 (35.9)	192 (38.2)	63 (43.4)			
$40,000–$79,999	36 (28.1)	144 (28.6)	36 (24.8)			
$80,000–$119,999	19 (14.8)	65 (12.9)	16 (11.0)			
$120,000 or more	12 (9.4)	32 (6.4)	10 (6.9)			
Current living situation ($N = 806$)				12.81*	0.09	
A house	84 (62.7)	239 (45.6)	74 (50.0)			a > b
An apartment	42 (31.3)	233 (44.5)	59 (39.9)			a < b
Other	8 (6.0)	52 (9.9)	15 (10.1)			
HIV status ($N = 769$)				223.75***	0.38	
Negative	74 (56.1)	272 (54.8)	113 (80.1)			a, b < c
Positive[a]	0	188 (37.9)	16 (11.3)			b > c
Indeterminate or never got test results	0	12 (2.4)	2 (1.4)			NA
Never tested	58 (43.9)	24 (4.8)	10 (7.1)			a > b, c
Geographic region ($N = 813$)				16.94*	0.10	
Northeast	23 (17.4)	69 (13.0)	28 (18.7)			
Southeast	37 (28.0)	171 (32.2)	55 (36.7)			
Midwest	33 (25.0)	106 (20.0)	34 (22.7)			
Southwest	16 (12.1)	51 (9.6)	14 (9.3)			
West	23 (17.4)	134 (25.2)	19 (12.7)			b > c
Recruitment source ($N = 821$)				434.13***	0.51	
Sexual networking	13 (9.7)	396 (74.2)	128 (83.7)			a < b, c
Social networking	4 (3.0)	9 (1.7)	0			NA
Craigslist	23 (17.2)	6 (1.1)	5 (3.3)			a > b, c
Research (i.e., Web sites, participant registry)	33 (24.6)	112 (21.0)	16 (10.5)			a, b > c
Amazon Mechanical Turk	61 (45.5)	3 (0.6)	3 (2.0)			NA
Palm cards	0	8 (1.5)	1 (0.7)			NA

n (%) presented. Other living situation includes a room in someone else's house or apartment, drug treatment, detox, shelter or drop in center for homeless people, or some other place

*** $p < .001$; * $p < .05$. Bonferroni corrections applied to post hoc comparisons ($p < .017$). NA (not analyzed due to low cell counts)

[a] Bivariate analysis restricted to gay and bisexual men. χ^2. φ_c (Cramer's V)

on the study landing page and clicking their agreement to participate.

The survey included a ReCaptcha function to validate human responses (i.e., "Please enter the code shown below in order to proceed.") and offer protection from bots. This feature followed the consent page. Internet provider (IP) addresses were collected for each survey entry to further reduce the likelihood of participant fraud. Survey entries with matching IP addresses (matching on all four quadrants) were considered to be duplicate cases. For duplicate cases: (1) if both entries had complete data, the initial entry was kept for analysis; (2) if the initial entry was incomplete, the complete entry was kept for analysis.

Participants were asked to complete an online survey that included items to assess demographic information, recent sexual behavior, HIV/STI testing history, history of viewing sexually explicit videos online, and the content of sexually explicit videos viewed during the past 6 months. The survey took approximately 15 min to complete.

Due to concerns regarding survey length, participants were offered the opportunity to be entered into a random drawing for one of five $20 Amazon.com electronic gift cards. Those who were interested in being considered for the random drawing were asked to provide an e-mail address for entry. E-mail addresses were used to distribute e-gift cards to the winners of the drawing. Participants who completed the survey through Amazon Mechanical Turk received US $0.40, but were not eligible to enter the random drawing as this service does not allow for the collection of personal information such as an e-mail address.

Measures

Participant characteristics

The online survey included a set of demographic questions to assess age, race and ethnicity, gender identity, sexual identity, relationship status, education, annual income, housing status, HIV testing history and status, and zip code (to assess participants' geographic region in the U.S.). For sexual identity, participants were asked the following question: "Do you think of yourself as…?" Response options included lesbian, gay or homosexual, straight or heterosexual, bisexual, or something else.

Internet SEM use

Survey participants were asked to report (yes or no) if they had viewed pornographic videos on the Internet (on a computer, tablet, or smartphone) in the past 6 months. The survey also included several items to assess the types of SEM that participants watched on the Internet (i.e., videos featuring a man and a woman, only men, only women, at least two men and one woman engaging in sexual acts with each other, and at least two women and one man engaging in sexual acts with each other). Participants were asked to report how often in the past 6 months they watched pornographic videos on the Internet (on a computer, tablet, or smartphone) (adapted from Nelson et al., 2014b). Response options included less than once a month, once a month, two to three times a month, at least once a week, every day, two to three times a day, once an hour, and more than once an hour. Participants were also asked to report the number of hours spent viewing pornographic videos on the Internet in a typical week (Downing, Antebi, & Schrimshaw, 2014a). A single follow-up item assessed the length, in minutes, of a typical viewing session (adapted from Nelson et al., 2014b). The survey included items to better understand how participants access pornographic videos on the Internet (i.e., through Web sites with free viewing, paid subscription) and viewing context (i.e., at home on a computer, at home on a tablet or smartphone, at home on a television, at work on a computer, at work on a tablet or smartphone, at a sex party, in a bar, club or at an adult video store). Further, participants were asked to report the percentage of time they masturbate while watching pornographic videos on the Internet (none of the time = 0 % to every time = 100 %). The survey also included a single item to assess the frequency of substance use in the context of watching Internet SEM (Downing et al., 2014a). Response options included none of the time, some of the time, about half of the time, more than half of the time, and every time.

Behaviors viewed in Internet SEM

Participants were asked about the sexual behaviors that actors were performing in pornographic videos they watched on the Internet in the past 6 months. The list of sexual behaviors, along with instructions to check all that apply, included: solo acts of masturbation, mutual masturbation, oral sex, vaginal sex with a condom, vaginal sex without a condom, anal sex with a condom, anal sex without a condom (barebacking, raw, breeding, seeding), rimming, fisting (vaginal or anal), bondage, sadomasochism (S&M), cock and ball torture (CBT), sounding (urethral), watersports (golden showers, pissing/urinating), and felching (sucking or eating cum out of someone's anus). Further, participants were asked to report whether or not any of the pornographic videos they had viewed on the Internet in the past 6 months featured group sex scenes with more than two actors (Nelson et al., 2014b). Response options included: group sex with only men, group sex with only women, and group sex with men and women.

Condom use preferences in SEM

Participants were asked about their preference for viewing condom use during vaginal and anal sex in SEM (Rosser et al., 2013). Specifically, those who indicated that they viewed any

vaginal sex in the past 6 months were asked whether they prefer to watch actors perform vaginal sex with condoms or without. Similarly, those who indicated that they viewed any anal sex in the past 6 months were asked whether they prefer to watch actors perform anal sex with condoms or without. Response options for both items included: without condoms (−1), with condoms (1), and I do not care either way (0).

Data Analysis

Data cleaning and analyses were performed with IBM SPSS version 22 (IBM, 2013). We reviewed all surveys reporting any use of Internet SEM during the past 6 months to ensure that participants also selected at least one type of SEM (i.e., featuring a man and a woman, only men, only women, at least two men and one woman engaging in sexual acts with each other, and at least two women and one man engaging in sexual acts with each other) or sexual behavior that they viewed. Two participants in the overall analytic sample indicated that they viewed at least one type of SEM during the past 6 months, but did not report viewing any specific sexual behaviors (perhaps to indicate that they did not watch any of the behaviors included with the item). Because both participants did report at least one type of SEM viewed, we retained these surveys for analysis.

Descriptive statistics are reported for all participants unless otherwise indicated. Comparisons between dichotomous or categorical variables were conducted using chi-square analysis. Effect sizes for chi-square tests are reported using φ_c (Cramer's V) (Kline, 2013). Comparisons of categorical variables on continuous variables were conducted using one-way analysis of variance (ANOVA) for normally distributed variables and Kruskal–Wallis ANOVA for non-normally distributed variables (with post hoc comparisons using Mann–Whitney U tests). Statistically significant associations are reported at $p < .05$. Bonferroni corrections were applied to the alpha values obtained from post hoc comparisons. We modeled viewing of high-risk (condomless anal and vaginal sex) and protective behaviors (anal and vaginal sex with a condom) using logistic regression (with sexual identity as the predictor variable) controlling for participant characteristics significantly associated (at $p < .001$) with sexual identity in bivariate analysis and interactions between sexual identity and HIV status. Odds ratios and 95 % confidence intervals (CI) are reported for logistic regression models. We also modeled condom use preferences in SEM using linear regression, with viewing of anal and vaginal sex (with and without a condom) as predictor variables and controlling for participant characteristics (i.e., sexual identity, race and ethnicity, relationship status, and HIV status). Unstandardized betas and standard errors are reported for linear regression models.

Results

Comparisons of Participant Characteristics by Sexual Identity ($N = 821$)

Mean age for the sample was 37.98 years (SD = 12.02). There were no significant age differences by sexual identity [heterosexual ($M = 36.22$, SD = 11.53), gay ($M = 38.66$, SD = 12.13), bisexual ($M = 37.15$, SD = 11.94)], $F(2, 821) = 2.67$, $p = .07$. Most of the participants identified their race as Black (45.8 %) or White (42.1 %). Heterosexual-identified men were more likely than gay- and bisexual-identified men to be White and less likely to be Black. Similarly, gay men were more likely than bisexual men to be White or Hispanic/Latino and less likely to be Black. Approximately two-thirds (67.8 %) of the sample reported that they were single and not currently in a relationship. However, heterosexual men were more likely than gay and bisexual men to be married or in a domestic partnership and less likely to be single. Nearly half of participants had at least a 4-year college degree (46.0 %) and earned less than $40,000 per year (49.5 %). There were no differences in education or income by sexual identity. Most participants indicated that their current residence was a house (48.4 %) or apartment (40.7 %). Heterosexual men were more likely than gay men to report that they currently lived in a house. Among those who had ever been tested for HIV, more than half reported that their most recent HIV test was negative (55.9 %). Gay men were more likely than bisexual men to report their HIV serostatus as positive; because no participant identifying as heterosexual reported an HIV-positive status, we restricted this analysis to gay and bisexual men.

As shown in Table 1, gay and bisexual men were recruited primarily through sexual networking and research-oriented Web sites. Heterosexual men were recruited primarily through Amazon Mechanical Turk and Craigslist. The most represented geographic region was the Southeast (32.0 %) followed by the West (21.4 %), Midwest (21.1 %), Northeast (14.6 %), and Southwest (9.9 %). A significantly greater proportion of gay men reported a zip code corresponding to a US state in the West region compared to bisexual men.

SEM Viewing Context and Frequency of Use

Most participants reported viewing SEM at home: on a computer (85.6 %); on a tablet or smartphone (71.9 %); on a television through an Internet connection (24.2 %); or on a television from a DVD or On-Demand service (23.9 %). Although less common, men also reported viewing SEM at work on a tablet or smartphone (16.1 %) or a computer (5.4 %). Venue-based SEM viewing was also reported: in a bar, club, or at an adult video store (17.9 %); at a sex party (12.4 %). Nearly all men in the

study reported accessing Internet SEM from Web sites with free viewing (95.7 %). Only a small percentage of men indicated having a paid subscription for Internet SEM (10.5 %). Heterosexual men were more likely than gay men to report viewing SEM at work on a computer, but less likely than gay men to view it at home on a television (e.g., DVD, On-Demand), at a sex party, or in a commercial sex venue such as a bar, club, or adult video store (Table 2). Gay men were more likely than bisexual men to report viewing SEM while at a sex party or a commercial sex venue. When asked about substance use in the context of viewing Internet SEM, more than two-thirds (69.2 %) of heterosexual men indicated that they did this none of the time. Although there were no differences between gay and bisexual men, gay men were more likely than heterosexual men to report that they used substances while viewing Internet SEM. Heterosexual men were less likely than bisexual men to indicate doing this some of the time.

As shown in Table 2, heterosexual men were more likely to view Internet SEM once a week or less compared to gay and bisexual men who were more likely to view Internet SEM at least once a day. Gay and bisexual men viewed more hours of Internet SEM in a typical week ($Mdn = 3$ h, $IQR = 1$–5 for both groups) compared to heterosexual men ($Mdn = 2$ h, $IQR = 1$–3.75), $\chi^2(2, N = 819) = 17.19$, $p < .001$. Further, a significantly greater proportion of heterosexual men reported SEM viewing sessions lasting 10 min or less compared to gay and bisexual men. Differences by sexual identity in the percentage of time that participants masturbate while watching Internet SEM approached significance (gay [$Mdn = 94.00$, $IQR = 64.00$–100.00], bisexual [$Mdn = 90.00$, $IQR = 50.00$–100.00], heterosexual [$Mdn = 85.50$, $IQR = 54.25$–100.00]), $\chi^2(2, N = 812) = 5.20$, $p = .07$.

Behaviors Viewed in Internet SEM and Condom Use Viewing Preferences

The most common sexual behaviors men reported viewing in SEM were oral sex (86.2 %), anal sex without a condom (84.0 %), anal sex with a condom (65.3 %), rimming (64.8 %), solo acts of masturbation (53.1 %), vaginal sex without a condom (40.8 %), and mutual masturbation (39.2 %). Men also reported viewing, to a lesser extent, felching (28.5 %), vaginal sex with a condom (26.4 %), bondage/sadomasochism/cock and ball torture/sounding (24.7 %), watersports (23.9 %), and fisting (18.1 %). Group sex scenes featuring only men were highly reported (80.1 %) followed by scenes featuring men and women (46.5 %), and only women (12.8 %).

Heterosexual men were significantly less likely than gay and bisexual men to report that they viewed SEM featuring only men, group sex with only men, mutual masturbation, anal sex with or without a condom, and rimming (Table 2). However, one in five heterosexual-identified men reported viewing SEM that featured only men. Heterosexual men were less likely than gay men to report viewing SEM that featured watersports and felching. They were more likely than gay and bisexual men to report that they viewed SEM featuring group sex with only women, group sex with men and women, and vaginal sex without a condom. Heterosexual men were also more likely than gay men to report viewing SEM that featured vaginal sex with a condom.

Gay men were significantly more likely than bisexual men to report that they viewed SEM featuring group sex with only men, bondage, sadomasochism, cock and ball torture, sounding, fisting, watersports, and felching. However, they were less likely than bisexual men to report viewing SEM that featured group sex with only women, group sex with men and women, solo acts of masturbation, and vaginal sex with or without a condom.

Sexual identity significantly predicted viewing of anal sex with a condom (referent: heterosexual; gay OR 3.93, 95 % CI 2.64–5.83; bisexual OR 4.59, 95 % CI 2.78–7.57), anal sex without a condom (referent: heterosexual; gay OR 5.20, 95 % CI 3.35–8.09; bisexual OR 3.99, 95 % CI 2.24–7.10), vaginal sex with a condom (referent: gay; heterosexual OR 7.90, 95 % CI 5.19–12.03; bisexual OR 4.97, 95 % CI 3.32–7.44), and vaginal sex without a condom (referent: gay; heterosexual OR 27.08, 95 % CI 15.25–48.07; bisexual OR 5.59, 95 % CI 3.81–8.21) in separate logistic regression models. In multivariable analyses controlling for race and ethnicity, relationship status, and HIV status, sexual identity remained a significant predictor for viewing risk and protective behaviors. Specifically, sexual identity significantly predicted viewing of anal sex with a condom (gay AOR 4.53, 95 % CI 2.75–7.47; bisexual AOR 3.53, 95 % CI 1.96–6.35), anal sex without a condom (gay AOR 4.94, 95 % CI 2.75–8.87; bisexual AOR 4.03, 95 % CI 2.00–8.11), vaginal sex with a condom (heterosexual AOR 9.47, 95 % CI 5.44–16.46; bisexual AOR 4.69, 95 % CI 2.98–7.39), and vaginal sex without a condom (heterosexual AOR 22.94, 95 % CI 11.83–44.49; bisexual AOR 5.76, 95 % CI 3.73–8.89). Men who self-identified as Black or African American, compared to White or Caucasian, had significantly increased odds of reporting that they viewed anal sex with a condom (AOR 1.52, 95 % CI 1.06–2.20). Men with an HIV-positive status, compared to HIV-negative, had significantly decreased odds of reporting that they viewed anal sex with a condom (AOR 0.49, 95 % CI 0.33–0.72). Participant characteristics were not significantly associated with viewing of anal sex without a condom, vaginal sex with a condom, or vaginal sex without a condom. Adding the interaction between HIV status and sexual identity did not result in a significant change to any of the multivariable models.

Of those participants who viewed Internet SEM featuring anal sex in the past 6 months, nearly two-thirds (61.3 %) reported a preference for viewing condomless anal sex and only 6.8 % reported a preference for viewing anal sex with condoms. Gay men were more likely than bisexual men to indicate a preference for viewing condomless anal sex. Among those who viewed Internet SEM featuring vaginal sex in the past 6 months, more

Table 2 Comparisons of sexually explicit media use, behaviors viewed, and preferences for condom use by sexual identity

	Heterosexual (a)	Gay (b)	Bisexual (c)	χ^2	φ_c	Post hoc
Viewed SEM in the past 6 months… ($N = 821$)						
At home on a computer	89.6	85.2	83.7	2.23	0.05	
At home on a tablet or smartphone	65.7	74.0	69.9	3.99	0.07	
At work on a computer	9.7	4.3	5.2	6.15*	0.09	a > b
At work on a tablet or smartphone	12.7	17.2	15.0	1.79	0.05	
At home on a television (e.g., DVD, On-Demand)	14.9	27.5	19.0	11.86**	0.12	a < b
At home on a television via Internet connection	20.1	26.0	21.6	2.75	0.06	
In a bar, club, or at an adult video store	5.2	23.2	10.5	30.70***	0.19	a < b; b > c
At a sex party	4.5	15.9	7.2	17.62***	0.15	a < b; b > c
Internet SEM viewing frequency ($N = 816$)				31.34***	0.14	
Once a week or less	37.9	18.4	17.8			a > b, c
Two to three times a week	32.6	30.3	29.6			
Once a day or more	29.5	51.3	52.6			a < b, c
Length of typical SEM viewing session ($N = 818$)				10.60*	0.08	
≤10 min	41.7	28.7	25.5			a > b, c
30–45 min	38.6	45.2	47.7			
1 h or more	19.7	26.1	26.8			
Substance use while viewing Internet SEM ($N = 814$)				11.68*	0.08	
None of the time	69.2	54.4	55.6			a > b
Some of the time	18.8	29.0	32.0			a < c
Half or more of the time	12.0	16.7	12.4			
Types of Internet SEM viewed[a]						
SEM featuring only men	20.7	98.3	96.0	513.16***	0.80	a < b, c
SEM featuring a man and a woman	98.5	55.0	88.3	124.26***	0.40	a > b, c; b < c
SEM featuring only women	83.6	3.3	41.1	387.55***	0.72	a > b, c; b < c
SEM featuring at least two men and one woman	76.9	52.9	80.4	50.42***	0.26	a > b; b < c
SEM featuring at least two women and one man	88.5	22.5	61.8	215.32***	0.53	a > b, c; b < c
Internet SEM behaviors ($N = 821$)						
Solo acts of masturbation	58.2	49.6	60.8	7.62*	0.10	b < c
Mutual masturbation	24.6	42.3	41.2	14.37**	0.13	a < b, c
Oral sex	89.6	85.2	86.9	1.78	0.05	
Vaginal sex without a condom	88.8	22.7	62.1	229.32***	0.53	a > b, c; b < c
Vaginal sex with a condom	56.0	13.9	44.4	129.07***	0.40	a > b; b < c
Anal sex without a condom	61.2	89.1	86.3	63.07***	0.28	a < b, c
Anal sex with a condom	37.3	70.0	73.2	55.81***	0.26	a < b, c
Rimming	32.1	72.7	66.0	77.42***	0.31	a < b, c
Fisting (vaginal or anal)	14.9	21.0	11.1	8.91*	0.10	b > c
Bondage, sadomasochism, cock and ball torture, sounding[b]	24.6	27.9	13.7	12.84**	0.12	b > c
Watersports[c]	13.4	28.7	16.3	19.52***	0.15	a < b; b > c
Felching[d]	12.7	33.9	23.5	25.93***	0.18	a < b; b > c
Group sex with only men	8.2	95.9	88.2	525.17***	0.80	a < b, c; b > c
Group sex with only women	44.8	2.8	19.6	176.99***	0.46	a > b, c; b < c
Group sex with men and women	85.8	32.6	60.8	137.38***	0.41	a > b, c; b < c
Preferences for vaginal sex condom use in SEM ($N = 413$)				10.19*	0.11	
No preference	31.7	45.1	41.5			
Without condoms	65.0	50.5	50.0			a > b

Table 2 continued

	Heterosexual (a)	Gay (b)	Bisexual (c)	χ^2	φ_c	Post hoc
With condoms	3.3	4.3	8.5			
Preferences for anal sex condom use in SEM ($N = 754$)				10.66*	0.08	
No preference	33.0	29.2	41.3			b < c
Without condoms	61.7	64.4	49.7			b > c
With condoms	5.3	6.4	9.1			

Percentages presented. SEM (sexually explicit media)

*** $p < .001$; ** $p < .01$, * $p < .05$. Bonferroni corrections applied to post hoc comparisons ($p < .017$)

[a] Missing data resulted in analytic samples ranging from 743 to 802. [b] Urethral sounding. [c] Golden showers, pissing/urinating. [d] Sucking or eating cum out of someone's anus. χ^2. φ_c (Cramer's V)

than half (54.7 %) reported a preference for viewing condomless vaginal sex and 5.1 % reported a preference for viewing vaginal sex with a condom. Compared to gay men, heterosexual men were more likely to indicate a preference for viewing condomless vaginal sex. Bisexual men did not differ from either gay or heterosexual men in their preference for viewing condomless vaginal sex.

We modeled condom use preferences for vaginal sex in SEM using linear regression, with viewing of vaginal sex with a condom and without a condom as predictor variables. Unstandardized betas and standard errors are reported in Table 3. The model, controlling for participant characteristics (i.e., sexual identity, race and ethnicity, relationship status, and HIV status), explained 23.9 % of the variance in condom use preferences for vaginal sex in SEM. Viewing vaginal sex with a condom and without a condom was both significantly associated (in expected directions) with condom use preferences for vaginal sex. Similarly, we modeled condom use preferences for anal sex in SEM, with viewing of anal sex with a condom and without a condom as predictor variables. The model, controlling for participant characteristics, explained 21.7 % of the variance in condom use preferences for anal sex in SEM. Viewing anal sex with a condom and without a condom was both significantly associated (in expected directions) with condom use preferences for anal sex.

Discussion

This study is one of the first to compare the behavioral content of Internet SEM viewed by sexual identity, building on prior work by Peter and Valkenburg (2012). Findings suggest that the behaviors men view in SEM tended to reflect their sexual identity. Specifically, heterosexual men were more likely than gay and bisexual men to report that they viewed SEM featuring women, vaginal sex, group sex with only women, and group sex with men and women during the past 6 months. Gay and bisexual men were more likely than heterosexual men to report that they viewed SEM featuring only men, mutual masturbation, and group sex with only men during the past 6 months.

Nevertheless, the findings also indicated that many men viewed SEM content inconsistent with their stated sexual identity. It was not uncommon for heterosexual-identified men to report viewing SEM containing male same-sex behavior (20.7 %) and for gay-identified men to report viewing heterosexual behavior in SEM (55.0 %). It was also not uncommon for gay men to report that they viewed vaginal sex with (13.9 %) and without a condom (22.7 %) during the past 6 months. Stein et al. (2012) found that nearly half of their sample of MSM had ever viewed heterosexual SEM. Interestingly, though not clear why, bisexual men were more likely than gay men, but not heterosexual men, to report viewing solo acts of masturbation in SEM. Heterosexual men did not differ from gay men in their viewing of SEM that featured fisting, bondage, sadomasochism, cock and ball torture, and sounding. However, gay men were more likely than heterosexual and bisexual men to report viewing SEM that featured watersports and felching, behaviors that have been found in certain genres (e.g., kink, fetish) of gay male SEM (Downing et al., 2014b). Likewise, gay men were more likely than bisexual men to report viewing of SEM that featured fisting, bondage, sadomasochism, cock and ball torture, and sounding in the past 6 months.

These data further suggest a need for clarification of what is considered bisexual SEM. Hald and Štulhofer (2016) assessed variations of bisexual behavior in SEM, including several (e.g., threesomes, orgy) that loaded onto a bisexual viewing factor for heterosexual men. Given the presence of sexual identity discrepancy in SEM viewing (as reported in the current study and by Hald & Štulhofer, 2016), there are important questions that warrant subsequent inquiry. More specifically, are bisexual sex scenes mostly embedded within heterosexual, lesbian, and/or gay SEM or is there a distinct presence of this media type beyond the gender and quantity of actors in a particular scene? Catalog analysis of leading adult industry studios coupled with a behavioral content analysis of select videos will likely provide some answers to these questions. Nevertheless, viewers

Table 3 Multiple linear regressions predicting condom use preferences in SEM

	Condom Use Preferences in SEM	
	Anal	
	b	SE
Viewing of anal sex without a condom	−0.59***	0.08
Viewing of anal sex with a condom	0.29***	0.05
Gay or homosexual	−0.07	0.07
Bisexual	−0.03	0.08
Black or African-American	0.25***	0.05
Hispanic or Latino	0.24**	0.08
Asian, Pacific Islander, Native American or Alaska Native, Native Hawaiian, or Other	0.13	0.12
In a steady relationship	−0.002	0.06
Married or domestic partnership	−0.05	0.06
HIV-positive	−0.13**	0.05
Never tested for HIV	0.01	0.08
	Vaginal	
	b	SE
Viewing of vaginal sex without a condom	−0.53***	0.07
Viewing of vaginal sex with a condom	0.37***	0.06
Straight or heterosexual	−0.14†	0.08
Bisexual	−0.02	0.07
Black or African-American	0.13†	0.07
Hispanic or Latino	0.25*	0.11
Asian, Pacific Islander, Native American or Alaska Native, Native Hawaiian, or Other	−0.13	0.13
In a steady relationship	−0.01	0.08
Married or domestic partnership	0.02	0.07
HIV-positive	−0.18*	0.08
Never tested for HIV	0.07	0.08

Unstandardized coefficients (*b*) and standard error (SE) are reported

*** $p < .001$; ** $p < .01$; * $p < .05$; $^{\dagger} p < .10$

may have a different perspective based on their SEM search patterns and preferences that deserves further consideration.

This study provides important insights into the contexts of SEM use. Not surprisingly, participants overwhelmingly reported viewing SEM at home either on a computer, on a tablet or smartphone, or on a television. Nevertheless, a modest proportion of men reported viewing SEM while attending sex parties or commercial sex venues. Gay men were significantly more likely than heterosexual and bisexual men to have viewed SEM at a sex party or commercial sex venue. This is perhaps due to group differences in frequency of attendance or the type of venue attended. Some research has also suggested that men who are less open about their sexuality, particularly heterosexual- and bisexual-identified men who engage in same-sex encounters, avoid these types of venues for fear of discovery (Schrimshaw, Downing, & Siegel, 2013a). Since multiple researchers have established cross-sectional associations between viewing condomless anal sex in SEM and engaging in condomless anal sex among GBMSM (Nelson et al., 2014b; Schrimshaw et al., 2016a; Stein et al., 2012), this finding does raise concerns about the potential role of SEM in facilitating high-risk encounters in sexually charged environments. Knowing that some men consume SEM in these contexts may be critical to tailoring delivery strategies of risk reduction messages. Additionally, study findings provide further evidence that the workplace is a common site for accessing SEM (Albright, 2008; Perrin et al., 2008), particularly on a tablet or smartphone. Although the frequency of accessing SEM at work on a computer was low, heterosexual men were significantly more likely than gay men to have done so during the past 6 months. Further research in this area might consider whether men who view SEM at work are more sexually compulsive and whether viewing in this context has a negative impact on productivity and interpersonal workplace relationships.

As other researchers have reported (Duggan & McCreary, 2004; Peter & Valkenburg, 2011b), the current study found that use of Internet SEM varied by sexual identity with heterosexual men accessing it less frequently than gay and bisexual men. Heterosexual men were also more likely to report viewing sessions of 10 min or less. Study findings suggest that heterosexual men are less likely to smoke, consume alcohol or other drugs while viewing Internet SEM compared to gay and bisexual men. Indeed, nearly half of gay (45.7 %) and bisexual men (44.4 %) indicated using substances at least some of the time in this context. Moreover, bisexual men were significantly more likely than heterosexual men to report that they did this some of the time. Additional research could assess the substances men are using while viewing SEM and what motivates their substance use in this context. Furthermore, there was a high rate of masturbation while viewing Internet SEM though no differences by sexual identity were found. This finding is not surprising as other studies have reported similar rates of masturbation among men while consuming SEM (Kraus & Rosenberg, 2014; Nelson et al., 2014b).

Despite growing attention to the potential negative implications of bareback sex in gay male SEM (e.g., Nelson et al., 2014a; Rosser et al., 2012; Schrimshaw et al., 2016a), there has been a lack of equivalent research pertaining to the use of condoms for vaginal and anal sex in heterosexual and bisexual media. The current study sought to bridge this gap in the literature by assessing the types of sexual behaviors that men (of diverse sexual identities) viewed in Internet SEM during the past 6 months, including con domless vaginal and anal sex. Consistent with findings from recent content analyses of gay male and heterosexual SEM (Downing et al., 2014; Grudzen et al., 2009; Salmon & Diamond, 2012), participants overwhelmingly reported viewing Internet SEM that featured at least one of these risk behaviors.

Moreover, this study builds on research by Kraus and Rosenberg (2016) who assessed attitudes toward condom use in SEM among heterosexual and non-heterosexual men. The authors did not specifically inquire about the types of behaviors that participants viewed, thus precluding any analyses into whether their attitudes predicted viewing. The current study, however, did assess behavioral content viewed and observed significant associations with preferences for condom use in SEM (also serving as a validity check).

Previous research with GBMSM has shown significant associations between viewing condomless anal sex in gay male SEM and engaging in more condomless anal sex encounters (Nelson et al., 2014b; Rosser et al., 2013; Schrimshaw et al., 2016a; Stein et al., 2012). The current study found that a substantial number of heterosexual and bisexual men reported viewing condomless vaginal and anal sex in SEM. Thus, it is possible that viewing such high-risk behaviors in SEM may be associated not only with more condomless anal sex with male partners (among bisexual men), but also with more condomless encounters with female partners among heterosexual and bisexual men. Further research is needed to examine these potential associations, particularly with regard to female partners, as this is an understudied area. Likewise, we also found that gay men report viewing condomless vaginal sex in SEM. Additional research should examine whether this viewing contributes at all to risky sexual encounters with male partners. If any of these associations are confirmed in subsequent studies, it would suggest that SEM-based risk reduction messaging (as an HIV/STI prevention intervention) must not only target gay male media but heterosexual and bisexual media as well.

Further research is also needed to better understand the mechanisms underlying diverse SEM viewing patterns. For example, some heterosexual-identified men may experience sexual arousal from the homosociality or patterns of male bonding (including BDSM) inherent to gay male SEM. For gay-identified men who watch bisexual sex scenes, perhaps their interest (gaze) lies not with the female actor(s), but with the one or more male actors engaging in sexual activity. Moreover, some men are perhaps aroused by the domination (implied or otherwise) incorporated into bisexual and other group sex scenes and may fantasize that they are the person being dominated. Of course we recognize that viewing patterns may change over time and are likely associated with more than just sexual identity, including attractions to one or more gender types, SEM content-related sexual arousal, and prior sexual experiences. Also embedded in this discussion is the idea that sexual identity is not always reflective of one's attractions or experiences (Baldwin et al., 2015). Indeed, the current study found evidence of sexual identity discrepancy in behavioral content viewed. This suggests, as we have noted above, that SEM-based risk reduction messages have the potential to reach a broad audience.

Limitations

Several study limitations should be noted. First, the data are cross-sectional in nature precluding any causal conclusions about condom use preferences in SEM and behavioral content viewed (i.e., does exposure influence viewing preferences, do preferences influence what viewers search for and watch, or is it reciprocal and mutually reinforcing). Further, the study relied on self-report retrospective data collected from an online non-probability sample. Thus, there are potential concerns about recall bias as well as participant selection and external validity. To minimize issues with recall, the survey utilized a 6-month timeframe to assess recent SEM use. Additionally, the survey did not include items to assess the types of behavioral content participants searched for in SEM, but rather what they actually viewed. As such, it remains unclear whether men intended to watch those behaviors that they reported viewing. Nevertheless, there was evidence of validity within the findings as preferences for viewing condom use in SEM (a likely marker for content searching) were significantly associated with behavioral content viewed—specifically condom use or nonuse during scenes featuring vaginal and anal sex—during the past 6 months. Lastly, we noted several differences between participants who completed the survey and those who only provided a partial survey. Thus, the findings may not necessarily generalize to those participants who did not complete the survey.

Conclusions

The results from this study have extended prior SEM research by comparing the frequency of use, viewing contexts, behavioral content viewed, and viewer preferences for condom use during vaginal and anal sex scenes by sexual identity among an ethnically diverse sample of men in the U.S. Gay and bisexual men reported significantly more frequent use of Internet SEM compared to heterosexual men. Although most participants reported viewing SEM at home on a computer, tablet, or smartphone, significantly more gay men reported SEM use at a sex party or commercial sex venue. Sexual identity predicted viewing of high-risk (condomless anal and vaginal sex) and protective behaviors (anal and vaginal sex with a condom). Nevertheless, there was evidence of identity discrepant SEM viewing as heterosexual-identified men reported viewing male same-sex behavior and gay-identified men reported viewing heterosexual behavior. Significant associations were also observed between behavioral content viewed and preferences for condom use in SEM. Findings suggest the importance of assessing SEM use across media types (e.g., SEM that targets heterosexual, bisexual, and gay audiences) and contexts and have implications for future SEM research and prevention strategies to address concerns about the potential influence of SEM on sexual behavior.

Compliance with Ethical Standards

Conflict of interest This research was supported by a grant from the Foundation for the Scientific Study of Sexuality to Martin J. Downing, Jr., Ph.D. (no award number provided). The authors declare that they have no other conflicts of interest.

Human Participants All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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