

## **Sex, media and adolescents**

How sexual media consumption predicts levels of sexual experience and  
sexual satisfaction of adolescents over time

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### **Abstract**

This study examined the longitudinal relationship between sexual media consumption, sexual experience and sexual satisfaction among adolescents. First, I expected that the more an adolescent consumed sexual media content, the more real life sexual experience he or she would have. Second, I expected that the more adolescents consumed sexual media content, the less sexual satisfaction they would report. Third, I expected to find a moderating effect of gender, in that both main effects would be stronger for boys than for girls. I analysed four-wave data of 494 Dutch adolescents with a mean age of 14.5 years at baseline. I performed hierarchical multiple regression analyses to establish if sexual media consumption could predict subsequent levels of sexual experience and sexual satisfaction over time. In line with the first hypothesis, results showed that the more sexual media adolescents consumed at baseline, the more sexual experience they had six months and one year later. At the same time however, results showed that sexual media consumption did not predict subsequent levels of sexual satisfaction across waves. Rejecting the third hypothesis, gender did not interact with sexual media consumption. Therefore, the relationship between sexual media consumption and sexual experience and sexual satisfaction was the same for male and female adolescents.

### **Samenvatting**

Het huidige onderzoek is gericht op de longitudinale relatie tussen seksuele media consumptie, seksuele ervaring en seksuele tevredenheid onder Nederlandse adolescenten. Ten eerste werd verwacht dat hoe meer adolescenten seksuele media beelden consumeerden, hoe meer seksuele ervaring zij zouden hebben. Ten tweede werd verwacht dat hoe meer seksuele media beelden werden geconsumeerd, des te minder tevreden adolescenten zouden zijn over hun eigen seksuele leven. Ten derde was de verwachting dat geslacht een modererend effect zou bewerkstelligen zodat beide hoofdeffecten sterker zouden zijn voor jongens dan voor meiden. Om deze hypothesen te onderzoeken is een longitudinale dataset geanalyseerd van 494 adolescenten met een gemiddelde leeftijd van 14.5 jaar op het eerste meetmoment. Aan de hand van hiërarchische multi-pele regressie analyses is gekeken of seksuele media consumptie de mate van seksuele ervaring en tevredenheid in de toekomst kon voorspellen. Resultaten laten zien dat des te meer seksuele media beelden adolescenten consumeerden op het eerste meetmoment, des te meer seksuele ervaring zij een half jaar en een jaar later hadden. Tegelijkertijd is echter gebleken dat seksuele media consumptie niet de mate van seksuele tevredenheid kon voorspellen. Tevens is er geen interactie-effect gevonden tussen geslacht en seksuele media consumptie. Deze laatste bevinding heeft laten zien dat de samenhang tussen seksuele media consumptie en seksuele ervaring en seksuele tevredenheid hetzelfde is voor zowel mannelijke als vrouwelijke adolescenten.

## **Introduction**

Adolescents of today live in a media-saturated world (Peter & Valkenburg, 2007) and research has shown that almost two out of every three television programs include 4.4 scenes per hour with sexual content (Kunkel, Farrar, Eyal, Biely, Donnerstein & Rideout, 2007). Sexual references can be a major influence on adolescents' sexual behavior, given the fact that teenagers are more susceptible to media influences than others. It has been suggested that adolescents who encounter sexual media, have an increased chance of being sexually active (Pardun, L'Engle & Brown, 2005) and an increased chance of being less satisfied about their own sexual life (Peter & Valkenburg, 2009). The increased chance of being sexually active can have negative consequences, in particular during adolescence when adolescents engage in risk behaviors, like having unprotected sex. This risky behavior in turn, can lead to a heightened risk of getting pregnant and getting sexually transmittable diseases (Maslowsky, Buvinger, Keating, Steinberg & Cauffman, 2011).

The majority of prior research concerning sexual media consumption and sexual behavior among adolescents used a cross-sectional design (e.g., L'Engle, Brown & Kenneavy, 2006). However, longitudinal research is needed to shed light on the relationship between sexual media consumption and the development of sexual experience and sexual satisfaction over time. In addition, previous studies did not concentrate on possible moderators of the media-sexuality link, such as gender (e.g., Pardun et al., 2005). Since gender is a central aspect within sexuality (Vanwesenbeeck, 2009), it is likely that the relationship between sexual media consumption, sexual experience and sexual satisfaction will be different for boys and girls. To draw definitive conclusions about this statement, it is essential to examine the effect of gender as a moderator.

Most research about adolescents and their sexual media consumption has been executed between 1999 and 2009. Today however, adolescents have more (unmonitored) access to the Internet than they ever had before, due to the arrival of the smartphone. Last year has shown a peak in the number of smartphones sold in The Netherlands (Elskamp, 2011), especially among Dutch young adults. A total of 60% of young adults between 15 and 25 years old are in possession of a such a phone (Van der Maal, 2011). Because the Internet can be easily used on smartphones, the access for adolescents to watch sexual media content has increased.

The social learning theory of Bandura provides a theoretical framework to study the effects of sexual media consumption on adolescents' sexual experience and sexual satisfaction. This theory refers to the process through which people learn specific behaviors by imitation and modeling. Television and the Internet can be seen, for example, as media that produce sexual role models for adolescents to imitate (Escobar-Chaves, Tortolero, Markham, Low, Eitel & Thickstun, 2005). Especially adolescents try to get more information and an understanding of normative and appropriate sexual patterns and practices (Kunkel et al., 2007). So, learning through observation of sexual role models enables adolescents to acquire sexual behavior patterns without having to learn them step by step, by trial and error (Bandura, 1978). The outcome of the performances of sexual role models are of major importance within this process. If teenagers watch porn for example, they observe actors who are enjoying themselves, and this could be seen as a reward for that specific kind of sexual behavior. Rewarded observed behaviors will encourage the learning of these behaviors more likely (Kunkel et al., 2007).

### **Sexual Media Content and Sexual Behavior**

Various studies have investigated the relationship between sexual media consumption and sexual experience. Pardun et al. (2005) and L'Engle et al. (2006) showed in their cross-sectional studies among 12-14 year olds that sexual media consumption is significantly related to increased sexual experience of teenagers and intentions to be sexually active. In addition, prior two wave longitudinal research showed that adolescents who were more exposed to sexual media content at baseline, were more likely to have engaged in (more advanced) sexual activity one or two years later, compared to those with less exposure to sexual media content (Brown, L'Engle, Pardun, Guo, Kenneavy & Jackson, 2006; Collins, Elliott, Berry, Kanouse, Kunkel, Hunter et al., 2004). However, until now only one study has been conducted about sexual satisfaction among male and female adolescents. Peter and Valkenburg (2009) showed in their longitudinal three-wave panel survey among 13-20 year olds, that more frequent exposure to sexually explicit Internet material reduced adolescents' sexual satisfaction. This result was equally strong for males and females.

### **Gender Differences in the Media-Sexuality Link**

Besides the research of Peter and Valkenburg (2009), no study has explicitly focused on gender as a moderator of the link between sexual media consumption and the development of sexual experience and sexual satisfaction. However, gender is central to sexuality and *vice versa* (Vanwesenbeeck, 2009). Research has shown that men are more likely to expose themselves more frequently to sexually explicit material on the Internet than women (e.g., Peter & Valkenburg, 2006). When doing so, males are more focused on physical aspects of the sexual behavior, while females are more focused on the relational aspects (Cantor, Mares & Hyde, 2003). In addition, women hold on to more negative feelings towards sex, like shame and guilt

(Vanwesenbeeck, 2009). Not only are there gender differences in the amount and experience of sexual media consumption, but due to the double standard (i.e., to criticize only women who are having sex) and the expectation that men should have sexual experience, male adolescents may react more strongly than female adolescents with feelings of inferiority to sexual media content (Peter & Valkenburg, 2009). This feeling of inferiority could lead to less sexual satisfaction and/or a stronger need to improve their sexual accomplishments, by having more sexual experience. Therefore, I expected that the relationship between sexualized media content and sexual experience and sexual satisfaction would be stronger for males than females.

### **The Present Study**

Because of the lack of longitudinal research on the sexual development of adolescents, I examined (1) the longitudinal relationship between Dutch adolescents' sexual media consumption and their sexual experience and (2) the association with adolescents' sexual satisfaction. First, I expected that the more an adolescent consumed sexual media content, the more real life sexual experience he or she had. Second, I expected that the more adolescents consumed sexual media content, the less sexual satisfaction they reported. Third, I expected that both main effects were stronger for boys than for girls. To test these hypotheses, I used a unique longitudinal database of Dutch adolescents.

## **Methods**

### **Participants and Procedure**

Data were gathered from seven high schools in the Netherlands. At baseline, schools were asked for the participation of fourteen and fifteen year olds. Since some of the questionnaire items referred explicitly to sexual activities and attitudes towards sex, all schools received the survey in advance to judge whether item content was



appropriate. None of the schools refused to participate after considering the questionnaire content. Three parents did not want their child to participate when parental consent and adolescents' informed consent were obtained. Items about specific sexual activities were not obligatory for adolescents to fill in. These items had an extra answering category of "I don't want to answer this question". Questionnaires were filled in during regular school hours, in the presence of two research assistants. These assistants introduced the questionnaire, emphasized that data would be handled confidentially, and remained present during the school hours to answer any questions.

At baseline ( $T_1$ ), 523 ninth graders filled in a questionnaire. The second, third, and fourth wave of data collection ( $T_2$ ,  $T_3$ , and  $T_4$ ) took place six, twelve, and eighteen months after baseline, respectively. Since the baseline measurement took place in October 2009, the participants who completed the survey between  $T_2$  and  $T_3$  in ninth grade, moved into tenth grade. Because of this transition it was impossible to retain all baseline participants in the sample. The Dutch secondary school system reallocates students to different classes across grades, which makes class composition change dramatically. Data was collected from classes that at  $T_3$  and  $T_4$  had at least seven students who had previously participated at  $T_1$  and  $T_2$ . The dataset contained information of 714 adolescents, but respondents who did not participate at  $T_1$  and respondents who only participated at  $T_1$ , were removed from the database. With this procedure, the four-wave longitudinal dataset contained 494 adolescents (49.2% girls,  $n= 243$ ). The mean age of this sample at baseline was 14.52 ( $SD= 0.65$  | min-max 13-17), and comprised predominantly of youths with a native Dutch background (83.6%,  $n= 413$ ). The majority of adolescents (67%,  $n= 329$ ) were enrolled in vocational training and the majority did not receive a religious upbringing (69.4%,  $n= 343$ ). A total of 454 adolescents (92.0%) reported to have a heterosexual orientation.

I performed an attrition analysis to examine possible differences between the respondents who were taken into the longitudinal sample and those who did not participate at T<sub>1</sub> or only participated at T<sub>1</sub>. Predictors of attrition were gender, age, ethnicity, educational level, religion, having an own TV and PC, relationship status and baseline levels of sexual media consumption, sexual experience and sexual satisfaction. The full model of the logistic regression analysis containing all predictors was statistically significant,  $\chi^2(11, n=307) = 25.17, p < .01$ , indicating that the model was able to distinguish between respondents who remained in or dropped out of the study over time. Respondents who remained in the longitudinal sample were more often Dutch [ $OR = .12, p < .01$ ] and had less sexual experience [ $OR = .27, p < .05$ ] compared with adolescents who dropped out.

### Measures

**Sexual media consumption.** Adolescents' self-reported consumption of sexualized media images was assessed with six items, which tapped into the use of different media such as magazines, television programs, Internet, and movies. The main question was: "How often in the past six months have you...", for example "...looked into a porn or sex magazine", "...watched a porn site on the Internet", and "...watched an X-rated video clip (a video clip that contains nudity)". Answers ranged on a 5-point scale from 1 = never to 5 = very often. Internal consistency of items was high (T<sub>1</sub>  $\alpha = .84$ , T<sub>2</sub>  $\alpha = .88$ , T<sub>3</sub>  $\alpha = .60$ , T<sub>4</sub>  $\alpha = .88$ ).

Sexualized media consumption was also assessed with four extra items regarding respondents intentionally search on the Internet in the last six months for 1) pictures with clearly exposed genitals; 2) movies with clearly exposed genitals; 3) pictures in which people are having sex; 4) movies in which people are having sex.

Answers were ranged on a 5-point scale from 1= never to 5= daily. Internal consistency of items was high ( $T_1 \alpha = .90$ ,  $T_2 \alpha = .94$ ,  $T_3 \alpha = .92$ ,  $T_4 \alpha = .96$ ).

**Sexual experience.** Adolescents' sexual behavior was measured with five items that tapped into participants' level of sexual experience at that point in time. Example items were "Have you ever French kissed someone", "Have you ever had oral sex", and "Have you ever had sex (with penis in vagina)". Adolescents responded to these questions on a three-point scale ranging from 0= never, to 2= often. Whenever adolescents marked "I don't want to answer this question" with a specific item, this was scored as system missing. Internal consistency of the items was high ( $T_1 \alpha = .84$ ,  $T_2 \alpha = .86$ ,  $T_3 \alpha = .88$ ,  $T_4 \alpha = .88$ ). Data was revised by recoding variables on a three-point scale from 0= no sexual experience, 1= light sexual experience (French kissing and/or caressing) and 2= heavy experience (oral sex and/or sexual intercourse).

**Sexual satisfaction.** Adolescents' sexual satisfaction, or the extent to which one is pleased with one's sex life, was measured with a summed score from two items that assessed the quality of the participants' sex life. The items were "I am satisfied about my sexual life" and "I am happy with my sexual life". Adolescents' responded to these questions on a five-point scale ranging from 0= does not apply at all, to 4= applies completely. Internal consistency of items was high ( $T_1 \alpha = .88$ ,  $T_2 \alpha = .84$ ,  $T_3 \alpha = .81$ ,  $T_4 \alpha = .83$ ).

### **Data Analysis**

First, I performed a principal component factor analysis to reduce the items of the variable sexual media consumption to form a smaller number of coherent subscales. Next, in a first descriptive analysis, I performed a multivariate analysis of variance (MANOVA) to investigate differences of sexual media consumption, sexual

experience and sexual satisfaction across the four waves between groups of gender, educational level, ethnicity and religion. In a next step, I calculated Pearson correlations in order to examine bivariate associations between sexualized media consumption, sexual experience and sexual satisfaction between each of the four waves. Finally, I performed hierarchical multiple regression analyses to establish if sexual media consumption could predict subsequent levels of sexual experience and sexual satisfaction over time. The regression analyses were executed over different waves: from T<sub>1</sub> to T<sub>2</sub>, T<sub>1</sub> to T<sub>3</sub> and T<sub>1</sub> to T<sub>4</sub>. Each regression model was controlled for the effects of age, educational level, religion, ethnicity, having an own television/computer, having a boyfriend or girlfriend, and for baseline levels of sexual experience and sexual satisfaction. To test whether gender moderated the effect of sexual media consumption on sexual experience and sexual satisfaction, I included a moderator term of sexual media consumption at T<sub>1</sub> × gender in the last step of the model. Explained variance of each model was examined by means of R<sup>2</sup>.

### **Results**

At T<sub>1</sub>, 55% (*n*= 270) of all participants (31% boys) reported to have never watched sexual media images in the past six months. Almost 44% (*n*= 216) of the adolescents (43% boys) reported to have had experience with light sexual activity and 12% (*n*= 61) indicated that they had experience with heavy sexual activity (56% boys). A small proportion of all participants, 11% (*n*= 54), reported to be satisfied or very satisfied about their sexual life at T<sub>1</sub> (43% boys). A total of 38% (*n*= 186) reported to be not satisfied, or not satisfied at all about their sexual life (53% boys).

### **Factor Analysis for Sexual Media Consumption**

The ten items of sexual media consumption were subjected to principal component analysis (PCA). Prior to performing PCA, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .30 and above. Principal components analysis revealed the presence of two components with eigenvalues exceeding 1, explaining 54.6% and 12.8% respectively. An inspection of the scree plot revealed an unclear break between the first and second component. Two out of five items did not load strongly (above .4) on the second component. Therefore, I decided to retain one component.

The one component solution explained 54.6% of the variance, with an eigenvalue of 5.46. Nine out of ten items loaded strongly on the component (.7 and higher), but one item (i.e., 'read something about sex in a magazine') did not. I therefore decided to remove this item and proceeded with the one component factor analysis by using the fixed number of factors. The one component solution explained 59.9% of the variance, with an eigenvalue of 5.39. The component showed strong loadings of all variables (.7 and higher). Thus, for further analysis of the variable sexual media consumption, nine instead of ten items were included. I transformed this variable by summing the scores from the nine items and dividing them by nine. In this manner, every participant received one score on sexual media consumption.

### **Development of Sexual Media Consumption, Sexual Experience and Satisfaction**

A MANOVA was performed to examine differences in sexual media consumption, sexual experience and sexual satisfaction over time (see Table 1). Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance- covariance matrices, and multicollinearity, with no serious violations noted. Levels of sexual media

consumption did not increase significant over time,  $F(3, 98) = 1.7, p = .17$ , but at the same time however, results showed that the development of sexual media consumption was different for adolescents of diverse ethnicities,  $F(3, 98) = 3.43, p < .05$ , and religious backgrounds  $F(3, 98) = 2.27, p < .05$ . During the first three waves, native Dutch adolescents ( $n = 89$ ) reported more sexual media consumption ( $M_{T1-T2-T3} =$  between 1.19 and 1.25,  $SD =$  between .49 and .61) than non-Dutch adolescents ( $M_{T1-T2-T3} = 1.00, SD = .00$ ). During the fourth wave the non-Dutch participants reported to watch more sexual media consumption ( $M = 1.40, SD = 1.26$ ) than native Dutch respondents ( $M = 1.20, SD = .48$ ). The interaction effect of sexual media consumption with religion was also dependent on the time of measurement. At the first and third wave non-religious respondents ( $n = 69$ ) reported to watch more sexual media consumption ( $M_{T1-T3} = 1.20/1.25, SD = .48/.60$ ) than religious participants ( $M_{T1-T3} = 1.17, SD = .53/.46$ ). However, during the second and fourth wave religious adolescents reported more sexual media consumption ( $M_{T2-T4} = 1.20/1.27, SD = .66/.78$ ) than non-religious participants ( $M_{T2-T4} = 1.16/1.20, SD = .47/.78$ ). Although the multivariate analysis showed that there is a significant interaction effect of sexual media consumption with ethnicity and religion, it remains unclear if the differences within each wave also differ significantly from each other.

There was also no statistically significant effect of sexual experience over time  $F(3, 108) = .67, p = .57$ , but the trend observed that the average amount of sexual experience insignificantly developed over time from .96 at  $T_1$  to 1.39 at  $T_4$ . There were no significant interaction effects of sexual experience with the control variables gender, ethnicity, educational level and religion. The same results were found for sexual satisfaction. There were no significant differences for sexual satisfaction across the four waves,  $F(3, 128) = .47, p = .71$  and there were no significant interaction

effects of sexual satisfaction with the control variables. Just like the development of sexual experience, the trend of sexual satisfaction showed an insignificantly development over time from 3.45 at T<sub>1</sub> to 3.74 at T<sub>4</sub>. Overall, the respondents reported to be highly satisfied about their sexual life.

### **Pearson Product-Moment Correlation Coefficient**

The relationship between sexual media consumption, sexual experience and sexual satisfaction was examined using the Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. The correlation coefficients (see Table 2) showed that there were small significant cross-sectional correlations between sexual media consumption and sexual experience at each wave ( $r_{T1-T4}$  = between .16 and .30,  $p < .05$ ). The longitudinal correlations between sexual media consumption at baseline and subsequent levels of sexual experience were small but significant ( $r_{T1-T3}$  = between .17 and .22,  $p < .01$ ), except for levels of sexual experience at T<sub>4</sub>. These results imply that high levels of sexual media consumption were associated with higher levels of sexual experience. The cross-sectional and longitudinal correlations between sexual media consumption and sexual satisfaction at each wave were small and not significant ( $r_{T1-T4}$  = between .01 and .17,  $p > .05$ ), which implies that there was no relationship between these variables.

### **Regression – Sexual Experience T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub> on Sexual Media Consumption T<sub>1</sub>**

A hierarchical multiple regression analysis was performed to establish whether sexual media consumption could predict subsequent levels of sexual experience and sexual satisfaction over time after controlling for the influence of age, ethnicity, educational level, religion, having an own television, having an own computer with Internet and having a boyfriend or girlfriend. Preliminary analyses were conducted to

ensure no violation of the assumptions of normality, multicollinearity and homoscedasticity. The control variables were entered at step 1, baseline levels of sexual experience at step 2, baseline levels of sexual media consumption at step 3 and the interaction effect of sexual media consumption  $\times$  gender was entered at step 4. In the final model (see Table 3), results showed that ethnicity (i.e., being native Dutch) had a significant association with sexual experience at each wave. This means that native Dutch respondents reported to have had more sexual experience compared to non-Dutch respondents. Baseline measurement of sexual experience also had a significant association with sexual experience at each wave, which means that respondents, who reported to have had more sexual experience at baseline compared to others, also had more experience six, twelve and eighteen months later compared to others. In addition, respondents' relationship status (i.e., having a boyfriend/girlfriend) was statistically significant with sexual experience at each wave. This implies that adolescents who were in a relationship reported to have had more sexual experience than those who were single. Overall, the longitudinal hierarchical regression analyses showed that sexual media consumption significantly predicted sexual experience at  $T_2$  and  $T_3$ . Thus, the more sexual media adolescents consumed at baseline, the more sexual experience they had six months and one year later. However, no significant interaction effect was found between sexual media consumption and gender, which implies that the relationship between sexual media consumption and sexual experience was the same for male and female adolescents.

I performed an additional, multinomial logistic regression to assess the impact of sexual media consumption and the before mentioned control variables on three separate categories of sexual experience (i.e., having no sexual experience, experience with light sexual activity and experience with heavy sexual activity). I examined if the



impact of the independent variables differed between respondents who reported to have light or heavy sexual experience compared with having no sexual experience at all. The category 'having no sexual experience' was used as the reference category. Results showed that the multiple independent variables did not differentially predict whether a person was more likely to have had experience with light sexual activity or with heavy sexual activity. Thus, both light and heavy sexual activity were predicted by the same set of significant predictors as in the main analyses (i.e., ethnicity, previous sexual experience, relationship status, and media consumption).

### **Regression – Sexual Satisfaction T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub> on Sexual Media Consumption T<sub>1</sub>**

The control variables age, ethnicity, educational level, religion, having an own television, having an own computer with Internet and relationship status were entered at step 1. Baseline levels of sexual satisfaction were entered at step 2, baseline levels of sexual media consumption at step 3 and the interaction effect of sexual media consumption  $\times$  gender was entered at step 4. Results in the final model (see Table 4) showed that respondents' relationship status (i.e., having a boyfriend/girlfriend) was statistically significant with sexual satisfaction at each wave. This implies that adolescents who were in a relationship reported to be more satisfied about their sexual life than those who are single. Baseline levels of sexual satisfaction also had a significant positive association with levels of sexual satisfaction across T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub>. This implies that respondents, who reported to be more satisfied about their sexual life at baseline compared to others, were also more satisfied six, twelve and eighteen months later compared to others. Overall, the longitudinal analyses showed that sexual media consumption did not predict subsequent levels of sexual satisfaction across waves and no significant interaction effect was found between sexual media consumption and gender.

## Discussion

In this paper, I analysed four-wave data from 494 adolescents between 13 and 17 years old in order to examine if sexual media consumption predicted subsequent levels of sexual experience and sexual satisfaction. Controlling for baseline levels of sexual experience, I found that adolescents who reported to consume more sexual media at baseline compared with their peers, had more sexual experience six months and one year later, regardless of their gender. At the same time however, results also showed that sexual media consumption did not predict subsequent levels of sexual satisfaction among male and female adolescents.

The confirmation of the first hypothesis, that the more sexual media adolescents' consumed at baseline, the more sexual experience they had in the future, is in line with previous findings (e.g., Collins et al., 2004). Furthermore, this result supports the social learning theory of Bandura (1978), because it is likely that adolescents model sexual behavior patterns through observation of sexual role models. However, no significant results were found for sexual experience at T<sub>4</sub>, eighteen months later. Due to the longer time interval of the prediction from baseline to T<sub>4</sub>, the likelihood that other factors than those examined in this study played a significant role is significantly greater. Related to this point, future longitudinal research could focus more on shifts in social influence over time, as with the process of gradually spending more time with friends than with parents during adolescence (De Goede, Branje & Meeus, 2007). Given the fact that adolescents spent less time with their family or in and around the house, adolescents make it difficult for adults to monitor their whereabouts and activities (Dishion & McMahon, 1998). For instance, is it possible that talking about sex with friends, or the sexual experience of friends, predicts levels of sexual experience when adolescents get older? Or do late

adolescents have more options to have sex compared with early adolescents, if parental monitoring declines?

The second hypothesis, that the more adolescents consumed sexual media content, the less sexual satisfaction they reported, was rejected. This result contradicts previous findings of Peter and Valkenburg (2009) who demonstrated that more frequent exposure to sexually explicit Internet material reduced adolescents' sexual satisfaction. This contradiction can be explained by the fact that Peter and Valkenburg only analysed sexually explicit Internet material (i.e., pictures and movies with exposed genitals or in which people are having sex), while I added more mainstream sexual media as well (i.e., watched an X-rated video clip or looked into a sex magazine). It might be possible that (hardcore) porn on the Internet presents a more distorted representation of sex than more mainstream sexual media. This in turn could lead to a stronger discrepancy between observed sexual behaviors and actual sexual experience among adolescents, which might lead to less sexual satisfaction.

Experimental research using a sound control group, could establish whether or not sexual media consumption actually reduces sexual satisfaction among adolescents and to what extent type of media (i.e., Internet, magazine) moderates this effect. A proper way to conduct such an experiment would be to show diverse sexual images from various types of media to the respondents and monitor their sexual experience during a specific time-interval afterwards. However, keeping in mind ethical considerations regarding the age limit under which sexually explicit material should not be shown to participants, it might prove difficult to establish the relationship between sexual media consumption and sexual satisfaction among early adolescents.

The third hypothesis, that both main effects would be stronger for boys than for girls was rejected. This means that the relationship between sexual media

consumption and sexual experience and sexual satisfaction was the same for male as for female adolescents. Apparently, the before mentioned double standard (i.e., to criticize only women who are having sex) and the expectation that men should have (more) sexual experience, does not apply to the studied sample. In fact, it seems that the process through which people learn specific behaviors by imitation and modeling (i.e., the social learning theory) is gender neutral.

An interesting finding is that the development of sexual media consumption different was for adolescents of diverse ethnicities within waves. During the first three waves, native Dutch adolescents reported to watch more sexual media consumption than non-Dutch adolescents. This result is in line with findings from previous research (e.g., Doornenbal, Schouten, De Graaf & Meijer, 2009) and can be explained by the fact that negative sexual attitudes, like being ashamed of sex, predicts lower levels of sexual media consumption (Gerrard, Kurylo & Reis, 1991). Previous research had shown that Turkish and Moroccan adolescents who live in The Netherland are more ashamed of sex compared with native Dutch adolescents (Vennix & Vanwesenbeeck, 2005). Perhaps because of this phenomenon, native Dutch respondents reported to watch more sexual media consumption and in addition, reported more sexual experience compared to non-Dutch respondents. Adolescents who were in a relationship had as well more sexual experience in contrast with those who were single, since sex is more available within relationships.

Several limitations of this study warrant attention. First, the schools in the studied sample were not selected at random, so results can not be generalized to all adolescents in The Netherlands. Second, there was a relatively high attrition rate of non-Dutch and more sexually experienced adolescents, which in turn leads to a more limited representation of the studies sample. Third, results from the current

longitudinal research imply a significant relationship between sexual media consumption and sexual experience, but given that the study is not an experiment, cause and consequences can not be determined with certainty. Further research is needed to establish unambiguous conclusions about the direction of this relationship. In spite of these limitations, this study is a unique longitudinal examination of the sexual development of 494 adolescents. The results of the current study fill the research gap in shedding light on the longitudinal relationship between sexual media consumption and the sexual development of adolescents.

Overall, adolescents' sexual media consumption predicts their level of sexual experience in the near future. However, it is important to note that since the model only explained 2% of the variance of sexual experience among adolescents, it is not just sexualized media alone that leads to more sexual experience. More research is necessary to establish which other factors play a significant role in explaining sexual activity among teenagers. Especially the role of friends, in terms of their experience and related (implicit) pressure, and parents, in terms of their monitoring, should be examined. If it is clear which factors play a major role in explaining sexual experience among adolescents, interventions can be developed to prevent adolescents from having risky sex at an early age.

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Table 1

*MANOVA with mean levels and standard deviations across T<sub>1</sub>-T<sub>4</sub>*

	<i>N</i>	<b>T<sub>1</sub></b>	<b>T<sub>2</sub></b>	<b>T<sub>3</sub></b>	<b>T<sub>4</sub></b>	<i>F</i>	<i>p</i>
Sexual media consumption (1-5)	99	1.22 (.58)	1.17 (.54)	1.19 (.47)	1.22 (.60)	1.70	.17
Sexual experience (0-2)	109	0.96 (.58)	1.08 (.62)	1.32 (.64)	1.39 (.62)	0.67	.57
Sexual satisfaction (0-2)	129	3.45 (.91)	3.64 (.89)	3.74 (.94)	3.74 (.96)	0.47	.71

Cases were excluded pair wise.

Table 2

*Pearson product- moment correlations between measures of sexual media consumption, sexual experience and sexual satisfaction*

	1	2	3	4	5	6	7	8	9	10	11	12
1. Sexual media consumption T <sub>1</sub>	-											
2. Sexual media consumption T <sub>2</sub>	.73**	-										
3. Sexual media consumption T <sub>3</sub>	.69**	.68**	-									
4. Sexual media consumption T <sub>4</sub>	.60**	.55**	.48**	-								
5. Sexual experience T <sub>1</sub>	.17**	.20**	.10	.00	-							
6. Sexual experience T <sub>2</sub>	.22**	.30**	.20**	-.04	.75**	-						
7. Sexual experience T <sub>3</sub>	.21**	.20**	.18**	.06	.67**	.80**	-					
8. Sexual experience T <sub>4</sub>	.14	.15	.10	.16*	.51**	.62**	.79**	-				
9. Sexual satisfaction T <sub>1</sub>	.06	.17**	.15*	.07	.34**	.29**	.24**	.21**	-			
10. Sexual satisfaction T <sub>2</sub>	-.02	.06	.12	-.02	.22**	.27**	.18**	.17*	.58**	-		
11. Sexual satisfaction T <sub>3</sub>	.01	.03	.11	-.06	.25**	.36**	.37**	.29**	.41**	.48**	-	
12. Sexual satisfaction T <sub>4</sub>	-.04	.00	.00	-.03	.21**	.17*	.32**	.36**	.35**	.43**	.59**	-

Cases were excluded pair wise.

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Table 3

*Summary of longitudinal hierarchical regression analyses: sexual experience at T<sub>2</sub>*

*(n=223), T<sub>3</sub>(n=184) and T<sub>4</sub>(n=147) on sexual media consumption at T<sub>1</sub>*

	Sexual experience T <sub>2</sub>	Sexual experience T <sub>3</sub>	Sexual experience T <sub>4</sub>
<b>Step 1</b>			
Age	.16*	.03	-.05
Ethnicity	-.17*	-.18*	-.23**
Educational level	-.08	.01	-.09
Religion	.00	.06	.10
Having an own TV	-.11	.05	.05
Having an own PC	.00	.07	.06
Relationship status	.41***	.42***	.42***
<b>Step 2</b>			
Age	.07	-.07	-.08
Ethnicity	-.15**	-.14*	-.20**
Educational level	-.04	.04	-.04
Religion	.00	-.01	.06
Having an own TV	.00	-.01	-.03
Having an own PC	-.02	.06	.04
Relationship status	.24***	.27***	.34***
Sexual experience T <sub>1</sub>	.64***	.61***	.38***
<b>Step 3</b>			
Age	.06	-.08	-.09
Ethnicity	-.15**	-.14*	-.20**
Educational level	-.06	.02	-.05
Religion	.00	-.02	.05
Having an own TV	.02	-.03	-.03
Having an own PC	-.02	.05	.03
Relationship status	.25***	.27***	.36***
Sexual experience T <sub>1</sub>	.62***	.59***	.37***
Sexual media consumption T <sub>1</sub>	.14**	.12**	.12
<b>Step 4</b>			
Age	.06	-.08	-.09
Ethnicity	-.15**	-.15**	-.20**
Educational level	-.06	.02	-.05
Religion	.00	-.02	.05
Having an own TV	.02	-.03	-.03
Having an own PC	-.02	.05	.03
Relationship status	.25***	.27***	.36***
Sexual experience T <sub>1</sub>	.62***	.59***	.37***
Sexual media consumption T <sub>1</sub>	.13*	.14*	.13

## SEX, MEDIA AND ADOLESCENTS

Sexual media consumption × gender	.01	-.02	-.02
Step 1 $\Delta R^2$	.26***	.23***	.28***
Step 2 $\Delta R^2$	.35***	.32***	.12***
Step 3 $\Delta R^2$	.02**	.02**	.01
Step 4 $\Delta R^2$	.00	.00	.00
Total model $R^2$	.63	.57	.42

*Note:* sexual media consumption was centered at its mean. Standardized betas are presented for both main and interaction effects. Cases were excluded pair wise. The control variables age, educational level, having an own TV and PC and relationship status were entered per wave in the regression analysis, since these variables might fluctuate over time.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Table 4

*Summary of longitudinal hierarchical regression analyses: sexual satisfaction at T<sub>2</sub>*

*(n=235), T<sub>3</sub>(n=196) and T<sub>4</sub>(n=166) on sexual media consumption at T<sub>1</sub>*

	Sexual satisfaction T <sub>2</sub>	Sexual satisfaction T <sub>3</sub>	Sexual satisfaction T <sub>4</sub>
<b>Step 1</b>			
Age	.10	.02	.00
Ethnicity	-.14	-.03	-.01
Educational level	-.04	-.08	-.10
Religion	.00	.07	.08
Having an own TV	-.07	.07	-.02
Having an own PC	-.02	-.11	-.12
Relationship status	.17*	.28***	.38***
<b>Step 2</b>			
Age	.00	.05	.00
Ethnicity	-.09	-.01	.04
Educational level	.02	-.06	-.07
Religion	-.02	.06	.03
Having an own TV	-.13*	.06	-.02
Having an own PC	-.02	-.11	-.09
Relationship status	.14*	.27***	.36***
Sexual satisfaction T <sub>1</sub>	.57***	.49***	.37***
<b>Step 3</b>			
Age	.01	.06	.01
Ethnicity	-.10	-.01	.05
Educational level	.03	-.06	-.06
Religion	-.02	.06	.03
Having an own TV	-.14*	.07	-.02
Having an own PC	-.02	-.11	-.08
Relationship status	.13*	.27***	.34***
Sexual satisfaction T <sub>1</sub>	.58***	.49***	.38***
Sexual media consumption T <sub>1</sub>	-.06	-.05	-.07
<b>Step 4</b>			
Age	.01	.06	.01
Ethnicity	-.09	-.02	.04
Educational level	.03	-.06	-.06
Religion	-.02	.05	.03
Having an own TV	-.13*	.07	-.02
Having an own PC	-.02	-.11	-.08
Relationship status	.13*	.28***	.34***
Sexual satisfaction T <sub>1</sub>	.57***	.50***	.38***
Sexual media consumption T <sub>1</sub>	-.05	-.07	-.08

## SEX, MEDIA AND ADOLESCENTS

Sexual media consumption × gender	-.02	.04	.02
Step 1 $\Delta R^2$	.07*	.11**	.17***
Step 2 $\Delta R^2$	.31***	.24***	.13***
Step 3 $\Delta R^2$	.00	.00	.00
Step 4 $\Delta R^2$	.00	.00	.00
Total model $R^2$	.39	.35	.31

*Note:* sexual media consumption was centered at its mean. Standardized betas are presented for both main and interaction effects. Cases were excluded pair wise. The control variables age, educational level, having an own TV and PC and relationship status were entered per wave in the regression analysis, since these variables might fluctuate over time.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$