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Adolescents' Sexual Media Use and Willingness to Engage in Casual Sex:
Differential Relations and Underlying Processes

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Abstract

The present study investigated the relationship between different types of sexual media use (i.e., sexually explicit internet material, sexually oriented reality TV and sexy self-presentations on social network sites) and adolescents' willingness to engage in casual sex, as well as underlying social-cognitive processes of this relationship. Drawing on a longitudinal three-wave panel study among 1,467 adolescents (aged 13-17, 50% female), we found that exposure to sexually explicit internet material directly predicted adolescents' willingness to engage in casual sex. Exposure to sexy self-presentations of others on social network sites and sexually oriented reality TV predicted adolescents' willingness to engage in casual sex indirectly through descriptive peer norms on casual sex.

Adolescents' Sexual Media Use and Willingness to Engage in Casual Sex: Differential Relations and Underlying Processes

In many Western or Westernized countries, sexual activity is increasingly considered a normative aspect of adolescence (Tolman & McClelland, 2011). However, research has also suggested that engaging in sexual behaviors with partners outside of a committed relationship (i.e., casual sex) may be risky for adolescents (e.g., Kotchick, Shaffer, Forehand, & Miller, 2001). As a result, scholars have investigated possible predictors of casual sex behavior. In the past years, the prototype-willingness model has become an important theoretical framework for the investigation of adolescent sexuality (e.g., Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008; Gibbons, Gerrard, Blanton, & Russell, 1998), including casual sex behavior (Gibbons & Gerrard, 1995; Gibbons et al., 1998). This model aims at predicting behaviors that are considered risky and is based on the idea that young people often do not intend to engage in risk behavior, but may be willing to do so if the situation facilitates this behavior (Gerrard et al., 2008; Gibbons & Gerrard, 1995).

A recent study has linked the prototype-willingness model to sexual media use and showed that liking a movie character who engages in casual sex can increase the willingness to engage in casual sex among young adult women (Boot, Peter, & van Oosten, 2016). However, not much is known about how and which types of sexual media use can influence the willingness to engage in casual sex among adolescents. Therefore, going beyond the study by Boot et al. (2016), the present study systematically compares three types of sexual media content that are popular among adolescents and seem to promote (casual) sex (i.e., sexually explicit internet material as well as sexual content on television and in social media), in their relation to adolescents' willingness to engage in casual sex.

The just mentioned three types of sexual media use may predict willingness to engage in casual sex differently, given the potential differences in social-cognitive processes that underlie changes in behavioral willingness. More specifically, willingness to engage in a particular behavior results from perceptions of whether similar others engage in a behavior (i.e., descriptive peer norms) and the favorability of the prototypes of peers engaging in that behavior (e.g., prototype-willingness model, Gerrard et al., 2008; Gibbons & Gerrard, 1995; Gibbons et al., 1998). The three aforementioned types of sexual content may be differently related to peer norms and prototypes of sexual peers, given differences in their levels of realism and similarity to adolescents' social environment. This study therefore specifically aimed at 1) investigating the relationship between exposure to three types of sexual media content and adolescents' willingness to engage in casual sex, and 2) studying potential differences between each type of sexual media content in whether favorability of prototypes of peers engaging in casual sex as well as descriptive peer norms about casual sex underlie these relationships.

Sexual Media Content and Casual Sex

Depictions of casual sex are prevalent in the media, in both sexually explicit internet material (Bridges, Wosnitzer, Scharrer, Sun, & Liberman, 2010; Brosius, Weaver, & Staab, 1993) and mainstream media (Wright, 2009). Previous findings on the association between sexually explicit media content and young people's permissive attitudes towards sex (e.g., Brown & L'Engle, 2009; Omori, Zhang, Allen, Ota, & Imamura, 2011; Peter & Valkenburg, 2010) suggest that adolescents' willingness to engage in casual sex may increase as they watch sexually explicit internet material more often. Furthermore, a type of mainstream media that ranks among the genres with the highest sexual content is reality TV (e.g., Fisher, Hill, Grube, Gruber, & Crube, 2004; Kunkel, Eyal, Donnerstein, Biely, & Rideout, 2007). Sexual situations in reality TV such as docu-soaps revolve often around casual sex. Exposure to such content has been related to

adolescents' permissive attitudes towards sex (Bond & Drogos, 2014) and their beliefs about sex in relationships (e.g., sex on first date, having multiple sex partners; Riddle & De Simone, 2013).

With the rise of social media, adolescents have also been creating and sharing sexual content themselves, for example in the form of sexy self-presentation on social network sites (Hall, West, & McIntyre, 2012; Hinduja & Patchin, 2008; Moreno, Parks, Zimmerman, Brito, & Christakis, 2009; Peluchette & Karl, 2009). Sexy self-presentation often involves posting sexually suggestive pictures of oneself on one's social network site profile (Hinduja & Patchin, 2008; Peluchette & Karl, 2009). Such pictures of adolescents on social network sites may be interpreted as them being sexually available (e.g., Peluchette & Karl, 2009; Ringrose & Eriksson Barajas, 2011) and potentially willing to engage in casual sex. This idea is supported by initial evidence that online sexual self-disclosure is associated with having experience with casual sex (Bobkowski, Brown, & Neffa, 2012).

In sum, given that casual sex behavior is visible in sexually explicit internet material and reality TV and is suggested on social network sites, such content may influence adolescents' willingness to engage in casual sex. We therefore hypothesized that the frequency of watching sexually explicit internet material (H1a), reality TV (H1b), and sexy online self-presentations (H1c) would positively predict adolescents' willingness to engage in casual sex.

Social-Cognitive Processes Underlying the Willingness to Engage in Casual Sex

The willingness to engage in risk behavior may be explained by social-cognitive processes (e.g., Houlihan et al., 2008; Thornton, Gibbons, & Gerrard, 2002). Based on the prototype-willingness model (e.g., Gibbons et al., 1998; Gerrard et al., 2008), two types of social-cognitive processes are particularly relevant, notably with regard to the potential influence of media content, namely the increased favorability of the social images (i.e., prototypes) of peers engaging in casual sex and descriptive peer norms about casual sex. The first process consists of

the social-cognitive representations, or prototypes, that adolescents have of the type of person their age who typically engages in a particular behavior. When such prototypes are favorable, adolescents are more willing to engage in this behavior (Gerrard et al., 2008; Gibbons & Gerrard, 1995). Prototypes are often the result of behavior observed among peers (Gibbons et al., 2010), but may also be affected by the media (Dal Cin et al., 2009).

Social norms about a given behavior form a second type of social-cognitive process of behavioral willingness (e.g., Gerrard et al., 2008) and have been investigated as a predictor of behavioral willingness in previous research (e.g., Gibbons, Helweg-Larsen, & Gerrard, 1995), including willingness to engage in casual sex (Buunk & Bakker, 1995). One particularly relevant type of social norm is the perception of the prevalence of a behavior. The more common a behavior is perceived to be, the more willing people are to engage in that behavior (e.g., Gibbons, Helweg-Larsen, & Gerrard, 1995). According to the availability heuristic, perceptions of prevalence depend on the visibility of a behavior in one's environment (Tversky & Kahneman, 1973). In the context of media influence, it can be expected that frequent portrayals of a behavior in the media are particularly likely to increase its visibility and thus the perception of its prevalence (e.g., Shrum, 2009). We therefore focus on descriptive norms (i.e., norms about how many people engage in a given behavior), in addition to the favorability of prototypes of peers engaging in casual sex, as social-cognitive processes underlying the relationship between sexual media use and the willingness to engage in casual sex.

Differential influences of sexual media content on social-cognitive processes.

Sexually explicit internet material. Research on social-cognitive processes underlying the prediction of sexual attitudes and behaviors by exposure to sexually explicit internet material is scarce. Previous research has explained the role of sexually explicit internet material by the extent to which “the content of SEIM [sexually explicit internet material] is perceived to be

similar to real-world sex” (Peter & Valkenburg, 2010, pp. 376–77). This suggests that exposure to sexually explicit internet material may be related to adolescents’ perceptions of peer behaviors. At the same time, several studies have also shown that adolescents criticize sexually explicit media content for their lack of realism and are able to distinguish between the fantasies featured in sexually explicit material and real-life sexual interactions (Häggström-Nordin, Sandberg, Hanson, & Tydén, 2006; Lofgren-Mårtenson & Månsson, 2010). Based on the existing literature, it is currently thus an open question whether exposure to sexually explicit internet material results in more favorable prototypes of sexual peers or descriptive peer norms on casual sex. As a result, we refrained from formulating hypotheses about the mediating role of these social-cognitive processes and instead posed the following research questions: Is the relationships between watching sexually explicit internet material and adolescents’ willingness to engage in casual sex mediated by the favorability of the prototype of a peer engaging in casual sex (RQ1a) and by descriptive peer norms on casual sex (RQ1b)?

Sexually oriented reality TV. Reality TV is generally set up to appear as a non-scripted portrayal of ordinary young people in real living or working environments (e.g., Beck, Hellmueller, & Aeschbacher, 2012). This portrayal of ordinary life may make it easier for adolescents to identify with the characters and to integrate the content into their own lives (Beck et al., 2012). However, similar to sexually explicit internet material, the content in reality TV has been considered as extreme and unrealistic by young viewers (Lundy, Ruth, & Park, 2008). As a consequence, it is also possible that adolescents may not apply such content to their peer prototypes or descriptive norms on casual sex. Because specific predictions were thus difficult to make also for reality TV, we investigated the following research question: Is the relationship between watching sexually oriented reality TV and adolescents’ willingness to engage in casual

sex mediated by the favorability of the prototype of a peer engaging in casual sex (RQ2a) and by descriptive peer norms on casual sex (RQ2b)?

Exposure to online sexy self-presentations of peers. Adolescents use social network sites mostly to interact with their friends (e.g., Barker, 2009; Gross, 2004; Lenhart & Madden, 2007) and often present themselves on such sites in sexy ways (e.g., in sexy clothing and poses, Kapidzic & Herring, 2014; Moreno et al., 2009). Because sexy online self-presentations are thus likely to portray the sexual behavior of peers, exposure to such online presentations may influence the social images that adolescents acquire of sexual peers. Moreover, as engaging in sexy self-presentation is used as a way to become more popular and attractive to peers (e.g., Bailey, Steeves, Burkell, & Regan, 2013; Siibak, 2009) and interpreted in terms of sexual availability (Ringrose & Eriksson Barajas, 2011), adolescents' exposure to sexy self-presentations of others on social network sites may eventually result in more favorable prototypes of a peer engaging in casual sex. We therefore hypothesized that exposure to sexy online self-presentations would predict more favorable prototypes of peers engaging in casual sex (H2a). In turn, based on the prototype-willingness model (Gerrard et al., 2008; Thornton et al., 2002), favorable prototypes of peers engaging in casual sex, were expected to predict adolescents' willingness to engage in casual sex (H2b). We thus predicted that the favorability of prototypes of peers engaging in casual sex would mediate the relationship between exposure to sexy online self-presentations and willingness to engage in casual sex (H2c).

Sexy online self-presentation also reinforces the perception of sex as 'everybody is doing it' (e.g., Ringrose & Eriksson Barajas, 2011), which may, at least partly, generalize to perceptions of casual sex. In fact, it has been previously shown that sexual displays on social network sites are related to adolescents' perceived peer norms regarding sex (Doornwaard, Moreno, van den Eijnden, Vanwesenbeeck, & Ter Bogt, 2014). This perception, in turn, may increase the

perceived prevalence of casual sex in adolescents' minds. As outlined above, when casual sex seems prevalent, descriptive norms on casual sex may change. We therefore expected that exposure to sexy online self-presentations would be related to the number of peers that are perceived to have casual sex (H3a). Such descriptive peer norms on casual sex, in turn, were expected to predict adolescents' willingness to engage in casual sex (H3b). We thus predicted that descriptive peer norms on casual sex would mediate the relationship between exposure to sexy online self-presentations and willingness to engage in casual sex (H3c).

Method

Sample and Procedure

We analyzed data from a three-wave panel survey that was fielded between May/June 2013 and May/June 2014 by Veldkamp, a Dutch survey institute. An interval of six months separated each wave. Veldkamp had originally sampled 2,137 adolescents randomly from a pool of respondents that are representative of the Dutch adolescent population in terms of gender, age, educational level, family size and residential area. The response rate across all three waves was 68.65%, resulting in a final sample of 1,467 adolescents with an age range of 13-17 ($M = 15$, $SD = 1.41$). An equal amount of boys and girls participated in all three waves of the study. Of the final sample, 93.5% was heterosexual (i.e., only attracted to members of the opposite sex). The SES of our sample, based on the educational level and income level of the participants' parents, was rather high; the majority (77 %) of the participants was part of the highest and second highest level of SES, and 23% of our sample was part of the lowest and second lowest SES level. This is similar to the SES levels of the Netherlands in general, where 73% of the population has received university- or intermediate or higher vocational education, and 27% are low educated (CBS, 2014).

Ethical approval was obtained from the Ethical Review Board of the University of Amsterdam where the study was developed. Moreover, active consent of the adolescents' parents as well as informed consent of the adolescents was obtained before the start of the study. Respondents were asked to complete an online questionnaire on sexual issues and the media at home. Respondents were notified that they could stop at any time they wished and that the principal investigators could not trace identifying information. After completing each wave of the study, the participants received a voucher worth five Euro for participation. When completing all three waves of the study, the participants obtained an additional voucher worth of five Euro.

Measures

Means and standard deviations of our measures in all three waves can be found in Table 1. A repeated measures ANOVA was conducted to see how the means of each variable changed over time. The results of these analyses are also shown in Table 1.

Sexually explicit internet material. Exposure to sexually explicit internet material was measured by asking participants how often in the previous 6 months they had intentionally looked at sexually explicit content (i.e., pornographic material, not nudity) on their computer, either online or offline (i.e., downloaded material) (cf. Peter & Valkenburg, 2010). Sexually explicit content was specified as (a) pictures with clearly exposed genitals, (b) movies with clearly exposed genitals, (c) pictures in which people were having sex, and (d) movies in which people were having sex. Response categories ranged from 1 (*several times a day*) to 7 (*never*). Items were recoded such that higher scores indicated more frequent use of sexually explicit internet material. In all three waves, the items formed a unidimensional scale (explained variance > 88%), which had a Cronbach's alpha of .95 or higher. The items were therefore averaged to form the measure of 'exposure to sexually explicit internet material'.

Reality TV. In order to measure exposure to sexually oriented reality TV, we measured the frequency with which participants watched two docu-soaps that were broadcast before and during the survey period: (a) *MTV's 'Jersey Shore'*, and (b) *MTV's 'Geordie Shore'*. Because 'Jersey Shore' was no longer aired on MTV during the third wave of the study, we replaced this item with the similar type of MTV reality show '*The Valleys*'. Respondents were asked to indicate how often, in the past 6 months, they had watched these shows on television, computer, or smartphone. The response categories were 1 (*every episode*) to 7 (*never*). Items were recoded such that higher scores indicated more frequent exposure to sexually oriented reality TV. The items formed a unidimensional scale (explained variance > 87%), and were highly correlated (Pearson's $r > .76$) in all three waves, and were thus averaged to form the variable 'exposure to reality TV.'

Sexy online self-presentations of others. To measure exposure to sexy online self-presentations on social network sites, respondents were asked how often, in the past 6 months, they had looked at pictures on social network sites (e.g., Facebook, Twitter) of others in which these others presented themselves (a) with a sexy gaze, (b) with a sexy appearance, (c) scantily dressed (e.g., bathing suit or underwear), and (d) with a sexy pose. The items were based on previous literature describing adolescents' sexy self-presentations on social media (e.g., Hall et al., 2012; Moreno et al., 2009; Peluchette & Karl, 2009). Response options ranged from 1 (*always*) to 7 (*never*). Adolescents who did not use social network sites were also given a score of "never" on this measure. Items were recoded such that higher scores indicated more frequent exposure to sexy online self-presentations. The items loaded on one factor with an explained variance of 86 % and higher and showed good internal consistency (Cronbach's alpha = .95) in all three waves. The items were therefore averaged to form the variable 'exposure to sexy online self-presentations.'

Prototypes of a peer engaging in casual sex. To measure the favorability of a prototype of a peer engaging in casual sex, we used a scale that was based on a measure of *prototype perception* by Gibbons and colleagues (Gibbons & Gerrard, 1995; Gibbons, Gerrard, & McCoy, 1995). Respondents were asked the following question about a person of their own gender: “Imagine a boy/girl that has many casual sexual contacts. According to you, which characteristics are typical for this boy/girl? A boy/girls that has many casual sexual contacts is... (a) attractive, (b) spontaneous, (c) interesting, (d) desired, (e) confident.” Response categories ranged from 1 (*totally agree*) to 7 (*totally disagree*). Items were recoded such that higher scores indicated a more favorable prototype. The five items formed a uni-dimensional scale with an explained variance of 76 % or higher and good reliability (Cronbach’s alpha > .92) in all three waves and were thus averaged to form the variable ‘prototypes of a peer engaging in casual sex.’

Descriptive peer norms on casual sex. Descriptive peer norms were measured with one item. Adolescents were asked how many of their same-aged friends they thought had engaged in casual sex. Answer options were 1 (*no one*), 2 (*almost no one*), 3 (*some of them*), 4 (*many*), 5 (*almost all of them*), and 6 (*all of them*).

Willingness to engage in casual sex. The measure of willingness to engage in casual sex was based on previous assessments of willingness to engage in risk behavior (e.g., Gerrard et al., 2008; Gibbons, Gerrard, & McCoy, 1995). Respondents were asked the following: “Imagine meeting someone that you are not in love with and with whom you do not want a relationship. However, you do find this person very attractive, and you know this feeling is mutual. How likely is it that the following happens between the two of you: a) touching each other’s genitals, b) giving or receiving oral sex, and c) vaginal intercourse?” Gay, lesbian and adolescents who were undecided about their sexual orientation answered a question about ‘having sex’ instead of ‘vaginal intercourse’ to avoid a heterosexual bias. Response categories ranged from 1 (*very*

likely) to 7 (*very unlikely*). Items were recoded such that higher scores indicated a higher willingness to engage in casual sex.

The items loaded on one factor with an explained variance of 91% and higher and a Cronbach's alpha of .95 in all three waves. The items were therefore averaged to form the variable 'willingness to engage in casual sex'. Looking at the number of participants who scored within the range of (recoded) 4 (*neutral*) to 7 (*very likely*) on the mean willingness score, it appears that 19.35% of the participants at wave 1, 34.83% of the participants at wave 2, and 36.19% of the participants at wave 3 were at least somewhat to very willing to engage in casual sex.

Control variables. Because casual sex has been shown to be more accepted among boys (Allen et al., 2007) and older adolescents (Fortunato, Young, Boyd, & Fons, 2010), we controlled for gender and age. Gender was coded "0" for boys and "1" for girls. Age was measured in years. Moreover, because it seems probable that adolescents with more sexual experience are more willing to engage in casual sex, compared to adolescents with little sexual experience, we also controlled for sexual experience. Sexual experience was measured by asking respondents whether they had experience with the following sexual behaviors: a) touching each other's genitals, b) giving or receiving oral sex, and c) vaginal intercourse (the latter was changed into 'having sex' for gay, lesbian and undecided adolescents). Response categories were "yes" (coded '1') or "no" (coded '0'). The three items loaded on one factor with an explained variance of 78% in all waves. Because the internal structure of the measurement is hierarchical and thus heterogeneous, we used Guttman's Lambda 2 to calculate the reliability (Guttman, 1945; Tang & Cui, 2012), which showed good reliability of the items ($\lambda^2 > .85$) in all three waves. Items were averaged to form the variable 'sexual experience' ($M = .13$, $SD = .25$ in wave 1; $M = .23$, $SD = .36$ in wave 2; $M = .27$, $SD = .39$ in wave 3).

Data analyses. The hypotheses were tested with structural equation modeling (in AMOS 21), using autoregressive models that included levels of the dependent variables at waves 1 and 2, along with the simultaneous influence of the independent variables at waves 2 and 3 (e.g., Cole & Maxwell, 2003). In all of our analyses, we controlled for gender, age and sexual experience, which were modeled as manifest variables in the model, by letting them predict the dependent and mediator variables at wave 2 and wave 3 and covary with the variables at wave 1. Disturbance terms of the variables at waves 2 and 3 and the error terms of the identical items of each variable between the three waves were allowed to covary. To account for the violation of the normality assumption in our variables, we used the bootstrap method in addition to our parametric tests (Efron & Tibshirani, 1993). We estimated 95% bias-corrected confidence intervals (95% BCI) of the standardized estimates on the basis of 1,000 bootstrapping samples ($N = 1,467$ each). When the 95% BCI does not include zero, the effect can be assumed to differ significantly from zero, and thus refers to a statistically significant relationship.

Results

Zero-order correlations between the variables are shown in Table 2. Standardized regression coefficients of the tested relationships are illustrated in Figure 1. Hypotheses 1a-c posited that the frequency of watching sexually explicit internet material (H1a), reality TV (H1b) and sexy online self-presentations (H1c) would positively predict adolescents' willingness to engage in casual sex. To test the hypotheses, we analyzed the model with exposure to the three types of sexual media content (at wave 1) as the independent variables, predicting the dependent variable willingness to engage in casual sex (at wave 3). The fit of the model was good, $\chi^2(330, N = 1,467) = 1984.18, p < .001, CFI = .96, RMSEA = .058$ (90% confidence interval: .056/.061). In line with Hypothesis 1a, adolescents' willingness to engage in casual sex at wave 3 was predicted by the frequency of watching sexually explicit internet material at wave 1, $\beta = .174, B =$

.290, $SE = .047$, $p < .001$, 95% BCI: .110/.236. In contrast to hypotheses 1b and 1c, willingness to engage in casual sex at wave 3 was not significantly predicted by exposure to sexually oriented reality TV at wave 1, $\beta = .035$, $B = .050$, $SE = .034$, $p = .140$, 95% BCI: -.015/.081, nor by exposure to sexy self-presentations on social network sites at wave 1, $\beta = .030$, $B = .036$, $SE = .030$, $p = .238$, 95% BCI: -.024/.081.

As an additional test of the robustness of the direct relationships within shorter time periods, a second model was analyzed in which the latent dependent variable willingness to engage in casual sex at wave 2 and wave 3 was predicted by the latent independent variables of exposure to sexually explicit internet material, reality TV, and sexy self-presentations at wave 1 and wave 2 respectively. The model (model fit: $\chi^2 [730, N = 1,467] = 3777.77$, $p < .001$, CFI = .96, RMSEA = .053 [90% confidence interval: .052/.055]) also showed that adolescents' willingness to engage in casual sex at wave 2 was predicted by the frequency of watching sexually explicit internet material at wave 1, $\beta = .112$, $B = .186$, $SE = .045$, $p < .001$, 95% BCI: .054/.169, and that adolescents' willingness to engage in casual sex at wave 3 was predicted by the frequency of watching sexually explicit internet material at wave 2, $\beta = .165$, $B = .257$, $SE = .038$, $p < .001$, 95% BCI: .110/.222. Willingness to engage in casual sex at wave 2 was significantly predicted by exposure to sexually oriented reality TV at wave 1, $\beta = .094$, $B = .130$, $SE = .033$, $p < .001$, 95% BCI: .041/.148, but willingness to engage in casual sex at wave 3 was not significantly predicted by exposure to sexually oriented reality TV at wave 2, $\beta = .016$, $B = .025$, $SE = .036$, $p = .491$, 95% BCI: -.033/.063. Finally, willingness to engage in casual sex at wave 2 was not significantly predicted by exposure to sexy self-presentations on social network sites at wave 1, $\beta = .006$, $B = .007$, $SE = .031$, $p = .823$, 95% BCI: -.053/.054, but willingness to engage in casual sex at wave 3 was significantly predicted by exposure to sexy self-presentations on social network sites at wave 2, $\beta = .050$, $B = .063$, $SE = .029$, $p = .030$, 95% BCI: .006/.107.

Thus, despite some longitudinal relationships between willingness to engage in casual sex and reality TV (H1b) and exposure to sexy self-presentations (H1c), these relationships were not robust over waves. Only hypothesis 1a was thus fully supported.

Mediation Analyses for Peer Prototypes and Descriptive Peer Norms

In order to test Hypotheses 2a-c, 3a-c and to answer the research questions 1a, 1b, 2a and 2b, we analyzed an indirect effect model with the three types of sexual media content (at wave 1) as independent variables, willingness to engage in casual sex (at wave 3) as the dependent variable, and peer prototypes and descriptive norms on casual sex (at wave 2) as mediators (see Figure 1). The fit of the model was good, $\chi^2(1561, N = 1,467) = 5785.63, p < .001, CFI = .95, RMSEA = .043$ (90% CI: .042/.044).

Sexually explicit internet material. Exposure to sexually explicit internet material (in wave 1) was not significantly related to prototypes of sexual peers (i.e., the mediating variable, wave 2), $\beta = .044, B = .067, SE = .045, p = .132, 95\% \text{ BCI: } -.008/.103$, or to descriptive peer norms on casual sex (wave 2), $\beta = -.005, B = -.004, SE = .025, p = .860, 95\% \text{ BCI: } -.062/.054$. This thus precludes a mediation of the relationship between exposure to sexually explicit internet material (at wave 1) and willingness to engage in casual sex (at wave 3) by prototypes of sexual peers (RQ 1a) or descriptive peer norms on casual sex (RQ 1b).

Reality TV. Exposure to sexually oriented reality TV (in wave 1) was not significantly related to prototypes of sexual peers (at wave 2), $\beta = -.016, B = -.021, SE = .035, p = .557, 95\% \text{ BCI: } -.065/.049$. Thus, prototypes of sexual peers did not mediate an association between exposure to sexually oriented reality TV and willingness to engage in casual sex (RQ 2a). However, exposure to sexually oriented reality TV (in wave 1) significantly predicted descriptive peer norms on casual sex (at wave 2), $\beta = .111, B = .088, SE = .020, p < .001, 95\% \text{ BCI: } .082/.159$. Descriptive peer norms on casual sex (at wave 2), in turn, significantly predicted

willingness to engage in casual sex (at wave 3), $\beta = .059$, $B = .108$, $SE = .039$, $p = .005$, 95% BCI: .014/.108.

Reality TV at wave 1 did not predict willingness to engage in casual sex at wave 3, but did so at wave 2, as outline above. Moreover, Table 2 shows a significant correlation between reality TV exposure at wave 1 and willingness to engage in casual sex at wave 3. These findings thus indicated a possibility of an indirect relationship between reality TV, descriptive peer norms, and willingness to engage in casual sex. We, therefore, tested the indirect relation between reality TV exposure at wave 1 and willingness to engage in casual sex at wave 3 through descriptive peer norms on casual sex at wave 2. The indirect effect (i.e., the product of the prediction of descriptive norms by reality TV and the prediction of willingness to engage in casual sex by descriptive norms) was significant, $B = .009$, $SE = .004$, $p = .019$, 95% BCI: .002/.014. Moreover, comparing two models where the direct relationship between sexually oriented reality TV exposure and willingness to engage in casual sex was either allowed to vary or constrained to zero, did not result in a significant change in the model fit ($CMIN = .011$, $p = .92$). Thus in line with RQ2b, there is an indirect relationship between exposure to sexually oriented reality TV (at wave 1) and willingness to engage in casual sex (at wave 3) through descriptive peer norms on casual sex (at wave 2).

Sexy self-presentation. Exposure to online sexy self-presentations of others (in wave 1) was significantly related to prototypes of sexual peers (at wave 2), $\beta = .078$, $B = .088$, $SE = .033$, $p = .009$, 95% BCI: .007/.128. Hypothesis 2a was thus supported. However, prototypes of sexual peers (at wave 2) did not significantly predict willingness to engage in casual sex (at wave 3), $\beta = .034$, $B = .035$, $SE = .024$, $p = .132$, 95% BCI: -.012/.081. Hypothesis 2b was thus not supported. There was thus no indirect relationship between exposure to sexy self-presentations and willingness to engage in casual sex through prototypes of peers engaging in casual sex

(hypothesis 2c). Exposure to sexy self-presentations (in wave 1) was significantly related to descriptive peer norms on casual sex (at wave 2), $\beta = .125$, $B = .087$, $SE = .019$, $p < .001$, 95% BCI: .082/.190. Hypothesis 3a was thus supported. Hypothesis 3b was also supported as descriptive norms on casual sex (at wave 2) significantly predicted willingness to engage in casual sex (at wave 3) (see results for RQ2b).

Similar to the influence of reality TV, the significant prediction of willingness to engage in casual sex at wave 3 by exposure to sexy self-presentations of others at wave 2 as well as the significant correlation between exposure to sexy self-presentations of others at wave 1 and willingness to engage in casual sex at wave 3 (see Table 2) suggested a potential indirect relationship between these variables through descriptive peer norms on casual sex (at wave 2). The indirect effect (i.e., the product of the two predictions in Hypotheses 3a and 3b) was significant, $B = .010$, $SE = .004$, $p = .018$, 95% BCI: .002/.018. Comparing two models where the direct relationship between exposure to sexy self-presentations and willingness to engage in casual sex was either allowed to vary or constrained to zero, did not result in a significant change in the model fit ($CMIN = .368$, $p = .544$). Thus, the findings show an indirect relationship between exposure to sexy self-presentations (at wave 1) and willingness to engage in casual sex (at wave 3) through descriptive peer norms on casual sex (at wave 2), supporting Hypothesis 3c.

Discussion

The present study investigated the association between adolescents' sexual media use (i.e., sexually explicit internet material, sexually oriented reality TV, and sexy self-presentations on social network sites) and their willingness to engage in casual sex. Following the predictions of the prototype-willingness model (Gerrard et al., 2008; Gibbons & Gerrard, 1995), we further investigated whether the favorability of adolescents' prototypes of peers engaging in casual sex as well as descriptive peer norms on casual sex mediated the relationship between sexual media

use and adolescents' willingness to engage in casual sex. We found that only exposure to sexually explicit internet material directly predicted adolescents' willingness to engage in casual sex. Exposure to reality TV and sexy online self-presentations predicted willingness to engage in casual sex indirectly, through perceived descriptive peer norms on casual sex. These findings suggest that sexual media use is a relevant predictor of adolescents' willingness to engage in casual sex but that the processes through which such a prediction occurs seem to depend on the type of media content.

Implications for Research on Sexual Behavior

The present findings suggest that media effects research and the prototype-willingness model (Gerrard et al., 2008; Gibbons et al., 1998) can be combined to predict adolescents' engagement in casual sex. In line with previous studies (e.g., Boot et al., 2015; Dal Cin et al., 2009), the present study shows that the inclusion of sexual media content or media content in general may be a relevant additional predictor in the prototype-willingness model. Whereas Boot et al. (2016) previously found an influence of sexual media content on willingness to engage in casual sex among young adult women, the present study showed that such relations also occur among adolescent boys and girls. Moreover, present findings suggest that the relation between sexual media and adolescents' sexual behavior is mediated by social-cognitive processes outlined in the prototype-willingness model. Future research may thus find a fruitful task in studying how the media predict adolescents' (sexual) behavior, through changing peer norms and subsequently behavioral willingness.

More precisely, these findings have important implications for research on other types of behavior than casual sex as an outcome of sexual media use. We focused on casual sex in the present study as it occurs to varying degrees in the three types of media content (i.e., sexually explicit internet material, reality TV and social media) and was previously studied in the context

of the prototype-willingness model (Gibbons & Gerrard, 1995; Gibbons et al., 1998). However, research has also focused on other messages in sexual media content. For instance, studies have shown that depictions of sexual violence, both in sexually explicit internet material (e.g., Allen, D' Alessio, & Brezgel, 1995; Hald, Malamuth, & Yuen, 2010) and more mainstream sexual content (e.g., movies, Emmers-Sommer, Pauley, Hanzal, & Triplett, 2006; television, Kahlor & Eastin, 2011) are related to sexual aggression and rape myth acceptance among adults. Future research may investigate whether exposure to messages promoting sexual aggression or harassment in sexual media content predicts adolescents' engagement in sexual aggression or harassment through the social-cognitive processes in the prototype-willingness model.

Furthermore, the present study is one of the first to show how sexual content in *social media* may also predict adolescents' perceptions of sexual behavior. Previous research found associations between sexual content in social media and peer norms regarding sex (Doornwaard et al., 2014), as well as sexual behavior (Moreno, Brockman, Wasserheit, & Christakis, 2012). The present study extends such findings by showing longitudinally that exposure to sexy self-presentations on social network sites predicts adolescents' perceptions of how many peers are engaging in casual sex, and that such norms can predict their willingness to engage in sexual behavior. Together, these findings may start a timely and promising new line of research on self-generated sexual content on social network sites as an important predictor of adolescent sexual behavior through influencing peer norms on sexual behavior.

Implications for Research on Social-Cognitive Processes of Sexual Media Use

Our differential findings on the relation between sexual media content and adolescents' prototypes of peers as well as their descriptive peer norms on casual sex call for more attention to characteristics of sexual media content and how they relate to viewers' perceptions of peers. The finding that that frequent exposure to sexually explicit internet material was not related to social-

cognitive processes in the structural equation model suggests that such material may be somewhat removed from adolescents' direct sexual experiences and is therefore less likely to be associated with the perception of peers' sexual behavior. At the same time, additional analysesⁱ demonstrated an association between exposure to sexually explicit internet material (at high levels) and peer prototypes and peer norms. Our results, therefore, need validation in other research to see to what extent the use of sexually explicit internet material is related to perceptions of peers' sexual behavior.

Peer norms on casual sex did appear to be an important social-cognitive process underlying the prediction of the willingness to engage in casual sex by exposure to both reality TV and peers' sexy self-presentations. This relation may result from the fact that the sexual content in reality TV and in social media may reflect what adolescents experience in their lives. Given that sexy self-presentations are typically generated by adolescents' peers, it seems comprehensible that exposure to sexy self-presentations of others on social network sites predicted adolescents' prototypes of peers engaging in casual sex as well as their descriptive peer norms on casual sex. In a similar vein, reality TV portrays the real life behavior of other young people (Hall, 2006; Reiss & Wiltz, 2004; Tsay-Vogel & Krakowiak, 2015), which may explain why such content is more easily linked to perceptions of peers' sexual behavior than sexually explicit internet material.

At the same time, we did not find a relationship between exposure to sexually oriented reality TV and the favorability of prototypes of peers engaging in casual sex. The portrayal of casual sex behavior among young people in reality TV possibly may thus give adolescents the idea that engaging in casual sex is normative, but not that it is necessarily desirable. In fact, the characters in reality TV and their behavior in reality TV are sometimes considered "out of control" by viewers (Lundy et al., 2008, p. 216) and are not always perceived as similar to

oneself or one's peers (e.g., Anschutz, Van den Berg, de Graaf & Koordeman, 2014). As a consequence, exposure to reality TV may not elicit more favorable prototypes of sexual peers.

Limitations and Conclusions

Our findings need to be seen within the specific cultural context in which the study was done. The present study was conducted in the Netherlands, a country that has a liberal stance towards adolescent sexuality. While casual sex is not endorsed, certainly not among adolescents, it is increasingly seen as a part of an individual lifestyle at particular stages in life (e.g., Schalet, 2011). Depictions of casual sex in the media thus resonate with the broader cultural context in which adolescents grow up, which may enhance the influence of such depictions. Our results may therefore not generalize to other cultures where casual sex is more stigmatized. Specifics of the Dutch cultural context may have also affected the social-cognitive processes found in our study. Whereas social media likely contain images of peers from the same culture and country, the reality TV shows whose use we assessed are situated in the US and the UK and may thus be less similar to what the adolescents in our sample experience in their daily lives. Descriptive peer norms and peer prototypes could be influenced more strongly by reality TV that depicts characters who live in the same country as the respondents.

Another limitation of the present study is that we did not distinguish between looking at sexy self-presentations of close friends, casual acquaintances, or strangers in our measure of exposure to sexy self-presentations of others in social media. Although social media are generally considered platforms where adolescents are in contact with close friends and family (Barker, 2009; Gross, 2004; Lenhart & Madden, 2007), they can also be used for looking at images of celebrities or other individuals who differ from adolescents or their peers (boyd, 2007; McAndrew & Jeong, 2012). Therefore, further research may specify what type of individuals

adolescents are exposed to in social media and how this relates to influences on peer norms and prototypes.

Our findings also call for more research on other concepts that may explain the relation between the use of sexual media content and adolescents' willingness to engage in casual sex. The prototype-willingness model proposes perceived vulnerability to risks associated with the behavior as another possible antecedent of behavioral willingness (e.g., Gerrard et al., 2008). As sexually explicit internet material often depicts casual sex as risk-free (e.g., Bridges et al., 2010), exposure to such material may influence adolescents' willingness to engage in casual sex through decreasing their perceived vulnerability to risks of casual sex, such as contracting STD's. Similar processes may also occur for sexual content in mainstream television, including reality TV, as sexual content on television typically lacks portrayals of risks associated with casual sex (e.g., Aubrey, 2004; Kunkel et al, 2007).

In sum, the present study shows the importance of differentiating between different types of sexual media content as predictors of adolescents' willingness to engage in casual sex and the role of socio-cognitive processes herein. Moreover, the study shows how sexual media content and the influence of the sexual behavior of peers are linked to each other, especially in social media. To understand the sexual socialization of adolescents better, we may thus need to focus more on the sexual content that is presented by similar others on social network sites and television, its association with adolescents' perceptions of the sexual behavior of their peers, and how this is subsequently related to adolescents' own sexual behavior.

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Table 1.
Differences in Means of the Variables over Time

	Wave 1 <i>M (SD)</i>	Wave 2 <i>M (SD)</i>	Wave 3 <i>M (SD)</i>	
Sexually explicit internet material	1.64 _a (1.17)	1.68 _a (1.21)	1.80 _b (1.27)	Wilks' Lambda = .974, $F(2, 1465) = 19.84, p < .001$
Reality TV	1.75 _a (1.33)	1.75 _a (1.27)	1.73 _a (1.28)	Wilks' Lambda = 1.000, $F(2, 1465) = .16, p = .856$
Sexy self-presentations of others	2.86 _a (1.51)	2.96 _b (1.49)	2.94 _{ab} (1.47)	Wilks' Lambda = .995, $F(2, 1465) = 4.00, p = .019$
Peer prototypes of casual sex	3.85 _a (1.68)	3.76 _{ab} (1.68)	3.72 _b (1.70)	Wilks' Lambda = .995, $F(2, 1465) = 3.98, p < .001$
Peer norms on casual sex	1.78 _a (0.94)	1.91 _b (1.04)	2.00 _c (1.05)	Wilks' Lambda = .952, $F(2, 1465) = 37.05, p < .001$
Willingness to engage in casual sex	2.56 _a (1.74)	2.69 _b (1.82)	2.75 _b (1.84)	Wilks' Lambda = .988, $F(2, 1465) = 8.91, p < .001$
<i>Willingness to engage in casual sex by type of sexual behavior</i>				
Genital touching	2.76 _a (1.90)	2.89 _b (1.97)	2.96 _b (1.99)	Wilks' Lambda = .990, $F(2, 1465) = 7.76, p < .001$
Oral sex	2.43 _a (1.75)	2.56 _b (1.83)	2.63 _b (1.85)	Wilks' Lambda = .988, $F(2, 1465) = 8.83, p < .001$
Sexual intercourse	2.49 _a (1.82)	2.63 _b (1.90)	2.67 _b (1.91)	Wilks' Lambda = .991, $F(2, 1465) = 6.85, p = .001$

Note. Means with different subscript letters between waves differ significantly from each other at the $p < .05$ level.

Table 2.
Zero-Order Correlations between the Variables

	1.	2.	3.	4.	5.	6.	7.	8.
1. Sexually explicit internet material (w1)								
2. Reality TV (w1)	.10***							
3. Sexy self-presentations of others (w1)	.32***	.30***						
4. Positive prototype casual sex (w2)	.19***	.05	.16***					
5. Descriptive norms casual sex (w2)	.20***	.26***	.31***	.17***				
6. Willingness to engage in casual sex (w3)	.41***	.14***	.22***	.23***	.27***			
7. Biological sex	-.35***	.13***	.08**	-.12***	-.05	-.28***		
8. Age (w1)	.12***	.15***	.22***	.09**	.32***	.08**	.08**	
9. Sexual experience (w1)	.21***	.26***	.30***	.07*	.33***	.26***	.04	.42***

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

Note. w1 = wave 1; w2 = wave 2; w3 = wave 3. Biological sex was coded '0' for boys and '1' for girls.

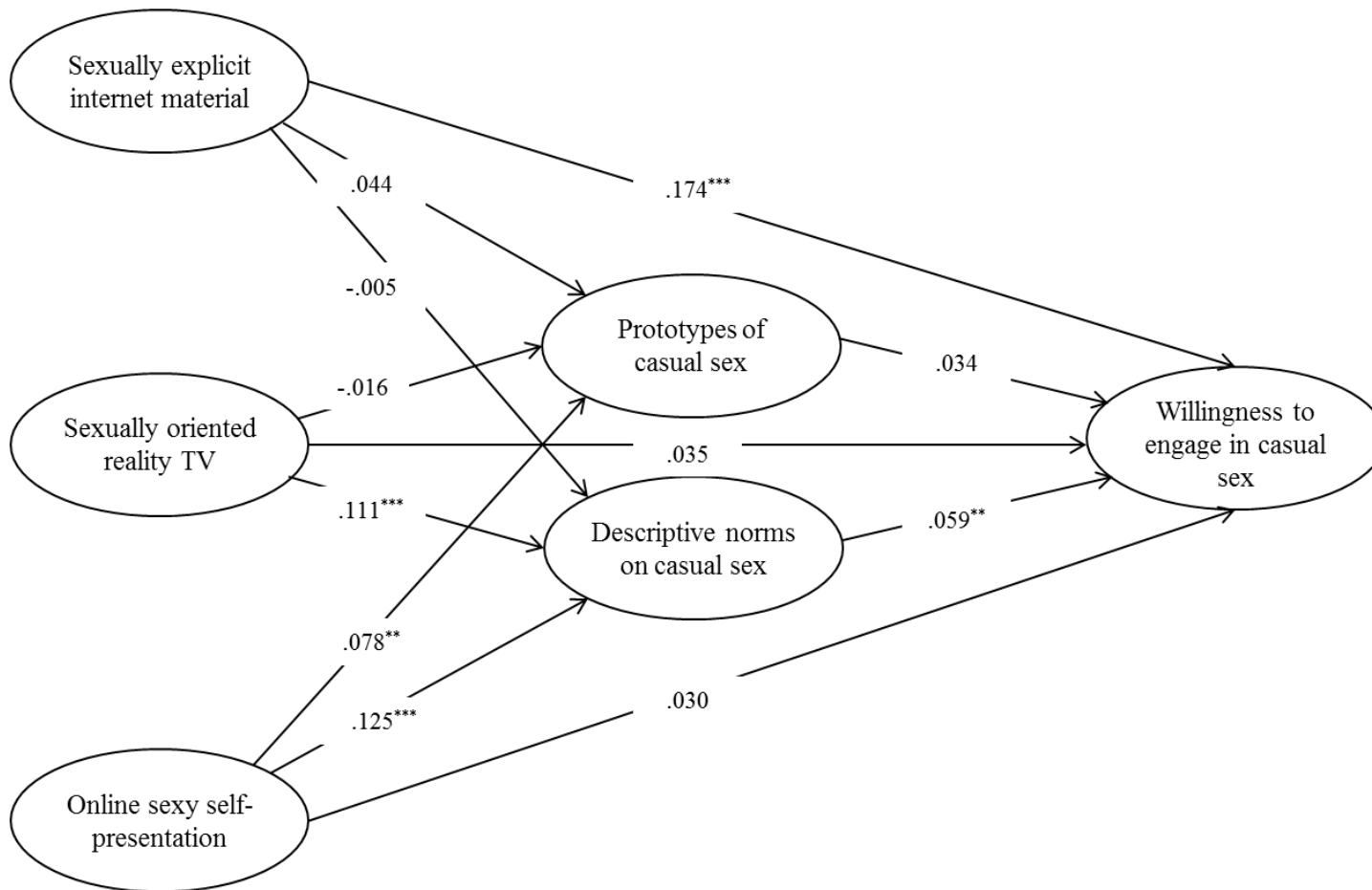


Figure 1. Standardized estimates of the direct and indirect relationships between exposure to three types of sexual media content (at wave 1) on willingness to engage in casual sex (at wave 3) through prototypes of peers engaging in, and peer norms on, casual sex (wave 2).

** $p < .01$; *** $p < .001$

Note. All independent, mediator and dependent variables at all three waves were included in the same model (not shown in the figure for clarity reasons).

Note

ⁱ Because the measures of exposure to sexually explicit internet material and exposure to reality TV were skewed (i.e., the skewness of the variable was outside the appropriate range between -2 and 2), we ran additional linear regression analyses in which the sexual media use variables were recoded into three categories. Categories were based on mean scores of 1 standard deviation below and above the mean, and subsequently turned into two dummy variables. The findings largely confirmed the structural equation models with three exceptions: 1) we found a direct relationship between exposure to sexy self-presentations at wave 1 and willingness to engage in casual sex at wave 3; 2) exposure to SEIM predicted prototypes of peers engaging in casual sex; 3) exposure to SEIM (at high levels) predicted peer norms on casual sex. A full description of these analyses can be obtained from the first author on request.