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Antecedents of the Initiation of Watching Sexually Explicit Internet Material: A Longitudinal Study among Adolescents

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Abstract

Little research to date has focused on adolescents' initiation of watching sexually explicit Internet material (SEIM) and its antecedents. Based on 400 adolescents who had *never* watched SEIM at baseline (in a three-wave panel study among 1,467 13-17 year-old Dutch adolescents), we examined antecedents of the initiation of watching SEIM one year later. Logistic regression analyses indicated that boys were more likely to start watching SEIM than girls. A hyper gender identity increased the likelihood to initiate watching SEIM among girls, while frequent exposure to the sexy self-presentation of others in social media especially increased boys' chance of watching SEIM. Among younger adolescents, those with sexual experience were more likely to initiate watching SEIM than their inexperienced counterparts.

Keywords: Pornography, youth, selective exposure, media practice model

Antecedents of the Initiation of Watching Sexually Explicit Internet Material: A Longitudinal Study among Adolescents

While sexually explicit Internet material (= SEIM) is officially targeted at adults, a substantial proportion of individuals starts watching it during adolescence. For example, surveys among young adults have shown that up to 99% of men and 62% of women started watching pornography during adolescence (Sabina, Wolak, & Finkelhor, 2008; Svedin, Ackerman, & Priebe, 2010). Although some adolescents may initially encounter pornography in an accidental way (Wolak, Mitchell, & Finkelhor, 2007), research among Dutch adolescents for example has found that, on average, one out of two adolescents has recently used SEIM intentionally (Peter & Valkenburg, 2006). Intentional adolescent users of SEIM differ. For instance, high sensation seekers and male adolescents more frequently use SEIM intentionally than low sensation seekers and female adolescents do (e.g., Peter & Valkenburg, 2011; Wolak et al., 2007).

While the characteristics that affect the frequency with which adolescents intentionally use SEIM have been well documented, we lack research on antecedents that predict adolescents' *first* intentional use of SEIM. However, such knowledge may inform educators, parents and practitioners about important target groups for media literacy training. Media literacy skills may decrease one's chances of being negatively affected by SEIM (Isaacs & Fisher, 2006) and may, in particular, provide guidance for one's first intentional experience with SEIM. Adolescents often start watching SEIM out of curiosity (Arrington-Sanders, Harper, Morgan, Ogunbajo, Trent, & Fortenberry, 2015; Cameron et al., 20015; Lofgren-Martenson & Mansson, 2010). For some users, however, the decision to initiate watching SEIM is associated with feelings of ambivalence (Lofgren-Martenson & Mansson, 2010), and the first exposure to SEIM is experienced as unpleasant (Cameron et al., 20015; Lofgren-Martenson & Mansson, 2010). Retrospective research among college students

further revealed that memorable experiences with sexual media content during adolescence, such as one's first exposure to pornography, triggered strong, sometimes negative, emotional (e.g., surprise, anger, disgust, guilt) and physical (e.g., tension, sexual arousal) responses (Cantor, Mares, & Hyde, 2003).

Against this background, we aimed at identifying antecedents of the initiation of watching SEIM among adolescents. As the literature suggests that age and gender may affect how antecedents stimulate sexual media use (Brown, White, & Nikopoulou, 1993; Valkenburg & Peter, 2013), we also tested the potential moderating roles of age and gender.

Antecedents of the Initiation of Watching Sexually Explicit Internet Material

SEIM can be described as "professionally produced or user generated pictures or videos (clips) on or from the internet that are intended to arouse the viewer. These videos and pictures depict sexual activities, such as masturbation as well as oral, anal, and vaginal penetration, in an unconcealed way, often with a close-up on genitals" (Peter & Valkenburg, 2011, pp. 1015-1016). One theoretical framework that can explain why different adolescent media users are attracted to such SEIM is the Media Practice Model (Steele & Brown, 1995). This model has been used in various studies (e.g., Hawk, Vanwesenbeeck , de Graaf, & Bakker, 2006; Peter & Valkenburg, 2006) to explain how adolescents select, interpret, and incorporate sexual media content in their identity. The processes of selection, interpretation, and application are seen as a function of adolescents' lived experiences, referring to the demographic characteristics and various other socializing factors that shape adolescents' identity (Steele & Brown, 1995). The Media Practice Model explains the selection of media content with the level of congruence between one's own identity (e.g., demographic characteristics) and the messages covered in the media content (Steele & Brown, 1995).

Media content that is congruent with a user's identity is more likely to be selected as this material matches the user's motives to consume media. For instance, an adolescent who

explores his or her own sexuality, and is thus motivated to learn more about sexuality, will experience sexual content as more congruent with his/ her own identity. Because the adolescent aims at learning more about sexuality, he or she will in particular select sexual media content (Steele & Brown, 1995). The Media Practice Model thus differs from other theories that explain media selection patterns, such as the uses and gratifications theory (Rubin, 2002), because of its focus on identity development during adolescence.

The Media Practice Model (Steele & Brown, 1995) posits, amongst other things, that two groups of antecedents determine congruency between an adolescent's identity and SEIM: demographic (e.g., gender) and sociocultural (e.g., academic self-concept) antecedents. The literature on adolescents' general SEIM use, however, has suggested that also other antecedents may be important when studying adolescents' selection of SEIM, notably exposure to sexual television and social media content, relationship status, sexual experience, and personality-related factors (e.g., Beyens, Vandenbosch & Eggermont, 2015; Peter & Valkenburg, 2006, 2011).

Demographic antecedents. Research points to three demographic antecedents that may affect whether adolescents start watching SEIM: age, gender, and sexual orientation. As for age, research has revealed contradictory findings. Some studies in the Netherlands and Israel have not found age differences in the use of SEIM (e.g., Mesch, 2009; Peter & Valkenburg, 2006, 2011), while research in the U.S. and 25 European countries has demonstrated that older adolescents consume SEIM more extensively than younger adolescents do (Ševčikova, Šerek, Barbovschi, & Daneback, 2014; Wolak et al., 2007; Ybarra & Mitchell, 2005). The latter quantitative studies merge with findings from qualitative studies in the U.S. that older adolescents feel developmentally better equipped to enjoy sexual media content (Brown et al., 1993). If sexual content is considered too explicit, users may feel disgusted, which is more likely among younger adolescents (Brown et al., 1993). As

a result, we expect that older adolescents will be more likely to start using SEIM because the material is more congruent with their identity.

As to gender, studies have consistently shown that boys use SEIM more frequently than girls do (e.g., Peter & Valkenburg, 2006, 2011; Wolak et al., 2007). Moreover, girls are more likely than boys to have been exposed to SEIM accidentally (e.g., Sabina et al., 2008). Qualitative research suggests that SEIM evokes disgust in some girls (Cameron et al., 2005). SEIM features gender stereotypes relatively often (e.g., Klaassen & Peter, 2015) and, sometimes, also sexual aggression toward women(e.g., Bridges et al., 2010). As a result, girls may experience SEIM as less congruent with their identity than boys and thus are less likely to start using SEIM.

In line with contemporary approaches to homosexuality (e.g., Ward, 2003; Wright & Bae, 2013), sexual orientation may also be considered a demographic factor that influences the initiation of SEIM use. Lesbians, gay men, and bisexual women and men tend to have a more liberal sexual attitude than heterosexual individuals (Traeen, Stigum, & Sorensen, 2002). At the same time, positive correlations between liberal sexual attitudes and exposure to SEIM have been reported (e.g., Peter & Valkenburg, 2008). Moreover, adolescents and adults with a not exclusively heterosexual orientation watch SEIM more frequently than exclusively heterosexual individuals do (Peter &Valkenburg, 2011). In line with the Media Practice Model (Steele & Brown, 1995), these findings thus suggest that the more liberal sexual attitudes of lesbian girls, gay boys, and bisexual adolescents increase the likelihood that they experience SEIM as congruent with their identity. As a result, we hypothesized:

> Hypothesis 1: Male adolescents, older adolescents, and gay, lesbian or bisexual adolescents will be more likely to start watching SEIM than will female adolescents, younger adolescents and heterosexual adolescents.

Academic self-concept. Roe (1995) has outlined that an individual's academic self-concept is an important sociocultural factor as it is likely to determine one's identification with certain subcultures. Within subcultures of adolescents with a negative academic self-concept, the selection of culturally disapproved media content is considered more normative as opposed to subcultures of adolescents with a positive academic self-concept (Roe, 1995). Negative perceptions of one's own academic trajectory may thus trigger the selection of culturally disapproved media content. Qualitative research has indicated that pornography is sometimes described as such culturally disapproved media content (e.g., Cameron et al., 2001). Accordingly, a Swedish study showed that young male adults who had dropped out of school were more regular users of pornography than male students who had successfully completed high school (Svedin et al., 2010). Therefore, we hypothesized:

> Hypothesis 2. Adolescents with a negative academic self-concept will be more likely to start watching SEIM than those with a positive academic self-concept.

Exposure to sexual reality television content and social media content. There is evidence that exposure to other types of sexual content is related to exposure to SEIM (e.g., Peter & Valkenburg, 2006). Two types of sexual content may be especially worth considering: content in reality television (TV) and content on social networking sites (SNS). Reality TV is a recent, popular television genre (Bond & Drogos, 2014), particularly in the Netherlands, where the present study was done, with the ten most watched programs in 2012 (excluding sport programs) having been reality programs (Stichting KijkOnderzoek, 2012). This popular genre frequently features sexual content (Bond & Drogos, 2014). However, the portrayal of sex in reality TV is rather suggestive (Kunkel et al., 2007) and not as explicit as in SEIM. According to the concept of desensitization (Zillmann & Bryant, 1986), adolescents may gradually become habituated to the sexually suggestive portrayals of reality TV. As a

result of this habituation, they may search for more explicit portrayals of sex and thus become more inclined to access SEIM.

Habituation to sexy images of adolescents on SNS may also stimulate adolescents' debut of watching SEIM. Research has revealed that Dutch media users spend on average 10 minutes a day on SNS (Pollet, Roberts, & Dunbar, 2011). Recent research has also shown that adolescents regularly post sexy images of themselves on their profiles on SNS (Kapidzic & Herring, 2014). These images are typically sexually suggestive (Ringrose, 2010). Similar to desensitization processes that may occur with respect to reality TV, adolescents may thus become habituated to the sexual portrayals on SNS. Consequently, they may look for more explicit content and, as a result, be more likely to start watching SEIM. We thus hypothesized:

> Hypothesis 3. Frequent viewers of sexual reality TV content and SNS users who have frequently been exposed to sexy self-presentations of others will be more likely to start watching SEIM than will non-frequent viewers of sexual reality TV content and SNS users who have rarely or never been exposed to sexy self-presentations of others.

Relationship status. Young people typically experience their first romantic relationship during adolescence, which is often accompanied by sexual exploration (Feldman & Cauffman, 1999). A romantic relationship can therefore be assumed to satisfy initially adolescents' sexual needs. Sexually explicit media content, in contrast, may be used to compensate for sexual needs (Hawk et al., 2006; Lofgren-Martenson & Mansson, 2010; Mattebo, Tydén, Häggström-Nordin, Nilsson, & Larsson, 2014). Once this compensation is no longer necessary, for example through a romantic relationship, the need for sexually explicit media content may decline. We thus hypothesized:

> Hypothesis 4. Adolescents without a romantic relationship will be more likely to start watching SEIM than will those with a romantic relationship.

Sexual experience. Qualitative research has suggested that sexually inexperienced adolescents use SEIM to learn more about sex and sexuality (Arrington-Sanders et al., 2015; Lofgren-Martenson & Mansson, 2010). Moreover, adolescents use SEIM to satisfy sexual needs (Mattebo et al., 2014). This need for sexual satisfaction may be weaker among adolescents with sexual experience, who may satisfy their sexual needs by having sex. Starting to watch SEIM may thus be more appealing for adolescents who have no sexual experience. We hypothesized:

Hypothesis 5. Adolescents without sexual experience will be more likely to start watching SEIM than those with sexual experience.

Personality-related antecedents. The personality factors of a hyper gender identity and sensation seeking may be important markers for the level of congurency experienced between one's identity and SEIM. With regard to a hyper gender identity, the literature suggests that hyper feminine women and hyper masculine men may be more likely to start watching SEIM as opposed to non-hyper feminine women and non-hyper masculine men: Individuals with a hyper gender orientation endorse highly stereotypical sexual gender roles (Hamburger, Hogben, McGowan, & Dawson, 1996). As SEIM frequently portrays stereotypical sexual gender roles (Klaassen & Peter, 2015), hyper gender adolescents may be more inclined to experience SEIM as consistent with their sexual beliefs.

Furthermore, high sensation seekers search for activities that trigger high levels of arousal, such as sexual activities (Zuckerman, 1994). Using SEIM may be such an activity, certainly when it concerns the initiation of watching SEIM. Research among adolescents has consistently shown that high sensation seekers are more frequent users of SEIM as compared to low sensation seekers (e.g., Beyens et al., 2015; Peter Valkenburg, 2006, 2011). Therefore, high sensation seekers may also be more likely to initiate watching SEIM than low sensation seekers. As such, we hypothesize:

Hypothesis 6. Hyper masculine boys and hyper feminine girls as well as high sensation seekers will be more likely to start watching SEIM than low sensation seekers and non-hyper masculine boys and non-hyper feminine girls.

Age Differences

Recent theorizing in communication research has suggested that the influence that particular antecedents exert on the selection of media content may differ by users' age (Valkenburg & Peter, 2013). Specifically, age relates to adolescents' interpretation of sexual media messages (Cantor, Mares & Hyde, 2003; Silverman-Watkins & Sprafkin, 1983). For instance, 16 year-old adolescents are more likely to understand sexual innuendos in TV content than 12 year-old adolescents (Silverman-Watkins & Sprafkin, 1983). Age may therefore also affect how an antecedent shapes the congruency experienced between SEIM and one' s identity. Based on these considerations, we posed the following research question:

RQ1. Do gender, sexual orientation, academic self-concept, watching sexual reality TV content, exposure to sexy online self-presentation of others, relationship status, sexual experience, hyper gender orientation and sensation seeking relate differently to the intiation of watching SEIM by age?

Gender Differences

Communication theory, such as the Media Practice Model (Steele & Brown, 1995) and the recently developed Differential Susceptibility to Media Effects Models (Valkenburg & Peter, 2013), also posits that gender affects how particular antecedents influence the selection of media content. The literature on adolescent sexuality, in particular, emphasizes that boys and girls undergo a differential sexual socialization (Tolman, Striepe, & Harmon, 2003). Girls, for instance, are often socialized towards a more restrictive sexuality that values a rather passive sexual role. Boys, in contrast, are taught to be more active and rather dominant sexual partners (Tolman et al., 2003). Because of these different socialization

processes, antecedents of starting to watch SEIM may differ between boys and girls. Therefore, we posed a second research question:

> RQ2. Do age, sexual orientation, academic self-concept, watching sexual reality TV content, exposure to sexy online self-presentation of others, relationship status, sexual experience, hyper gender orientation and sensation seeking relate differently to the initiation of watching SEIM by gender?

Methods

Participants and Procedure

Between May 2013-2014, a three-wave panel study with an interval of 6 months was conducted among 13- to17-year-old adolescents by a Dutch research bureau. The study was approved by the Ethics Committee of [identifying data deleted]. Participants were randomly selected from an existing panel of adolescents that is representative of the Dutch population (response rate = 78%). A total of 2,137 adolescents participated at Time 1. At Time 2, 1,765 adolescents of those who had participated at Time 1 participated again (= 82.6%), and, at Time 3, 1,467 adolescents of those who had participated at Times 1 and 2 participated again (= 68.7%). This study intended to predict which adolescents had started to use SEIM in the year between Time 1 and Time 3. As a result, the sample for the longitudinal analyses was limited to adolescents who had reported at Time 1 that they had *never* accidentally or intentionally been exposed to SEIM. This resulted in a total sample of 580 adolescents at Time 1. At Time 2 and Time 3, respectively 482 adolescents and 400 adolescents of these 580 adolescents at Time 1 filled in the online survey again. The analytical sample included those 400 adolescents that had participated at all times. Mean age was 14.58 (*SD* = 1.37), the age distribution was: 13 years (= 29.0% of the analytical sample), 14 years (= 24.3%), 15 years (= 19.0%), 16 years (= 15.8%) and 17 years (= 12%). Thirty-seven percent were male and 95.3% had a heterosexual orientation.

To measure the antecedents of starting to use SEIM, the study draws on the data collected at Time 1. To measure the number of adolescents who had initiated watching SEIM between Time 1 and Time 3, the study used the data collected among the analytical sample at Time 2 and Time 3. Using Pillai's Trace, a MANOVA analysis indicated significant differences between adolescents participating only at Time 1 and adolescents participating at all times in their age, gender, sexual orientation, academic self-concept, watching sexual reality TV content, exposure to sexy online self-presentation of others, relationship status, sexual experience, sensation seeking and hyper gender orientation, $V = .04$, $F(10, 596) = 2.11$, $p < .05$, $\eta p^2 = .04$. Adolescents participating at all times were more likely to have a heterosexual orientation ($M = 0.05$; $SD = 0.21$), $F(1, 578) = 8.09$, $p < .01$; were less frequently exposed to the sexy self-presentations of others ($M = 2.09$; $SD = 1.32$), $F(1, 578) = 7.08$, $p < .01$; and scored lower on hyper gender identity ($M = 2.98$; $SD = 1.25$), $F(1, 578) = 3.89$, $p < .05$, than adolescents participating only at Time 1 (respectively $M = 0.11$; $SD = 0.32$; $M = 2.41$; $SD = 1.47$; $M = 3.20$; $SD = 1.26$).

Measures

Selection of sexually explicit Internet material. Participants used a 7-point scale (*never* = 1 through *several times a day* = 7) to rate the extent to which they had intentionally exposed themselves during the last six months to (a) pictures with clearly exposed genitals, (b) videos with clearly exposed genitals, (c) pictures in which people are having sex, (d) or videos in which people are having sex (Peter & Valkenburg, 2008, p.585) (Time 2 $\alpha = .93$ and Time 3 $\alpha = .95$). Given the focus of this study on the initiation of watching SEIM, the variable measured at Time 2 and at Time 3 was recoded into a dichotomous variable: "*users who had never intentionally watched SEIM*" (= 0) and "*users who started watching SEIM in the year between Time 1 and Time 3*" (= 1).

Gender. Participants indicated whether they were a boy (= 0) or a girl (= 1).

Age. Participants indicated their age.

Sexual orientation. The H-scale developed by Kinsey, Pomeroy, and Martin (1948) was used. Adolescents indicated whether they were sexually attracted to (= 1) only to boys, (= 2) mainly to boys, but also to girls, (= 3) equally to boys and girls, (= 4) mainly to girls, but also to boys, or (= 5) only to girls. The variable was recoded into a dichotomous variable with the categories 0 (= *exclusively heterosexual*) and 1 (= *not exclusively heterosexual*).

Academic self-concept. Two items from the General School Scale of the Academic Self-Description Questionnaire (Marsh, 1990) were used: "I get good grades in school" and "I am good at most subjects in school", Time 1 $r = .80$, $p < .001$. Participants evaluated the items on a 7-point Likert scale ranging from 1 (= *not at all applicable to me)* to 7 (= *very applicable to me).* All items were averaged in a new variable (Time 1 $M = 5.66$; $SD = 0.99$).

Exposure to sexual reality TV content. Participants indicated on a 7-point Likert scale the extent to which they had watched on television, computer or smartphone, in the past six months, (a) *MTV's 'Jersey Shore'*, and (b) *MTV's 'Geordie Shore'*. These two sexual reality programs were broadcast during the 6 months' time period before our data collection. Moreover, prior research has documented the prevalence of sexual messages in these shows (Bond, 2014; Bond & Drogos, 2014). The response categories were "never" (= 1), "almost never" (= 2), "rarely" (= 3), "occasionally" (= 4), "often" (= 5), "almost every episode" (= 6), and "every episode" (= 7). These sexual and highly popular docu-soaps were broadcast before and during the survey period. The items (Time 1 $r = .82$, $p < .001$) were averaged into a new variable (Time 1 $M = 1.49$; $SD = 1.06$).

Exposure to sexy online self-presentations of others. Participants first answered whether they used social media or not. Next, participants, who indicated to use social media evaluated on a 7-point Likert scale ranging from 1 (= *never*) to 7 (= *always*) the extent to which, in the past six months, they had been exposed to pictures in which others portrayed themselves

a) with a sexy gaze, b) with a sexy appearance, c) scantily dressed (e.g., bathing suit or underwear), and d) in a sexy posture. Principal component analysis indicated that all items loaded on one factor (Time 1 eigenvalue = 3.48; explained variance = 86.88%; α = .95). Before creating the new variable, we recoded the missing values on the four items of participants (*n* = 50) who did not use social media[1] into "*never*" as it logically follows that they had never been exposed to the sexy self-presentations of others on social media. All items were averaged into a new variable (Time 1 *M* = 2.09; *SD* = 1.31).

Relationship status. Participants indicated their relationship status by choosing one of these options: (a) that they were currently in a relationship; (b) that they were seeing someone that could turn into a relationship; (c) that they were currently in a relationship but the relationship was unstable; (d) that they had no relationship but had had a relationship before; and (e) that they had no relationship and had never had a relationship before. Because the current study focuses on the difference between having a relationship (options a and c) or not (options b, d, and e), we recoded the variable into a dichotomous variable with the categories "*involved in a relationship*" (= 1; 12%) and "*no relationship*" (= 0; 88%).

Sexual experience. Participants indicated with "*yes*" (= 1) or "*no*" (= 0) their experience with the following sexual behaviors: a) touching each other's genitals, b) giving or receiving oral sex, and c) vaginal intercourse (penis inside the vagina). Adolescents who were identified as gay, lesbian or undecided about their sexual orientation answered a question about "having sex" instead of "vaginal intercourse." Principal component analysis indicated that all items loaded on one factor (Time 1 eigenvalue = 2.29; explained variance = 76.23%; α = .84). All items were averaged into a new variable (Time 1 *M* = 0.07; *SD* = .21).

Sensation seeking. In line with the study of Peter and Valkenburg (2008), five items were selected from the Brief Sensation Seeking Scale. Items were rated on a 7-point Likert scale ranging from 1 *(= not at all applicable to me)* to 7 *(= very applicable to me)* (Hoyle,

Stephenson, Palmgreen, Lorch, & Donohew, 2002). An example item is ‘‘I would love to have new and exciting experiences, even if they are illegal.” Principal component analysis indicated that all items loaded on one factor (Time 1 eigenvalue = 3.27; explained variance = 65.43%; α = .87). All items were averaged into a new variable (Time 1 *M* = 2.98; *SD* = 1.30).

Hyper gender identity. The Hyper Femininity Scale of Murnen and Byrne (1991) and the Hyper Masculinity Index of Mosher and Sirkin (1984) were used to measure a hyper gender identity in respectively female and male adolescents. Each scale was shortened and adopted to ensure its applicability among boys and girls. The selection of items was based on the results of a pilot study among 103 college students (77 women). The six items with the highest corrected item-total in the pilot study were selected from each scale. Adolescents rated the items on a 7-point Likert scale ranging from 1 (= *totally disagree)* to 7 (= *totally agree).* The criterion validity of these abbreviated scales for girls and boys has been demonstrated in prior research (van Oosten, 2015). Hyper femininity and hyper masculinity were similarly related to theoretically relevant constructs, such as sexual experience and the use of SEIM (van Oosten, 2015).

Example items from the included items of the Hyper Femininity Scale were “I feel flattered when boys whistle at me,” and “It’s fun to play ‘hard-to-get’.” Principal component analysis indicated all items loaded on one factor (Time 1 eigenvalue = 3.62; explained variance = 60.41%; α = .87). The six items were averaged into a new variable (Time 1 *M* = 3.09; *SD* = 1.27). Example items from the included items of the Hyper Masculinity Index were “I fight to win,” and “If you insult me, you better be prepared.” Principal component analysis showed that all items loaded on one factor (Time 1 eigenvalue = 3.03; explained variance = 50.57%; α = .80). All items were averaged into a new variable (Time 1 *M* = 2.80; *SD* = 1.21).

Analytical Strategy

To predict the initiation of watching SEIM one year later, a set of three logistic regression analyses was performed. A first logistic regression analysis tested hypotheses 1 to 6. The baseline measures of the hypothesized antecedents were entered as predictors. A second logistic regression analysis tested the first research question concerning the moderating influence of age. This analysis was similar to the first analysis, but also included interaction effects between age and all other antecedents. In line with prior research (Dalley & Buumk, 2009; Dawson, 2014), continuous predictors were centered before including the resulting interaction terms in the regression model. A third logistic regression analysis tested our second research question concerning the moderating influence of gender. This analysis included centered versions of continuous predictors. Interaction effects between gender and the other (centered/dichotomous) predictors were also included.

To interpret significant interaction effect, simple regression slopes were calculated using Hayes and Matthes' MODPROBE model (2009). When an interaction effect with age emerged, three simple slopes of the antecedent were calculated, i.e., a slope for the centered mean of age (i.e., middle adolescents), a slope that was one *SD* above the centered mean of age (i.e., late adolescents) and a slope that was one *SD* under the centered mean (i.e., early adolescents). For an interaction effect with gender, simple slopes of the antecedent were calculated separately for boys and girls. The final results[2] are reported in Table 1.

Results

Preliminary Analyses

A total of 71 (= 17.8%) of the 400 adolescents who, at Time 1, had never been exposed to SEIM reported to have watched SEIM one year later. More precisely, 32 adolescents had watched SEIM for the first time at Time 2. At Time 3, another group of 39 adolescents had started watching SEIM. The zero-order correlations between antecedents at Time 1 and starting to watch SEIM between Time 1 and Time 3 initially suggested that being

male (r = -.15, p < .001), exposure to sexy online self-presentations of others (r = .10, p < .05), sensation seeking (r = .17, p < .001), and hyper gender identity (r = .15, p < .05) predicted starting to watch SEIM one year later.

Antecedents of Watching Sexually Explicit Internet Material

Hypothesis 1 posited that gender, age and sexual orientation would predict starting to watch SEIM. In line with this prediction, the first logistic regression analysis showed that boys were 2.79 (CI: 1.53-5.09) times more likely to initiate watching SEIM than girls. However, no support was found for age or sexual orientation as predictors. Moreover, the moderation analyses revealed no interaction effects between gender and age, gender and sexual orientation, as well age and sexual orientation.

Hypothesis 2 posited that a negative academic self-concept would predict starting to watch SEIM and was not supported as Table 2 shows. No interaction effects were found.

Hypothesis 3 predicted that frequent viewers of sexual reality TV content and users of SNS who have frequently been exposed to sexy self-presentations of others would be more likely to have initiated watching SEIM. This hypothesis was partly supported. Viewers of sexual reality TV were not more likely to start watching SEIM, even when considering potential moderation effects of gender or age. However, a one-unit increase in one's levels of exposure to online sexy self-presentations of others multiplied the odds of being classified in the SEIM exposure group by 1.25 (CI: 1.01-1.55). No interaction effect was found for age, but an interaction effect occurred for gender with an odds ratio of 1.74 (CI: 1.06-2.88). The probing of this interaction effect showed that boys with more exposure to online sexy self-presentation of others were more likely to initiate consuming SEIM (b = 0.53, p < .01). In contrast, exposure to online sexy self-presentation of others had no influence on the initiation of watching SEIM among girls (b = 0.06, p > .10).

Hypothesis 4 predicted that relationship status would affect the initiation of watching SEIM and was not supported. We also did not find interaction effects with gender or age.

Hypothesis 5 posited that sexual experience would decrease the likelihood to start watching SEIM. While this hypothesis was not supported, we did find an interaction effect with age (0.18; CI: 0.04-0.80). In contrast to hypothesis 5, post-hoc probing showed a significant positive influence of sexual experience in early adolescents ($b = 3.66$, $p = .05$), while the relationship for middle adolescents just failed to reach significance ($b = 2.09$, $p = .06$). For older adolescents, the relationship appeared to be non-significant ($b = 0.51$, $p > .10$). No interaction effect was found between gender and sexual experience.

In hypothesis 6, we expected that a hyper gender identity and sensation seeking would predict starting to watch SEIM. We did not find a main effect of hyper gender identity nor an interaction effect of hyper gender identity and age on starting to watch SEIM. However, we did find an interaction effect between a hyper gender identity and gender with an odds ratio of 0.53 (CI: 0.31-0.92). The post-hoc probing of the interaction effect demonstrated a significant, positive relationship between hyper gender identity and starting to watch SEIM among girls ($b = 0.57$, $p < .005$), but not among boys ($b = -0.03$, $p > .10$).

Although there was a significant zero-order correlation between sensation seeking at Time 1 and selecting SEIM one year later, the regression coefficient in the logistic regression analysis was not significant for sensation seeking. Moreover, no significant interaction effects with age or gender were found.

Discussion

This study showed that, from the adolescents who had *never* been exposed to SEIM at baseline, one in six had intentionally started to watch SEIM one year later. According to the Media Practice Model (Steele & Brown, 1995), particular factors affect the congruency between an adolescent's identity and SEIM and consequently influence whether they start

watching SEIM. With regard to demographic antecedents, gender played a prominent role: Boys were more likely to start watching SEIM than girls. This finding is consistent with various previous studies on adolescents' use of SEIM (e.g., Wolak et al., 2007; Peter & Valkenburg, 2006, 2011) and supports the Media Practice Model (Steele & Brown, 1995). This finding also dovetails with qualitative research that suggests that boys experience SEIM as more congruent with their identity (Cameron et al., 2005).

Neither age nor sexual orientation predicted the initiation of watching SEIM. The finding for age was unexpected, but merges with other Dutch longitudinal studies reporting that age did not explain adolescents' frequency of using SEIM (e.g., Peter & Valkenburg, 2006, 2011). Other developmental factors, such as pubertal status, seem to have more explanatory power to describe at least European adolescents' debut of accessing SEIM (Beyens et al, 2015; Skoog, Stattin, & Kerr, 2009). The null result for sexual orientation may be explained by the relatively low number of adolescents with a gay, lesbian or homosexual orientation in our study. Prior research in the Netherlands by Peter and Valkenburg (2011) showed sexual orientation was associated with a more frequent use of SEIM. Therefore, future researchers should still consider this factor.

In contrast to our expectations, academic self-concept did not predict the initiation of watching SEIM. Roe (1995) suggested that the preference of individuals with a low academic self-concept for media behavior that is culturally disapproved is part of their identification with a particular subculture. Potentially, involvement in such subcultures may be a more valid predictor of whether adolescents start watching SEIM than merely the concept of adolescents' academic self-concept.

Our study is one of the first to demonstrate the important role of social media use in adolescents' use of SEIM. Male adolescents who had frequently been exposed to the online sexy self-presentations of others were more likely to start watching SEIM than male

adolescents who had been less exposed to such online content. SNS are typically used for social purposes, such as communicating with peers (Barker, 2009). However, our study suggests that, at least for boys, SNS may have implications that, to date, have hardly been considered in academic and public discussions. Sexy images on SNS serve for some peers as a tool to promote sexual norms (Ringrose, 2010). Our study shows that these sexy images also stimulate other male SNS users to access more sexually explicit material. Social media may thus function as a gateway to SEIM use among male SNS users. In this context, future research should examine whether exposure to the online sexy self-presentation of others also stimulates adolescents' interest in other sexually explicit online activities, such as involvement in cybersex and visiting erotic contact websites. Such research may focus on middle adolescents as research in the Netherlands suggests that adolescents' online sexual risk behavior particularly peaks between the ages 15 to 16 (Baumgartner, Sumter, Peter, & Valkenburg, 2012).

Our finding that exposure to the sexy self-presentation of others influenced SEIM initiation only among boys may result from the fact that girls are more likely to post sexy images than are boys (Kapidzic & Herring, 2014). Social media users are thus more often exposed to sexy images of female peers, which may particularly trigger sexual curiosity among (heterosexual) boys. However, more research on social media users' responses to male and female sexy images on SNS is necessary to test this explanation.

In contrast to prior findings on the use of various types of sexual media content and SEIM (e.g., Peter & Valkenburg, 2006), watching the reality TV shows Jersey Shore and Geordie Shore was unrelated to adolescents' initiation of watching SEIM. Jersey Shore and Geordie Shore were selected because of their popularity among adolescents and high level of sexual messages (Bond & Drogos, 2014). However, adolescents may prefer watching other reality programs that are also sexually oriented but were not broadcast during the time of our

investigation. Therefore, additional research is needed to further explore the relationship between watching sexual reality TV and adolescents' debut of watching SEIM.

In contrast to research on married couples (Albright, 2012), relationship status did not influence adolescents' use of SEIM. Potentially, involvement in a relationship may have a different meaning among adult couples than among adolescent couples, who are in the middle of exploring their sexuality. Moreover, research has demonstrated substantial inter-individual differences in adolescents' assessment of the quality, duration, and content of their romantic relationships (Furman & Collins, 2007). Potentially, more consistent results with research among adults can be obtained when including the latter factors in future research.

In contrast to our expectations, younger adolescents with sexual experience were more likely to start watching SEIM than were younger adolescents who were sexually inexperienced. Among older adolescents, however, sexual experience was not related to the initiation of watching SEIM, which merges with research among young adults (Hald, 2006). Potentially, sexual experience among younger adolescents is part of a more sexual lifestyle and identity (e.g., Buzwell & Rosenthal, 1996). Generally, sexually experienced adolescents have a more favorable attitude toward sexual matters (Meier, 2003). Experience with sexual intercourse, in turn, is rather uncommon among Europeans before the age of 15 (Avery & Lazdane, 2008). Being young and sexually experienced may thus indicate a particular interest in sexual activities, which also manifests itself in the initiation of watching SEIM.

Hyper feminine girls were more likely to initiate watching SEIM while hyper masculinity played no role in boys' debut of watching SEIM. Our finding for girls merges with a recent study that showed that hyper feminine women were more tolerant toward SEIM than were non-hyper feminine women (van Oosten et al., 2014). SEIM frequently portrays gender stereotypical content (e.g., Klaassen & Peter, 2015), which is congruent with the identity of hyper gender women, but not with the sexual attitudes of non-hyper gender

women (Hamburger et al., 1996). In contrast, males generally hold more gender stereotypical attitudes and typically show less resistance towards the content portrayed in SEIM (Cameron et al., 2001). Consequently, a hyper gender identity may be less relevant to explain whether boys start accessing SEIM. These differential findings for hyper gender identity among boys and girls suggest that future research on SEIM should consider both between-gender differences (i.e., boys versus girls) and within-gender differences (i.e., hyper gender identity).

In contrast to several prior studies on the prevalence of adolescents' SEIM use (Beyens et al., 2015; Peter & Valkenburg, 2006, 2011), sensation seeking did not affect starting to watch SEIM. Possibly, watching SEIM has become such a common, normative activity among adolescents that it hardly presents something adventurous or thrilling. (Lofgren-Martenson & Mansson, 2010; Mattebo et al., 2014). In fact more than 70% of the adolescents in our sample had already consumed SEIM at baseline, which suggests that it is by now a normative part of adolescent development. While SEIM may thus no longer be attractive for adolescent sensation seekers in particular, it may still be exciting, thrilling content for 10-12-year old sensation seekers, among whom SEIM consumption is rather rare (Ybarra & Mitchell, 2005). Research sampling pre-teens may therefore further study this issue. Moreover, the idea that the use of SEIM is rather normative among adolescents may also (party) explain the other null results that we found for age, sexual orientation, academic self-concept, watching sexual reality TV content, and relationship status. Future research is needed to examine this idea more systematically.

The findings of our study should be interpreted within the cultural context of our study. Overall, the Dutch society can be described as liberal in sexual matters (Schalet, 2000; Ševčíková et al., 2014). Within this liberal culture, sex is discussed within an open, non-judgmental context (Schalet, 2000). While the age of the initiation of sexual intercourse among Dutch adolescents (16.5 years) is similar to the European average age (16.4 years)

(Avery & Lazdane, 2008), the intentional use of SEIM is somewhat higher in the Netherlands (22%) than in other European countries (14%; Sonck, 2012). As noted above, several null findings may be explained by the consideration of SEIM as rather normative among Dutch adolescents. This may not be true for adolescents from other, less liberal countries. Future research therefore needs to examine the antecedents of the initiation of SEIM exposure in a cross-nationally comparative fashion.

Limitations

The current study has at least four limitations. First, the attrition between waves was in total 31%, which may limit the generalizability of the results. Second, we only assessed two reality TV programs and cannot preclude that findings may look differently when other reality TV programs are included. Third, although we selected our antecedents in line with the Media Practice Model, several factors that may predict one's first intentional use of SEIM may not have been included, for instance, parental involvement (Ybarra & Mitchell, 2005), the importance of body ideals (Mattebo, Larsson, Tydén, & Häggström-Nordin, 2013), older siblings (Arrington-Sanders et al., 2015), and life satisfaction (Peter & Valkenburg, 2006, 2011). Fourth, we expected that adolescents who never used SNS were never exposed to sexy images of others on SNS. Although our MANOVA analysis supported this reasoning (see footnote 1), different results for the logistic regression analyses emerged when excluding participants who never used SNS (see footnote 2). Future research may examine whether this difference is due to unexplored background differences between adolescents who use SNS and adolescents who never use SNS.

Conclusion

This empirical study substantiates the Media Practice Model (Brown & Steele, 1999), which posits that adolescents' identity predicts their use of sexual media content. Moreover, by focusing on the initiation rather than the frequency of SEIM use, this study expands the

literature on SEIM and adolescents. Gender, exposure to the sexy self-presentations of others (for boys), a hyper gender identity (for girls) and sexual experience (for younger adolescents) were important antecedents. In contrast to prior literature on the frequency of using SEIM (e.g., Peter & Valkenburg, 2006, 2011), age, sexual orientation, and sensation seeking did not predict starting to watch SEIM. The antecedents of adolescents' first intentional use of SEIM and of adolescents' frequency of using SEIM may thus overlap only partly.

Several studies have suggested that adolescents' first experience with SEIM is memorable and triggers strong emotional and physical responses in adolescents (e.g., Cameron et al., 20015; Cantor et al., 2003; Lofgren-Martenson & Mansson, 2010). Our findings highlight characteristics that may help practitioners and parents to understand which adolescents are particularly likely to initiate SEIM use and may help to socialize adolescents toward a healthy sexuality.

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Footnotes

[1] A MANOVA analysis showed no significant differences existed between the participants who never used social media *(n* = 50) and those who used social media but were never exposed to sexy online self-presentations of others (*n* = 123) regarding age, gender, sexual orientation, academic self-concept, watching sexual reality TV content, exposure to sexy online self-presentation of others, relationship status, sexual experience, sensation seeking, hyper gender orientation, and initiation of SEIM, $V = .10$, $F(10, 162) = 1.71$, $p = .08$, $\eta p^2 = .10$.

[2]All the logistic regression analyses were also conducted with a sample that excluced participants who never used SNS at baseline ($N = 350$). The first analysis, $\chi^2 (10) = 29.58$, $p < .005$, revealed similar results and found that exposure to sexy online self-presentations of others predicted the initiation of watching SEIM with an odds ratio of 1.37 (CI: 1.09 -1.72). No other significant results were found. The second logistic regression analysis, $\chi^2 (19) = 46.23$, $p < .001$, showed an interaction effect between age and sexual experience, 0.14 (CI: 0.03- 0.67). Sexual experience marginally significantly affected the start of watching SEIM among early adolescents, $p = .06$, and middle adolescents, $p = .07$. No significant effect was found among older adolescents. Also, an interaction effect between age and academic self-concept emerged, 0.78 (CI: 0.61 - 0.99). The probing of this effect showed that early adolescents with a lower academic self-concept had a marginally significant higher chance to start watching SEIM, $p = .07$. No other significant results were found. The third logistic regression analysis, $\chi^2 (19) = 50.30$, $p < .001$, revealed an interaction effect between gender and hyper gender identity, 0.54 (CI: 0.29-0.99). According to the probing of this effect, a hyper gender identity only significantly supported girls' debut of accessing SEIM, $p < .01$. No other significant interaction effects emerged. The full description of the additional results can be obtained by sending an email to the corresponding author.

Table 1.

Logistic Regression Analyses to Predict The Initiation of Watching SEIM one Year Later among Non-Users at baseline (N = 400)

Initiation of watching SEIM	Model 1					Model 2					Model 3				
	B	*SE*	*OR*	*95% CI*		*B*	*SE*	*OR*	*95%CI*		*B*	*SE*	*OR*	*95% CI*	
Gender T1 (ref girls)	1.03***	.31	2.79	1.53	5.09										
Age T1	.01	.11	1.01	.82	1.26										
Sexual orientation T1 (ref not exclusively heterosexual)	-.03	.66	.97	.27	3.55										
Academic Self-Concept T1	.18	.14	1.20	.91	1.59										
Sexual reality television T1	-.13	.14	.88	.67	1.16										
Sexy online self-presentation others T1	.22*	.11	1.25	1.01	1.55										
Relationship status T1 (ref involved in a relationship)	-.09	.48	.91	.36	2.33										
Sexual experience T1	.51	.72	1.66	.41	6.74										
Sensation seeking T1	.21	.12	1.24	.98	1.56										
Hyper gender identity T1	.24	.13	1.28	.99	1.65										
Gender T1 X Age T1						-.19	.24	.83	.52	1.33	-.33	.23	.72	.45	1.13
Moderator X Sexual orientation T1						-.49	.50	.61	.23	1.62	.13	1.43	1.14	.07	18.85
Moderator X Academic Self-concept T1						-.17	.11	.85	.68	1.05	.08	.29	1.09	.61	1.93
Moderator X Sexual reality television T1						.20	.12	1.23	.97	1.55	.63	.37	1.88	.91	3.87
Moderator X Sexy online self-presentation of others T1						-.13	.09	.88	.74	1.04	.56*	.26	1.74	1.06	2.88
Moderator X Relationship status T1						-.11	.38	.90	.43	1.89	-1.20	1.01	.30	.04	2.19
Moderator X Sexual experience T1						-1.74*	.78	.18	.04	.80	.88	1.65	2.42	.09	61.54
Moderator X Sensation seeking T1						.05	.09	1.05	.87	1.26	-.29	.25	.75	.46	1.23
Moderator X Hyper gender identity T1						.02	.10	1.02	.84	1.24	-.63*	.28	.53	.31	.92
Model constant	-4.69	1.34	.01			-1.65	.89	.19			-2.36	1.04	.09		

Note. Model 1 χ^2 (10) = 30.33, p < .005; Model 2 χ^2 (19) = 43.80, p < .001; Model 3 χ^2 (19) = 52.33, p < .001; *** p < .001; * p <.01.

Moderator in Model 2 is age, moderator in Model 3 is gender.