

Sex-Related Online Behaviors and Adolescents' Body and Sexual Self-Perceptions

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KEY WORDS

adolescence, development, Internet, online sexual behavior, parenting strategies, self-perceptions, social networking site

ABBREVIATIONS

LGM—latent growth curve modeling

SEIM—sexually explicit Internet material

SNS—social networking site

Ms Doornwaard conceptualized the study, coordinated and conducted the data collection, performed the analyses, drafted the initial manuscript, and revised the manuscript; Drs Bickham and Rich contributed to the conceptualization of the study and the interpretation of the results, and reviewed and revised the manuscript; Dr Vanwesenbeeck contributed to the conceptualization of the study and critically reviewed the manuscript; Drs Van den Eijnden and ter Bogt designed the larger study and data collection procedures, contributed to the conceptualization of the study, and critically reviewed the manuscript; and all authors approved the final manuscript as submitted.

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WHAT'S KNOWN ON THIS SUBJECT: Research suggests that appearance-focused messages and exaggerated depictions of sexual activity in the media negatively influence adolescents' body and sexual self-perceptions. As adolescents increasingly use the Internet to explore their sexuality, health risks related to online behaviors should be identified.



WHAT THIS STUDY ADDS: This 4-wave study examined the prevalence and development of 2 receptive and 2 interactive sex-related online behaviors and their relations with adolescents' body and sexual self-perceptions. It further investigated which parental strategies regarding Internet use may reduce risky sex-related online behaviors.

abstract

BACKGROUND AND OBJECTIVE: This study investigated: (1) the prevalence and development of 2 receptive (sexually explicit Internet material [SEIM] use and sexual information seeking) and 2 interactive (cybersex and general social networking site [SNS] use) online behaviors in adolescence; (2) whether development of these behaviors predict adolescents' body and sexual self-perceptions; and (3) whether parental strategies regarding adolescents' Internet use reduce engagement in sex-related online behaviors.

METHODS: Four-wave longitudinal data among 1132 seventh- to 10th-grade Dutch adolescents (mean age at wave 1: 13.95 years; 52.7% boys) were collected. Developmental trajectories of sex-related online behaviors were estimated by using latent growth curve modeling. Self-perception outcomes at wave 4 and parental strategies predicting online behaviors were investigated by adding regression paths to growth models.

RESULTS: Boys occasionally and increasingly used SEIM. Patterns for girls' SEIM use and boys' and girls' sexual information seeking and cybersex were consistently low. SNS use, however, was a common, daily activity for both. Higher initial levels and/or faster increases in sex-related online behaviors generally predicted less physical self-esteem (girls' SNS use only), more body surveillance, and less satisfaction with sexual experience. Private Internet access and less parental rule setting regarding Internet use predicted greater engagement in sex-related online behaviors.

CONCLUSIONS: Although most sex-related online behaviors are not widespread among youth, adolescents who engage in such behaviors are at increased risk for developing negative body and sexual self-perceptions. Particular attention should be paid to adolescents' SNS use because this behavior is most popular and may, through its interactive characteristics, elicit more critical self-evaluations. Prevention efforts should focus on parents' role in reducing risky sex-related online behaviors.

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The Internet has become a popular venue for adolescents to learn about, explore, and develop their sexuality.¹ Indeed, for many it is their first contact with sexual images and behaviors.² Although the Internet can provide positive experiences and health information, parents and health professionals have increasingly voiced concerns about the influence that sex-related Internet use may have on adolescents' well-being.^{3,4} One frequently expressed fear is that one-sided, glamorized portrayals of sexuality on the Internet negatively influence adolescents' perceptions of their own bodies and sexual lives.^{5–8} Negative body and sexual self-perceptions may be manifested as low physical self-esteem, high body surveillance (ie, monitoring of one's appearance), and dissatisfaction with one's sexual experience. Because these self-perceptions have been linked to serious physical and mental health problems such as eating disorders, low self-esteem, and depression,^{9–13} it is important to critically examine their potential antecedents.

Both theory and research provide reasons to expect that sex-related Internet use affects adolescents' body and sexual self-perceptions. Content analyses of offline and online media formats have demonstrated that media generally present an exaggerated and appearance-focused sexual reality, in which bodies are glamorized and sexual activity is common and easily available.^{14–16} According to social comparison theory, such unrealistic presentations of sex and sexual attractiveness lead adolescents to make upward comparisons, resulting in dissatisfaction with their own bodies or sexual experiences.^{17,18} Moreover, objectification theory stresses that exposure to media with a strong focus on sexual attractiveness triggers a process of self-objectification, a perception of one's own body that strongly emphasizes observable appearance and that is

actively manifested by high levels of body surveillance.^{19,20} Consistent with these theories, previous studies have indicated that adolescents' exposure to sexual content (offline and online) is related to more body surveillance and body image concerns and to less satisfaction with one's sexual experiences.^{5–8,21,22}

In most studies, sex-related Internet use was operationalized as adolescents' use of sexually explicit Internet material (SEIM). However, sex-related Internet use may incorporate a range of receptive and interactive online behaviors, functioning as entertainment, information seeking, communication, and cybersex (virtual sexual activity).^{23,24} Social networking site (SNS) use, one of the most prevalent online activities for adolescents and not explicitly sexual in nature, may also serve as a platform for sexual and romantic experimentation.^{25,26} These sex-related online behaviors likely differ in both prevalence and the extent to which they shape adolescents' body and sexual self-perceptions. Longitudinal studies that examine how adolescents develop different sex-related online behaviors over time, as well as the health outcomes associated with these developmental trajectories, are lacking. In addition, there is a lack of knowledge regarding the contexts in which adolescents engage in and develop sex-related online behaviors, and, consequently, regarding factors that may reduce or prevent adverse outcomes related to young people's Internet use.²⁷ Scholars have consistently identified parents as protective factors in adolescents' sexual development when they provide structure (eg, by monitoring or rule-setting), support, and sexual information.^{28,29} However, the extent to which they shape adolescents' online behaviors remains largely unknown. To address these gaps in the literature, the current study used a developmental and contextual framework to examine how adolescents' engagement in different sex-related online

behaviors predicts their body and sexual self-perceptions. Using 4-wave longitudinal data of 1132 Dutch adolescents, 3 questions were addressed: (1) How do adolescents engage in and develop 4 sex-related online behaviors (ie, SEIM use, sexual information seeking, cybersex, SNS use)? (2) Do developmental patterns in sex-related online behaviors predict adolescents' body and sexual self-perceptions (ie, physical self-esteem, body surveillance, satisfaction with sexual experience)? (3) Do parental strategies regarding Internet use (ie, privacy granting, rule setting, communication about Internet-related risks) shape developmental patterns in sex-related online behaviors? Most studies investigating links between sex-related media use and adolescents' body and sexual self-perceptions have not addressed gender differences. However, gender differences have been reported in both sexual development and media use^{1,22,30}; therefore, we studied the aforementioned questions for boys and girls separately.

METHODS

Participants

Data for this study were collected as part of Project STARS (Studies on Trajectories of Adolescent Relationships and Sexuality), a longitudinal research project on romantic and sexual development of Dutch adolescents.³¹ Adolescents in grades 6 through 10 were followed up across 4 waves (T₁–T₄), with 6-month intervals between waves. For the current study, students in seventh-through 10th-grade ($n = 1132$) were included because the sixth-grade students did not complete all investigated concepts. Table 1 presents demographic characteristics of this sample.

Of 1132 participants, 815 (72.0%) contributed data to all 4 waves. At T₁, T₂, T₃, and T₄, the number of participants was 1066, 1047, 1010, and 925, respectively. Compared with participants who completed all questionnaires,

TABLE 1 Sample Characteristics at T₁ (N = 1132)

Variable	Value
Age, y	
Mean ± SD	13.95 ± 1.18
Range	11.49–17.89
Gender, no. (%)	
Male	596 (52.7)
Female	536 (47.3)
Ethnic background, no. (%) ^a	
Dutch	897 (79.2)
Western	124 (11.0)
Non-Western	111 (9.8)
Educational level, no. (%)	
Vocational education	429 (40.3)
College or university preparatory	636 (59.7)

^a Dutch = self and both parents born in the Netherlands; Western = self or a parent born in Europe, the United States, Canada, Australia, or New Zealand; non-Western = self or a parent born in an African, Middle Eastern, Asian, or South American country.

participants who missed ≥ 1 wave were more often boys, $\chi^2(1, N = 1132) = 10.21, P = .001$; older, $t(503.21) = -6.71, P < .001$; enrolled in lower educational levels, $\chi^2(1, N = 1065) = 66.80, P < .001$; and more often had a non-Western background, $\chi^2(1, N = 1132) = 12.55, P < .001$. Moreover, at T₁ they reported higher levels of SEIM use, $t(314.96) = -5.00, P < .001$; higher levels of cybersex, $t(312.15) = -2.59, P = .010$; lower levels of parental rule setting, $t(377.56) = 3.98, P < .001$; and lower levels of communication about Internet-related risks, $t(371.00) = 2.73, P = .007$. Our data analysis procedure (full information maximum likelihood) includes cases with partially missing data; our results are therefore based on the complete sample.³²

Procedure

Adolescents were recruited from 4 secondary schools in large cities and small municipalities in the Netherlands. Before the first measurement, adolescents and their parents were informed about study aims, procedures, and confidentiality safeguards. Passive informed parental consent was obtained for adolescents wishing to participate (93% of approached adolescents and their parents agreed to participate).

At each wave, adolescents completed a computer-based Dutch questionnaire at school during regular school hours. Researchers were present to supervise data collection, answer questions, and ensure maximum privacy. To curb the length of the extensive questionnaire, a planned missingness design was used at T₁ and T₂. For some concepts, participants were presented with 1 to 2 core items and 1 to 2 randomly selected items within the scale. Remaining items in the scale were imputed.^{33,34}

After each completed questionnaire adolescents received a book voucher. This study was approved by the ethics board of the Faculty of Social and Behavioral Sciences of Utrecht University, Netherlands.

Measures

Sex-Related Online Behaviors

SEIM use was operationalized with a single item, developed with research on sensitive questions,³⁵ which read: “Many teenagers sometimes look at pornography on the Internet. We would like to know how this is for you. How often do you use the Internet to view a porn Web site (a Web site with pictures or movies that show nudity or people having sex)?” Response categories were 1 = never; 2 = less than once a year; 3 = less than once a month; 4 = 1 to 3 times a month; 5 = once or twice a week; and 6 = ≥ 3 times a week. Sexual information seeking was assessed by asking participants “How often do you use the Internet to search for information about sex?” Response categories were identical to those for SEIM use. Cybersex was operationalized by asking participants how often (1 = never to 6 = ≥ 3 times a week) they engaged in 4 online activities: (1) asking or responding to a question of a sexual nature; (2) stripping or doing something sexual in front of the Web cam; (3) asking someone to strip or do some-

thing sexual in front of the Web cam; and (4) taking and sending a sexual photo or video. Because the prevalence of these activities was consistently low, items were recoded to be binary (0 = never, 1 = engaged in this activity at least once a year) and summed, resulting in a cybersex measure with values ranging from 0 to 4. Finally, SNS use was measured by asking participants how much time they actively spent each day on their most used SNS. Response categories were 0 = no SNS member; 1 = <15 minutes; 2 = 15 to 30 minutes; 3 = 30 to 60 minutes; 4 = 1 to 2 hours; 5 = 3 to 4 hours; and 6 = >4 hours.

Self-perceptions

Physical self-esteem was measured by using an adapted and translated version of Harter’s Self-Perception Profile for Adolescents.^{36,37} On a 5-point scale (1 = completely untrue, 5 = completely true), adolescents rated the extent to which they agreed with 5 statements (eg, “I am happy with how I look”) about their appearance ($\alpha = 0.89$; mean averaged scores: 3.51). Body surveillance was assessed with a translation of McKinley and Hyde’s surveillance subscale of the Objectified Body Consciousness scale.³⁸ This 8-item scale measures how often adolescents monitor their appearance and think of their body in terms of how it looks rather than how it feels (eg, “I think about how I look many times; $\alpha = 0.79$), rated on a 6-point scale (1 = completely disagree, 6 = completely agree; mean: 3.81). Satisfaction with sexual experience was measured by asking participants how satisfied they are with their sexual experience, even if they have no sexual experience. This item was rated on a 10-point continuum from very dissatisfied to very satisfied (mean: 7.88).

Parental Strategies Regarding Internet Use

Privacy of Internet use was determined by asking adolescents whether they had

a computer with Internet connection in their bedroom (0 = yes, 1 = no). Parental rule setting with regard to Internet use was measured by adolescents' agreement to 3 statements about their parents' rules (eg, "I can do whatever I want on the Internet"; $\alpha = 0.86$), scored on a 6-point scale (1 = completely disagree, 6 = completely agree), which were recoded so that higher scores indicated more rule setting (mean: 3.28). Parental communication about Internet-related risks was assessed by asking adolescents how often their parents told them about 7 different Internet-related risks (eg, "You can't always trust people on the Internet"; $\alpha = 0.85$), scored on a 6-point scale (1 = never, 6 = very often; mean: 3.46).

Data Analysis

The present analyses were conducted in 2 steps. First, to examine prevalence and development of sex-related online behaviors, we used latent growth curve modeling (LGM) in Mplus.³⁹ LGM provides latent variables (ie, growth factors) that reflect developmental trajectories of variables: initial levels (ie, intercepts) and change rates (ie, slopes). Variances of these growth factors indicate variability between individuals in the initial level or change rate.⁴⁰ We modeled unconditional linear growth in each behavior. To test for differences between boys and girls in the development of online behaviors, a multigroup design was used.

Second, to test whether levels and changes in online behaviors predict adolescents' body and sexual self-perceptions, and to examine the parental context in which these relations are embedded, we added regression paths to the unconditional LGMs. Figure 1 shows the conceptual model that was estimated for each combination of sex-related online behaviors and self-perceptions. Maximum likelihood robust estimation was used to estimate

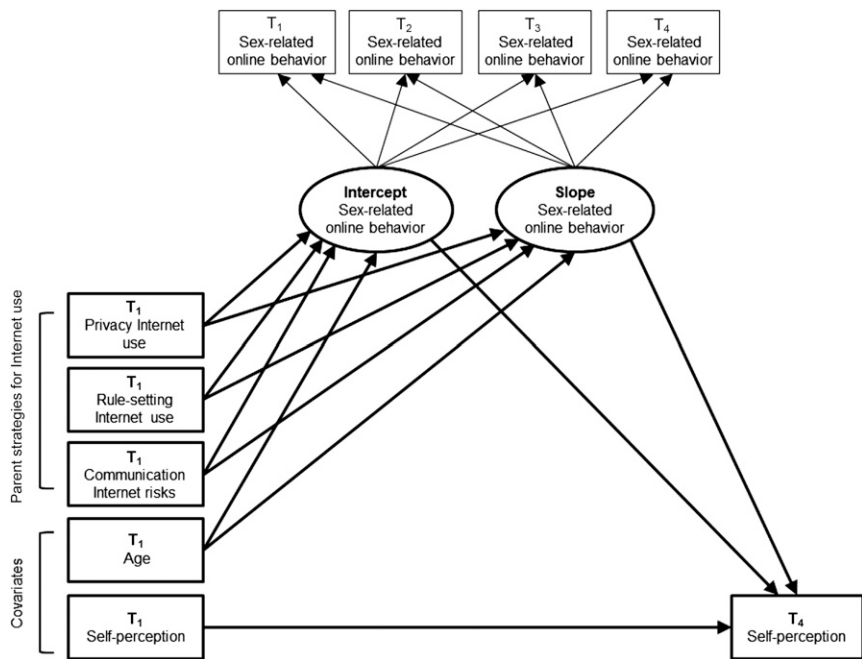


FIGURE 1

Conceptual model of the relations among sex-related online behaviors, self-perceptions, and parental strategies. Bold constructs and arrows represent the structural model. For clarity, factor loadings and error terms are not shown. This model was hypothesized for each combination of sex-related online behaviors and self-perception measures (12 models).

models. Model fits were evaluated and considered as adequate if their comparative fit index was >0.90 and their root mean square error of approximation was <0.08 .⁴¹

RESULTS

Development of Sex-Related Online Behaviors

Table 2 shows mean initial levels (ie, intercepts) and change rates (ie, slopes) of each sex-related online behavior (Figs 2 A, B, C, and D). Wald tests of parameter constraints indicated gender differences in the developmental trajectories of all online behaviors. Therefore, model estimates are reported and discussed for boys and girls separately.

For boys, a developmental pattern of occasional and increasing SEIM use was observed. Girls, conversely, reported low initial levels and minor increases in SEIM use. For sexual information seeking and cybersex, both boys and girls reported low mean levels and no or minor in-

creases, although engagement levels were somewhat higher for boys. SNS use was more common among girls but overall a stable, common activity for both. For SEIM use, sexual information seeking, and SNS use, significant variances of the growth factors reflected interindividual variability in both initial levels and developments of these behaviors over time. This finding was not the case for cybersex, and this behavior was therefore excluded from subsequent analyses.

Effects and Context of Sex-Related Online Behaviors

Table 3 displays standardized effects of the growth factors of sex-related online behaviors on adolescents' body and sexual self-perceptions at T4. Among boys, higher initial levels in SEIM use, sexual information seeking, and SNS use predicted more body surveillance and less satisfaction with sexual experience. Among girls, a higher initial level of SNS use predicted more body

TABLE 2 Estimated Levels and Rates of Change of Boys' and Girls' Engagement in Sex-Related Online Behaviors, Derived From Unconditional Multigroup Univariate LGM Models

Online Behavior	Range	Intercept		Linear Slope	
		Mean (SE)	σ^2 (SE)	Mean (SE)	σ^2 (SE)
Boys					
SEIM use	1–6	2.45 (.07)***	1.88 (0.18)***	0.32 (.03)***	0.13 (0.04)**
Sexual information seeking	1–6	1.69 (.04)***	0.45 (0.10)***	0.01 (.02)	0.09 (0.03)**
Cybersex	0–4	0.10 (.02)***	0.05 (0.02)*	0.03 (.01)**	0.01 (0.01)
SNS use	0–6	2.42 (.06)***	1.64 (0.15)***	−0.05 (.03)	0.18 (0.04)***
Girls					
SEIM use	1–6	1.09 (.02)***	0.10 (0.03)**	0.05 (.01)***	0.05 (0.01)***
Sexual information seeking	1–6	1.20 (.02)***	0.11 (0.04)**	0.04 (.01)**	0.02 (0.01)*
Cybersex	0–4	0.03 (.01)***	0.01 (0.01)	0.01 (.00)	0.00 (0.00)
SNS use	0–6	2.96 (.06)***	1.26 (0.14)***	−0.03 (.02)	0.10 (0.03)**

Because a few participants had missing data on online behavior variables in all 4 waves, *N* models for boys = 592 to 593, *N* models for girls = 555. σ^2 represents the variance around mean levels and rates of change. Growth factor means in italics differed significantly between boys and girls as indicated by the Wald test of parameter constraints. Models had adequate fit statistics: comparative fit index, ≥ 0.94 ; root mean square error of approximation, ≤ 0.06 . * $P < .05$, ** $P < .01$, *** $P < .001$.

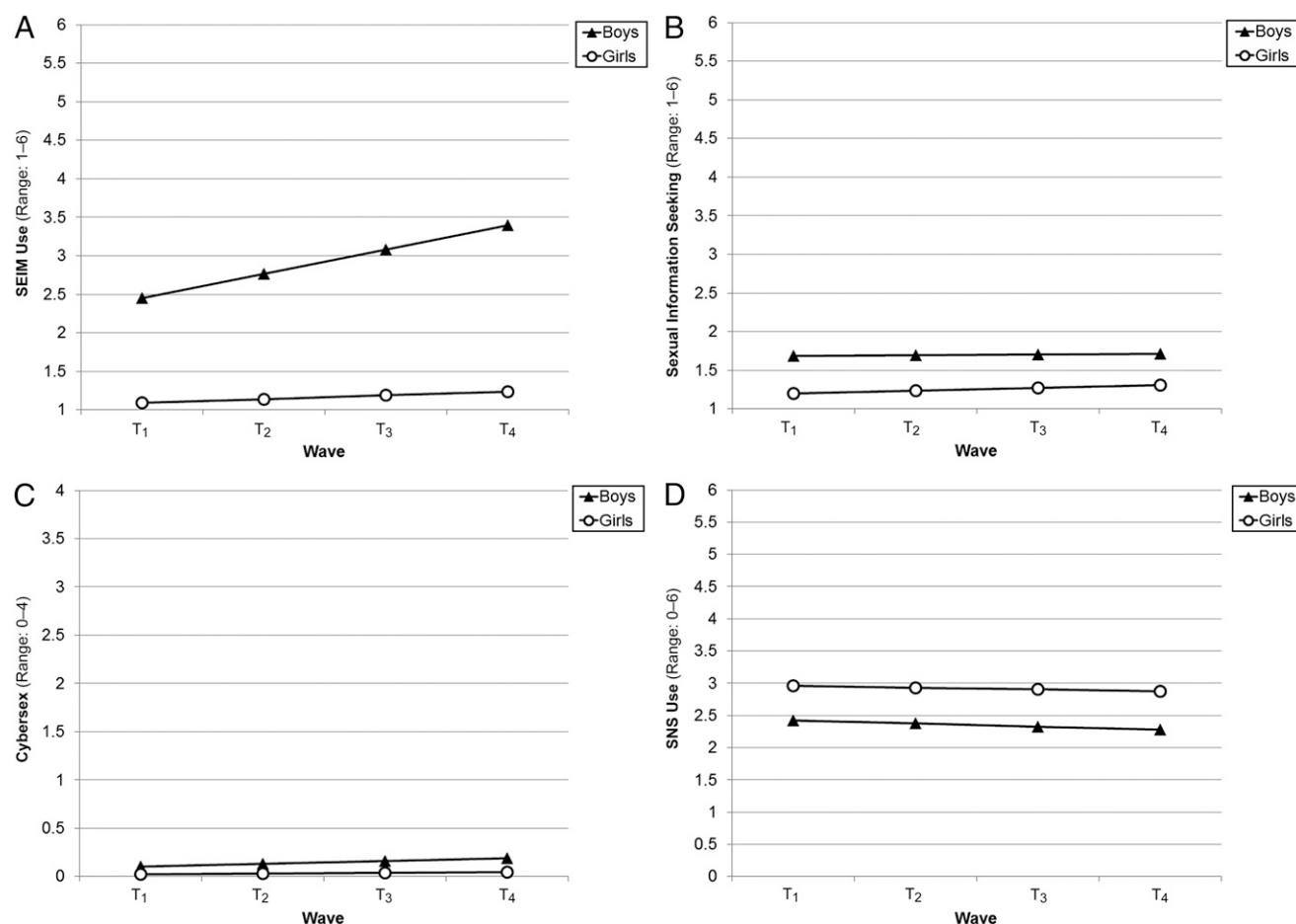
surveillance and less satisfaction with sexual experience. In addition, faster increases in girls' SEIM use and sexual information seeking predicted less

satisfaction with sexual experience, and faster increases in their SNS use predicted lower physical self-esteem and more body surveillance.

Table 3 also shows how parental strategies predict adolescents' development of sex-related online behaviors. Less rule setting with regard to Internet use predicted higher initial levels in boys' SEIM use, whereas ability to access the Internet in privacy predicted higher initial levels in girls' SEIM use. Private Internet access (boys and girls) predicted higher initial levels in sexual information seeking. Less rule setting (boys and girls) and private Internet access (boys) predicted higher initial levels of SNS use. Less rule setting also predicted slower increases in girls' SNS use.

DISCUSSION

This study is, to the best of our knowledge, the first using a developmental and contextual framework to examine

**FIGURE 2**

Developmental trajectories of: A, SEIM use for boys and girls; B, sexual information seeking for boys and girls; C, cybersex for boys and girls; and D, SNS use for boys and girls.

TABLE 3 Standardized Regression Coefficients Derived From Conditional Multigroup Univariate LGM Models Predicting Self-Perceptions for Boys and Girls

Estimated Relation	SEIM Use		Sexual Information Seeking		SNS Use	
	Boys	Girls	Boys	Girls	Boys	Girls
T₄ Physical self-esteem						
Intercept online behavior	-0.00 (0.06)	0.01 (0.05)	-0.02 (0.07)	0.04 (0.06)	0.05 (0.05)	-0.08 (0.05)
Slope online behavior	0.01 (0.07)	-0.07 (0.05)	-0.02 (0.08)	-0.06 (0.07)	0.05 (0.09)	-0.16 (0.07)*
T ₁ Physical self-esteem	0.43 (0.05)***	0.59 (0.03)***	0.43 (0.05)***	0.60 (0.03)***	0.42 (0.05)***	0.59 (0.03)***
T₄ Body surveillance						
Intercept online behavior	0.13 (0.05)*	0.02 (0.04)	0.15 (0.07)*	0.05 (0.07)	0.12 (0.05)*	0.14 (0.06)*
Slope online behavior	0.10 (0.07)	0.08 (0.05)	0.11 (0.09)	0.07 (0.09)	-0.02 (0.09)	0.15 (0.07)*
T ₁ Body surveillance	0.31 (0.05)***	0.43 (0.05)***	0.31 (0.05)***	0.42 (0.05)***	0.31 (0.05)***	0.43 (0.04)***
T₄ Satisfaction sexual experience						
Intercept online behavior	-0.22 (0.06)**	-0.11 (0.06)	-0.30 (0.07)***	-0.08 (0.08)	-0.12 (0.06)*	-0.16 (0.06)**
Slope online behavior	-0.12 (0.08)	-0.13 (0.05)*	0.03 (0.10)	-0.21 (0.10)*	0.09 (0.11)	0.01 (0.10)
T ₁ Sexual satisfaction	0.11 (0.05)*	0.19 (0.05)***	0.12 (0.05)*	0.18 (0.05)**	0.13 (0.05)**	0.17 (0.05)**
Intercept online behavior^a						
T ₁ Privacy Internet use (1 = yes)	0.07 (0.05)	0.12 (0.05)**	0.17 (0.07)*	0.13 (0.05)*	0.16 (0.06)**	0.03 (0.06)
T ₁ Rule setting for Internet use	-0.21 (0.05)***	-0.06 (0.07)	-0.13 (0.09)	-0.13 (0.07)	-0.26 (0.07)***	-0.35 (0.06)***
T ₁ Communication risks	-0.09 (0.06)	0.01 (0.05)	-0.09 (0.12)	0.05 (0.07)	-0.03 (0.07)	0.01 (0.06)
T ₁ Age	0.35 (0.05)***	0.06 (0.07)	0.14 (0.09)	0.08 (0.08)	-0.04 (0.06)	-0.02 (0.06)
Slope online behavior^a						
T ₁ Privacy Internet use (1 = yes)	0.00 (0.07)	-0.09 (0.06)	-0.15 (0.10)	-0.08 (0.07)	-0.19 (0.10)	0.05 (0.09)
T ₁ Rule setting for Internet use	0.06 (0.08)	-0.04 (0.06)	0.17 (0.11)	0.09 (0.07)	0.19 (0.12)	0.20 (0.09)*
T ₁ Communication risks	0.12 (0.08)	0.02 (0.05)	0.09 (0.13)	-0.03 (0.08)	0.09 (0.12)	0.05 (0.09)
T ₁ Age	-0.20 (0.07)**	-0.01 (0.06)	0.02 (0.10)	0.05 (0.08)	-0.09 (0.11)	-0.17 (0.10)

Data are presented as β (SE). *N* models for boys = 596, *N* models for girls = 536. Models had adequate fit statistics: comparative fit index, ≥ 0.94 ; root mean square error of approximation, ≤ 0.05 . * $P < .05$, ** $P < .01$, *** $P < .001$.

^a Presented parameters are derived from models including physical self-esteem as self-perception measure. Parameters from models with different self-perception measures are not presented for the sake of parsimony. These parameters are largely similar but may vary slightly by measure.

whether adolescents' engagement in 4 sex-related online behaviors predicted their body and sexual self-perceptions. Mean developmental trajectories revealed that boys occasionally and increasingly used SEIM. However, SEIM use for girls and sexual information seeking and cybersex for both boys and girls were characterized by consistently low engagement patterns. SNS use was a common, daily activity for both. Establishing prevalence and development of adolescents' engagement in these behaviors helps us put the phenomenon of sex-related Internet use during adolescence into perspective. In contrast to public concerns,^{3,4} most sex-related online behaviors were not widespread in our sample.

Although mean use was limited, our results confirmed theoretical assumptions and previous findings on effects of SEIM use on adolescents' body and sexual self-perceptions.^{7,8,17,19–22} Specifically, higher levels and/or faster

increases in SEIM use predicted more body surveillance among boys and less satisfaction with sexual experiences among both boys and girls. Moreover, our study found that these effects extend to online behaviors other than SEIM use: sexual information seeking also predicted more body surveillance among boys and less satisfaction with sexual experiences among boys and girls. This finding points to the need to more thoroughly investigate what sources adolescents turn to for sex-related information, and develop or promote appealing yet age-appropriate educational material that is serving a healthy self-image rather than undermining it.^{23,42,43}

More importantly, given trends in adolescents' Internet usage, our findings showed that SNS use, an interactive behavior that is more social than explicitly sexual, was predictive of poorer body and sexual self-perceptions, particularly among girls. Several processes

may explain this finding. First, interactive online behaviors enable users to create, distribute, and receive feedback on self-referencing content. This self-portrayal is especially popular on SNSs, where users post pictures of themselves or are tagged in friends' photos. Portraying oneself in pictures puts significant emphasis on one's appearance. The awareness of other people's scrutiny and judgment may make adolescents more self-conscious about their looks.^{6,44} Second, adolescents may be more likely to make social comparisons with age-mates than with glamorous media models. Here, it is important to note that adolescent girls have been found to create biased realities or "ideal selves" on SNS by deleting pictures of themselves when these do not conform to beauty ideals.⁴⁵ Moreover, references to sexuality on SNSs have been shown to increase adolescents' perceptions of peer sexual activity, regardless of the authenticity of

these references.^{25,26,46} Consequently, social comparisons with online peers may turn out unfavorable, resulting in lower physical self-esteem and less satisfaction with sexual experience.^{47–49}

Together, our results show that sex-related online behaviors predict poorer body and sexual self-perceptions among adolescents. Recent perspectives on media influence emphasize that media effects should be understood in conjunction with media selection: People select media that matches their existing attitudes and avoid attitude-incongruent material, and this selective exposure reinforces their preexisting dispositions.^{50–52} Although it was beyond the scope of the present study, future studies should examine whether adolescents with negative body and sexual self-perceptions selectively engage in sex-related online behaviors and thus are at increased risk for developing more negative self-perceptions.

Our results also provided insights on how parental strategies influence sex-related online behaviors that predict negative body and sexual self-perceptions. Private Internet access and less parental rule setting regarding Internet use predicted higher levels of engagement in both explicit sex-related online behaviors and

SNS use. Determining the context in which sex-related Internet use occurs enables us to identify risk and protective factors that may guide parenting and prevention strategies. Our findings support the efficacy of parents setting rules and monitoring their children's Internet use to reduce engagement in sex-related online behaviors that may cause negative self-perceptions. These findings are particularly important in light of the growing use of portable devices (eg, smartphones, tablets) among adolescents,⁵³ increasing their opportunities to access the Internet and engage in sex-related online behaviors in privacy.

Some limitations of the present study warrant discussion. The generalizability of our findings is limited by our young, predominantly white sample of Dutch adolescents. Due to the lack of interindividual variability, we could not address effects of cybersex engagement. Moreover, we did not have information on the content that adolescents created, posted, and were exposed to when they engaged in sex-related online behaviors. Specifically, our findings with regard to SNS use point to the need to identify characteristics of SNS that risk the development of negative self-perceptions. Future studies should

measure specific online content to which adolescents are exposed and that they create and distribute to others. Future studies should also investigate how the increasing use of portable Internet devices influences adolescents' sex-related online behaviors, as well as its implications for their well-being.

CONCLUSIONS

This study provides a detailed understanding of the prevalence and development of sex-related online behaviors during adolescence, as well as their effects on body and sexual self-perceptions. The findings suggest that most sex-related online behaviors are not widespread. However, adolescents who engage in such behaviors are at increased risk for developing negative body and sexual self-perceptions. Particular attention should be paid to adolescents' use of SNS because this behavior is common and may, through its interactive characteristics, elicit more critical self-evaluations. Prevention efforts should consider the contexts in which adolescents engage in sex-related online behaviors and focus on the important role parents can play in raising healthy digital natives.

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