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## Examining the relationship between use of sexually explicit media and sexual risk behavior in a sample of men who have sex with men in Norway

BENTE TRÆEN<sup>1</sup>, SYED W. NOOR<sup>2</sup>, GERT MARTIN HALD<sup>3</sup>, B. R. SIMON ROSSER<sup>2</sup>, SONYA S. BRADY<sup>2</sup>, DARIN ERICKSON<sup>2</sup>, DYLAN L. GALOS<sup>2</sup>, JEREMY A. GREY<sup>2</sup>, KEITH J. HORVATH<sup>2</sup>, ALEX IANTAFFI<sup>4</sup>, GUDRUNA KILIAN<sup>2</sup>, and J. MICHAEL WILKERSON<sup>5</sup>

<sup>1</sup>Department of Psychology, University of Oslo, Oslo, Norway

<sup>2</sup>Division of Epidemiology and Community Health, University of Minnesota School of Public Health, Minneapolis, Minnesota, MN, USA

<sup>3</sup>Department of Public Health, University of Copenhagen, Copenhagen, Denmark

<sup>4</sup>Program in Human Sexuality, Department of Family Medicine and Community Health, University of Minnesota, Minneapolis, MN, USA

<sup>5</sup>School of Public Health,, University of Texas, Huston, TX, USA

### Abstract

The purpose of this study was to investigate consumption patterns of gay-oriented sexually explicit media (SEM) among men who have sex with men (MSM) in Norway, with a particular emphasis on a possible relationship between gay SEM consumption and HIV risk behavior. Participants included 529 MSM living in Norway recruited online to complete a SEM consumption and sexual risk survey. Of the 507 participants who responded to the all items measuring exposure to SEM, 19% reported unprotected anal intercourse with a casual partner (UAI) in last 90 days, and 14% reported having had sero-discordant UAI. Among those with UAI experience, 23% reported receptive anal intercourse (R-UAI) and 37% reported insertive anal intercourse (I-UAI). SEM consumption was found to be significantly associated with sexual risk behaviors. Participants with increased consumption of bareback SEM reported higher odds of UAI and I-UAI after adjusting for other factors using multivariable statistics. MSM who started using SEM at a later age reported lower odds of UAI and I-UAI than MSM who started earlier. Future research should aim at understanding how MSM develop and maintain SEM preferences and the relationship between developmental and maintenance factors and HIV sexual risk behavior.

### Keywords

MSM; sexually explicit media; HIV prevention; unsafe sex; sexual risk behavior; Norway; anal intercourse

## INTRODUCTION

Sexually explicit media (SEM) may be defined as any kind of material aimed at creating or enhancing sexual feelings or thoughts in the recipient and, at the same time, containing explicit exposure and/or descriptions of the genitals and/or sexual acts (Hald, 2006). The gay SEM industry advocates SEM's role in validating homosexuality, creating an outlet for desire and exploration, and strengthening gay communities (Lucas, 2006). Researchers have reported that SEM may play a positive role in young MSM's development and sexual education (Kubicek, Beyer, Weiss, Iverson & Kipke, 2010; Kubicek, Carpineto, McDavitt, Weiss & Kipke, 2010), with young MSM describing SEM as a major source of sexual information (Mustanski, Lyons & Garcia, 2011). However, not all agree on these beneficial outcomes of SEM consumption, and express concern about potentially negative health effects. In particular, it has been claimed that gay SEM consumption may be promoting unsafe sexual behaviors such as non-condom sex (McNeil, 2012; Tydén & Rogala, 2004).

Compared to heterosexual SEM, gay SEM is more likely to depict use of condoms (Grudzen, Elliot, Kerndt, Shuster, Brook & Gelberg, 2009). In the late 1980s, the major gay SEM producers in the USA committed to show condom use during anal sex between men (Calvert & Richards, 2007; Clark-Flory, 2012). This self-imposed industry standard lasted for about a decade before the re-emergence of SEM depicting unprotected anal sex between men, dubbed "bareback SEM" (Holt, 2008). Since then, the use or non-use of condoms in gay SEM has remained controversial, with industry 'safer sex advocates' arguing to retain the standard both to protect actors and to model safer sex behavior, and others arguing that consumer demand and competition from amateur SEM producers necessitate bareback production (McNeil, 2012).

Evidence of a relationship between gay SEM use and health and HIV sexual risk behaviors of MSM is emerging (Træen, Hald, Noor, Iantaffi, Grey & Rosser, 2013; Rosser, Smolenski, Erickson *et al.*, 2013). In these studies SEM consumption, or specific SEM genres, have been found to be positively associated with a higher likelihood of engaging in protected anal intercourse, finding anal sex activities appealing, and having group sex (Duggan & McCreary, 2004; Morrison, 2004; Morrison, Morrison & Bradley, 2007; Parsons, Kelly, Bimbi, Muench & Morgenstern, 2007; Rosser *et al.*, 2013; Træen & Daneback, 2012). Importantly, a recent study of a large group of MSM in the USA suggests that relationships between the use of SEM depicting non-condom use and HIV sexual risk behavior may be mediated by various factors such as condom use self-efficacy (Træen *et al.*, 2013). Specifically, in this study it was found that viewing condom use in SEM was associated with increased condom use self-efficacy, and further that higher condom use self-efficacy was associated with higher likelihood of engaging in protected anal intercourse. Accordingly, MSM who consume SEM depicting condom use may learn or gain confidence in skills related to using condoms and negotiating condom use and/or viewing SEM with condoms may contribute to a normalization of condom use.

The most commonly cited reasons for condom use in actual sexual encounters include HIV/STI prevention (Caballo-Dieguez & Bauermeister, 2004; Harawa, Williams, Ramamurthi & Bingham, 2006), and for HIV-positive men, altruism (Brennan, Welles, Ross,

Miner Mayer & Rosser, 2009; Harawa *et al.*, 2006). Commonly cited reasons for non-condom use are personal pleasure, physical sensation and a belief that condoms spoil sex (Caballo-Diequez & Bauermeister, 2004; Offir, Fisher, Williams & Fisher, 1993; Valdiserri, Lyter, Leviton, Callahan, Kingsley & Rinaldo, 1988). However, none of these reasons explain or are linked to preferences for viewing or not viewing condoms in gay SEM. Accordingly, the direction of the relationship between SEM consumption, possible mediators, and sexual risk behaviors remain unknown.

Viewing preferences and preferences for actual sexual behavior may influence one another and/or fully or partly be explained by third variable influences such as personality or sexual arousal (Hald, Malamuth & Lange, 2013). Accordingly, being able to control for a third factor variable that may confound associations between SEM consumption variables and sexual risk behavioral outcomes remain crucial. In this regard, controlling for social background factors, affective state, social desirability, internalized homonegativity and compulsive sexual behavior, Rosser *et al.* (2013) reported a dosage effect of SEM consumption on sexual risk behavior. Thus, MSM who watched more bareback SEM were found to have significantly greater odds of engaging in receptive unprotected anal intercourse with multiple male partners, insertive unprotected anal intercourse with multiple male partners and sero-discordant unprotected anal intercourse. Conversely, a preference for safer sex SEM predicted significantly lower risk of receptive unprotected anal intercourse and insertive unprotected anal intercourse. These results suggest that a preference for or greater exposure to bareback SEM is associated with engaging in risk behavior, while a preference for or exposure to safer sex SEM is associated with reduced HIV risk.

However, as also noted by Rosser *et al.* (2013) such results, given their possible implication for sexual and general health among MSM, are in urgent need of cross-cultural validation before the full implications of such results on MSM sexual health may be readily determined. On this background, the overall purpose of the present study was to replicate the findings from Rosser *et al.*'s (2013) study in Norway. More specifically, the aims of this study was (1) to study exposure to and consumption of gay-oriented SEM, and (2) to study the relationship between SEM consumption and HIV risk behavior in MSM in Norway.

## METHODS

### Recruitment and sample

This online questionnaire study was piloted and calibrated in December 2011. Between January 15 and February 2, 2011, MSM were invited to participate in a survey about the use of pornography and sexual behavior through pop-up banners on Norway's largest gay website – [www.gaysir.no](http://www.gaysir.no). This web site has 47,000 members and is an informal community website for gay and lesbian people. It is not primarily a 'hook up' web site. The web site provides general news and information of community interest, allow members to set up profiles and participate in debates, forums and groups, in addition to search member profiles and send messages to other members.

The questionnaire used for the present online survey was adapted from the Sexually Explicit Media (SEM) study, a US National Institutes for Health (NIH) funded study of SEM

consumption and HIV risk behavior among MSM in the USA (Rosser *et al.*, 2013). The questionnaire was translated into Norwegian and adjusted to fit Norwegian terminology and cultural contexts. The questionnaire contained questions about socio-demography, HIV status, being in a long-term relationship, number of partners, drug use, SEM consumption and preferences in SEM, sexual behavior, and use of condoms.

Participants were asked to complete the survey questionnaire online following informed consent. A total of 529 MSM volunteered to participate in the study. To participate in the study, participants had to be male, 18 years of age or older, and able to comprehend written Norwegian. Participants were not compensated for study participation.

For de-duplication and cross-validation purposes, participants' e-mail addresses were recorded by the data program used to collect the data (Questback) in a separate data base. Hence, the data set accessible to researchers was de-identified and anonymous. The participants were informed about the procedure. The study was conducted under the oversight of the Norwegian Social Science Data Services Institutional Review Board.

For the purpose of this study, the sample was restricted to participants who responded to all items measuring exposure to SEM described in detail below ( $N = 507$ , 95%). Socio-demographic characteristics of the sample are presented in Table 1.

A majority of participants were younger than 35 years of age (54.9%), White (95.9%), had formal education of less than a college degree (58.1%), not in a long-term relationship (52.1%) and self-identified as gay (66.9%). Eighteen participants (4.0%) reported that they were HIV positive (see Table 1).

## Measures

**Sexual risk behavior**—Participants were asked two items relating to the number of casual male sex partners in the last 90 days with whom they had engaged in unprotected receptive and insertive anal intercourse. To compare participants who engaged in unprotected anal intercourse with those who did not on the consumption of sexually explicit material, we created three binary outcome variables: unprotected anal intercourse with a casual male partner (UAI); receptive unprotected anal intercourse with a casual male partner (R-UAI) and insertive unprotected anal intercourse with a casual male partner (I-UAI).

In addition, participants reported the number of UAI partners that were HIV-negative, HIV-positive, or unknown. Using each participant's self-reported HIV-status, we developed a binary indicator of whether or not the participant had engaged in sero-discordant or potentially sero-discordant unprotected anal intercourse. HIV-negative participants who reported UAI with any HIV-positive or HIV-status-unknown male casual partner were classified as engaging in sero-discordant or potentially sero-discordant unprotected anal intercourse (SDUAI).

**SEM consumption**—Exposure to SEM was measured in terms of the frequency and duration of overall exposure to SEM, a preference for SEM depicting protected and unprotected anal intercourse, and the frequency of exposure to SEM depicting protected and

unprotected anal intercourse. The preference for viewing condom use during anal intercourse in SEM was measured by a single item, “In general, do you prefer to watch actors perform anal sex with condoms or without?” with three nominal response options: (1) without condoms; (2) with condoms; and (3) I do not care either way. Participants also responded to two five-point, Likert-type items on the frequency of viewing protected and unprotected anal intercourse when they watched SEM during the past 3 months. The response range was from 1 = “rarely or never” to 5 = “always or almost always.” We created an index by subtracting the frequency of viewing protected anal intercourse from the frequency of viewing unprotected anal intercourse to provide an ordinal measure of the tendency to view unprotected anal intercourse versus protected anal intercourse. This index ranged from -4 to 4, with -4 indicating exclusive viewing of protected anal intercourse and 4 indicating exclusive viewing of unprotected anal intercourse. A score of zero indicated equivalent exposure to both forms of anal intercourse. Then, frequency and duration measures of SEM consumption of any kind in the last 3 months were combined to create an index of the hours per week dedicated to SEM consumption.

In addition, four items were used to assess the frequency of accessing SEM through the following four sources: (1) magazines; (2) video/DVD; (3) Internet on a computer; and (4) Internet through a phone or mobile device. Response options to each of these items ranged from 1 = “not at all” to 6 = “more than once a day.” One item asked participants to report the typical duration of use of SEM when it was used in the last 90 days, with response categories including: (1) 1–15 min; (2) 16–30 min; (3) 30–45 min; (4) 46–60 min; (5) between 1 and 1½ h; (6) between 1½ and 2½ h; and (7) >2 h. Finally, we multiplied exclusive viewing of protected anal intercourse and exclusive viewing of unprotected anal intercourse by hours of SEM consumption by week to create a composite measure of SEM consumption. Considering the distribution we used a natural logarithm transformation of SEM consumption. We treated this index as an ordinal scale of absolute condom watching to absolute no-condom watching. To assess the relationship between SEM consumption and sexual behaviors we regressed outcome variables on this index. The calculated regression estimates ( $\beta$ ) indicate the effect of one unit value dispersion from the absolute condom watching towards the absolute no-condom watching on the outcome variable.

**Positive and negative affect schedule (PANAS)**—The ten-item short-form PANAS (Thompson, 2007), was used to assess positive and negative affect in the last 90 days. All items were responded to using a five-point Likert-type index, with 1 = “Very little or not at all,” and 5 = “Extremely.” One item (i.e., alert) in the positive subscale of the PANAS had an item-rest correlation of 0.17. That item was excluded to increase internal consistency. Cronbach’s alpha was 0.70 for positive affect and 0.86 for negative affect in this sample.

**Social desirability**—The Marlowe–Crowne short form (Strahan & Gerbasi, 1972), was used to measure social desirability. This is a standard measure of social desirability that included 10 true/false statements about general characteristics of the participants. The Kuder–Richardson 20 internal-consistency estimate for this measure was 0.43.

**Compulsive Sexual Behavior Inventory (CSBI)**—The “control” subscale of the CSBI was used to assess compulsive, or out-of-control sexual behavior (Coleman, Miner,

Ohlerking & Raymond, 2001). The subscale comprised 13 items measured using five-point Likert-type response scales with 1 = “Very frequently” and 5 = “Never.” The valence of the arithmetic mean was reversed so that higher scores indicate a stronger manifestation of the construct. Cronbach’s alpha in this sample was 0.85.

**Internalized homonegativity (IH)**—The revised Reactions to Homosexuality scale (Smolenski, Diamond, Ross & Rosser, 2010), was used to measure IH. The measure consisted of seven items answered using a seven-point Likert-type scale ranging from 1 = “Strongly disagree” to 7 = “Strongly agree.” Cronbach’s alpha in this sample was 0.80.

### Statistical analysis

The goal of this analysis was to estimate the direct association of SEM consumption (SEM) with HIV sexual risk behaviors. We conducted this analysis in two steps.

In step one, we used summary statistics to describe the study sample. We also calculated the prevalence of unprotected anal intercourse among the participants, and means and standard deviations of the other variables. Bivariate comparison was used to assess differences in risk behaviors across various demographic factors (age, race/ethnicity, education, HIV status, identity as gay, relationship status, age of first SEM use). These were conducted four times for each sexual behavior.

We wanted to assess the relationship between SEM consumption and HIV risk behaviors in four unprotected anal intercourse (0 = No, 1 = Yes) contexts. Four separate and comparable multiple logistic regression models were run to assess this relationship, and to calculate the contribution of various demographic and psychosocial measures on this relationship. Participant’s age, selected psychosocial measures and statistically significant ( $p < 0.05$ ) demographic factors were entered in all four models as covariates. Mindful that this is one of the first studies of the relationship between bareback SEM and HIV risk behaviors, we identified the following potential confounders to rule out competing hypotheses. We identified constructs that have been previously associated directly or indirectly with HIV risk behaviors for MSM. From these we selected measures that from our knowledge of the target population could be hypothesized as alternative explanations for both watching bareback SEM and engaging in risk behaviors (Wilkerson, Iantaffi, Smolenski *et al.*, 2012). These included a measure of Positive and Negative Affect to control for the possibility that negative emotional states would lead some participants to both report more bareback SEM consumption and risk behavior (Noor, Rosser & Erickson, 2014; Rosser, Noor & Iantaffi, 2014). Similarly, compulsive sexual behavior and internalized homonegativity have been shown to influence MSM’s risk behavior (Benotsch, Kalichman & Kelly, 1999; Dew & Chaney, 2005; Smolenski, Ross, Risser & Rosser, 2009; Smolenski, Stigler, Ross & Rosser, 2011). To rule out competing explanations that hypersexuality leads to some MSM just watching more over everything (and engaging in risk behavior) or that internalized homonegativity would lead some men to negatively evaluate their SEM watching as bareback, we included these scales. Finally, social desirability has been shown to influence responding on socially sensitive items, such as SEM consumption and sexual behaviors (Noor *et al.*, 2014). Hence, we included these items in the model considering their potential

to be confounds and to not be on the causal pathway between exposure to SEM and the specified outcomes. All statistical tests were two-tailed, and all analyses were conducted in Stata 13 software (StataCorp., 2013).

## RESULTS

Around 12% of the participants reported using SEM for the first time before the age of ten and more than one third (37.8%) of the sample reported viewing an average of 3.5 hours of SEM or more per week and 43.7% reported that they preferred viewing bareback sex in SEM (i.e., sex without condoms) in the last 90 days. Regarding sexual behavior, a total of 19% (96/507) of the participants reported UAI with a casual partner in the last 90 days. Among them 23% (22/96) reported R-UAI, 37% (36/96) reported I-UAI, and 40% (38/96) reported both. In addition, 14% (71/507) of participants reported having had sero-discordant UAI with a male partner (see Table 1).

The means, standard deviations, and percentage of the variables of interest (SEM consumption, sexual risk behavioral, positive and negative affective state, social desirability, internalized homonegativity and compulsive sexual behavior), are shown in Table 2. The mean dosage of overall SEM consumed was 5.32 hours (sd. 8.48) per week during the last 90 days and the median dosage was 2.87 hours per week (or 24.6 minutes per day), with a wide inter-quartile range between 1.1 and 5.8 hours of SEM per week.

In terms of content viewed, the typical respondent reported about equal amounts of protected and bareback SEM consumption, although the small positive value of the mean (0.15) suggests that participants reported slightly more consumption of bareback SEM as compared to protected anal intercourse SEM. A majority of participants reported low scores on the compulsive sexual behavior-control subscale (mean 1.98, sd. 0.60), and high scores on the revised reactions to homosexuality scale (mean 5.43, sd. 1.28), indicating higher internalized homophobia.

The estimates of associations of SEM consumption with sexual risk behaviors and the results of multiple logistic regression analyses are reported in Table 3 (bivariate associations are presented in Tables 1 and 3). SEM consumption was significantly associated with sexual risk behaviors. Participants with increased consumption of bareback SEM reported higher odds of UAI (aOR = 1.19; 95% CI: 1.04–1.36;  $p = 0.01$ ) and I-UAI (aOR = 1.16; 95% CI: 1.02–1.32;  $p = 0.03$ ) after adjusting for other factors in the model. While bareback SEM consumption was significantly associated with R-UAI in the unadjusted model, after adjustment for other cofactors, the association was found to be non-significant (aOR = 1.12; 95% CI: 0.96–1.29;  $p = 0.15$ ). Bareback SEM consumption was found not to be associated with SDUAI (aOR = 0.97; 95% CI: 0.83–1.15;  $p = 0.75$ ) in the multi-variable analyses. In addition, self-reported HIV-negative participants and participants who were in a relationship reported lower odds of engaging in UAI. Participating MSM who started using SEM at a later age (10 years of age) reported significantly lower odds of UAI (aOR = 0.33; 95% CI: 0.12–0.87;  $p = 0.03$ ) and R-UAI (aOR = 0.23; 95% CI: 0.07–0.78;  $p = 0.02$ ) after controlling for other factors in the regression model.

## DISCUSSION

The first aim of this study was to study exposure to and consumption of gay-oriented SEM in Norway. The results showed that recent gay SEM exposure appeared normative for this sample, with a majority MSM reporting slightly below three hours of SEM exposure per week. Recent HIV risk behavior measured behaviorally (UAI) or by taking into account serostatus, was relatively infrequent. The second aim of the survey was to study the relationship between gay SEM consumption and HIV risk behavior in MSM. We found that SEM consumption was statistically significantly associated with risk behaviors, and MSM with increased consumption of bareback SEM reported higher odds of UAI and I-UAI. Furthermore, the time of first exposure to SEM seem to be of importance to HIV sexual risk behavior. The findings from the Norwegian study support the findings from Rosser *et al.*'s (2013) study from the US, even though the Norwegian sample differed from the US sample by expressing less compulsive sexual behavior-control and a higher level of internalized homonegativity.

The four different outcomes were highly correlated ( $p < 0.001$ ) as insertive, receptive and sero-discordant unprotected anal intercourse are subsequent scenarios of UAI. For this reason, we will continue the discussion of the findings with reference to UAI. Our main finding is that what MSM in Norway prefer to watch in gay SEM is associated with what they do sexually. This finding may be seen as consistent with the media practice model (Steele & Brown, 1995). According to the media practice model individuals (here MSM) are more likely to exposure themselves, select, and attend to media materials (here specific types of SEM) and messages that align with their motivations, beliefs, attitudes, and behaviors (here sexual behaviors). Consequently, it may be that MSM select gay SEM according to what they already do or would like to do sexually and that this SEM material then reinforces these sexual preferences and behaviors (Steele, 1999; Steele & Brown, 1995). This, would also, in part, explain why and how some men develop preferences for depictions of anal sex with condoms while others have and/or develop preferences for depictions without condom.

Neither can a self-interest for using protection explain the preference for watching safer sex SEM, nor can the quest for enhanced physical sensation related to engaging in bareback sex explain the preference for watching bareback SEM. One explanation to consider for this may be related to what the valid gay sexual script (Gagnon, 1990; Gagnon & Simon, 1973) prescribes. It could be that over time, anal sex with condoms has become eroticized for some men, bareback sex become eroticized for others, while still others find different features of SEM more salient. If so, then watching safer sex or bareback SEM may act to reinforce the preferred behavior, for example, through operant conditioning. This explanation is consistent with research findings from qualitative studies among MSM in the US (Wilkerson, Iantaffi, Grey, Bockting & Rosser, 2013) and might also explain why differences were found between those exposed early to gay SEM and those exposed later. For some subgroups of MSM, but not all, watching bareback SEM could be considered a risk stimulus whereas in other groups the use of bareback SEM may serve more as a substitution for engaging in risk, suggesting it may be a protective factor.



An alternative explanation for our main finding may be that preferences for or against condoms in SEM is not causally related to engaging in risk behavior, but reflective of some other preferences in SEM or sexual behavior. For example, SEM genre (depictions of regular/vanilla SEM versus heavier/kinky SEM) may influence both whether safer sex or bareback scenes are depicted, and may appeal to different SEM consumers (Erickson, Galos, Smolenski, Iantaffi & Rosser, forthcoming). Hence, a preference for SEM depicting leather sex, group sex, or kink may result in a higher probability of viewing bareback SEM than SEM depicting scenes of mutual masturbation and oral sex. As Erickson *et al.*, note, the impact of genre should be explored in future studies. Considering the temporal ambiguity, one can question whether MSMs' preferences for bareback or safer sex in SEM is motivating sexual risk behavior, or if sexual risk behavior is motivating SEM preferences, or perhaps preferences for SEM and actual sexual behavior are both motivated by other variables? Psychological, social, and SEM factors may potentially confound the relationship between viewing bareback SEM and actual behavior (Hald, Kuyper, Adams & De Wit, 2013). A third possible explanation for the finding can be that SEM viewing preferences and actual behavior do not influence one another, but are caused by one or more third variables. It is a topic for future research to clarify these matters.

Lastly, the limitations of this study are addressed. Clearly, the cross-sectional data of the study prevents us from exploring temporality and causality in the relationships. Second, we lack an adequate literature in which to contextualize the findings or to discuss reliability of results. Third, this survey-based study relies on self-reported data and in some situations, subjective assessments (e.g., whether SEM depicts bareback or safer sex, and sero-concordance in sex with other partners) which cannot be verified. Fourth, the study sample was a convenience sample and thereby restricted, by design, to Internet-using MSM. MSM who do not use the Internet may have different SEM use patterns. It should also be noted that since this is a convenience sample, the generalizability of findings to other Internet-using MSM, or all MSM, is uncertain.

## CONCLUSIONS

More research is needed to understand how MSM develop preferences for safer sex SEM or bareback SEM, genre, and how such preferences correlate with sexual risk behavior. The strength and meaning of such preferences may open up new insights for HIV prevention. The structural challenge for HIV prevention is to identify and test methods of using SEM for HIV prevention that are acceptable, feasible and effective. Researchers in gay men's health need to acknowledge and study SEM consumption as part of the broader context of MSM's sexual lives. Like also found in Rosser *et al.* (2013), and in Stein, Silvera, Hagerty and Marmor (2012), we found a relationship between viewing bareback SEM and engaging in HIV risk behavior. The converse is also true which means that viewing protected anal sex is associated with decreased sexual risk behavior. This finding could be of use to the SEM industry, and to health promotion.

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**Table 1**  
Socio-demographic characteristics of the study participants, and prevalence of UAI, R-UAI and I-UAI in the different sub groups (N=507)

Variable	UAI		R-UAI		I-UAI		SDUAI	
	yes (%)	p-value <sup>d</sup>	yes (%)	p-value <sup>d</sup>	yes (%)	p-value <sup>d</sup>	yes (%)	p-value <sup>d</sup>
<b>Total</b>	<b>96 (18.9)</b>		<b>60 (11.8)</b>		<b>75 (14.8)</b>		<b>71 (14.0)</b>	
Age		0.26		0.66		0.31		0.14
18–24	139 (28.9)	20 (20.2)	12 (21.4)		15 (21.1)		21 (31.3)	
25–34	125 (26.0)	19 (21.1)	13 (23.2)		15 (21.1)		11 (16.4)	
35–44	98 (20.4)	25 (27.8)	14 (25.0)		20 (28.2)		15 (22.4)	
45	118 (24.6)	26 (28.9)	17 (30.4)		21 (29.6)		20 (29.9)	
Race/ethnicity		1.00 <sup>‡</sup>		0.99 <sup>‡</sup>		0.99 <sup>‡</sup>		0.12
White, White	478 (95.9)	92 (95.8)	58 (96.7)		72 (72.0)		64 (92.8)	
Other <sup>b</sup>	20 (4.1)	4 (4.2)	2 (3.3)		3 (4.0)		5 (7.5)	
Education		0.21		0.20		0.12		0.19
Less than college degree	289 (58.1)	59 (61.5)	38 (63.3)		48 (64.0)		44 (62.9)	
College degree or greater	208 (41.9)	37 (38.5)	22 (36.7)		27 (36.0)		26 (37.1)	
HIV-status		<0.001 <sup>‡</sup>		<0.001 <sup>‡</sup>		0.06		<0.001
Positive	18 (4.0)	12 (15.0)	11 (22.0)		6 (9.4)		10 (20.8)	
Negative	427 (96.0)	68 (85)	39 (78.0)		58 (90.6)		38 (79.2)	
Identify as gay		0.63		0.70		0.99		0.12
No	163 (33.1)	28 (27.2)	18 (31.0)		21 (29.2)		15 (22.1)	
Yes	329 (66.9)	67 (72.8)	40 (69.0)		51 (70.8)		53 (77.9)	
Long-term Relationship status		<0.001		0.02		0.002		0.02
No	186 (52.1)	66 (68.8)	40 (66.7)		51 (68.0)		46 (64.8)	
Yes	171 (47.9)	30 (31.2)	20 (33.3)		24 (32.0)		25 (35.2)	
Age of first SEM use		0.01		0.005		0.14		0.71
<10 years	48 (11.2)	19 (23.8)	14 (28.6)		13 (20.6)		7 (11.9)	
10–14 years	301 (70.5)	51 (63.7)	28 (57.1)		43 (68.3)		44 (74.6)	
15 years	78 (18.3)	10 (12.5)	7 (14.3)		7 (11.1)		8 (13.6)	
Condom use preference in SEM		<0.001		<0.001 <sup>‡</sup>		0.001 <sup>‡</sup>		0.28

Variable	UAI		R-UAI		I-UAI		SDUAI	
	yes (%)	<i>p-value</i> <sup>d</sup>	yes (%)	<i>p-value</i> <sup>d</sup>	yes (%)	<i>p-value</i> <sup>d</sup>	yes (%)	<i>p-value</i> <sup>d</sup>
<b>Total</b>	<b>96 (18.9)</b>		<b>60 (11.8)</b>		<b>75 (14.8)</b>		<b>71 (14.0)</b>	
N (%)								
No condoms	220 (43.7)		47 (78.3)		50 (66.7)		41 (57.7)	
Condoms	85 (16.9)		2 (3.3)		4 (5.3)		21 (29.6)	
No preference	198 (39.4)		11 (18.3)		21 (28.0)		9 (12.7)	
Amount of SEM viewed, hr/wk								
0		0.04		0.03		0.10		0.25
1	121 (23.9)		9 (15.0)		12 (16.0)		12 (16.9)	
>1-3.5	194 (38.3)		24 (40.0)		30 (40.0)		25 (35.2)	
>3.5-7	95 (18.7)		9 (15.0)		13 (17.3)		17 (23.9)	
>7	97 (19.1)		18 (30.0)		20 (26.7)		17 (23.9)	

Notes: UAI: Unprotected anal intercourse, R-UAI: Receptive unprotected anal intercourse, I-UAI: Insertive unprotected anal intercourse, SDUAI: Serodiscordant anal intercourse.

<sup>a</sup> Chi-square Test *p*-value.

<sup>b</sup> Other: Sami/Asian/Latino/mixed race.

<sup>d</sup> Exact test *p*-value.

**Table 2**

Distribution of continuous scale scores, dose of SEM consumption and sexual risk behaviour in a web sample of Norwegian MSM (N = 507)

Variable	n	Mean $\pm$ std. deviation	Range
PANAS, positive	350	3.24 $\pm$ 0.78	1, 5
PANAS, negative	350	1.90 $\pm$ 0.81	1, 4.8
Social desirability	353	5.36 $\pm$ 1.84	1, 10
Compulsive sexual behavior-control subscale <sup>a</sup>	351	1.98 $\pm$ 0.60	1, 5
Internalized homonegativity <sup>b</sup>	347	5.43 $\pm$ 1.28	1, 7
Dose of SEM hours/week	507	5.32 $\pm$ 8.48	0.03, 67.5
SEM content: absolute protected to absolute unprotected Anal intercourse	490	0.15 $\pm$ 1.38	-4, +4
SEM consumption (protected to bareback)	490	2.38 $\pm$ 20.69	-155, 270

Notes: PANAS: positive and negative affect schedule; SEM: Sexually explicit material;

<sup>a</sup> higher score indicative of higher compulsive behavior;

<sup>b</sup> higher score indicative of higher internalized homophobia.

**Table 3**  
Association between SEM consumption and sexual risk behaviors in a web sample of Norwegian MSM

Variable	UAI		R-UAI		I-UAI		SDUAI	
	OR (95% CI)	aOR (95% CI)	OR (95% CI)	aOR (95% CI)	OR (95% CI)	aOR (95% CI)	OR (95% CI)	aOR (95% CI)
Bareback SEM consumption	1.20 (1.10–1.31)	1.19 (1.04–1.36)	1.18 (1.07–1.30)	1.12 (0.96–1.29)	1.14 (1.02–1.31)	1.16 (1.05–1.25)	1.01 (0.92–1.12)	0.97 (0.83–1.15)
HIV-status negative	0.08 (0.02–0.28)	0.13 (0.03–0.60)	0.06 (0.02–0.18)	0.10 (0.02–0.44)	0.37 (0.12–1.08)	0.68 (0.17–2.83)	0.07 (0.02–0.22)	0.15 (0.04–0.56)
Long-term relationship status								
Yes	0.39 (0.24–0.64)	0.26 (0.12–0.54)	0.49 (0.27–0.88)	0.13 (0.04–0.40)	0.44 (0.25–0.75)	0.37 (0.18–0.78)	0.52 (0.30–0.89)	0.37 (0.17–0.89)
Age of first SEM use								
<10 years	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
10–14 years	0.38 (0.19–0.75)	0.33 (0.12–0.87)	0.30 (0.14–0.65)	0.23 (0.07–0.78)	0.56 (0.27–1.18)	0.61 (0.22–1.65)	1.29 (0.53–3.10)	1.28 (0.36–4.52)
>14 years	0.31 (0.12–0.77)	0.28 (0.08–1.01)	0.33 (0.12–0.92)	0.25 (0.05–1.23)	0.37 (0.13–1.04)	0.43 (0.11–1.60)	0.97 (0.32–2.95)	0.80 (0.16–3.95)

Notes: SEM: Sexually Explicit Material; OR: unadjusted Odds Ratio; aOR: Adjusted Odds Ratio; CI: Confidence Interval; UAI: Unprotected anal intercourse; R-UAI: Receptive unprotected anal intercourse; I-UAI: Insertive unprotected anal intercourse; SDUAI: Serodiscordant unprotected anal intercourse. All logistic regression models were adjusted for age, HIV status, long term relationship status, age of first SEM use, positive and negative affect, social desirability, compulsive sexual behavior control, and internalized homonegativity.