



Published in final edited form as:

*J Sex Res.* 2016 ; 53(4-5): 588–600. doi:10.1080/00224499.2015.1066744.

## A New Measure of the Perceived Influence of Sexually Explicit Online Media on the Sexual Behaviors of Men who have Sex with Men

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### Abstract

Men who have sex with men (MSM) frequently consume sexually explicit online media (SEOM), yet little is known about its influence on their sexual behaviors. We describe a sequence of four studies to develop and psychometrically validate a measure of the perceived influence of sexually explicit online media (PI-SEOM) on the sexual behaviors of MSM. Study 1 involved qualitative interviews ( $N = 28$ ) and a quantitative survey ( $N = 100$ ) to develop a preliminary measure. Using an Internet sample of MSM ( $N = 1,170$ ), we assessed its factor structure and reliability in Studies 2-3 as well as convergent validity and associations with HIV-related sexual risk in Study 4. Based on findings the measure was divided into two subscales: influences on (1) self and (2) other MSM. Factor analyses confirmed a two-factor model for each subscale, measuring perceived influences on (a) general sexual scripts and (b) condomless sex scripts. Survey results indicated the more men perceived SEOM influencing their own condomless sex scripts, the more likely they were to report engaging in sexual risk behaviors. The developed measure holds promise for assessing the influence of SEOM on the sexual behaviors of MSM and may prove a useful for HIV prevention research.

### Keywords

sexually explicit online media; pornography; men who have sex with men; HIV; sexual behavior

Men who have sex with men (MSM) remain the highest risk group for HIV acquisition and transmission in the United States (U.S.), accounting for approximately 68% of the 50,000 new HIV diagnoses in 2013 (Centers for Disease Control and Prevention [CDC], 2015). Elevated rates of HIV among MSM are due to a variety of factors, notably the high biological risk associated with anal intercourse and the relatively higher prevalence of HIV in MSM's social-sexual networks (Halkitis, Wolitski, & Millett, 2013; Scott et al., 2014). Novel strategies for HIV prevention targeting this high-risk group of men are sorely needed.

Innovative HIV prevention efforts for MSM might capitalize on their frequent consumption of online pornography. To avoid the negative connotations and prejudice often related to the word "pornography," researchers in this area prefer the term "sexually explicit online media" (SEOM; Nelson, Leickly, Yang, Pereira, & Simoni, 2014a; Nelson et al., 2014b; Rosser et al., 2013). Studies with community samples of MSM suggest nearly universal (98-99%) consumption of SEOM (Rosser et al., 2013; Stein, Silvera, Hagerty, & Marmor, 2012). SEOM provides a powerful medium for MSM to explore their sexual behavior preferences (Hald, Smolenski, & Rosser, 2013; Nelson et al., 2014a) allowing them to experience fantasies vicariously and safely. It follows, also, that viewing SEOM is an important source of sexual education for MSM (Arrington-Sanders et al., 2015; Kubicek, Beyer, Weiss, Iverson, & Kipke, 2010). SEOM provides models of sexual behavior in which MSM might engage and, potentially, behaviors in which they "should" engage based on community norms.

Over the past two decades, the amount of MSM-specific SEOM portraying condomless anal intercourse (C<sub>0</sub>AI) has increased, raising concerns about the encouragement of condomless sex among consumers (Downing, Schrimshaw, Antebi, & Siegel, 2014; Grudzen et al., 2009; Hurley, 2009). Despite the high prevalence of SEOM consumption among MSM, and concerns about its potential influence, scant research has investigated links between SEOM and MSM sexual behavior. The few studies conducted on sexually explicit media in general suggest that it may have effects that are both positive (e.g., increased sexual knowledge, enjoyment of sex) and negative (e.g., increased sexually compulsive behavior, sexual risk-taking; Hald et al., 2013; Nelson et al., 2014a; Nelson et al., 2014b; Rosser et al., 2012, 2013; Stein et al., 2012).

Work in this area could benefit from a better understanding of how MSM perceive the influence of SEOM on themselves and how they believe it influences other MSM. Norm formation and sexual scripts are two intersecting pathways through which SEOM consumption may be influencing the sexual behaviors of MSM.

Norm formation research reliably demonstrates that, independent of one's awareness of the impact, perceived norms predict behavior (Buhi & Goodson, 2007; Collins, Murphy, & Bierman, 2004; Rimal & Real, 2005). Norms influence behavior by suggesting what other members of the group are doing (modeling) as well as by dictating what individuals think they should be doing (Rimal & Real, 2005). Perceived community norms for condom non-use are consistently associated with increased sexual risk-taking among MSM (e.g., Berg, 2008; Kok, Hospers, Harterink, & De Zwart, 2007). In line with norm formation research, the increasingly prevalent portrayals of C<sub>0</sub>AI in SEOM may lead MSM to perceive C<sub>0</sub>AI as

normative in the community (likely an over-estimation), which could lead to their own increased C<sub>0</sub>AI to be more in line with the perceived norm.

Another potential pathway between SEOM and sexual behavior is via sexual scripts (Ross, 2005; Wright & Randall, 2012). Sexual scripts are specific cognitive schematic or personalized systems for defining sexual reality that guide and enable sexual decision-making (Frith & Kitzinger, 2001; Simon & Gagnon, 1984, 1986). Sexual scripts are determined, at least in part, by sociocultural factors, including perceived community norms (Gagnon, 1990; Irvine, 2003; Lenton & Bryan, 2005; Simon & Gagnon, 2005). In line with scripting theory (Simon & Gagnon, 1986), portrayals of C<sub>0</sub>AI in SEOM may both prompt and reinforce C<sub>0</sub>AI among MSM.

Prior survey research on the perceived influence of sexually explicit media has been conducted almost exclusively with heterosexual populations (Harkness, Mullan, & Blaszczyński, 2015). We could identify only three studies that have addressed the perceived influence of sexually explicit media on the sexual behaviors of consumers who are MSM and their MSM peers. One quantitative study from Rosser and colleagues examined the influence of sexually explicit media on the sexual health of an online sample of MSM ( $N=1,333$ ) using the Pornography Consumption Effects Scale (PCES; Hald et al., 2013), an instrument that was developed and validated originally with predominantly heterosexual populations (Hald & Malamuth, 2008). MSM in this study generally endorsed positive effects of sexually explicit media on their sexual health (e.g., increased sexual knowledge, enjoyment of and interest in sex). Interestingly, although there is growing evidence that exposure to C<sub>0</sub>AI in sexually explicit media is positively associated with *engagement* in C<sub>0</sub>AI among MSM (Nelson et al., 2014b; Rosser et al., 2013; Stein et al., 2012), MSM in this study reported that exposure to sexually explicit media had no effect on their *desire* for C<sub>0</sub>AI. Using a subsample ( $N=1,165$ ) of the previous online sample from Rosser's group, investigators developed and provided preliminary psychometric support for a scale of compulsive consumption of sexually explicit media among MSM (Noor, Rosser, & Erickson, 2014). Findings demonstrated that compulsive consumption of sexually explicit media was related to greater internalized homonegativity, lower sexual self-esteem, earlier age of sex with a male partner, and more male sexual partners—but not C<sub>0</sub>AI. Finally, in a small qualitative study, MSM reported that MSM-specific SEOM increases their comfort with sexuality and sets expectations about sexual behaviors (Nelson et al., 2014a). Further, MSM in this study reported that, while they were not influenced personally by viewing C<sub>0</sub>AI in SEOM, they believed viewing C<sub>0</sub>AI increased sexual risk-taking among other MSM and served to normalize C<sub>0</sub>AI in the MSM community. Overall, these studies converge in suggesting that MSM who consume SEOM may perceive it to be less influential on their own sexual behaviors than it may genuinely be.

A useful next step in this line of research is the development of culturally tailored, psychometrically sound, and easily implementable instruments to illuminate the self-perceived role that SEOM plays in the lives of MSM, as well as how it may be impacting MSM community norms and, in turn, sexual scripts. In the present study, we used a mixed-methods approach to develop and psychometrically validate a measure of the perceived influence of SEOM. Our aim was to develop a measure that is created from the bottom-up to

be culturally tailored to MSM, given their unique experiences and community mores. Measure development and testing involved a sequence of four studies, employing both qualitative and quantitative methods, moving from item generation to measure refinement and psychometric testing (Aday & Cornelius, 2006; Hagino, 2002). We additionally used the developed measure to investigate how these perceptions were associated with participants' reported HIV-related sexual risk behaviors. All study procedures were reviewed and approved by a university Institutional Review Board.

## Study 1

The goal of this study was to develop accurate and culturally relevant items for the perceived influence of SEOM measure.

## Method

**Participants and procedures**—In-depth, semi-structured, one-hour interviews were conducted in 2011 with a convenience sample of 16 urban MSM recruited from the northwestern U.S. Participants were recruited via MSM-specific listservs, Facebook groups, and fliers at community organizations. Eligibility criteria were: (1) self-identifying as male; (2) being at least 18 years old; (3) endorsing sex with a man in the past year; (4) having personal Internet access; (5) having accessed an online men-seeking-men website in the past year; and (6) having accessed SEOM in the past year. We asked participants open-ended questions about online partner-seeking, SEOM consumption, and the perceived influence of SEOM on themselves and on other MSM. We utilized the perceived influence of SEOM section of the interview for measure development (see Appendix for this section of the interview guide). Participants received \$20 for the interview.

In-depth interviews were digitally recorded, transcribed verbatim, and coded in Atlas.ti 5.2 (Muhr, 2004) using a constant comparison analysis framework (Miles & Huberman, 1994). After all coding had been reconciled, we developed draft items using the most common themes and concepts, in addition to questions that arose from background research on SEOM. We pre-tested the draft items using in-person cognitive interviews (Czaja, 1998) with a subset of the same men who completed the in-depth interviews, as well as an additional convenience sample ( $N = 12$ ) recruited using the same procedures and with the same eligibility requirements as the initial participants. The cognitive interviews used a standard “think-aloud” procedure in which participants were asked to verbally convey their thought process as they were interpreting questions and arriving at answers. Participants were additionally presented with structured probes after answering each question to assess question comprehension (Czaja, 1998). Participants received \$20 for their time.

Based on the cognitive interviews, items found to be confusing or irrelevant were edited or omitted. The revised set of items was pre-tested online. Recruitment and eligibility screening procedures are described in greater detail elsewhere [author citation omitted]. Briefly, participants ( $N = 100$ ) were recruited via banner advertisements from men-seeking-men websites and Facebook during 2012. Eligible participants (1) were 18 years old or older; (2) identified as male; (3) reported having anal sex, oral sex, or engaging in mutual masturbation with at least one man in the prior year; (4) reported accessing an online men-seeking-men

website at least once in the prior year; (5) reported using SEOM in the past year; (6) reported being a U.S. resident; and (7) reported being new to the study (i.e., men who had participated in earlier phases were not eligible for this phase). The survey was administered through [name], a proprietary online survey program of [institution omitted]. Upon completion of the 20-30 minute survey, participants were offered the opportunity to enter a drawing to win one of fifteen \$50 gift certificates.

**Analyses**—Qualitative data was analyzed using a constant comparison analysis (Miles & Huberman, 1994). Quantitative data was analyzed using frequency distributions, measures of central tendency, and variation.

## Results

In the qualitative interviews, participants collectively defined SEOM as “any online media that is meant to be sexually arousing.” Item responses were on a 4-point Likert-type scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*). Twenty-five draft items were developed from the in-depth interviews and background research. Three items were found to be confusing or irrelevant during the cognitive interviews and were removed, leaving a set of twenty-two items to be assessed in the online pre-test. Each of the twenty-two items had scores ranging from 1-4 across participants in the online pre-test and were retained. As seen in Table 1, we divided these twenty-two items into two subscales: Subscale 1 measured the perceived influence of SEOM on the participants themselves (12 items), and Subscale 2 measured the perceived influence of SEOM on other MSM (10 items) with separate prompts for the perceived influence of viewing SEOM generally and the perceived influence specific to viewing C<sub>0</sub>AI in SEOM specifically.

## Discussion

We developed twenty-two culturally tailored items using qualitative and quantitative methods. MSM reported that they perceived SEOM influencing their own and other MSM's sexual attitudes, beliefs, and condom use. The men also agreed on a broad definition of SEOM that includes professional/commercial media, amateur media, as well as the media used in sexual/social networking sites (e.g., profile pictures). This reflects the wide range of ways that MSM are exposed to SEOM, including websites that offer men the opportunity to access both SEOM and seek sex at the same time (Rosser et al., 2012).

## Study 2

The purpose of this study was to refine the measure by exploring the factor structure and examining the reliability of the two developed subscales.

## Method

**Participants and procedures**—The twenty-two items were administered in a large, cross-sectional, Internet-based survey examining SEOM consumption and sexual behaviors among U.S. MSM ( $N = 1,170$ ). The same procedures and eligibility criteria described for the online pre-test in Study 1 were used. Subscale 1 was preceded by the statement, “This section asks about how you think online porn may influence your sex life. We are interested

in how it affects you personally.” Subscale 2 was preceded by the statement, “These questions are like the last questions except that here we want to know how you think online porn affects OTHER men who have sex with men (MSM). This might be the same or different from the ways it may affect you.” In addition to the two subscales, participants were asked to fill out measures about socio-demographics, negative condom use attitudes, SEOM consumption, and sexual behaviors.

**Measures. Socio-demographics**—We assessed recruitment source (men-seeking-men websites, other); race/ethnicity (White, Black/African American, Latino/Hispanic, Other); age in years (18-29, 30-39, 40-49, 50+); education (< associate degree, associate degree or higher education); current living situation (own or rent domicile, other); urban residence (yes, no); self-identifying as having a gay sexual orientation (yes, no); “out” to almost everyone or everyone (yes, no); primary partner (yes, no); and HIV-serostatus (HIV-seropositive, HIV-seronegative/unknown).

**Negative condom use attitudes**—Participants were asked about their negative attitudes toward condom use by summing responses to six commonly used negative condom attitude questions (e.g., “I believe that using condoms interferes with sexual pleasure”; Nakamura, Mausbach, Ulibarri, Semple, & Patterson, 2011). Item responses were on a 4-point scale (1 = *strongly disagree* to 4 = *strongly agree*). The alpha for the current sample = 0.90. For *t*-tests, we dichotomized scores at one standard deviation above the mean to indicate high negative attitudes toward condoms (Nakamura et al., 2011). We used centered continuous scores for logistic regression models.

**SEOM consumption**—Frequency of SEOM consumption was assessed by asking participants how often they viewed SEOM (coded <1 or 1 viewing/day) and how long they viewed SEOM on average per viewing session (coded 30 or >30 minutes/session) in the prior three months. Participants were asked about preferences for condom use during anal sex scenes in SEOM (prefers condoms are used, prefers condoms are not used, no preference). Prevalence of viewing C<sub>0</sub>AI in SEOM was attained via the question: “How much of the online porn you looked at in the last three months clearly showed that a condom was NOT being used during anal sex?” (coded 0-24%, 25-49%, 50-74%, 75-100%).

**Sexual behaviors**—Participants were asked about voluntary sexual behaviors in the prior three months, including questions about condom use during anal intercourse with male partners and the number of C<sub>0</sub>AI partners who directly told them they were HIV-seropositive, HIV-seronegative, or who did not disclose their HIV serostatus. Composite variables for C<sub>0</sub>AI (yes, no) and serodiscordant C<sub>0</sub>AI (yes, no) were created using these sexual behavior characteristics, along with participants’ self-reported HIV serostatus. Serodiscordant C<sub>0</sub>AI was defined as C<sub>0</sub>AI with a partner of discordant or unknown HIV serostatus.

**Analyses**—As it is recommended that different datasets be used to conduct exploratory and confirmatory factor analyses, we used the random split-half sample method (Fabrigar & Wegener, 2014). Specifically, we randomly divided the primary sample (*N* = 1,170) into two subsamples (Subsample 1: *n* = 585, Subsample 2: *n* = 585) using the random number

generation (i.e., runiform) command in Stata 12.1 (StataCorp, 2011) for exploratory and confirmatory factor analyses, respectively. Subsample 1 (70% White, 89% urban, 63% had an associate degree or higher, 90% self-identified as gay,  $m\text{ age} = 37$ ,  $SD\text{ age} = 15$ ,  $\text{age range} = 18 - 84$  years) was used in this study for the exploratory factor analyses. We conducted analyses with participants who had complete data only (Subscale 1:  $n = 551$ , Subscale 2:  $n = 545$ ). There were no significant differences ( $p < 0.05$ ) in socio-demographic characteristics between those with and without missing data.

We ran preliminary analyses to examine item distribution and test for univariate and multivariate normality. We then conducted initial exploratory factor analyses on the two subscales separately. Given the lack of normality in the data, we used an iterated principal axis factors method of extraction (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Additionally, we examined the proportion of variance accounted for by common factors and removed items with low communalities ( $< 0.20$ ; MacCallum, Widaman, Zhang, & Hong, 1999).

With the reduced item sets, exploratory factor analyses were then conducted to determine the number of factors to retain in each subscale. We used three criteria: the Kaiser-Guttman criterion (i.e., factors with eigenvalues  $> 1.00$ ); visual assessment of the scree test plots; and Horn's parallel analysis with Glorfeld's Monte Carlo extension (Dinno, 2009; Floyd & Widaman, 1995; Glorfeld, 1995; Horn, 1965). We chose to compare observed eigenvalues to the 95<sup>th</sup> percentile of eigenvalues, as a conservative test (Glorfeld, 1995). Items with low factor loading ( $< 0.45$ ), or without parallel items between the two subscales, were removed from further analyses. We then re-analyzed the reduced subscales and calculated coefficient alphas.

## Results

Eleven items in Subscale 1 and eight items in Subscale 2 exhibited signs of skewness and kurtosis, as well as a lack of multivariate normality (Subscale 1: Doornik-Hansen omnibus test,  $\chi^2(24) = 296.4$ ,  $p < 0.001$ ; Subscale 2: Doornik-Hansen omnibus test,  $\chi^2(20) = 256.5$ ,  $p < 0.001$ ). In the initial exploratory factor analysis on each subscale, Bartlett's test of sphericity (Subscale 1:  $\chi^2(66) = 1463$ ,  $p < 0.001$ ; Subscale 2:  $\chi^2(45) = 1463$ ,  $p < 0.001$ ) indicated that there was no association between items, and the Kaiser-Meyer-Olkin test (Subscale 1:  $KMO = 0.75$ ; Subscale 2:  $0.85$ ) indicated that the sample was sufficient to explain the correlations between variables. In the examination of the proportion of variance accounted for by common factors, we removed item 2 from Subscale 1 and item 2 from Subscale 2, as they had communalities below 0.20. Finally, we excluded the two items from Subscale 1 (items 8 and 9) without parallel items in Subscale 2.

In the exploratory factor analyses of the reduced item sets, for Subscale 1, two factors emerged with eigenvalues greater than 1.00 (2.66, 1.06), which accounted for 75% of the variance (54% and 21%, respectively). For Subscale 2, two factors emerged with eigenvalues greater than 1.00 (4.10, 1.11), which accounted for 86% of the variance (68% and 18% respectively). An examination of the scree test plots confirmed that the two factors should be retained for each subscale. Further, for Subscale 1 in the parallel analysis, only the first two factors were above the chance level (Factor 1: actual = 2.66, adjusted = 2.29, 95<sup>th</sup> percentile

= 0.38; Factor 2: actual = 1.06, adjusted = 0.77, 95<sup>th</sup> percentile = 0.29). For Subscale 2, similar results appeared, with only the first two factors above the chance level (Factor 1: actual = 4.10, adjusted = 3.68, 95<sup>th</sup> percentile = 0.42; Factor 2: actual = 1.11, adjusted = 0.84, 95<sup>th</sup> percentile = 0.27). These results suggested retention of two factors for each subscale. The majority of the item loadings were high (> 0.55; 5 of 9 for Subscale 1, and 7 of 9 for Subscale 2). Three items in Subscale 1 (items 1, 6, 7) and one item in Subscale 2 (item 1) were removed from further analyses due to low factor loadings (< 0.45). To maintain parallel scale construction, items 6 and 7 were also removed from Subscale 2. Table 2 presents item loadings for the retained items in Subscale 1 (6 items) and Subscale 2 (6 items).

## Discussion

Using exploratory factor analyses, we further refined the two subscales to reflect two factors each, which we believe reflect SEOM influences on general sexual scripts and condomless sex scripts for MSM themselves and other MSM. The first construct (Subscale 1, items 3, 4, 5; Subscale 2, items 3, 4, 5) relates how SEOM influences what MSM think sex should be like, what their partners should look like, and what they should look like. These perceived “shoulds” illustrate the way that SEOM may be shaping the general sexual scripts of MSM themselves, as well as the way they perceive it to be shaping their peers’ general sexual scripts. The second construct (Subscale 1, items 10, 11, 12; Subscale 2, items 8, 9, 10) relates how viewing C<sub>0</sub>AI in SEOM influences expectations, desires, and attitudes around condom use both for MSM themselves as well as the way they perceive it influencing other MSM. Together, these items inform the influence of SEOM on the condomless sex scripts of MSM.

## Study 3

The goal of this study was to conduct confirmatory factor analyses in order to confirm the factor structure of the scales.

## Method

**Analyses**—Confirmatory factor analyses were conducted on each subscale using Subsample 2 ( $n = 585$ ; 70% White, 90% urban, 62% had associate degree or higher, 90% gay,  $m$  age = 37,  $SD$  age = 15, age range = 18 - 79 years). Analyses were conducted using participants with complete data (Subscale 1:  $n = 568$ , Subscale 2:  $n = 556$ ). There were no significant differences ( $p < 0.05$ ) in socio-demographic characteristics between those with and without missing data.

Preliminary analyses were conducted to (a) evaluate multicollinearity by inspecting intercorrelations, (b) determine the potential severity of multicollinearity using the variance inflation factor (VIF), and (c) test for univariate or multivariate normality (Kline, 2011). Given the skewness of the data and our use of an ordinal Likert scale, we conducted confirmatory factor analyses using structural equation modeling with weighted least squares estimators in Mplus 7.11 (DiStefano, 2002; Muthén & Muthén, 2013). We examined one- and two-factor models for each subscale, and evaluated the models using  $\chi^2$  as a



comparative measure of model fit. An overall good fit to the model is assumed when the CFI is 0.95, the SMSR is 0.08, the RMSEA is 0.06, and when Chi-square is non-significant (Hu & Bentler, 1999; Kline, 2011). We hypothesized that a two-factor model (perceived influence of SEOM on general sexual scripts and condomless sex scripts) would provide the best fitting model.

## Results

The inter-item correlations did not exceed 0.85 for any items, indicating that multicollinearity was within acceptable limits (Kline, 2011). Examinations of the VIFs confirmed our initial findings; none of the VIFs exceeded ten (Subscale 1: range = 1.18 - 2.07; Subscale 2: range = 2.00 - 3.37). Results of the tests of univariate and multivariate normality (not shown) indicated that, for Subscale 1 and Subscale 2, all items exhibited signs of skewness and kurtosis, as well as a lack of multivariate normality (Subscale 1: Doornik-Hansen omnibus test,  $\chi^2(12) = 189.7$ ,  $p < 0.001$ ; Subscale 2: Doornik-Hansen omnibus test,  $\chi^2(12) = 187.1$ ,  $p < 0.001$ ).

The two-factor model for Subscale 1 ( $\chi^2(8, N = 585) = 12.34$ ,  $p = 0.12$ ) demonstrated a better fit than a single factor model ( $\chi^2(49, N = 585) = 1080.01$ ,  $p < 0.001$ ). Further, comparing the two models to each other, the two-factor model fit the data significantly better than a single factor model ( $\chi^2(9) = 235.2$ ,  $p < 0.001$ ), and fit indices suggested that is the two-factor model was a reasonable fit to these data (CFI = 0.98; SRMR = 0.03; RMSEA = 0.05). For Subscale 2, the two-factor model ( $\chi^2(8, N = 585) = 12.62$ ,  $p = 0.13$ ) also demonstrated a better fit than a single factor model ( $\chi^2(30, N = 585) = 1506.34$ ,  $p < 0.001$ ). In addition, comparing the two models to each other the two-factor model fit the data significantly better than a single factor model ( $\chi^2(5) = 129.41$ ,  $p < 0.001$ ), and the other fit indices also suggested that is the two factor model was a reasonable fit to these data (CFI = 0.99; SRMR = 0.02, RMSEA = 0.03). Given that the factor loadings of the multi-factors were relatively similar in magnitude, we created subscale composites for the entire sample ( $N = 1,170$ ) that corresponded to the two factors for both Subscale 1 and Subscale 2. The coefficient alphas for Subscale 1 were: Factor 1 (Subscale 1a, items 3, 4, 5) = 0.78 and Factor 2 (Subscale 1b, items 10, 11, 12) = 0.70. The coefficient alphas for Subscale 2 were: Factor 1 (Subscale 2b, items 8, 9, 10) = 0.88 and Factor 2 (Subscale 2a, items 3, 4, 5) = 0.86.

## Discussion

The two subscales were confirmed to reflect two factors each: SEOM influences on general sexual scripts and condomless sex scripts. The final two subscales, with six items each, appear to be reliable in terms of factor structure and internal consistency.

## Study 4

The purpose of this study was twofold: (1) to establish convergent validity of the measure and (2) to assess relations between the final measure's subscales and HIV-related sexual risk behaviors. At the time this study was developed, there were no measures of the perceived influence of SEOM on MSM and, as such, there were no "gold standards" against which to test validity. However, given the literature on SEOM consumption among MSM, we believe

that measures of socio-demographics, condom use attitudes, and SEOM consumption characteristics can be used to inform convergent validity of the measure. Specifically, we hypothesized that the perceived influence of SEOM on general sexual scripts for MSM themselves (Subscale 1a) and other MSM (Subscale 2a) would be positively associated with being younger and more frequent SEOM consumption as well as negatively associated with being “out” to almost everyone or everyone and having a primary partner. Additionally, we hypothesized that the perceived influence of SEOM on condomless sex scripts for MSM themselves (Subscale 1b) and other MSM (Subscale 2b) would be positively associated with younger age, high levels of negative condom use attitudes, preference that condoms are not used in SEOM, increased exposure to C<sub>0</sub>AI in SEOM, and increased frequency of SEOM consumption.

## Method

**Participants and procedures**—The full Internet sample of MSM ( $N = 1,170$ ) was used to examine both convergent validity and relations between the final subscales and HIV-related sexual risk behaviors. See the measures section from Study 2 for descriptions of the socio-demographic, condom use attitude, SEOM consumption, and HIV-related sexual risk variables. Participants were primarily White (70%), urban (90%), highly educated (63% had an associate degree or higher), and self-identified as gay (90%). Mean age was 37 years ( $SD = 15$ , range = 18-84) and 15% reported being HIV-seropositive. Approximately half were recruited from men-seeking-men websites (51%) and over one-third reported currently having a steady romantic or sexual relationship with a primary partner (43%).

**Analyses**—We calculated mean scores for each of the subscales. To assess for convergent validity, comparisons of means were conducted using  $t$ -tests and analysis of variance. Effect sizes were calculated using Cohen's  $d$  and  $f$  for dichotomous and multi-group variables, respectively.

To assess relations between subscales (Subscale 1a, Subscale 1b, Subscale 2a, Subscale 2b), covariates of interest (negative attitudes towards condom use, exposure to C<sub>0</sub>AI in SEOM, preferences for C<sub>0</sub>AI in SEOM), and HIV-related sexual risk behaviors (any C<sub>0</sub>AI, any serodiscordant C<sub>0</sub>AI), we ran bivariate and multivariate logistic regression models. We entered factors associated with sexual risk-taking in the bivariate models into the final multivariate model. In all models, subscales were entered as continuous variables, negative attitudes towards condom use was entered as a continuous variable, exposure to C<sub>0</sub>AI in SEOM was entered as an ordinal variable, and preference for condom use in SEOM was entered as a dummy variable. To account for variables that qualified as confounders, all models were adjusted for recruitment source, age, race/ethnicity, having a primary partner, “outness,” and HIV serostatus. All analyses were conducted in Stata 12.1 (StataCorp, 2011).

## Results

As shown in the analyses informing convergent validity presented in Table 3, younger age and more frequent SEOM consumption were associated with greater perceived influence of SEOM on general sexual scripts for MSM themselves (Subscale 1a). In contrast, being “out” and having a primary partner were associated with lower perceived SEOM on general sexual

scripts for MSM themselves. Being younger was the only hypothesized characteristic associated with an increased perceived influence of SEOM on the general sexual scripts of other MSM (Subscale 2a). Greater perceived influence of SEOM on condomless sex scripts for MSM themselves (Subscale 1b) was associated with negative condom use attitudes, preference that condoms are not used in SEOM, increased exposure to C<sub>0</sub>AI in SEOM, and increased frequency of SEOM consumption. Greater levels of perceived influence of SEOM on condomless sex scripts for other MSM (Subscale 2b) was associated with younger age, high levels of negative condom use attitudes, and increased exposure to C<sub>0</sub>AI in SEOM, but not an increased frequency of SEOM consumption or a preference that condoms are not used in SEOM.

Table 4 presents both bivariate and multivariate logistic regression models assessing relations between the subscales, covariates of interest, and HIV-related sexual risk behaviors. Several predictors remained significant in the multivariate model, including the perceived influence of SEOM on one's own condomless sex scripts (Subscale 1b). Specifically, each unit increase in the perceived influence of SEOM on one's own condomless sex scripts was associated with 1.4 and 1.2 times the odds of engaging in C<sub>0</sub>AI and serodiscordant C<sub>0</sub>AI, respectively. Further, men who reported that 75%-100% of the SEOM they viewed depicted C<sub>0</sub>AI had 2.5 times the odds of engaging in C<sub>0</sub>AI compared to men who reported that only 0-24% of the SEOM they consumed depicted C<sub>0</sub>AI. Men who reported a preference for C<sub>0</sub>AI in SEOM had 2.7 times the odds of engaging in that same behavior and 2.5 times the odds of engaging in serodiscordant C<sub>0</sub>AI compared to men who preferred condoms were used in SEOM. Similarly, reporting no preference about condoms use in SEOM was associated with 2.3 and 2.1 times the odds of engaging in C<sub>0</sub>AI and serodiscordant C<sub>0</sub>AI, respectively, compared to men who preferred condoms were used in SEOM.

## Discussion

Four out of the five proposed hypotheses informing convergent validity were confirmed regarding associations between socio-demographic and SEOM consumption characteristics with general sexual scripts for MSM themselves. Although being younger was the only hypothesized characteristic associated with an increased perceived influence of SEOM on the general sexual scripts of other MSM, this does not necessarily diminish this subscale's validity. As this subscale taps into the perceived influence of SEOM on what our participants believe *other* MSM think sex should be like, what their partners should look like, and what they should look like, it is possible that this subscale would be more likely to be associated to factors that were not measured as a part of this study (e.g., peer norms, body image, internalized heterosexism).

A similar pattern appeared for the perceived influence of viewing to C<sub>0</sub>AI in SEOM, where more of the proposed hypotheses were supported for the subscale measuring the perceived influence of viewing C<sub>0</sub>AI in SEOM on condomless sex scripts for MSM themselves than the perceived influence on other MSM. It is possible that additional factors that tap into community characteristics (e.g., condom use norms), as opposed to individual characteristics, would be more likely to inform the validity of Subscale 2b. Future research in this area should also consider examining the overall validity of this measure against the

Pornography Consumption Effects Scale (PCES), which has just recently been validated for MSM (Hald et al., 2013).

For relations between the newly developed PI-SEOM measure subscales and HIV-related sexual risk behaviors, we found that higher levels of the perceived influence of SEOM on one's own condomless sex scripts were associated with greater HIV-related sexual risk behaviors, above and beyond other established predictors of sexual risk—including negative attitudes towards condom use (Nakamura et al., 2011), exposure to C<sub>0</sub>AI in sexually explicit media (Nelson et al., 2014b; Rosser et al., 2013; Stein et al., 2012), and preferences for C<sub>0</sub>AI in sexually explicit media (Rosser et al., 2013). This result supports the notion that, consistent with both norm formation research (Rimal & Real, 2005) and scripting theory (Simon & Gagnon, 1986), portrayals of C<sub>0</sub>AI in SEOM are likely influencing sexual risk behaviors among MSM. Of course, the cross-sectional design of the study precludes our ability to discern the direction of any associations. That is, it may be that frequent viewing of C<sub>0</sub>AI in SEOM influences men to incorporate that behavior into their sexual script, or that individuals who are already engaging in C<sub>0</sub>AI may be more likely to report that portrayals of C<sub>0</sub>AI in SEOM influence their perceived condomless sex scripts.

Interestingly, the subscales of PI-SEOM on general sexual scripts do not appear to be independently associated with sexual risk-taking, suggesting that SEOM use generally may not be problematic. This is consistent with some previous research which has shown that there are many positive influences of SEOM on the sexual behaviors of MSM, including increased sexual knowledge, enjoyment of and interest in sex, positive attitudes towards sex, and others (Hald et al., 2013; Nelson et al., 2014a).

## General Discussion

In this series of studies, we developed and demonstrated preliminary validation for a measure of the perceived influence of viewing SEOM on the sexual behaviors of MSM and those of their peers. Using mixed-methods, and through multiple iterations, we identified six items (three about general sexual scripts, three about condomless sex scripts) for each of two subscales, one focused on SEOM's influence on oneself and the other on SEOM's influence on other MSM. Results demonstrated strong psychometric support for reliability with respect to factor structure and internal consistency. Further, the subscales were associated as hypothesized with a variety of socio-demographic, attitudinal, and SEOM consumption characteristics, indicating preliminary evidence of measure validity. To our knowledge, this is the first measure that has been created and developed specifically with MSM (vs. adapting an existing measure originally created for mostly heterosexual samples [Hald & Malamuth, 2008; Hald et al., 2013]), using rigorous methods, and employing multiple samples—all with a focus on the measurement of the perceptions of MSM about the influences of SEOM on themselves and their peers.

A prominent limitation of this project, and the majority of research in this area, is the cross-sectional design, which precludes inferences about causality or even temporal sequencing, and removes our ability to determine whether viewing SEOM leads to sexual risk behaviors, or if those who already engage in sexual risk are more likely to seek out C<sub>0</sub>AI in the SEOM

that they view. It is also possible that unknown factors, such as unconscious processes, may be mediating relations between SEOM consumption and sexual risk behaviors. While this may be the case, the three large cross-sectional studies in this area (Nelson et al., 2014b; Rosser et al., 2013; Stein et al., 2012) each used different measures, procedures, and eligibility criteria—as well as controlled for different socio-demographic, attitudinal, and mental health factors in their multivariate models—reflecting a higher likelihood that the positive, linear association between viewing C<sub>0</sub>AI in SEOM and engaging in sexual risk among MSM is robust. Further, given that the perceived influence of viewing C<sub>0</sub>AI in SEOM on one's own condomless sex scripts was independently associated with participants' own C<sub>0</sub>AI, above and beyond established predictors of sexual risk, including actual exposure to C<sub>0</sub>AI in SEOM, the ongoing focus on the role of portrayals of C<sub>0</sub>AI in SEOM appears warranted as a unique influence on MSM's attitudes, beliefs, perceived norms, and behavior. Future research should continue to elucidate the principal features of SEOM that influence MSM, the magnitude and stability of those influences, and any potential interventions that could be provided by SEOM purveyors, clinicians, or public health professionals to help MSM continue to enjoy SEOM while maintaining their sexual safety.

### Limitations

As with any individual study, this research has limitations that compromise its generalizability, including the cross-sectional design, as we discussed above. Another critique is the online nature of the large survey, which precludes in-person or objective verification of data. However, online data collection has become routine for working with hidden populations like MSM (Sullivan, Grey, & Rosser, 2013) and, to counter these risks, our procedures followed the established best practices (Mustanski, 2001; Sullivan et al., 2013). Some may argue that the sample we recruited was relatively narrow—recruiting online for accessing men-seeking-men websites and for SEOM consumption—although epidemiologic data support those behaviors to be common among MSM, regardless of the recruitment venue (Groves, Breslow, Newcomb, Rosenberger, & Bauermeister, 2014). Also our sample was predominantly White, well-educated, and urban. Further, we were not able to ascertain whether serodiscordant C<sub>0</sub>AI was with a main or casual partner. Given advances in biomedical HIV prevention strategies (i.e., pre-exposure prophylaxis or PrEP; Grant et al., 2010), future research is warranted to understand whether and how biomedical prevention strategies may enhance or change the influence SEOM on MSM's sexual behaviors. Finally, our analytic methods required taking continuous variables and reducing them to categorical variables, a common practice for non-normally distributed risk behaviors, which is sometimes criticized for decreased statistical power and conceptual nuance (e.g., Agresti, 2012).

### Conclusion

The development of our psychometrically sound instrument paves the way for much needed future research in this area. Given the stubbornly high number of new HIV infections in the U.S., and the disproportionate burden on MSM, the field of HIV prevention needs novel interventions. HIV prevention efforts might benefit from the common consumption of SEOM among MSM, facilitating access to a high-risk population and possibly offering a potent medium to adjust norms and sexual scripts as well as enhance motivation for less

risky behavior. As SEOM is likely contributing to sexual risk-taking among MSM, and MSM are unlikely to stop consuming SEOM, understanding the influence of SEOM on HIV risk-taking and ways to intervene on that influence may play an essential role in slowing the spread of HIV among MSM.

## Acknowledgements

We would like to thank our participants for sharing their experiences, our research assistant Emily Leickly for her endless hours of work, as well as members of the Simoni Lab for their help with this project. The work was supported in part by the National Institutes of Health (T32MH078788, F31MH088851, K24MH093243, P30AI27757). Additional support was provided by the University of Washington Department of Psychology and the American Psychological Association of Graduate Students. The content of this publication is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or other sources of support.

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Initial items and mean scores for the Perceived Influence of Sexually Explicit Online Media (PI-SEOM) measure with an online sample of 100 men who have sex with men (MSM) in the United States.

**Table 1**

	<b>m (SD)</b>
<b>Subscale 1: Perceived influence on self</b>	
<b>Online porn:</b>	
1. Inspires me to try new sex acts	2.8 (0.7)
2. Makes me less likely to go out and seek sex with other people	2.4 (0.9)
3. Influences what I think sex should be like	2.6 (0.8)
4. Influences what I think my sex partner(s) should look like	2.2 (0.8)
5. Influences what I think I should look like	2.6 (0.9)
6. Influences me to look at other men as just sex objects	1.9 (0.8)
7. Shows the kind of sex that most men have	2.1 (0.8)
8. Helps me know that other men have the same kind of sex that I do	2.8 (0.8)
9. Helps increase my arousal before sex	2.6 (0.9)
<b>Seeing men having anal sex without condoms in online porn:</b>	
10. Makes me believe that other men won't want to use condoms when we have sex	2.2 (0.8)
11. Makes me want to have sex without condoms	2.3 (1.0)
12. Makes it seem okay for me not to use a condom all the time	1.8 (0.8)
<b>Subscale 2: Perceived influence on other MSM</b>	
<b>Online porn:</b>	
1. Inspires other MSM to try new sex acts	3.0 (0.6)
2. Makes other MSM less likely to go out and seek sex with other people	2.4 (0.7)
3. Influences what other MSM think sex should be like	2.9 (0.7)
4. Influences what other MSM think their sex partner(s) should look like	3.0 (0.7)
5. Influences what other MSM think they should look like	3.0 (0.6)
6. Influences other MSM to look at other men as just sex objects	2.7 (0.8)
7. Influences other MSM to think that SEOM shows the kind of sex that most men have	2.7 (0.7)
<b>Men having anal sex without condoms in online porn:</b>	

**Subscale 1: Perceived influence on self**

	<b>m (SD)</b>
8. Makes other MSM believe that their partners won't want to use condoms when they have sex	2.5 (0.8)
9. Makes other MSM want to have anal sex without condoms	2.7 (0.7)
10. Makes other MSM think that it is okay not to use a condom all the time	2.6 (0.7)

Note: m = mean, SD = standard deviation. Participants responded to items via 4-point Likert-type scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*).

Factor loadings of the final items for the Perceived Influence of Sexually Explicit Online Media (PI-SEOM) measure from the exploratory factor analysis using an online sample of men who have sex with men (MSM; Subscale 1:  $n = 551$ , Subscale 2:  $n = 545$ ) in the United States.

**Table 2**

	Factor 1	Factor 2
<b>Subscale 1 -- Perceived influence on self:</b>		
<b>Online porn (Subscale 1a):</b>		
3. Influences what I think sex should be like	<b>0.55</b>	0.13
4. Influences what I think my sex partner(s) should look like	<b>0.92</b>	0.11
5. Influences what I think I should look like	<b>0.68</b>	0.13
Factor 1 (3 items) Cronbach's alpha	0.77	
<b>Seeing men having anal sex without condoms in online porn (Subscale 1b):</b>		
10. Makes me believe that other men won't want to use condoms when we have sex	0.17	<b>0.48</b>
11. Makes me want to have sex without condoms	0.17	<b>0.68</b>
12. Makes it seem okay for me not to use a condom all the time	0.10	<b>0.85</b>
Factor 2 (3 items) Cronbach's alpha		0.72
Subscale 2 -- Influence on other MSM:	Factor 1	Factor 2
<b>Online porn (Subscale 2a):</b>		
3. Influences what other MSM think sex should be like	0.28	<b>0.58</b>
4. Influences what other MSM think their sex partner(s) should look like	0.22	<b>0.89</b>
5. Influences what other MSM think they should look like	0.15	<b>0.87</b>
Factor 2 (3 items) Cronbach's alpha		0.85
<b>Men having anal sex without condoms in online porn (Subscale 2b):</b>		
8. Makes other MSM believe that their partners won't want to use condoms when they have sex	<b>0.72</b>	0.21
9. Makes other MSM want to have anal sex without condoms	<b>0.85</b>	0.17
10. Makes other MSM think that it is okay not to use a condom all the time	<b>0.79</b>	0.23
Factor 1 (3 items) Cronbach's alpha	0.86	

Note: Loadings in **bold** designate which factor an item was assigned. Subscale 1a = Perceived influence of SEOM on general sexual scripts; Subscale 1b = Perceived influence of SEOM on condomless sex scripts; Subscale 2a = Perceived influence of SEOM on general sexual scripts; Subscale 2b = Perceived influence of SEOM on condomless sex scripts

**Table 3**

Socio-demographic, attitudinal, and sexually explicit online media (SEOM) consumption characteristics of 1,170 men who have sex with men (MSM) in the United States by PI-SEOM subscales.

	Total N = 1,170	Subscale 1a			Subscale 1b			Subscale 2a			Subscale 2b		
		n (%)	m (SD)	d	m (SD)	d	m (SD)	d	m (SD)	d	m (SD)	d	
<b>Socio-demographics</b>													
<b>Recruitment source</b>													
Men-seeking-men websites	596 (51)	2.4 (0.7)	0.29**	1.9 (0.7)	0.14	2.8 (0.7)	0.31***	2.4 (0.8)	0.27***	3.0 (0.6)	0.08	2.6 (0.7)	
Other	574 (49)	2.6 (0.7)	--	2.0 (0.7)	--	3.0 (0.6)	--	2.5 (0.7)	--	2.5 (0.9)	--	2.6 (0.7)	
<b>Race/Ethnicity<sup>†</sup></b>													
White	821 (70)	2.5 (0.7)	--	2.0 (0.7)	--	2.9 (0.6)	--	2.5 (0.7)	--	2.5 (0.7)	--	2.5 (0.7)	
Black/African American	146 (13)	2.4 (0.8)	0.16***	1.9 (0.7)	--	2.8 (0.7)	0.19***	2.5 (0.9)	0.16***	2.6 (0.7)	0.14**	2.4 (0.7)	
Latino/Hispanic	102 (9)	2.6 (0.8)	--	1.9 (0.7)	--	3.0 (0.7)	--	2.6 (0.7)	--	2.6 (0.7)	--	2.6 (0.7)	
Other	99 (9)	2.5 (0.8)	--	2.0 (0.7)	--	3.0 (0.7)	--	2.4 (0.7)	--	2.4 (0.7)	--	2.4 (0.7)	
<b>Age (in years)<sup>†</sup></b>													
18-29	524 (45)	2.6 (0.8)	0.16***	1.9 (0.7)	0.14**	3.1 (0.6)	0.19***	2.6 (0.7)	0.14**	2.6 (0.7)	0.15*	2.5 (0.7)	
30-39	148 (12)	2.5 (0.8)	--	2.0 (0.7)	--	2.8 (0.7)	--	2.4 (0.8)	--	2.4 (0.8)	--	2.4 (0.7)	
40-49	220 (19)	2.4 (0.7)	--	2.0 (0.7)	--	2.8 (0.7)	--	2.4 (0.7)	--	2.4 (0.7)	--	2.4 (0.7)	
50+	278 (24)	2.4 (0.7)	--	1.9 (0.7)	--	2.8 (0.6)	--	2.4 (0.7)	--	2.4 (0.7)	--	2.4 (0.7)	
<b>Education</b>													
< Associate degree	437 (38)	2.5 (0.8)	0.27***	2.0 (0.7)	0.14**	2.9 (0.7)	0.15*	2.6 (0.7)	0.14**	2.6 (0.7)	0.15*	2.5 (0.7)	
Associate degree	728 (62)	2.5 (0.7)	--	1.9 (0.7)	--	2.9 (0.6)	--	2.5 (0.7)	--	2.5 (0.7)	--	2.5 (0.7)	
<b>Housing</b>													
Own or rent domicile	896 (74)	2.4 (0.7)	0.12	1.9 (0.7)	0.14	2.9 (0.6)	0.15*	2.5 (0.7)	0.14**	2.5 (0.7)	0.13	2.5 (0.7)	
Other	272 (23)	2.6 (0.8)	--	2.0 (0.7)	--	3.0 (0.7)	--	2.6 (0.7)	--	2.6 (0.7)	--	2.6 (0.7)	
<b>Urban residence</b>													
Yes	1,050 (90)	2.5 (0.7)	0.12	2.0 (0.7)	--	2.9 (0.6)	--	2.5 (0.7)	--	2.5 (0.7)	--	2.5 (0.7)	
No	120 (10)	2.4 (0.9)	--	2.0 (0.8)	--	2.9 (0.7)	--	2.6 (0.8)	--	2.6 (0.8)	--	2.6 (0.8)	

Socio-demographics	Total N = 1,170	Subscale 1a		Subscale 1: Self		Subscale 1b		Subscale 2a		Subscale 2: Other MSM		Subscale 2b
		n (%)	m (SD)	d	Perceived influence of SEOM on general sexual scripts	m (SD)	d	Perceived influence of SEOM on condomless sex scripts	m (SD)	d	Perceived influence of SEOM on condomless sex scripts	
<b>Gay sexual orientation</b>												
Yes	1,043 (89)	2.5 (0.7)	--	0.15	2.0 (0.7)	--	--	2.9 (0.6)	--	2.5 (0.7)	--	--
No	112 (11)	2.5 (0.7)			1.9 (0.6)			2.9 (0.6)		2.5 (0.8)		
<b>“Out” to almost everyone or everyone</b>												
Yes	640 (55)	2.4 (0.7)	0.14*		1.9 (0.7)		0.14	2.9 (0.6)		2.5 (0.8)		--
No	525 (45)	2.5 (0.7)			2.0 (0.7)			2.9 (0.7)		2.5 (0.7)		
<b>Has a primary partner</b>												
Yes	494 (43)	2.4 (0.7)	0.29***	0.14	1.9 (0.7)			2.9 (0.7)		2.4 (0.7)		0.29*
No	663 (57)	2.6 (0.7)			2.0 (0.7)			2.9 (0.6)		2.6 (0.7)		
<b>HIV-serostatus</b>												
HIV-seronegative/unknown	995 (85)	2.5 (0.7)	0.29***	0.29*	1.9 (0.7)		0.46***	3.0 (0.6)		2.5 (0.7)		0.27***
HIV-seropositive	175 (15)	2.3 (0.7)			2.1 (0.7)			2.7 (0.7)		2.3 (0.8)		
<b>High levels of negative condom use attitudes</b>												
Yes	169 (15)	2.7 (0.7)	0.29***	1.13***	2.6 (0.8)		0.17	3.0 (0.6)		2.8 (0.7)		
No	976 (85)	2.5 (0.7)			1.8 (0.6)			2.9 (0.6)		2.5 (0.7)		
<b>Preferences for condom use in SEOM<sup>†</sup></b>												
Prefers condoms are used	236 (21)	2.5 (0.7)	0.04	0.34***	1.7 (0.6)		--	2.9 (0.7)		2.5 (0.8)		--
Prefers condoms are not used	384 (33)	2.6 (0.7)			2.3 (0.8)			2.9 (0.6)		2.5 (0.7)		
No preference	533 (46)	2.5 (0.7)			1.9 (0.6)			2.9 (0.6)		2.5 (0.7)		
<b>% of SEOM viewed containing C<sub>0</sub>AI<sup>‡</sup></b>												
0-24%	398 (34)	2.5 (0.7)	0.05	0.32***	1.7 (0.6)		--	2.9 (0.7)		2.4 (0.8)		
25-49%	222 (19)	2.5 (0.8)			2.0 (0.6)			2.9 (0.6)		2.5 (0.7)		

	Total <i>N</i> = 1,170	Subscale 1a		Subscale 1b		Subscale 2a		Subscale 2b		
		Perceived influence of SEOM on general sexual scripts	<i>m</i> ( <i>SD</i> )	<i>d</i>	Perceived influence of SEOM on condomless sex scripts	<i>m</i> ( <i>SD</i> )	<i>d</i>	Perceived influence of SEOM on general sexual scripts	<i>m</i> ( <i>SD</i> )	<i>d</i>
<b>Socio-demographics</b>	<i>n</i> (%)	<i>m</i> ( <i>SD</i> )	<i>d</i>	<i>m</i> ( <i>SD</i> )	<i>d</i>	<i>m</i> ( <i>SD</i> )	<i>d</i>	<i>m</i> ( <i>SD</i> )	<i>d</i>	
50-74%	388 (33)	2.4 (0.7)		2.0 (0.7)		2.9 (0.6)		2.6 (0.7)		
75-100%	141 (12)	2.6 (0.8)		2.4 (0.9)		2.9 (0.7)		2.6 (0.8)		
<b>Frequency of SEOM consumption</b>										
<b>1 viewing per day</b>										
Yes	661 (57)	2.5 (0.7)	0.15 <sup>***</sup>	2.0 (0.7)	0.14 <sup>***</sup>	2.9 (0.6)	--	2.5 (0.8)	--	
No	503 (43)	2.4 (0.7)		1.9 (0.7)		2.9 (0.6)		2.5 (0.7)		
<b>&gt; 30 minutes of viewing per session on average</b>										
Yes	479 (41)	2.5 (0.7)	--	2.0 (0.8)	0.13 <sup>***</sup>	2.9 (0.7)	--	2.5 (0.8)	--	
No	683 (59)	2.5 (0.7)		1.9 (0.7)		2.9 (0.6)		2.5 (0.7)		

Note. C0AI = condomless anal intercourse; SEOM = sexually explicit online media; *m* = mean; *SD* = standard deviation; *d* = Cohen's *d*

\*\*\*  
*p* < 0.001

\*\*  
*p* < 0.01

\*  
*p* < 0.05

<sup>†</sup> effect size calculated using Cohen's *f*.

**Table 4**

Logistic regression analyses of condomless anal intercourse (C<sub>0</sub>AI) or serodiscordant C<sub>0</sub>AI among 1,170 men who have sex with men (MSM) in the United States.

	Bivariate Models				Multivariate Model			
	C <sub>0</sub> AI OR (95% CI)	Serodiscordant C <sub>0</sub> AI OR (95% CI)	C <sub>0</sub> AI OR (95% CI)	Serodiscordant C <sub>0</sub> AI AOR (95% CI)	C <sub>0</sub> AI AOR (95% CI)	Serodiscordant C <sub>0</sub> AI AOR (95% CI)	C <sub>0</sub> AI AOR (95% CI)	Serodiscordant C <sub>0</sub> AI AOR (95% CI)
<b>PI-SEOM Subscale 1: Influence on Self</b>								
General sexual scripts (Subscale 1a)	1.0	0.8 - 1.2	1.0	0.9 - 1.3				
Condomless sex scripts (Subscale 1b)	2.3	1.9 - 2.8	1.8	1.5 - 2.2	1.4	1.1 - 1.7	1.2	1.0 - 1.6
<b>PI-SEOM Subscale 2: Influence on Others</b>								
General sexual scripts (Subscale 2a)	1.0	0.9 - 1.3	1.1	0.9 - 1.4				
Condomless sex scripts (Subscale 2b)	1.2	1.0 - 1.4	1.4	1.1 - 1.7	0.9	0.8 - 1.1	1.2	0.9 - 1.5
Negative attitudes towards condoms	1.2	1.1 - 1.2	1.1	1.1 - 1.2	1.1	1.1 - 1.2	1.1	1.0 - 1.1
<b>Percentage of SEOM showing C<sub>0</sub>AI</b>								
0-24%	ref	ref	ref	ref	ref	ref	ref	ref
25-49%	1.7	1.5 - 1.9	1.4	1.2 - 1.6	1.3	1.2 - 1.5	1.1	0.9 - 1.3
50-74%	2.9	2.2 - 3.7	1.9	1.4 - 2.4	1.8	1.3 - 2.4	1.2	0.9 - 1.6
75-100%	5.1	3.2 - 7.0	2.6	1.6 - 3.6	2.5	1.4 - 3.5	1.4	0.7 - 2.0
<b>Preferences about condom use in SEOM</b>								
Prefers condoms are used	ref	ref	ref	ref	ref	ref	ref	ref
Prefers condoms are not used	6.7	4.6 - 9.8	4.1	2.6 - 6.6	2.7	1.7 - 4.2	2.5	1.4 - 4.3
No preference	3.4	2.4 - 4.8	2.4	1.5 - 3.8	2.3	1.6 - 3.4	2.1	1.3 - 3.4

Note. C<sub>0</sub>AI = condomless anal intercourse; PI-SEOM = perceived influence of sexually explicit online media; SEOM = sexually explicit online media; OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval; All models are adjusted for recruitment source, age, race/ethnicity, having a primary partner, "outness," and HIV serostatus.