

ORIGINAL ARTICLE

Adolescents' Exposure to Sexually Explicit Internet Material and Sexual Satisfaction: A Longitudinal Study

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The aim of this study was to investigate, within a social comparison framework, the causal relationship between adolescents' use of sexually explicit Internet material (SEIM) and their sexual satisfaction. In addition, we tested which adolescents were most susceptible to a potential influence of SEIM on sexual satisfaction. Between May 2006 and May 2007, we conducted a three-wave panel survey among 1,052 Dutch adolescents aged 13–20. Structural equation modeling revealed that exposure to SEIM consistently reduced adolescents' sexual satisfaction. Lower sexual satisfaction (in Wave 2) also increased the use of SEIM (in Wave 3). Moderator analyses showed that the negative effect of SEIM on sexual satisfaction was stronger for adolescents who had no or limited sexual experience as well as for adolescents who perceived the majority of their peers to be sexually inexperienced. The effect of exposure to SEIM on sexual satisfaction did not differ among male and female adolescents.

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The past years have witnessed an increasing interest in the implications of adolescents' exposure to sexually explicit Internet material (SEIM). Robust evidence from various continents has emerged that many adolescents get in contact with SEIM (Flood, 2007; Lo & Wei, 2005; Peter & Valkenburg, 2006a; Wolak, Mitchell, & Finkelhor, 2007). For example, Wolak et al. (2007) have found that 42% of U.S. adolescents aged 10 to 17 were exposed to online pornography over the course of 1 year. Similarly, Lo and Wei (2005) have reported that 38% of Taiwanese adolescents visited pornographic websites in the 2 years before the study. Besides these studies on adolescents' exposure to SEIM, several investigations have shown that a more frequent exposure to SEIM is associated with more permissive sexual

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attitudes, greater sexual preoccupancy, and stronger beliefs that women are sex objects (Lo & Wei, 2005; Peter & Valkenburg, 2006b, 2007, 2008a, 2008b). Interestingly, however, no study to date has dealt with the question of whether adolescents' use of SEIM influences their sexual satisfaction. This lack of research is striking because content analyses have suggested that sexually explicit material tends to depict exaggerated portrayals of sexual activities and performances (e.g., Brosius, Weaver, & Staab, 1993; Ertel, 1990; Jensen & Dines, 1998). At the same time, scholars have argued that adolescents may lack the sexual experience necessary to put the sexual reality in sexually explicit material into perspective (e.g., Strasburger & Donnerstein, 1999; Thornburgh & Lin, 2002). Consequently, adolescents may feel that their sexual lives cannot keep up with the sexual reality depicted in SEIM and, as a result, may feel less sexually satisfied.

The main goal of this study is to initially fill this research gap. Within a social comparison framework (e.g., Buunk & Gibbons, 2007; Festinger, 1954; Suls, Martin, & Wheeler, 2002), we will study to what extent adolescents' exposure to SEIM impacts their sexual satisfaction. Additionally, we will investigate whether this potential impact depends on adolescents' sexual experience, perceived peer norms, and gender. Adolescents' sexual satisfaction refers to the extent to which they are content with their sexual lives. Adolescents' sexual lives may, but do not have to, include coital experiences. As several scholars have emphasized, the dominant discourse of adolescent sexuality defines adolescents' sexual lives narrowly in terms of adult sexuality and focuses too much on coitus (Brown, Steele, & Walsh-Childers, 2002; Ward, 2003). However, other sexual experiences, including masturbation and petting, as well as the absence thereof, may also constitute adolescents' sexual lives and their satisfaction with it.

By SEIM we mean (audio)visual material on or from the Internet that depicts sexual activities in unconcealed ways, which includes the overt depiction of (aroused) genitals and oral, anal, and vaginal penetration. We do not imply that adolescents' exposure to SEIM is inherently bad, nor do we suggest that adolescents who use SEIM are morally wrong. Sexual curiosity is typical of adolescence (Savin-Williams & Diamond, 2004), and adolescents grow up in a sexual media environment in which sexually explicit material is easily accessible (e.g., Brown et al., 2006; Peter & Valkenburg, 2007). Against this backdrop, researchers from various disciplines have called for research to understand the role of adolescents' use of SEIM in their sexual socialization (e.g., Brown et al., 2006; Thornburgh & Lin, 2002; Wolak et al., 2007), and we respond to this call.

Effects of exposure to SEIM on sexual satisfaction

To date, only a few studies have investigated to what extent the use of sexual media content affects sexual satisfaction. The existing studies, all conducted among adults, suggest that sexual media content reduces various dimensions of sexual satisfaction.

For example, Kenrick, Gutierrez, and Goldberg (1989) have shown that men who were exposed to *Playboy*-type centerfolds found their partners less sexually attractive and rated themselves as less in love with them than did men who were exposed to abstract art. Similarly, Weaver, Masland, and Zillmann (1984) have reported that men who had watched a sexually explicit video featuring beautiful women were less satisfied with their (female) partners' bodies than men who had watched a nature film. Interestingly, exposure to the sexually explicit video did not reduce men's sexual satisfaction with their (female) partner. However, in a more elaborate study, in which subjects were exposed to sexually explicit videos in hourly sessions over the course of 6 weeks, Zillmann and Bryant (1988) have found that such exposure decreased subjects' sexual satisfaction with their partner. Subjects who had watched the sexually explicit videos were less satisfied with their partners' physical appearance, affection, sexual curiosity, and sexual performance than were subjects in the control group.

Social comparison theory (e.g., Buunk & Gibbons, 2007; Festinger, 1954; Suls et al., 2002) provides an appealing theoretical framework to study the effects of sexual media content on people's sexual satisfaction. Social comparison refers to "any process in which individuals relate their own characteristics to those of others" (Buunk & Gibbons, 2007, p. 16). Social comparison theory posits that people compare themselves with others to evaluate or enhance particular attributes of their selves (e.g., Suls et al., 2002). Because social comparisons thus inform people where they stand relative to others concerning particular attributes of evaluation, social comparisons may elicit profound emotional reactions (for a review, see Smith, 2000). One of these emotional reactions may be the satisfaction or dissatisfaction with the particular attribute of evaluation (e.g., Botta, 1999; Jones, 2001; Richins, 1991).

To apply social comparison theory to the potential effects of sexual media content on sexual satisfaction, two more specific features of social comparison theory are important. First, although social comparisons are often intentional and sought, they may also occur unintentionally and involuntarily, for example, during media use, as several scholars have suggested (Buunk, Taylor, Dakof, Collins, & VanYperen, 1990; Goethals, 1986; Wood, 1989). In accordance with this suggestion, research on adolescents' body image has shown that adolescents compare their body characteristics with body images in magazines and on television (e.g., Botta, 1999; Jones, 2001; Richins, 1991). Second, although social comparisons can be downward, upward, or lateral (Buunk et al., 1990; Suls et al., 2002), the notion of upward comparisons is theoretically more useful when it comes to potentially negative media effects. For example, content analyses have demonstrated that media present glamorized, unrealistic body images (for an overview, see Harrison & Cantor, 1997), which leaves most people no other choice than to make upward comparisons. Generally, when people perceive a large discrepancy between their own and an upward comparison target's standing on an important attribute, dissatisfaction results (Higgins, 1987). As a result of the forced upward comparison with unrealistic body images in the

media, higher levels of body dissatisfaction have accordingly been found, especially among females (for a meta-analysis, see Grabe, Ward, & Hyde, 2008).

The use of social comparison theory to explain the effects of mediated body images on body satisfaction seems a helpful template for predicting effects of SEIM on adolescents' sexual satisfaction. First, in the same way as adolescents compare their bodies to body images in the media (e.g., Botta, 1999; Jones, 2001), they may compare their sexual lives with the sexual reality portrayed in SEIM, at least unintentionally. The studies that reported effects of sexual content on sexual satisfaction point to this social comparison process (Kenrick et al., 1989; Zillmann & Bryant, 1988). Second, as the prevalent media depiction of glamorized bodies leads to upward comparisons, SEIM may provoke adolescents to compare their sexual lives with the sexual reality of SEIM in an upward fashion. Content analyses suggest that sexually explicit content depicts sexual activities that are uncommon in their variety and sexual performances that are unrealistic in their intensity (e.g., Brosius et al., 1993; Ertel, 1990; Jensen & Dines, 1998). Moreover, the content analyses agree that sexually explicit material presents sex as a commodity that is omnipresent and easily available. The literature on adolescent sexuality, however, suggests that this is not how many adolescents experience sex in their lives (e.g., Savin-Williams & Diamond, 2004; Tolman, 2002). Even in a sexually liberal country, such as the Netherlands, where this study was done, the majority of adolescents have limited sexual experiences. Typically, adolescents' sexual experiences are initially confined to masturbation and French kissing and include oral sex and coitus only toward the end of adolescence (Rutgers Nisso Group, 2005). When adolescents are confronted with SEIM's depictions of sex as an omnipresent, easily available commodity, they may thus perceive a large discrepancy between these depictions and their own sexual lives. Because many adolescents consider no or limited sexual experience an unwanted constraint or even a stigma (e.g., Brumberg, 1997; Carpenter, 2001), they may think of their own sexual lives as inferior and may ultimately develop an increasing sexual dissatisfaction. Therefore, our first hypothesis reads:

H1a: As adolescents' exposure to SEIM increases, their sexual satisfaction decreases.

Investigating reciprocal causality

Social comparison theory provides a good reason to assume that adolescents' exposure to SEIM may reduce their sexual satisfaction. However, on the basis of social comparison theory it seems also possible that reduced sexual satisfaction may lead adolescents to use SEIM more often. Research has consistently shown that people low in self-esteem make more upward comparisons than people high in self-esteem (for a review, see Wheeler, 2000). In addition, individuals with low self-esteem tend to be less satisfied with many attributes of themselves and also with their lives in general (for a review, see Diener, Oishi, & Lucas, 2003). These findings merge with results from sex-related research. There is first evidence that adolescents who are less satisfied with their lives (Peter & Valkenburg, 2006a) and who show depressive

symptoms (Wolak et al., 2007) are more likely to use SEIM. Sexual dissatisfaction, in turn, seems to be associated with depressive symptoms and, arguably, also with life satisfaction (e.g., Wiederman & Allgeier, 1993). In sum, if (a) exposure to SEIM instigates upward comparisons; (b) low self-esteem predicts upward comparisons; and (c) low self-esteem can be related to sexual dissatisfaction, then we can expect that adolescents consume SEIM more frequently if they are dissatisfied with their sexual lives. Our hypothesis reads:

H1b: The lower adolescents' sexual satisfaction, the more frequent their exposure to SEIM.

Together, Hypotheses 1a and 1b imply a reciprocal causal relation between exposure to SEIM and sexual satisfaction. In his reinforcing spirals framework, Slater (2007) has recently outlined that the relevance of reciprocal causal relations between media exposure and outcomes lies in its potentially dynamic character. Over time, the relation in which more frequent exposure to SEIM reduces sexual satisfaction and reduced sexual satisfaction in turn increases exposure may form a spiral. Slater, Henry, Swaim, and Anderson (2003) have described such a spiral for the relation between the use of aggressive media content and aggression among adolescents. Our aim is to test whether such a spiral may also emerge for the long-term relation between exposure to SEIM and sexual satisfaction. Our research question reads:

RQ: Does the reciprocal relation between adolescents' exposure to SEIM and sexual satisfaction as hypothesized in H1a and H1b hold over time?

Individual differences: Who is most susceptible to the influence of SEIM?

There is a striking parallel between social comparison theory and media effects research in that both traditions have recently requested a stronger focus on the factors that may moderate the effects of either social comparisons or media content (e.g., Oliver, 2002; Wheeler, 2000). Social comparison scholars have started to study whether the intensity of emotional reactions to social comparisons depends on individual difference variables (e.g., Buunk & Gibbons, 2007; Smith, 2000; Wheeler, 2000). At the same time, media effects researchers have requested that individual difference variables receive, as moderators, greater attention in models of media influence (e.g., Malamuth & Impett, 2001; Oliver, 2002). Interestingly, however, researchers have rarely combined the suggestions of the two traditions to specify, on the basis of social comparison theory, individual difference variables that may moderate media effects. In what follows we try to address this issue, focusing on the effects of SEIM on adolescents' sexual satisfaction.

Early social comparison theory has assumed that upward comparisons necessarily elicit negative emotions (for a review, see Wheeler, 2000). According to this view, the discrepancy between one's own and the comparison target's standing on an attribute automatically leads to feelings of inferiority. More recently, however, research has shown that emotional reactions to upward comparisons may depend

on individual difference variables that determine the extent to which such comparisons lead to feelings of inferiority (for a review, see Smith, 2000). For example, Buunk et al. (1990) found that, after upward comparisons, individuals who were uncertain about their marital relationship tended to be more dissatisfied with their marriage than individuals who were certain about their marriage. Uncertainty about marriage thus moderated the impact of upward comparisons on feelings of inferiority, which showed in dissatisfaction with marriage.

Given our conceptualization of the effect of SEIM on adolescents' sexual satisfaction as an upward comparison, it seems plausible that individual difference variables also affect the impact of SEIM on sexual satisfaction. In line with social comparison theory, we expect that the discrepancy that adolescents may perceive between their own sexual lives and the sexual reality of SEIM, will not equally result in feelings of inferiority and, eventually, sexual dissatisfaction among all adolescents. Rather, the perceived discrepancy between own sexual life and the sexual reality of SEIM may lead to the strongest sexual dissatisfaction among those whose individual characteristics put them in the worst position to counteract feelings of their own sexual lives as inferior. We focus on adolescents' sexual experience, perceived peer norms, and gender.

Sexual experience

The gradual advancement of sexual experiences, ranging from masturbation to coitus, generally constitutes an important part of adolescents' sexual development (e.g., Savin-Williams & Diamond, 2004). Social comparison theory suggests that a potential moderating influence of sexual experience may originate from adolescents' views of lacking sexual experience as undesirable. Several studies have suggested that many adolescents consider no or limited sexual experience an unwanted constraint or stigma (e.g., Brumberg, 1997; Carpenter, 2001). When exposed to SEIM's depictions of sex as an omnipresent, easily available commodity, the notion of lacking sexual experience as a stigma may be stronger among adolescents with no or limited sexual experience. Becoming aware of the discrepancy between their own sexual lives and the sexual reality in SEIM, adolescents with limited or no sexual experience may be especially likely to perceive their own sexual lives as inferior. As a consequence, they will be less satisfied with their sexual lives than adolescents with greater sexual experience. Our hypothesis reads:

H2: The negative effect of exposure to SEIM on adolescents' sexual satisfaction will be stronger among sexually inexperienced adolescents than among sexually experienced adolescents.

Perceived peer norms

Many studies have shown that perceived peer norms (i.e., the perceived proportion of peers who already had sex) affect the sexual intentions and the sexual behavior of an adolescent (for a review, see DiClemente, Salazar, & Crosby, 2007). Generally, adolescents who perceive the majority of their peers to be sexually experienced are

more likely to subsequently become sexually active than are adolescents who perceive only a minority of their peers to have sexual experience. On the basis of social comparison theory, we expect that the upward comparison between adolescents' own sexual lives and the sex portrayed in SEIM may cause feelings of inferiority particularly among those who perceive the majority of their peers as sexually experienced. For these adolescents, the discrepancy between their sexual lives and the sexual reality of SEIM may be even more undesirable than for other adolescents because the perceived sexual experience of their peers may reinforce their feeling that they do not meet a common standard. As a result, adolescents with sexually experienced peers may be less satisfied with their sexual lives when they use SEIM than adolescents with sexually inexperienced peers.

H3: The negative effect of SEIM on sexual satisfaction will be stronger for adolescents who perceive their peers to be sexually experienced than for adolescents who perceive their peers not to be sexually experienced.

Gender

Generally, gender plays an important role in explaining sexuality-related differences (for a meta-analysis, see Oliver & Hyde, 1993). Most notably, sexual experience seems to be a stronger requirement for a masculine identity than for a feminine identity as, for instance, the consistent overreporting of sexual partners by male respondents indicates (e.g., Tourangeau & Smith, 1996). In the context of social comparison theory, this means that the upward comparison between their own sexual lives and the sexual reality depicted in SEIM may be more threatening for male adolescents than for female adolescents. Due to the still existing double standard and its request that males must have sexual experience (for a review, see Crawford & Popp, 2003), male adolescents may react more strongly than female adolescents with feelings of inferiority to SEIM. Consequently, male adolescents may become less satisfied with their sexual lives after using SEIM than female adolescents.

H4: The negative effect of SEIM on sexual satisfaction will be stronger among male than among female adolescents.

Method

Sample and procedure

Our study is based on a three-wave panel survey. The first wave was fielded in May and June 2006 among 2,341 Dutch adolescents aged 13 to 20, the second wave was fielded 6 months later, in November and December 2006, and the last wave was fielded in May and June 2007. We included postadolescents because the investigation of the proposed moderator effect of sexual experience may require some variation in the sexual experience variable. Because hardly any research on optimal time lags exists in our specific field, we based our choice of a 6-month time interval between the waves on two pragmatic considerations. First, adolescents seem to be able to

assess their frequency of SEIM use for a 6 month period, as previous research has shown (Peter & Valkenburg, 2006a). Second, in surveys on sex-related issues, adolescents are volatile respondents, which results in high attrition rates (Zimmer-Gembeck & Helfand, 2008). Choosing inappropriately long time lags might have increased the risk of losing too many respondents.

Sampling and fieldwork were done by Qrius, a Dutch research institute specializing in research among adolescents. Respondents were recruited, by means of a quota sample, from an existing online panel managed by Qrius. The members of this online panel had originally been sampled in all parts of the Netherlands. In each wave, they were (re)contacted by e-mail with an invitation to participate in the survey. The sample for our study was quoted for participants' gender and age because, in surveys on sensitive issues, respondents' gender and age seem to affect their willingness to participate and respond (e.g., Ross, Daneback, Mansson, Tikkanen, & Cooper, 2003; Wiederman, 1993). The resulting sample did not deviate from national distributions of age and gender among Dutch adolescents. Prior to the first wave, institutional approval, parental consent for minors' participation, and adolescents' informed consent were obtained. Before all waves, adolescents were notified that the study would be about sexuality and the Internet. In addition, respondents were aware of the fact that they could stop the survey at any time they wished.

Respondents were asked to fill in an online questionnaire. After notification by e-mail, they could freely choose when, within 1 week, they filled in the online questionnaire. Because online surveys or, more generally, computer-mediated surveys do not involve an interviewer, they have proven to be the best mode of interviewing when sensitive issues are studied (e.g., Mustanski, 2001). Problems that are typical of online surveys such as systematically biased samples due to access inequalities may be less troublesome in the Netherlands, especially when adolescents are interviewed. In 2005, more than 95% of Dutch adolescents had home access to the Internet (Duimel & De Haan, 2007).

To improve the confidentiality and privacy of the answering process, we emphasized on the introduction screen of each online questionnaire that the answers would be analyzed only by the principal investigators. Moreover, respondents were asked to complete the questionnaire in privacy. Finally, we explained that there was no possibility for the principal investigators to identify who had filled in the questionnaire. The research bureau only provided us with a number code for each respondent with which we could link the measurements of the three waves. On average, it took respondents 15 minutes to complete the questionnaire, which was largely identical in all three waves.

Between the first and the third wave, 404 (17.3%) of the 2,341 adolescents who had completed the questionnaire in Wave 1 (W1) terminated their membership in the online panel. These respondents were thus no longer eligible for Wave 2 (W2), and/or Wave 3 (W3). For the third wave, we only recontacted those 1,426 respondents who had completed the questionnaire in W2 because we interpreted nonparticipation or an incomplete questionnaire in W2 as respondents' wish to no longer participate in the

study. In the third wave, 1,123 adolescents participated, and 1,052 returned a complete questionnaire, which equals the number of respondents that completed the questionnaires in all three waves. Across all three waves, then, the cooperation rate was 54%, calculated according to the guidelines of the American Association for Public Opinion Research (2006) on the basis of the eligible cases and completed questionnaires in W3. Attrition could not be reduced further although, in both W2 and W3, respondents were reminded three times to participate in the study. In W2 and W3, they were finally also offered an extra bonus of 10 Euros for participation, in addition to the 2.50 Euros that they received for filling in each questionnaire and the final bonus of 5 Euros that they received for completing all three questionnaires.

Younger adolescents were less likely to participate in all three waves than older adolescents ($M_{part.} = 16.78$, $SD = 2.26$, $M_{non-part.} = 16.18$, $SD = 2.28$), $F(1, 1935) = 33.17$, $p < .001$, $\eta^2 = .017$. Boys (49%) participated less often than girls (60%) in all three waves, $\chi^2(1, N = 1937) = 13.85$, $p < .001$, $\Phi = .11$. Further analyses revealed that participants differed from nonparticipants in that they tended to be older at their first sexual experiences. This difference may be related to the age and gender differences between participants and nonparticipants. When we controlled for gender and age, the differences between participants and nonparticipants in terms of their age at first sexual experiences indeed vanished.

In sum, nonparticipation caused little unexplainable systematic differences in the data. The gender and age differences in participation merge with other sex-related research and point to a more general problem in this type of research (e.g., Ross et al., 2003; Wiederman, 1993). Most importantly, with respect to our independent and dependent variables, respondents who participated in all waves had the same levels of exposure to SEIM and sexual satisfaction as those who dropped out.

Measures

Exposure to SEIM

For the most part, we followed an operationalization used by Peter and Valkenburg (2006a), which has been shown to be valid and reliable. Respondents were asked to indicate how often, in the 6 months prior to the interview, they had intentionally looked at (a) pictures with clearly exposed genitals; (b) movies with clearly exposed genitals; (c) pictures in which people are having sex; (d) movies in which people are having sex. We emphasized in this operationalization the intentionality of exposure to SEIM to distinguish this type of exposure from random contact with SEIM, for example through pop-up windows or spam e-mail. Adolescents were informed that the question was about sexually explicit, pornographic content on or from the Internet. They were also told that looking at such content did not imply being online, but could also refer to sexually explicit material downloaded from the Internet. Further, adolescents were explained that genitals referred to the penis and the vagina and that "having sex" implied vaginal, anal, or oral penetration. The response categories were 1 (*never*), 2 (*less than once a month*), 3 (*1–3 times a month*), 4 (*once*

a week), 5 (*several times a week*), 6 (*every day*), and 7 (*several times a day*). In all three waves, the items formed a unidimensional scale (explained variance 88% in W1, 89% in W2 and W3). Cronbach's alpha was .95 in all three waves. For information about the means and standard deviations, see Table 1.

Sexual satisfaction

We operationalized this construct with two items, which both started with: "In the past 6 months ..." The items were: (1) "I have been satisfied with my sexual life" and (2) "I have felt happy with my sexual life." The response scale ranged from 1 (*does not apply at all*) to 5 (*applies completely*). Pretests showed that the items could be answered without any problems and meaningfully by adolescents of different ages. The items correlated $r = .88$, $p < .001$ in W1, $r = .90$, $p < .001$ in W2, and $r = .92$, $p < .001$ in W3. For information about the means and standard deviations, see Table 1.

Because our measure of sexual satisfaction is new, we tested its convergent and discriminant validity. Earlier research on the related measure of sexual depression suggests that people with a higher sexual satisfaction are also more generally satisfied with their lives and have weaker instrumental attitudes toward sex (Snell, Fisher, & Schuh, 1992). Conversely, on the basis of existing research there are neither empirical nor theoretical reasons to assume that sexual satisfaction is related to sensation seeking.

We measured adolescents' general life satisfaction with the 5-item satisfaction-with-life scale (Diener, Emmons, Larsen, & Griffin, 1985), $M_{W1} = 3.36$, $SD_{W1} = .80$, Cronbach's $\alpha_{W1} = .87$. For the operationalization of instrumental attitudes toward sex, we selected the four items with the highest factor loadings from Hendrick and Hendrick's (1987) instrumentality scale, $M_{W1} = 2.44$, $SD_{W1} = .80$,

Table 1 Correlations Between the Variables in the Models, Their Means, and Standard Deviations

$N = 1,052$	1	2	3	4	5	6	7	8	9	10
1. Exposure SEIM (W1)	1.00									
2. Exposure SEIM (W2)	.68	1.00								
3. Exposure SEIM (W3)	.65	.72	1.00							
4. Sexual satisfaction (W1)	-.06	-.07	-.13	1.00						
5. Sexual satisfaction (W2)	-.12	-.10	-.15	.46	1.00					
6. Sexual satisfaction (W3)	-.12	-.14	-.13	.40	.46	1.00				
7. Sexual experience (W1)	.10	.05	-.01	.43	.30	.28	1.00			
8. Sexual experience (W2)	.11	.08	.03	.38	.33	.30	.86	1.00		
9. Perceived peer norms (W1)	.07	.02	-.03	.23	.16	.17	.60	.57	1.00	
10. Perceived peer norms (W2)	.05	.03	-.02	.20	.17	.17	.57	.58	.72	1.00
Female	-.47	-.51	-.55	.12	.14	.15	.09	.09	.14	.12
Mean	2.01	2.05	2.08	3.02	3.09	3.17	1.45	1.50	1.95	2.10
Standard deviation	1.38	1.45	1.45	1.26	1.23	1.21	0.36	0.35	0.91	0.90

Note: Coefficients $\geq |.06|$ are significant at least at $p < .05$ (two-tailed). SEIM = sexually explicit Internet material, (W 1/2/3) = Wave 1/2/3.

Cronbach's $\alpha_{W1} = .78$. Sensation seeking was measured with the Brief Sensation Seeking Scale (Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002). However, we had to remove the two experience-seeking items and the restless-when-at-home item from the scale because they loaded on a separate factor in an exploratory factor analysis. The remaining items formed a unidimensional scale, $M_{W1} = 3.31$, $SD_{W1} = .79$, Cronbach's $\alpha_{W1} = .83$. The response categories of all three constructs ranged from 1 (*completely disagree*) to 5 (*completely agree*). The means, standard deviations, and alphas of the three scales were comparable across the three waves.

As expected, adolescents' sexual satisfaction was positively correlated with general life satisfaction, with an average correlation of $r = .18$, $p < .001$ across the three waves. Sexual satisfaction, in contrast, was negatively correlated with instrumental attitudes toward sex. The average correlation across the three waves was $r = -.09$, $p < .01$. Finally, as expected, we did not find a significant correlation between sexual satisfaction and sensation seeking (average $r = -.04$, *n.s.* across the three waves). In sum, the convergent and discriminant validity of sexual satisfaction were satisfactory.

Sexual experience

We operationalized sexual experience with seven sexual behaviors, including French kissing, intimate touching, mutual masturbation, fellatio, cunnilingus, anal sex, and vaginal sex. We explained the behaviors when necessary. Respondents were asked to indicate whether they had ever performed one or more of the sexual behaviors. Response categories were 1 (*no*) and 2 (*yes*). The seven behaviors formed a unidimensional scales (explained variance 61% in W1 and 60% in W2 and W3). Cronbach's α was .89 in all three waves. For information about the means and standard deviations, see Table 1.

Perceived peer norms

We asked adolescents whether they thought that the majority of their peers had already had sexual intercourse. Response categories were 1 (*the majority of my peers has not had sexual intercourse*), 2 (*there are about as many of my peers who have had sexual intercourse as there are peers who have not had sexual intercourse*), and 3 (*the majority of my peers has had sexual intercourse*). For information about the means and standard deviations, see Table 1.

Gender

Male adolescents were coded 0, female adolescents were coded 1.

Data analysis

We tested our model with structural equation modeling. Two item parcels (i.e., the averaged item scores of two or more items) served as manifest indicators for the latent construct of exposure to SEIM. These item parcels were created using a procedure suggested by Russell, Kahn, Spoth, and Altmaier (1998). First, we factor

analyzed the items meant to measure each variable. Based on the sizes of the factor loadings, we then alternately assigned each item to the first or second item parcel. For exposure to SEIM, this meant that items ranked 1 and 3 on the factor formed the first item parcel, and items ranked 2 and 4 on the factor formed the second item parcel. Generally, item parceling leads to more parsimonious models; reduces the chances for double loadings to occur; and diminishes the impact of the various sources of sampling error (e.g., Little, Cunningham, Shahar, & Widaman, 2002). However, item parceling should only be used if relations among the latent constructs, and not among the items, are studied (Little et al., 2002) and if the underlying construct is unidimensional (Bandalos & Finney, 2001; Little et al., 2002). These conditions were met.

Variables in sex research are typically skewed. Shapiro-Wilk tests showed that also the variables in this study were not normally distributed. As a result, the assumption of multivariate normality was also not met. Scholars have suggested the bootstrap method to alleviate statistical problems that may result from the violation of these assumptions (Efron & Tibshirani, 1993). Therefore, we tested the statistical significance of all analyses reported below not only with traditional parametric tests, but also with the bootstrap method. We estimated a 90% bias-corrected confidence interval for all values of interest (1,000 bootstrap samples, 1,052 each). None of the results below changed in its statistical significance when it was assessed with the bootstrap method.

Results

Causal relations between exposure to SEIM and sexual satisfaction

Hypothesis 1a stated that adolescents' sexual satisfaction would decrease if their exposure to SEIM increased. Hypothesis 1b predicted that as adolescents' sexual satisfaction decreased, their exposure to SEIM would increase. The research question asked whether the pattern as hypothesized in H1a and H1b would be robust over time. The zero-order correlations in Table 1 were consistent with the predictions of H1a and H1b and also suggested that the hypothesized pattern was robust over time. To investigate H1a and H1b and the research question rigorously, we tested the structural equation model in Figure 1.

The fit of our model in Figure 1 was acceptable, $\chi^2 (37, N = 1,052) = 204.64$, $p < .001$, CFI = .988, RMSEA = .066 (90% confidence interval [CI]: .057 to .075). In line with H1a, more frequent exposure to SEIM decreased adolescents' sexual satisfaction, both in the interval between W1 and W2, $\beta = -.10$, $B = -.090$, $SE = .026$, $p < .001$, and in the interval between W2 and W3, $\beta = -.10$, $B = -.076$, $SE = .022$, $p < .001$. As predicted in H1b, lower sexual satisfaction led to more frequent use of SEIM, but this influence was significant only in the interval between W2 and W3, $\beta = -.08$, $B = -.100$, $SE = .025$, $p < .001$. In the interval between W1 and W2, sexual satisfaction failed to significantly affect exposure to SEIM, $\beta = -.04$, $B = -.044$, $SE = .027$, *ns*. In conclusion, H1a was supported. We found partial support for H1b.

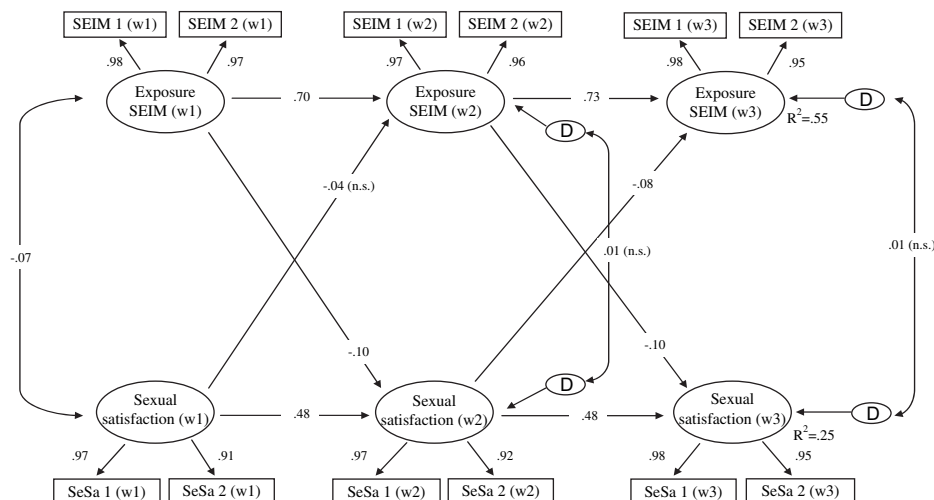


Figure 1 Influence of adolescents' exposure to SEIM on their sexual satisfaction.

Note: SEIM = sexually explicit Internet material. SeSa = sexual satisfaction. (w 1/2/3) = Wave 1/2/3. D = disturbance term. The coefficients represent standardized betas, correlations, or factor loadings. All coefficients are significant at least at $p < .05$ (two-tailed) unless indicated otherwise. The ovals represent latent constructs. The rectangles represent, for exposure to SEIM, the two manifest item parcels and, for sexual satisfaction, the two manifest items. In line with recommendations by Cole and Maxwell (2003), we allowed error terms of the same item (parcel) to covary over time. For clarity reasons, however, error variances, their impact on the manifest indicators, and the covariances between error terms are not shown.

In response to the first research question, the results showed that the reciprocal pattern as hypothesized jointly in H1a and H1b was not robust over time.

Who is most susceptible to the influence of SEIM?

The previous results have shown that exposure to SEIM exerts a consistent negative impact on sexual satisfaction. However, as outlined, there are good reasons to investigate whether this impact may be moderated by sexual experience, perceived peer norms, and gender. Such an investigation requires, for example, that an interaction effect between the exposure to SEIM and the respective moderator variable (i.e., sexual experience, perceived peer norms, or gender) be included in the model shown in Figure 1. Generally, the modeling of such moderation effects still presents a considerable problem in structural equation modeling, in particular when the two interaction variables are latent variables (for a discussion of the problem, see Cortina, Chen, & Dunlap, 2001). Therefore, we decided to test each hypothesized moderator effect with two different procedures. Only if the two procedures elicited similar results did we accept the finding as (non)support of our hypothesis.

The first procedure that we applied has been developed by Mathieu, Tannenbaum, and Salas (1992). Trying to avoid the problems surrounding the combination of two interacting latent variables, Mathieu et al. have suggested that both the interacting variables (e.g., SEIM and sexual experience) and the interaction term (e.g., $SEIM \times$ sexual experience) be modeled as latent composites. All interacting variables initially need to be centered around their mean to avoid multicollinearity problems between the interacting variables and the interaction term. With the knowledge of the reliabilities of the interacting variables, the loading of the latent variable on its indicator can be set equal to the square root of its reliability. The associated error variance can be computed by multiplying one minus the observed variable's reliability with its variance.¹ After the covariance of the two interacting variables has been assessed in a model *without* the interaction effect, the reliability of the interaction term can be computed. Subsequently, the factor loading and error variance of the interaction term can be computed and, eventually, be fixed in the model that includes the interaction effect (for more information and formulas, see Cortina et al., 2001; Mathieu et al., 1992). The procedure by Mathieu et al. produces estimates of the interaction effect that are comparable to more complex approaches to the modeling of interaction effects, but can be implemented more easily (Cortina et al., 2001).

The second procedure that we applied to test the hypothesized moderator effects differed depending on whether the moderator was measured with multiple items (i.e., sexual experience) or with one item (i.e., perceived peer norms and gender). For sexual experience as a moderator, we used a procedure recently developed by Coenders, Batista-Foguet, and Saris (2008). The authors have shown that nonoverlapping pairs of indicators of the latent interaction term² (with or without a single nonlinear constraint) produce less biased and more robust results than more complex approaches with multiple nonlinear constraints. For the moderators perceived peer norms and gender, we conducted multiple-group analyses. Multiple-group analyses are appropriate for testing interaction effects in structural equation models when the moderator can be grouped into meaningful categories without loss of variance (Rigdon, Schumacker, & Wothke, 1998).

Because procedures for testing interaction effects in structural equation models typically assume that the interacting variables are exogenous, we split the model in Figure 1 into the W1-W2 and the W2-W3 interval and tested H2 to H4 separately for the two intervals. For the W1-W2 interval, the interaction effects were formed with exposure to SEIM (W1) and sexual experience (W1) or perceived peer norms (W1) or gender (time invariant). For the interval between W2 and W3, we formed the interaction effect with exposure to SEIM (W2) and sexual experience (W2) or perceived peer norms (W2) or gender (time invariant).

Sexual experience

Hypothesis 2 predicted that the effect of exposure to SEIM on adolescents' sexual satisfaction would diminish with increasing levels of sexual experience. We first tested H2 with the Mathieu et al. (1992) procedure. For the W1-W2 interval, the fit of the

model was good, $\chi^2 (18, N = 1,052) = 30.88, p < .05$, CFI = .998, RMSEA = .026 (90% CI: .008 – .041). Sexual experience (W1) did not moderate the influence of SEIM (W1) on sexual satisfaction (W2), $B = .064, SE = .070, ns$. However, in the W2-W3 interval, sexual experience (W2) did moderate the impact of SEIM (W2) on sexual satisfaction (W3), $B = .143, SE = .067, p < .05$. This also showed in a significant χ^2 change compared to a model in which the impact of the interaction effect was constrained to zero, $\Delta\chi^2 (1, N = 1,052) = 7.55, p < .01$. The fit of the model with the interaction effect was good, $\chi^2 (18, N = 1,052) = 12.39, ns$, CFI = 1.000, RMSEA = .001 (90% CI: .000 – .017).

We subsequently tested the models with the procedure by Coenders *et al.* (2008). This procedure elicited similar results. In the W1-W2 interval, the interaction effect was not significant. For the W2-W3 interval, a significant interaction effect emerged, $B = .153, SE = .077, p < .05$, with a good model fit, $\chi^2 (42, N = 1,052) = 175.10, p < .001$, CFI = .988, RMSEA = .055 (90% CI: .047 – .064).

On the basis of the results of the Mathieu *et al.* (1992) procedure, we posthoc probed the W2-W3 interaction effect at selected values of sexual experience. The *conditional* effect of SEIM on sexual satisfaction at $-1SD$ of sexual experience was negative, $B = -.146, SE = .033, p < .001$; reduced to $B = -.096, SE = .022, p < .001$ at the mean of sexual experience; and was no longer significant at $+1SD$, $B = -.046, SE = .032, ns$. Thus, in the W2-W3 interval, the negative effect of SEIM on sexual satisfaction became weaker as adolescents' level of sexual experience increased and effectively no longer existed for adolescents with great sexual experience. In conclusion, Hypothesis 2 was partly supported.³

Perceived peer norms

Hypothesis 3 stated that the negative effect of SEIM on sexual satisfaction would be stronger for adolescents who perceived their peers to be sexually experienced than for adolescents who perceived their peers not to be sexually experienced. Again, we started with the Mathieu *et al.* (1992) procedure. The fit of the model for the W1-W2 interval was good, $\chi^2 (18, N = 1,052) = 38.88, p < .01$, CFI = .997, RMSEA = .033 (90% CI: .019 – .048). Perceived peer norms did not moderate the influence of SEIM (W1) on sexual satisfaction (W2), $B = -.019, SE = .028, ns$. In the W2-W3 interval, however, perceived peer norms did moderate the impact of SEIM (W2) on sexual satisfaction (W3), $B = .053, SE = .026, p < .05$. Including the interaction effect in the model improved the model fit significantly, $\Delta\chi^2 (1, N = 1,052) = 4.19, p < .05$. The fit of the model with the interaction effect was good, $\chi^2 (18, N = 1,052) = 11.18, ns$, CFI = 1.000, RMSEA = .001 (90% CI: .000 – .013).

Next, we tested the interaction effects also with multiple-group analyses. We compared a model in which we constrained the path from SEIM to sexual satisfaction across the groups with a model in which we allowed this path to vary (all other structural weights and the measurement weights were constrained across the groups).⁴ For the W1-W2 interval, the effect of SEIM on sexual satisfaction did not differ among adolescents, as a nonsignificant χ^2 change between the models

indicated, $\Delta\chi^2 (2, N = 1,052) = 0.84, ns$. However, for the W2-W3 interval, a significant χ^2 change occurred between the models, $\Delta\chi^2 (2, N = 1,052) = 9.73, p < .01$. Adolescents with a minority of sexually experienced peers showed higher dissatisfaction with their sexual lives as a result of consuming SEIM than did adolescents with sexually experienced peers.

To specify these findings, we posthoc probed the W2-W3 interaction effect that we had found with the procedure by Mathieu et al. (1992). The conditional effect of SEIM at $-1SD$ of peer norms was negative, $B = -.124, SE = .033, p < .001$; became weaker, but was still significantly negative at the mean of peer norms, $B = -.091, SE = .022, p < .001$; and only lost its significance at $+1SD$ of peer norms, $B = -.043, SE = .032, ns$. Thus, in the W2-W3 interval, the negative effect of exposure to SEIM on sexual satisfaction *diminished* if adolescents perceived their peers to be sexually experienced. H3 was not supported.

Gender

Hypothesis 4 predicted that the influence of SEIM on sexual satisfaction would be stronger for male adolescents than for female adolescents. On the basis of the Mathieu et al. (1992) procedure, neither in the W1-W2 interval nor in the W2-W3 interval did a significant interaction effect emerge. Multiple-group analyses elicited the same results. When we compared a model in which we constrained the path from SEIM to sexual satisfaction across the two groups with a model in which we allowed this path to vary (while constraining all other structural weights and the measurement weights), no significant χ^2 changes occurred. For the W1-W2 interval, the χ^2 change was $\Delta\chi^2 (1, N = 1,052) = 0.30, ns$. For the W2-W3 interval, the χ^2 was $\Delta\chi^2 (1, N = 1,052) = 0.26, ns$. Thus, the effect of exposure to SEIM on sexual satisfaction did not differ between male and female adolescents. H4 was not supported.

It is conceivable that the moderating effect of gender only emerges when adolescents' different levels of sexual experience are taken into account. When using SEIM, male adolescents without sexual experience may be more likely to feel that they do not meet the expectations expressed in the double standard compared to female adolescents without sexual experience. As a result, SEIM may have differential effects on male and female adolescents' sexual satisfaction depending on their sexual experiences. Similarly, the moderating effect of perceived peer norms may further depend on adolescents' sexual experience. If sexually inexperienced adolescents perceive the majority of their peers to be sexually experienced, they may feel more inferior about their sexual lives in comparison to the sexual reality in SEIM, compared to sexually experienced adolescents. As a consequence, the reduced effect of SEIM that we found for adolescents with sexually experienced peers may be somewhat stronger for adolescents with little own sexual experience.

To test whether the results for gender and perceived peer norms depend on adolescents' sexual experience, it is technically necessary to include three-way interactions in the model in Figure 1. The modeling of three-way interaction effects with

metric variables currently poses unresolved statistical problems in structural equation modeling. Therefore, we followed a procedure by Jaccard and Wan (1996) in which the model with the two-way interaction is subjected to a multiple-group analysis with the three-way moderator (i.e., sexual experience) as the grouping variable. To create the grouping variable, we median-split sexual experience into two groups, one consisting of less sexually experienced adolescents and the other consisting of more sexually experienced adolescents. Similar to the procedure for multiple-group analyses described above, we subsequently tested the fit of a model in which the two-way interaction effect was allowed to vary across the two groups against a model in which the two-way interaction effect was constrained to be equal across the two groups. The fits of the unconstrained models were generally acceptable. Constraining the interaction effect to be equal across the two groups did not result in significant chi-square changes, neither for the model with the interaction between SEIM and gender, nor for the interaction between SEIM and perceived peer norms. Thus, adolescents' sexual experience did not bring about a potential sexual experience-based gender difference in the effect of SEIM on sexual satisfaction, nor did it further condition the moderating impact of perceived peer norms.

Discussion

Within a social comparison framework, this study has shown that more frequent exposure to SEIM reduced adolescents' satisfaction with their sexual lives. In one of the two time intervals studied, lower sexual satisfaction also led to more frequent exposure to SEIM. The negative influence of SEIM on sexual satisfaction was equally strong among female and male adolescents. However, among more sexually experienced adolescents this negative effect was weaker than among less sexually experienced adolescents. In addition, adolescents with fewer sexually experienced peers were more susceptible to a negative effect of SEIM on their sexual satisfaction than adolescents with more sexually experienced peers.

Our result that a more frequent exposure to SEIM reduced adolescents' satisfaction with their sexual lives merges with previous research that has demonstrated a similar pattern among adults' responses to sexually explicit videos (Zillmann & Bryant, 1988). In contrast to Zillmann and Bryant's investigation, our study did not focus on sexual satisfaction with one's sex partner, but more generally on satisfaction with one's sexual life, because many adolescents do not have a sex partner (Rutgers Nisso Group, 2005). However, both Zillmann and Bryant's findings and our results are in accordance with social comparison theory (Festinger, 1954; Suls et al., 2002). When confronted with sexually explicit material, people typically make upward comparisons between their own sexual lives (or partners) and the sexual reality portrayed in such material. The perceived discrepancy subsequently leads some people to consider their own sexual lives (or partners) as inferior, which, eventually, results in dissatisfaction with their own sexual lives (or partners). Thus, in line with Zillmann and Bryant's investigation, our study suggests that exposure to sexually

explicit material instigates upward social comparisons that may have undesirable effects on sexual satisfaction.

As predicted by social comparison theory, the negative effect of SEIM on adolescents' sexual satisfaction was not universal, but depended on adolescents' sexual experience and perceived peer norms. Adolescents with no or limited sexual experience were most likely to be dissatisfied with their sexual lives when they used SEIM. Sexually explicit material's depiction of sex as an easily available commodity (e.g., Brosius et al., 1993; Ertel, 1990; Jensen & Dines, 1998) seems to cause feelings of inferiority and, eventually, sexual dissatisfaction, especially among those for whom the discrepancy between these depictions and their sexual lives is the most sizeable. When sexually inexperienced adolescents are confronted with the omnipresence of sex in SEIM, they may be more likely to perceive lacking sexual experience as a constraint and thus become dissatisfied with their sexual lives.

In contrast to our expectations, the negative effect of SEIM on sexual satisfaction was weaker among adolescents with sexually experienced peers than among adolescents with sexually inexperienced peers. Initially, we expected that adolescents would feel that they do not meet a common standard when they use SEIM frequently and perceive the majority of their peers to be sexually experienced. Apparently, however, the perceived sexual experience of peers does not seem to pose a threat to adolescents. This effect also held when we tested adolescents' sexual experience as an additional moderating variable. An alternative explanation, also in line with social comparison theory, may be that the perceived sexual experience of peers gives adolescents cues about the controllability of sexual experiences. Social comparison theory has recently suggested that upward comparisons may elicit less negative or even positive reactions when people consider a comparison attribute controllable (for a review, see Smith, 2000). As a result, when the majority of peers are sexually experienced, adolescents may interpret this as a high probability for themselves to gather sexual experiences. They may thus consider sexual experiences as controllable and, consequently, be less susceptible to negative effects of SEIM.

The negative influence of SEIM on sexual satisfaction did not vary among female and male adolescents. This finding corresponds with Zillmann and Bryant's (1988) study, which also failed to find gender differences in the effect of sexually explicit material on adults' sexual satisfaction. From a social comparison perspective, this suggests that gender does not influence the reactions to upward comparisons elicited by sexually explicit material. However, before we prematurely abandon gender as a potential moderator of upward comparisons with sexually explicit material, future researchers should investigate measures that capture the essence of the gender concept— notions of femininity and masculinity—more adequately. Our study operationalized gender as a dichotomous variable, but it seems more appropriate to think of gender as expressing degrees of femininity and masculinity. Accordingly, it may be that, for adolescents with high degrees of masculinity, the discrepancy between their sexual lives and SEIM may indeed elicit greater sexual dissatisfaction because this

discrepancy contradicts ideals of masculinity as expressed, for example, in the double standard.

The influence of SEIM on sexual satisfaction was robust over time. However, the theoretically also plausible influence of sexual satisfaction on the use of SEIM only occurred in the interval between the second and the third wave of our study. As a result, our data do not fully support the reinforcing spiral model that Slater (2007) recently advanced as a model of cumulative media effects. Interestingly, the interaction effects between SEIM and both sexual experience and perceived peer norms also emerged only in the W2-W3 interval. A tentative explanation of this phenomenon may lie in the maturation of the sample. In the third and last wave, the sample no longer comprised early adolescents as all respondents were at least 14 years old. Overall, it may be that only in a sample starting with middle adolescents do sexual satisfaction, sexual experience, and perceived peer norms pass a threshold value after which they influence, or interact with, exposure to SEIM. Conceptually, such maturation processes may present boundary conditions of spiral models of media effects. In the same way as maturation can terminate or dampen reinforcing spiral processes, it may also only bring about or boost such processes, similar to the emerging reciprocal and interaction effects in our W2-W3 interval.

Although our study may provide some first insights into the relationship between adolescents' exposure to SEIM and their sexual satisfaction, there are at least three limitations worth noting. First, our effect sizes are small, albeit comparable with media effects in other domains. We need more research on the effects of SEIM and, ultimately, meta-analyses to evaluate the practical significance of these effects. Second, due to the exploratory character of our study, we worked with a broad measure of sexual satisfaction. Although the measure's convergent and discriminant validity were satisfactory, future research may benefit from more refined operationalizations that also take into account potential subdimensions, such as adolescents' uncertainties and worries about sex and sexuality. Finally, our study was conducted in a country with traditionally liberal stances toward issues of adolescent sexuality and sexually explicit material. Other culturally dependent approaches toward adolescent sexuality and sexually explicit material may change the results we found.

In conclusion, our study is one of the first to show, on the basis of a longitudinal design and a social comparison perspective, that exposure to SEIM affects a component of adolescents' sexual development, that is, their satisfaction with their sexual lives. Although the negative effect of SEIM on adolescents' sexual satisfaction is, in our view, an undesirable outcome, we urge scholars, parents, and practitioners not to pathologize adolescents' use of SEIM. We need research over a longer period of time than just 1 year to thoroughly evaluate the effect by its long-term development. Ideally, such research is informed by a developmental perspective that takes into account normal processes in adolescence, such as a heightened sexual interest and fluctuations in sexual satisfaction, and combines it with insights from social comparison theory. Further, we need to focus more strongly on developments in

adolescence that may present a natural protection against undesirable influences of SEIM. This suggests that normative developments among many (Western) adolescents, for example, the gathering of sexual experiences, may help adolescents to make sense of what they see in SEIM. Finally, we need to integrate into our research sexual content of lower degrees of explicitness and from different media. A more encompassing look at the sexualized media environment in which adolescents grow up may help us to assess the effects found in this study more thoroughly.

Notes

- 1 These computations are also possible when the observed variable is only a single item. Following Anderson and Gerbing (1988), we assumed a (conservative) reliability of .90 for our single-item measures perceived peer norms and gender.
- 2 For example, to form the first pair of the interaction term between SEIM and sexual experience, the centered first indicator of SEIM is multiplied with the centered first indicator of sexual experience. To form the second pair, the second indicator of SEIM is multiplied with the second indicator of sexual experience. No other combinations of the indicators are included.
- 3 It seems intuitively plausible that adolescents' chronological age may influence the effects of SEIM. However, many scholars have emphasized that chronological age does not appropriately capture developmental phenomena (for a review, see Petersen, 1988). Therefore, researchers have been advised to identify, for the particular developmental domain they are interested in, developmental markers that index developmental changes or influences better than chronological age with its proxy status. In contrast to adolescents' sexual experience, which we considered an appropriate developmental marker to test individual differences, chronological age did not moderate the influence of SEIM on sexual satisfaction (assessed with the procedure by Mathieu et al. [1992]). For the W1-W2 interval, the impact of the interaction effect between age and SEIM was not significant, $B = .010$, $SE = .010$, ns , with the model fit being $\chi^2 (18, N = 1,052) = 47.05$, $p < .001$, CFI = .995, RMSEA = .039 (90% CI: .026 – .053). The same result emerged for the W2-W3 interval, $B = .007$, $SE = .008$, ns , with the model fit being $\chi^2 (18, N = 1,052) = 23.66$, ns , CFI = .999, RMSEA = .017 (90% CI: .000 – .034).
- 4 None of the results of the multiple-group analyses reported in this study differed when only the influence of interest was constrained to be equal across groups.

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L'exposition des adolescents à du matériel sexuellement explicite dans Internet et leur satisfaction sexuelle : Une étude longitudinale

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Résumé

L'objectif de cette étude était d'examiner, dans un cadre de comparaison sociale, la relation causale entre l'utilisation par les adolescents de matériel sexuellement explicite dans Internet (MSEI) et leur satisfaction sexuelle. De plus, nous avons vérifié quels adolescents étaient les plus sensibles à une influence possible du MSEI sur leur satisfaction sexuelle. Entre mai 2006 et mai 2007, nous avons mené une enquête par panel à trois vagues auprès de 1052 adolescents néerlandais âgés entre 13 et 20 ans. La modélisation par équation structurelle a révélé que l'exposition à du MSEI réduisait systématiquement la satisfaction sexuelle des adolescents. Une satisfaction sexuelle plus basse (dans la deuxième vague) augmentait aussi l'utilisation du MSEI (dans la troisième vague). Des analyses modératrices ont montré que l'effet négatif du MSEI sur la satisfaction sexuelle était plus fort chez les adolescents qui n'avaient que peu d'expérience sexuelle ou aucune expérience sexuelle, ainsi que pour les adolescents qui percevaient la majorité de leurs pairs comme étant sexuellement inexpérimentés. L'effet de l'exposition à du MSEI sur la satisfaction sexuelle ne variait pas entre les adolescents et les adolescentes.

Die Zuwendung Jugendlicher zu Internetinhalten mit explizit sexueller Thematik und sexuelle Zufriedenheit. Eine Langzeitstudie

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Rekurrierend auf das Rahmenkonzept sozialer Vergleichsprozesse, war es Ziel dieser Studie, die Kausalbeziehung zwischen der Zuwendung Jugendlicher zu explizit sexuellen Internetinhalten und ihrer sexuellen Zufriedenheit zu untersuchen. Darüber hinaus testeten wir, welche Jugendlichen besonders anfällig für den potentiellen Einfluss dieser Inhalte auf ihre sexuelle Zufriedenheit sind. Zwischen Mai 2006 und Mai 2007 wurde eine 3-wellige Panelbefragung mit 1052 niederländischen Jugendlichen im Alter zwischen 13 und 20 Jahren durchgeführt. Strukturgleichungsmodelle zeigten, dass die Zuwendung zu sexuell expliziten Inhalten mit einer Abnahme der sexuellen Zufriedenheit einherging. Eine geringere sexuelle Zufriedenheit (2. Welle) steigerte zudem die Zuwendung zu sexuellen Inhalten (3. Welle). Eine Moderatorenanalyse zeigte, dass der negative Effekt von sexuell expliziten Inhalten auf sexuelle Zufriedenheit bei Jugendlichen ausgeprägter war, für diejenigen, die keine oder wenig sexuelle Erfahrung hatten sowie bei Jugendliche, die die Mehrheit ihrer Freunde als sexuell wenig erfahren wahrnahmen. Die Wirkung der Zuwendung zu sexuell expliziten Inhalten auf die sexuelle Zufriedenheit war unabhängig vom Geschlecht der Jugendlichen.

La Exposición de los Adolescentes al Material Sexualmente Explícito del Internet y la Satisfacción Sexual: Un Estudio Longitudinal

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Resumen

El propósito de este estudio fue investigar, dentro del marco de la comparación social, la relación causal entre el uso que hacen los adolescentes del material sexualmente explícito del Internet (SEIM) y su satisfacción sexual. Además, pusimos a prueba que los adolescentes fueron más susceptibles a la influencia potencial del SEIM sobre la satisfacción sexual. Entre Mayo del 2006 y Mayo del 2007, conducimos tres encuestas de panel con 1,052 adolescentes Holandeses de 13 a 20 años de edad. El modelo de ecuación estructural reveló que la exposición al SEIM redujo consistentemente la satisfacción sexual de los adolescentes. La satisfacción sexual menor (en el segundo grupo) incrementó el uso del SEIM (en el grupo 3). Análisis de los moderadores demostraron que el efecto negativo de los SEIM sobre la satisfacción sexual fue mayor para aquellos adolescentes que no tuvieron o que tuvieron limitada experiencia sexual y para los adolescentes que percibieron que la mayoría de sus pares no tenían experiencia sexual. El efecto de exposición al SEIM sobre la satisfacción sexual no varió entre las adolescentes mujeres y los adolescentes hombres.

青少年对网上暴露性资料的接触和性满意程度：一份纵向研究

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摘要

本研究的目的是在社会比较框架中探讨青少年对网上暴露性资料（SEIM）的使用和他们性满意程度之间的因果关系。此外，我们检测哪些青少年的性满意程度最容易受到SEIM的影响。我们在2006年5月至2007年5月间对1052名13至20岁间的荷兰青少年进行了3次调查。结构平等模式显示：接触SEIM始终如一地减少青少年的性满意程度。低性满意程度（第二次调查中的发现）导致更多地使用SEIM（第三次调查中的发现）。中介因素分析显示：SEIM对性满意程度的负面效果在没有性经验或性经验较少的青少年身上更为明显，这种负面效果在那些认为他们大部分的同辈都没有性经验的青少年身上也非常明显。此外，SEIM接触对性满意程度的影响在男性青少年和女性青少年之间没有差距。

성적으로 명백한 인터넷 자료에 대한 청소년들의 노출과 성적 만족에 관한 연구: 종적연구

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요약

본 연구의 목적은 청소년들이 성적으로 명백한 인터넷 자료(SEIM)를 사용하는 것과 그들의 성적 만족감 사이의 관계를 사회적 비교 프레임내에서 조사하려는 것이다. 그외에, 우리는 성적 만족에 대한 SEIM의 잠재적 영향력에 대해서도 연구하였다. . 본 논문은 2006년 5월부터 2007년 5월까지 13세부터 20세사이의 네덜란드 청소년 1,052명을 대상으로 한 3-Wave 패널 조사를 실시하였다. 구조적 균형 모델은 SEIM에 대한 노출은 청소년들의 성적 만족감을 지속적으로 감소시킨다는 것을 보여주고 있다. 낮은 정도의 성적 만족감(wave 2에서)은 또한 SEIM(wave 3에서)의 이용을 증가시킨다는 것을 보여주고 있다. 중재분석은 성적 만족도에 대한 SEIM의 부정적인 효과는 성적 경험이 거의 없거나 제한된 정도의 경험을 가진 청소년들에게 더욱 강하게 나타났다. 성적만족에 대한 SEIM에 노출 효과는 남자나 여자 청소년사이에 별 차이가 없었다.