Perceived Realism Moderates the Relation Between Sexualized Media Consumption and

Permissive Sexual Attitudes in Dutch Adolescents

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ABSTRACT

This study examined whether the development of sexualized media consumption and permissive sexual attitudes would be more strongly interrelated when adolescents perceived sexualized media images as highly realistic. We used data from a three-wave longitudinal sample of 444 Dutch adolescents aged 13-16 years at baseline. Results from parallel process latent growth modeling multigroup analyses showed that higher initial levels of sexualized media consumption were associated with higher initial level of permissive sexual attitudes. Moreover, increases of sexualized media consumption over time were associated with increases of permissive sexual attitudes over time. Considering the moderation by perceived realism, we found these effects only for those who perceived sexualized media as more realistic. Findings for male and female adolescents were similar except for the relations between initial levels and subsequent development. Among male adolescents who perceived sexualized media images to be realistic, higher initial levels of permissive sexual attitudes were related to subsequent less rapid development of sexualized media consumption. For male adolescents who perceived sexualized media to be less realistic, higher initial levels of sexualized media consumption were related to a subsequent less rapid development of permissive sexual attitudes. These relations were not found for female adolescents. Overall, our results suggest that, in male and female adolescents, those with a high level of perceived realism showed a correlated development of sexualized media consumption and permissive sexual attitudes. These findings point to a need for extended information on how to guide adolescents in interpreting and handling sexualized media in everyday life.

KEY WORDS: sexualized media consumption; permissive sexual attitudes; perceived realism; adolescents; longitudinal.

INTRODUCTION

Adolescents in Western cultures are confronted daily with sexual images and storylines in magazines, television shows, and on the Internet (Wolak, Mitchell, & Finkelhor, 2007). Among an American national sample of 13-18 year olds, 63% of boys and 40% of girls reported actively seeking sexual content in their media choices (Bleakley, Hennessy, & Fishbein, 2011). Sexualized media consist not only of explicit or pornographic images, but also of a narrative through which a representation of the "ideal," mostly heterosexual, sex life is depicted—also referred to as a sexual script (Kim et al., 2007; Simon & Gagnon, 1986). Further, storylines and images in sexualized media are commonly not reflective of "real life" or avoid showing potential risks of certain behaviors (Cope-Farrar & Kunkel, 2002; Kunkel, Eyal, Finnerty, Biely, & Donnerstein, 2005). For example, media rarely provide information about sexual health and sexualized media often oversimplify or stereotype gender differences (Collins, 2011; Huston, Wartella, & Donnerstein, 1998; Lowry & Shidler, 1993). While many studies have examined the possible negative consequences of sexualized media use (e.g., Strasburger, 2012a; Strasburger, Donnerstein, & Bushman, 2014), only recently have studies evaluated the reciprocal relation between media use and sexual outcomes (Hennessy, Bleakly, Fishbein, & Jordan, 2009; Peter & Valkenburg, 2010). Consuming sexualized media is a normal aspect of an increasing interest in sexuality during adolescence, but it has also been suggested to relate to risky sexual behavior (Strasburger, 2012a; Strasburger et al., 2014). However, research is now also looking at potential positive effects of incorporating "responsible" messages about sexuality in popular media (Strasburger, 2012a). In contrast to the plethora of previous cross-sectional work, the current study is the first to examine interrelated, intra-individual development of sexualized media consumption and permissive sexual attitudes over time. In the current study, we combined several forms of sexualized media ranging from "sexy" magazines to porn websites. Further, we examine permissive

sexual attitudes—these describe liberal and more tolerant attitudes concerning sexual behavior (i.e., casual sex, cheating, showing nudity online).

Sexualized Media Consumption and Sexual Outcomes

The interest in and consumption of sexualized media content increases during adolescence (Crockett, Raffaelli, & Moilanen, 2003; Savin-Williams & Diamond, 2004) and with age adolescents' attitudes toward sexuality tend to become more permissive (Crockett et al., 2003). Several theories outline how and why adolescents' sexualized media consumption and permissive sexual attitudes may be related.

Social cognitive theory (Bandura, 1977, 1994) posits that adolescents acquire knowledge and a set of expected behaviors, role models, and scenarios by observing others in social interactions. These effects are thought to be most prominent when the role model is similar to the observer and attractive, and when the role model seems to be rewarded for the displayed behaviors. Specific to sexualized media, adolescents are thought to acquire models that include those behaviors, roles, and attitudes that are pervasive in sexualized media (Hald, Seaman, & Linz, 2012). The crux is that through these observations adolescents expect similar outcomes to what they see in the media (Bandura, 1994). Thus, the main idea is that sexualized media consumption is determined by expected outcomes, that have followed from previous consumption or from observing others (LaRose & Eastin, 2004).

However, not all adolescents blindly believe what they come across on television or on the internet. One of the proposed moderators of the effect of sexualized media is the extent to which adolescents perceive the material they see as realistic—perceived realism. Thus, when the popular media depict sex as fun and worry-free and adolescents perceive these notions as realistic, this may implicitly gear adolescents' behavior and norms toward higher levels of permissiveness (Herlitz & Ramstedt, 2005), especially among those with a higher level of perceived realism (e.g., Rivadeneyra & Lebo, 2008; Taylor, 2005).

An alternative theory is the selective exposure hypothesis (e.g., Festinger, 1957; Zillman & Bryant, 1985). The model describes how media consumers select media that are supportive of or confirm their existing perceptions and that consumers avoid media that is incongruent with their perceptions. The third theory that frames the current study is the media practice model. This is similar to the selective exposure hypothesis in that it assumes that individuals' existing attitudes or perceptions affect whether they select or avoid certain media. According to this model, adolescents actively select media content based on their interpretation and motivations (Brown, 2000). In this circular model, adolescents' sense of self (identity) is thought to affect their media choices (selection), and their attention for these media leads to further interpretation and evaluation which then affects their sense of self (identity) (Brown, 2000).

Based on these theories, one might expect the developments (changes) in sexualized media consumption and permissive sexual attitudes to be interrelated in a reciprocal manner. From social cognitive theory, we would expect media to impact attitudes and vice versa, although this may be limited to certain circumstances such as perceiving media as more or less realistic. Similarly, from the selective exposure hypothesis and the media practice model, we would expect adolescents to select media that "match" their existing attitudes and perceptions.

Previous cross-sectional research has shown that adolescents who consume more sexualized media also report more permissive sexual attitudes (e.g., Aubrey, Harrison, Kramer, & Yellin, 2003; Buhi & Goodson, 2007; L'Engle, Brown, & Kenneavy, 2006; Somers & Tynan, 2006). Recently, Hald and colleagues (2013) related sexually explicit material use to several sexual behavior outcomes in a sample of Dutch young people. Their results showed that a higher frequency of sexually explicit material use was related to more adventurous (e.g., threesomes, same-sex partners) and transactional (e.g., paid or been paid

for sex) sexual experiences. For women, the frequency of sexually explicit material use was also related to more partner sexual experiences (e.g., number of lifetime sexual partners, experience with one-night stands) (Hald, Kuyper, Adam, & de Wit, 2013). A study among Indonesian university students showed that among men, pornography consumption was related to common sexual behaviors in non-marital relations (Hald & Mulya, 2013).

These studies assumed a unidirectional relation between sexualized media consumption and permissive sexual attitudes, suggesting that sexualized media forms a risk factor for adolescents' sexual health by influencing attitudes. However, based on the media practice model and the selective exposure theory, adolescents are active agents in selecting and consuming media and some adolescents might consciously seek out sexualized media more than others.

Only a few studies have examined the bidirectionality of associations between sexualized media consumption and sexual development (Hennessy et al., 2009; Peter & Valkenburg, 2010; Vandenbosch & Eggermont, 2013). Among Dutch 13-20 year olds, Peter and Valkenburg found that reported exposure to sexually explicit material predicted higher self-report of instrumental sexual attitudes (i.e., viewing sex as primarily physical and casual rather than affectionate and relational) six months later. They also found that instrumental sexual attitudes predicted more exposure to sexually explicit material. Among American 14-16 year old youth, Hennessy et al. found correlated increases between reported exposure to sexualized media content and sexual experience. They also found that higher levels of initial exposure to sexualized media content predicted less rapid increases in sexual experiences. Among Flemish adolescents (aged 12-16 years old), use of sexually explicit websites was related to the initiation of sexual intercourse, but the reciprocal relation was not found (Vandenbosch & Eggermont, 2013).

In a sample of U.S. adults it was found that pornography consumption was related to more positive subsequent premarital sex attitudes, but again the reciprocal relation was not found (Wright, 2014). In the married subsample of this panel study, it was found that pornography consumption was related to more positive subsequent extramarital sex attitudes, but, again, extramarital sex attitudes did not predict subsequent pornography consumption (Wright, Tokunaga, & Bae, 2014). Finally, among Dutch adolescents in grades 8-10, boys who had more permissive sexual attitudes at the beginning of the study showed a stronger increase in their sexually explicit internet material (Doornwaard, van den Eijnden, Overbeek, & ter Bogt, 2014) but no such link was found for girls. Together, results from these studies underline the importance of examining these relations from a correlated change-perspective.

The Role of Perceived Realism

According to both social cognitive theory and the media practice model, the relation between stimuli and behavior is not a "one size fits all" phenomenon. When investigating sexualized media as a stimuli it is important to consider individual differences in the susceptibility to these stimuli (Hald, & Malamuth, 2014).

Individuals are more likely to attend to or imitate stimuli when they perceive these stimuli to be realistic (Bandura, 1994). Thus, when adolescents consider media images as realistic, they may be more likely to imitate the modeled behavior (Peter & Valkenburg, 2010), with media taking on the role of a "sexual super peer" (Brown, Halpern, & L'Engle, 2005; Strasburger & Wilson, 2002). Results from several cross-sectional studies indicate that perceived realism moderates the relation between sexualized media and sexual outcomes. Perceiving sexual content on television as realistic was found to strengthen the relation between reported consumption of sexual media content and permissive sexual attitudes and beliefs among undergraduate students (Taylor, 2005) and more traditional dating role attitudes among adolescents (Rivadeneyra & Lebo, 2008). In contrast to expectations, in a

sample of Danish young adults perceived realism of pornography did not moderate the relationship between exposure to pornography and sexist attitudes (Hald, Malamuth, & Lange, 2013). Perceived realism is also found to predict relationship intimacy (Stulhofer, Busko, & Schmidt, 2012), recreational attitudes towards sex (Peter & Valkenburg, 2006), and pornography consumption (Hald, 2007).

In a recent longitudinal study, Peter and Valkenburg (2010) found that exposure to sexually explicit material predicted higher instrumental sexual attitudes and this link was mediated by social realism—a measure of individuals' perceived realism of media images. However, the reverse relation, with higher levels of instrumental sexual attitudes predicting more exposure to sexually explicit material, was not mediated by social realism.

Sex Differences

Male adolescents and adults generally report more sexualized media use (Brown & L'Engle, 2009; Wolak et al., 2007) than female adolescents, react more positively to these media (Allen et al., 2007; Hald & Malamuth, 2008), and find this material more entertaining and informative (Taris, Semin, & Bok, 1998; Ward & Rivadeneyra, 1999). Considering that sexualized media offer scripts that portray a more active or permissive role for men than for women (Aubrey, 2004; Tolman, 1999), it might be that the relation between sexualized media consumption and permissive sexual attitudes is stronger for male adolescents than for female adolescents. In addition, sexualized media may be consistent with society's scripts of male sexuality (Aubrey, 2004) and therefore impact or further encourage these scripts more in male adolescents than in female adolescents.

The Present Study

The present study examined whether the association between adolescents' sexualized media consumption and permissive sexual attitudes would be stronger among adolescents who perceived sexualized media images to be highly realistic. Using multi-group longitudinal

growth modeling, we tested three hypotheses. First, we hypothesized that (1) adolescents who consumed larger amounts of sexualized media at baseline would also report higher initial levels of permissive sexual attitudes at baseline, that (2) adolescents who increased their sexualized media consumption over time, would show a related increase in permissive sexual attitudes over time, and that (3) adolescents who consumed larger amounts of sexualized media at baseline, would show a more rapid increase in permissive sexual attitudes over time, and *vice versa*. Thus, based on the media practice model, we hypothesized a reciprocal, correlated developmental pattern between sexualized media consumption and permissive sexual attitudes. Second, based on theoretical notions and empirical findings, we hypothesized that the above-mentioned relations would be stronger for adolescents with a high level of perceived realism compared to adolescents with a low level of perceived realism. Third, based on the notion that media portrays men as more sexually assertive and permissive than women, and higher consumption levels of sexualized media among men, we hypothesized stronger links between sexualized media consumption and permissive sexual attitudes among male adolescents than among female adolescents.

METHOD

Participants

Data were collected as part of a larger study, a four-wave longitudinal research project on romantic and sexual development. In the current study, we used the first three measurement waves. The first wave of data collection (T_1) took place in October 2009; the second and third (T_2 and T_3) waves took place after 6 and 12 months, respectively. Paper-and-pencil survey data were collected from third year (U.S. 9th grade equivalent) students attending seven high schools in The Netherlands. Permission for the study was granted by the ethics board of the Faculty of Social and Behavioral Sciences of Utrecht University. Adolescents were included in the sample when they themselves agreed to participate and

their parents had given passive consent (three parents did not want their child to take part in the study). Adolescents did not receive compensation for their participation. Data collection took place in a classroom setting. Two research assistants were present at all times to introduce the questionnaire, emphasize that data would be handled confidentially, and answer any questions. All participants could withdraw at any time and were ensured of this in the introduction.

At baseline (T_1), 658 students completed the questionnaire. Because class composition changed between T_2 and T_3 there was some attrition in sample size; our final 3-wave sample consisted of 444 adolescents (230 girls, 51.8%). Analyses of the key variables and demographics at T_1 showed no significant differences between participants who dropped out at T_3 and those who participated in the entire study. The mean age of this sample at baseline was 14.46 ($SD = 0.61$; range, 13-16). The sample consisted predominantly of youths from a Dutch background (83.3%), the remainder were either Turkish: 4.5%, Moroccan: 3.4%, Surinamese: 0.5%, Dutch Antilles: 1.1%, Indonesian: 0.5% or other: 6.8%. Mean level analyses and correlational analyses showed no significant differences in the (relations between) key variables between the Dutch and non-Dutch ethnic groups. The majority of adolescents (66%, $n = 293$) were enrolled in vocational education programs. Sexual orientation was assessed by asking adolescents whether their sexual orientation was heterosexual, homosexual, bisexual, or unsure. Most adolescents reported having a heterosexual orientation (89.9%), 3.2% had a homosexual orientation, 0.9% had a bisexual orientation, and 6.0% was unsure of their orientation.

Measures

Sexualized media consumption

Adolescents' sexualized media consumption was assessed with six items that tapped into the use of different media such as magazines, television programs, internet, and movies

(Hawk, Vanwesenbeeck, De Graaf, & Bakker, 2006). The stem question was: "How often in the past six months have you..."? The items are shown in Table 1. Response options ranged on a 5-point scale from 1 = never to 5 = very often. A principal component analysis on the six original items identified one factor that had an eigenvalue > 1.0 at measurement T_2 and T_3. However, at T_1, one item in the original scale (i.e., exposure to sexual content in magazines) had a high (.96) factor loading on a second component. We therefore decided to exclude this item from the analyses and conclude with a scale of five items (factor loadings ranged from .74 to .88). The explained variance of this scale was 64.06% at T_1, 71.27% at T_2, and 64.99% at T_3. Internal consistency of the scale in the current sample was high (α = .85 at T1, α = .90 at T_2, and α = .86 at T_3). The longitudinal correlations between T_1 to T_3 ranged between .38 and .71, ps < .001.

Permissive sexual attitudes

We assessed adolescents' permissive sexual attitudes by measuring the extent to which they agreed with 11 statements of a sexually permissive nature (De Graaf, Meijer, Poelman, & Vanwesenbeeck, 2005). Specifically, adolescents were asked to respond on a 5-point scale, ranging from 1 = totally wrong to 5 = totally right, to statements such as "Having sex with somebody you just met." A principal component analysis on these 11 items identified different components over time across the three measurement waves. Forcing the items to load on one component resulted in eigenvalues ranging from 4.59 to 5.39 across waves, with factor loadings ranging from .44 to .83. The explained variance of the scale was 41.76% at T_1, 49.01% at T_2, and 43.73% at T_3. Internal consistency of the scales was high (α = .85 at T_1, α = .89 at T_2, and α = .86 at T_3). The longitudinal correlations between T_1 to T_3 ranged between .50 and .56, ps < .001.

Perceived realism

Adolescents' perceived realism regarding sexualized media images was assessed with seven items (De Graaf et al., 2005), such as "The sex you see in porn is like in real life." Response options ranged on a 5-point scale from 1 = totally disagree to 5 = totally agree. A principal component analysis on these seven items identified one factor consisting of four items that had an eigenvalue > 1.0. A second component of the remaining three items did not form a reliable factor (α = .58 at T_1); these items were therefore excluded from the analyses. The explained variance of the final scale was 56.98%, with factor loadings ranging from .69 to 83. Internal consistency of items in the current sample was adequate (α = .74 at T_1).

Analysis Strategy

To test our hypothesis that increases in adolescents' sexualized media consumption would be linked to increases in permissive sexual attitudes, we performed a parallel process linear growth model (LGM) analysis (see Fig. 1 for the conceptual model) in Mplus, version 6 (Muthén & Muthén, 2010). With LGM analyses, we obtained estimates of two latent variables (i.e., growth factors) that represent the initial level of a variable (i.e., intercept) and the rate of change of that variable (i.e., slope). Variance of these factors reflect individual variability in the initial level and rate of change (Duncan, Duncan, Strycker, Li, & Alpert, 1999). By correlating the growth factors of two processes, parallel (correlated) development can be examined. Specifically, we estimated a multi-group model with two groups: youths characterized by low perceived realism versus youths characterized by relatively high perceived realism (i.e., a score below or above the composite median of 2.29 at the first measurement wave).

The parallel process model was run for the total sample and for male and female adolescents separately, using a Bayesian estimation technique due to the non-normally distributed variables (sexualized media consumption and permissive sexual attitudes). Convergence of models was checked by inspecting the trace plots and potential scale

reduction of the relevant parameters. We used the estimates and Bayesian credibility intervals (CI) to inspect parameters (interpreting CIs not containing zero as significant effects; for an overview on the differences between Bayesian credibility intervals and confidence intervals, see Jaynes, 1976). To test for moderation by perceived realism, we compared parameters (and their CIs) of a fully constrained model, in which associations between growth factors were held equal for low versus high perceived realism groups, with parameters of an unconstrained model, in which these associations were freely estimated. The fit index deviance information criterion (DIC) was compared between the constrained and unconstrained models.

RESULTS

The means and SD for sexualized media consumption, permissive sexual attitudes, and perceived realism are shown in Table 2. Spearman rho correlations were computed to examine cross-sectional and longitudinal bivariate associations among these variables, separately for male and female adolescents (see Table 3). Cross-sectional correlations showed positive associations—for both male adolescents and female adolescents—between sexualized media consumption and permissive sexual attitudes. This indicated that adolescents who reported higher levels of sexualized media consumption also reported more permissive sexual attitudes. Longitudinally, from T_1 to T_2 and T_3, higher levels of sexualized media consumption were related to higher levels of permissive sexual attitudes. The relations of perceived realism with sexualized media consumption and permissive sexual attitudes varied by gender. For male adolescents, we found that higher levels of perceived realism at T_1 were related to higher levels of both sexualized media consumption (except at T_3) and permissive sexual attitudes. For female adolescents on the other hand, perceived realism was not related to sexualized media consumption at T_{1-3}, and only positively related to permissive sexual attitudes at T_1.

Parallel Process LGM Analyses

To examine whether the developmental trajectories of sexualized media consumption and permissive sexual attitudes would be interrelated, we performed a series of parallel process LGM analyses. In these models, we tested several relations simultaneously: (1) we examined the relation between initial levels of sexualized media consumption and permissive sexual attitudes (intercept-intercept), (2) we examined the correlated developments of sexualized media consumption and permissive sexual attitudes (slope-slope), (3) we examined the relation between initial levels of sexualized media consumption and the development of permissive sexual attitudes over time, and, finally, (4) we examined the relation between initial levels of permissive sexual attitudes and the development of sexualized media consumption over time.

Table 4 shows the associations between intercepts and slopes of sexualized media consumption and permissive sexual attitudes. First, results indicated that initial levels of sexualized media consumption and permissive sexual attitudes were positively related. Hence, those with higher levels of sexualized media consumption at the start of the study also showed higher levels of permissive sexual attitudes. Second, results showed that developmental changes of sexualized media consumption and permissive sexual attitudes were positively related. Thus, those with a steeper development in sexualized media consumption over the course of the study also showed a steeper development of sexualized media consumption over time. Third, higher initial levels of sexualized media consumption were related to a less rapid development of permissive sexual attitudes (intercept-slope)—but not for female adolescents. Fourth, for the overall sample, we found that higher initial levels of permissive sexual attitudes were related to a less rapid development of sexualized media consumption—this was not found for male and female adolescents separately.

In sum, results of the parallel LGM models showed that developments in sexualized media consumption were related to developments in permissive sexual attitudes, and also

indicated some sex differences in these relations. To test our hypothesis about the moderating role of perceived realism, we conducted multi-group parallel process LGM analyses for the low and high perceived realism groups. A comparison of the fit index DIC showed a better fit for the multi-group models compared to the constrained models and are thus interpreted further (see Tables 3-4 for fit statistics).

Multi-group Analyses: Low and High Perceived Realism

The multi-group parallel process LGM models were fit for the overall sample and for male and female adolescents separately. Table 5 shows mean intercepts and slopes of sexualized media consumption and permissive sexual attitudes, as well as variances around these growth factors, for the overall sample and for male and female adolescents separately. As can be seen from this table, mean initial levels of both sexualized media consumption and permissive sexual attitudes deviated from zero. More importantly, the mean slopes of sexualized media consumption and permissive sexual attitudes differed from zero dependent on sex of the sample and level of perceived realism. In other words, not all groups showed, on average, a change in levels of sexualized media consumption and permissive sexual attitudes over time. However, in all groups, the variance of the slope of sexualized media consumption and permissive sexual attitudes deviated from zero. Thus, adolescents showed individual differences in their rate of development of sexualized media consumption and permissive sexual attitudes.

Table 6 shows the associations between growth factors of sexualized media consumption and permissive sexual attitudes for the overall group, and for male and female adolescents separately, across low and high perceived realism groups.

The multi-group LGM parallel process model (see Table 6) showed that: (1) In both the high and low perceived realism group, the initial levels of sexualized media consumption and permissive sexual attitudes were positively related. In other words, those with higher

levels of sexualized media consumption at the start of the study also showed higher levels of permissive sexual attitudes at the start of the study; (2) Only in the high perceived realism group, we found that the development of sexualized media consumption and permissive sexual attitudes were positively related—indicating correlated change. Thus, among those who perceived sexualized media to be relatively realistic, a steeper change in sexualized media consumption was related to a steeper change in permissive sexual attitudes; (3) For male adolescents in the low perceived realism group, we found that higher initial levels of sexualized media consumption were related to a less steep development of permissive sexual attitudes—this was not found among male adolescents in the high perceived realism group, and not among female adolescents; (4) For male adolescents in the high perceived realism group, we found that higher initial levels of permissive sexual attitudes were related to a less steep development of sexualized media consumption—this was not found among male adolescents in the low perceived realism group, and not among female adolescents.

DISCUSSION

In the present study, we examined relations between the development of sexualized media consumption and the development of permissive sexual attitudes and whether these were moderated by perceived realism of sexualized media content. We found partial support for our hypotheses. Specifically, findings indicated that adolescents who reported consuming larger amounts of sexualized media at the start of the study also reported higher initial levels of permissive sexual attitudes. Further, we found that for adolescents who perceived sexualized media as relatively realistic, the change in sexualized media consumption was correlated to the change in permissive sexual attitudes—those who showed a steeper development in sexualized media consumption also showed a steeper development in permissive sexual attitudes. Thus, as hypothesized, those who viewed sexualized media as realistic were more likely to develop permissive sexual attitudes than those who perceived

these media to be unrealistic. As social cognitive theory posits, adolescents may be more likely to select media based on the expected outcomes—media that "matches" their level of realism—and at the same time these media have a part in further creating adolescents' social models (Hald et al., 2012; LaRose & Eastin, 2004). Further, these findings also supported the notion that adolescents may select media based on existing attitudes (Festinger, 1957; Zillman & Bryant, 1985) and sense of self (Brown, 2000).

In contrast to our hypothesis, we found that male adolescents who reported consuming higher levels of sexualized media consumption at the start of the study, showed a less rapid development in permissive sexual attitudes over time, albeit only in the low perceived realism group. Similarly, male adolescents who reported higher levels of permissive sexual attitudes at the start of the study showed a slower development in sexualized media consumption over time, but only in the high perceived realism group. These results support previous findings by Hennessy et al. (2009). During adolescence, increases in both sexualized media consumption and permissive sexual attitudes can be observed (Crockett et al., 2003; Savin-Williams & Diamond, 2004). This may point toward a correlated development of sexualized media consumption and permissive sexual attitudes that had its onset *before* middle adolescence. This would explain why adolescents who already consume sexualized media and already have a relatively high level of permissive sexual attitudes (i.e., higher intercepts) showed less pronounced increases in these processes over time.

The current study was framed by several theories. First, our findings support the notion from social cognitive theory (Bandura, 1977, 1994) that sexualized media may offer a prototypical role model that adolescents adjust their permissive sexual attitudes to. Second, the current findings also support the expectations from the media practice model (Brown, 2000), and more importantly showed that sexualized media impact permissive sexual attitudes, but also that permissive sexual attitudes impact sexualized media consumption.

However, these findings also underline the importance of considering individual differences in these relations and factors that may make youth more susceptible to the effects of media such as personality and sexual arousal (Hald & Malamuth, 2014).

Perceived Realism

Our findings confirmed the relevance of perceived realism for younger adolescents. In particular, the finding that perceived realism plays a role in both male and female adolescents suggests that research needs to focus on the differential impact of media on young adolescents. Considering that we only found relations between initial levels and the development of sexualized media consumption and permissive sexual attitudes in male adolescents, dependent on levels of perceived realism, our study indicated that there may be different processes at play for male and female adolescents.

Previous research has found that media consumption is related to different gender stereotypical attitudes for men and women (Aubrey, 2004; Tolman, 1999). Perhaps then, sexualized media has a different impact on men than on women. Assuming that individuals imitate media images that "match" their gender, it is possible that, for female adolescents, sexualized media resonate less with their reality, seem less attractive, and thus have less impact. However, for both male and female adolescents, in the high perceived realism group, we found correlated developments of sexualized media consumption and permissive sexual attitudes. Thus, although the processes may be qualitatively different, the effects of sexualized media consumption seem similar for male and female adolescents. In future research, processes underlying different effects for men and women need to be explored further.

The current study used perceived realism to indicate the extent to which adolescents think that media portrayals reflect the real world—social realism (Busselle & Greenberg, 2000). Other relevant conceptualizations related to perceived realism include "plausibility" or

"probability" (the likelihood of observations in the media existing in the real world), "identity" (incorporating media content into real life), and "utility" (usefulness of media content in real life) (Busselle & Greenberg, 2000). Extensions of the current study could include assessments of different forms of perceived realism to examine their potentially differential functioning in media impact among adolescents.

Sex Differences

For male adolescents, the relation between the initial levels of permissive sexual attitudes and the development of sexualized media consumption was negative (dependent on level of perceived realism), while for female adolescents this relation was not found. Differences in findings may partly be explained by the idea that men are more visually directed, and thus more interested in (or impacted by) sexualized media at a younger age. This would then explain a ceiling effect of sexualized media consumption development. However, there is little research on whether male and female individuals interpret and are impacted by sexual visual stimuli differently. A review by Rupp and Wallen (2008) showed that it is not visual sexual stimuli per se that men and women respond differently to, but more the content characteristics of such stimuli. Their results showed that men are more affected by the sex of the actors whereas women are more influenced by the context they see.

Theoretical and Practical Implications

Our findings have potentially important implications for the area of adolescent sexual development. With the increasing pervasiveness of sexualized media in mind (Kunkel et al., 2005; Strasburger, 2012a), it is easy to assume that adolescents will blindly copy what they come across in the media. For some adolescents this may be the case and this warrants further research on media literacy and the interpretation of mass media (Brown, 2002; Pinkleton, Austin, Cohen, Chen, & Fitzgerald, 2008). For others, their media literacy may have enabled them to critically evaluate media content. This brings up the following questions: (1) How

can we guide adolescents in the interpretation and critical evaluation of (sexualized) media messages? (2) Since sexualized media content is present in daily life, the internet, social media, and television, how does sexualized media consumption become a part of healthy sexual development? Suggestions to help adolescents handle (sexualized) media include, but are not limited to, updating schools in how they treat media and media issues, and teach critical thinking skills and media education to young people (Strasburger, 2012b, 2014). Pornography and sexualized media often give a presentation of sex as risk-free (Cope-Farrar & Kunkel, 2002; Kunkel et al., 2005). However, pornography has also been found to encourage positive attitudes toward adolescents' access to birth control (Wright & Bae, 2014), which may facilitate healthy sexual development. In sum, future research needs to focus on the impact of sexualized media from a variety of sources such as TV, movies, *and* the Internet, and thereby examine potentially negative and positive outcomes (Ybarra, Strasburger, & Mitchell, 2014). To answer the abovementioned questions, we need to apply the existing theories in this field to new situations where adolescents consume media at young ages, with more independence and often without parental supervision.

Further, for future research, it is important to consider the operationalization of both permissive sexual attitudes and sexualized media consumption. For the current study, we chose to include a range of permissive sexual attitudes. Considering that permissive sexual attitudes can, but do not necessarily include potentially risky attitudes, it would be important to make this distinction in generalizing the results. Also, our measure of sexualized media consumption included questions about mostly explicit sexualized media. Because we know that sexual content is pervasive in both explicit and mainstream media, it would be important to examine whether explicit and non-explicit sexualized media have differential effects. Moreover, for future research, it would be necessary to also include more outcomes both of

media consumption and sexual development, such as (risky) sexual behavior, gender role attitudes, and self-image.

What mechanisms might underlie the relation between sexualized media and sexual attitudes? Previous research suggests that sexual arousal (Hald & Malamuth, 2014; Hald, Malamuth & Lange, 2013) may explain the relation between sexualized media and sexual attitudes or behaviors. More specifically, sexualized media may activate certain existing sexual scripts or attitudes, which are then engaged in through sexual arousal, and in turn reinforce these sexual attitudes (Hald, Malamuth, & Lange, 2013). More experimental work, that assesses sexual arousal in response to sexualized media, would enable us to answer questions about potential mechanisms that underlie its effects.

Strengths and Limitations

Strengths of this study included the use of three-wave longitudinal data from a sample of mid-adolescents and the examination of relations between sexualized media consumption and permissive sexual attitudes from a developmental, correlated change perspective. Using such a perspective—as opposed to a traditional cross-lagged relations analysis—we were able to examine changes in one construct and simultaneous changes in another, while including the moderating role of perceived realism and potential sex differences. Several limitations, however, were also present.

The first limitation concerns the measurement of our key concepts. Although adolescents are shown to honestly indicate their thoughts and behaviors of sensitive issues (Brener, Billy, & Grady, 2003), the participants still may have under (or over) reported their sexualized media consumption or permissive sexual attitudes. For example, for girls, it may be disadvantageous for their "reputation" to report sexualized media consumption and permissive sexual attitudes whereas, for boys, it may advance their social status (e.g., Kreager & Staff, 2009; Ward, 2003). For future research, behavioral measures in which sexualized

media consumption is tracked would reduce the number of self-report measures and prevent shared method variance. Further, it would be beneficial to examine how sexualized media are interpreted by boys and girls.

Second, our sample consisted of predominantly Dutch and vocationally trained adolescents—unfortunately, other ethnic and educational groups were too small to reliably examine group differences. In addition, the generalizability of our findings to other cultures outside the Netherlands remains to be determined. Much of the research on sexualized media comes from scholars based in the U.S. and is conducted among U.S. samples. However, much of the sexualized media that is consumed in the Netherlands was produced in the U.S. Although the U.S. and the Netherlands are both well-developed wealthy countries, there are some differences in sexual culture (Schalet, 2000). Thus, although adolescents consume largely similar sexualized media, its effects may be different due to differences in sexual culture. Unfortunately, cross-cultural comparisons between the Netherlands and other cultures in sexualized media consumption or interpretation are not available. However, because previous research suggests that the impact of media differs for different ethnicities (Hennessy et al., 2009), we note that for future research it would be important to take ethnic and cultural background into consideration.

Finally, despite our relatively young age group, we did not find an overall mean increase in sexualized media consumption. When tracking adolescents' development over longer periods of time, one may expect to find increases in the development of sexualized media consumption. That being said, at this young age participants already differ in starting levels of both sexualized media consumption and permissive sexual attitudes (Hennessy et al., 2009). To get more insight into the start of adolescents' sexual careers, future research will need to focus on even younger adolescents followed over a longer period of time and

including measures of romantic behaviors and cognitions.

Conclusion

Findings indicated that sexualized media consumption and permissive sexual attitudes are developmentally related, both at the initial level and in changes over time. Moreover, findings indicated that these relations tend to be strongest among those adolescents who perceive sexualized media as realistic. Hence, high perceived realism of media impacts the interpretation of sexualized media, and the development of permissive sexual attitudes.

The current study shows that the relation between sexualized media consumption and permissive sexual attitudes was present during mid-adolescence, and was strongest for male adolescents who perceive sexualized media to be realistic. Our findings underline the importance of studying the parallel and interacting development of sexualized media consumption and sexual outcomes and the need to acknowledge that media does not affect all adolescents in the same way—how adolescents perceive the media plays a large role. Accordingly, our results support ongoing efforts to promote media literacy among adolescents.

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Table 1

Sexualized Media Consumption Scale, Explained Variance, and Factor Loadings for the

Sexualized Media Consumption Scale Across the Three Measurement Waves

	Factor loadings		
How many times in the last 6 months have you...	T_1	T_2	T_3
read a sex- or porn magazine	.74	.85	.80
watched a sex movie on television	.82	.87	.84
watched a porn video or dvd	.84	.86	.87
watched an x-rated music video on the internet (a video with a lot of nudity)	.75	.77	.74
visited a porn website	.85	.88	.78
Eigenvalue	3.20	3.56	3.25
Total variance	64.06%	71.27%	64.99%

Note. Answer categories ranged on a 5-point scale from *1* = never to *5* = very often.

Table 2

Mean Scores and Standard Deviations for Males, Females and Total Sample

	Males	Females	Combined
	M *SD*	M *SD*	M *SD*
Sexualized media consumption, T_1	1.70 0.76	1.13 0.22	1.40 0.63
Sexualized media consumption, T_2	1.79 0.88	1.12 0.30	1.44 0.73
Sexualized media consumption, T_3	1.60 0.72	1.12 0.24	1.35 0.58
Permissive sexual attitudes, T_1	2.30 0.59	1.99 0.44	2.14 0.54
Permissive sexual attitudes, T_2	2.45 0.68	2.06 0.54	2.25 0.64
Permissive sexual attitudes, T_3	2.45 0.57	2.02 0.51	2.22 0.58
Perceived realism, T_1	2.64 0.87	2.05 0.71	2.34 0.84

Note. Mean-level changes in sexualized media consumption and permissive sexual attitudes were checked with repeated measures ANOVAs with between-subjects factor sex. No significant group differences were found. The range was 1-5 for each variable.

Table 3

Cross-sectional and Longitudinal Spearman's Rho Correlations for Males and Females

	1.	2.	3.	4.	5.	6.	7.
1. Sexualized media consumption, T_1	--	.45***	.38***	.38***	.19**	.26**	.11
2. Sexualized media consumption, T_2	.71***	--	.50***	.21**	.11	.22**	.08
3. Sexualized media consumption, T_3	.65***	.63***	--	.26**	.24**	.23**	.04
4. Permissive sexual attitudes, T_1	.46***	.42***	.32***	--	.65***	.62***	.18*
5. Permissive sexual attitudes, T_2	.42***	.42***	.40***	.61***	--	.62***	.09
6. Permissive sexual attitudes, T_3	.27**	.19*	.31***	.50***	.66***	--	.12
7. Perceived realism, T_1	.32***	.34***	.15	.31***	.14**	.20*	--

Note. Correlations for females are presented in the upper right triangle of the matrix; for males in the lower left triangle.

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

Table 4

Associations Between Growth Factors Derived from Parallel Process Models

	Males (*n* = 151)			Females (*n* = 164)			Combined (*n* = 315)		
	β	95% CI	*p*	*β*	95% CI	*p*	*β*	95% CI	*p*
Intercept SMC – Slope SMC	-.53	[-.69, -.33]	< .001	-.43	[-.62, -.15]	.002	-.48	[-.59, -.36]	< .001
Intercept permissive sexual attitudes – Slope permissive sexual attitudes	-.30	[-.55, .09]	ns	-.16	[-.38, .24]	ns	-.15	[-.36, .20]	ns
Intercept SMC – Intercept permissive sexual attitudes	.63	[.47, .76]	< .001	.43	[.28, .58]	< .001	.59	[.49, .68]	< .001
Slope SMC – Slope permissive sexual attitudes	.40	[.11, .68]	.003	.30	[.03, .65]	.013	.33	[.16, .53]	< .001
Intercept SMC – Slope permissive sexual attitudes	-.34	[-.59, -.09]	.003	-.19	[-.40, .02]	ns	-.16	[-.33, -.02]	.015
Intercept permissive sexual attitudes – Slope SMC	-.23	[-.48, .01]	ns	-.13	[-.35, .09]	ns	-.18	[-.33, -.01]	.007

Note. SMC = Sexualized media consumption. CI = Credibility interval. The one-tailed *p*-value is the proportion of the posterior distribution below zero for a positive

estimate, and the proportion of the posterior distribution above zero for a negative estimate. Significance is interpreted from CIs not containing zero. DIC overall = 3124.15;

Males = 1876.06; Females = 579.60.

Table 5

Estimated Level and Rates of Change for Combined, Male, and Female Adolescents, and for the Low and High

Perceived Realism Groups

	Sexualized media consumption		Permissive sexual attitudes		Sexualized media consumption		Permissive sexual attitudes	
	M SD	p	M SD	p	M SD	p	M SD	p
	Low perceived realism				High perceived realism			
	Males							
Mean intercept	1.42 0.07	< .001	2.12 0.08	< .001	1.84 0.07	< .001	2.40 0.05	< .001
Variance intercept	0.29 0.07	< .001	0.25 0.08	< .001	0.67 0.09	< .001	0.29 0.05	< .001
Mean slope	0.05 0.06	ns	0.12 0.05	.007	-0.04 0.03	ns	0.08 0.03	.006
Variance slope	0.14 0.05	< .001	0.06 0.02	< .001	0.09 0.03	< .001	0.06 0.02	< .001
	Females							
Mean intercept	1.10 0.02	< .001	1.93 0.04	< .001	1.15 0.03	< .001	2.07 0.05	< .001
Variance intercept	0.03 0.01	< .001	0.18 0.03	< .001	0.06 0.01	< .001	0.18 0.04	< .001
Mean slope	.0.01 0.01	ns	0.02 0.02	ns	-0.02 0.02	ns	0.02 0.03	ns
Variance slope	0.01 0.00	< .001	0.02 0.01	< .001	0.02 0.00	< .001	0.06 0.01	< .001
	Combined							
Mean intercept	1.21 0.03	< .001	1.99 0.04	< .001	1.56 0.05	< .001	2.26 0.04	< .001
Variance intercept	0.13 0.02	< .001	0.18 0.03	< .001	0.54 0.05	< .001	0.27 0.03	< .001
Mean slope	0.02 0.02	ns	0.05 0.02	.007	-0.03 0.02	ns	0.06 0.02	.004
Variance slope	0.04 0.01	< .001	0.03 0.01	< .001	0.07 0.01	< .001	0.06 0.01	< .001

Note. The one-tailed *p*-value is the proportion of the posterior distribution below zero for a positive estimate,

and the proportion of the posterior distribution above zero for a negative estimate.

Table 6

Associations Between Growth Factors Derived from Unconstrained Parallel Process Models – Multigroup for Low and High Perceived Realism

	Males			Females			Overall		
	β	95% CI	p	β	95% CI	p	β	95% CI	p
Low perceived realism									
Intercept SMC – Slope SMC	-.40	[-.67, -.04]	.014	-.23	[-.56, .34]	ns	-.37	[-.56, -.16]	.001
Intercept permissive sexual attitudes – Slope permissive sexual attitudes	-.34	[-.66, .15]	ns	-.09	[-.43, .46]	ns	-.07	[-.37, .38]	ns
Intercept SMC – Intercept permissive sexual attitudes	.66	[.37, .85]	< .001	.51	[.30, .73]	< .001	.56	[.41, .70]	< .001
Slope SMC – Slope permissive sexual attitudes	.18	[-.31, .62]	ns	.11	[-.39, .59]	ns	.18	[-.11, .52]	ns
Intercept SMC – Slope permissive sexual attitudes	-.53	[-.81, -.14]	.004	-.24	[-.66, .17]	ns	-.29	[-.56, -.06]	.008
Intercept permissive sexual attitudes – Slope SMC	.11	[-.29, .47]	ns	-.09	[-.45, .26]	ns	.10	[-.15, .34]	ns
High perceived realism									
Intercept SMC – Slope SMC	-.58	[-.79, -.37]	< .001	-.52	[-.70, -.25]	.001	-.52	[-.65, -.37]	< .001
Intercept permissive sexual attitudes – Slope permissive sexual attitudes	-.34	[-.58, .01]	ns	-.28	[-.51, .07]	ns	-.24	[-.42, .00]	ns
Intercept SMC – Intercept permissive sexual attitudes	.60	[.45, .74]	< .001	.39	[.16, .58]	.001	.60	[.49, .69]	< .001
Slope SMC – Slope permissive sexual attitudes	.48	[.16, .79]	.002	.34	[.02, .62]	.020	.37	[.17, .56]	.001
Intercept SMC – Slope permissive sexual attitudes	-.24	[-.49, .03]	ns	-.17	[-.43, .11]	ns	-.11	[-.29, .08]	ns
Intercept permissive sexual attitudes – Slope SMC	-.44	[-.72, -.16]	.002	-.15	[-.42, .13]	ns	-.33	[-.50, -.14]	< .001

Note. SMC = Sexualized media consumption. CI = Credibility interval. The one-tailed *p*-value is the proportion of the posterior distribution below zero for a positive

estimate, and the proportion of the posterior distribution above zero for a negative estimate. Significance is interpreted from CIs not containing zero. Multigroup models were

better supported by the data than constrained (non-multigroup) models DIC multi-group overall =3031.27; Males = 1873.87; Females = 566.81.
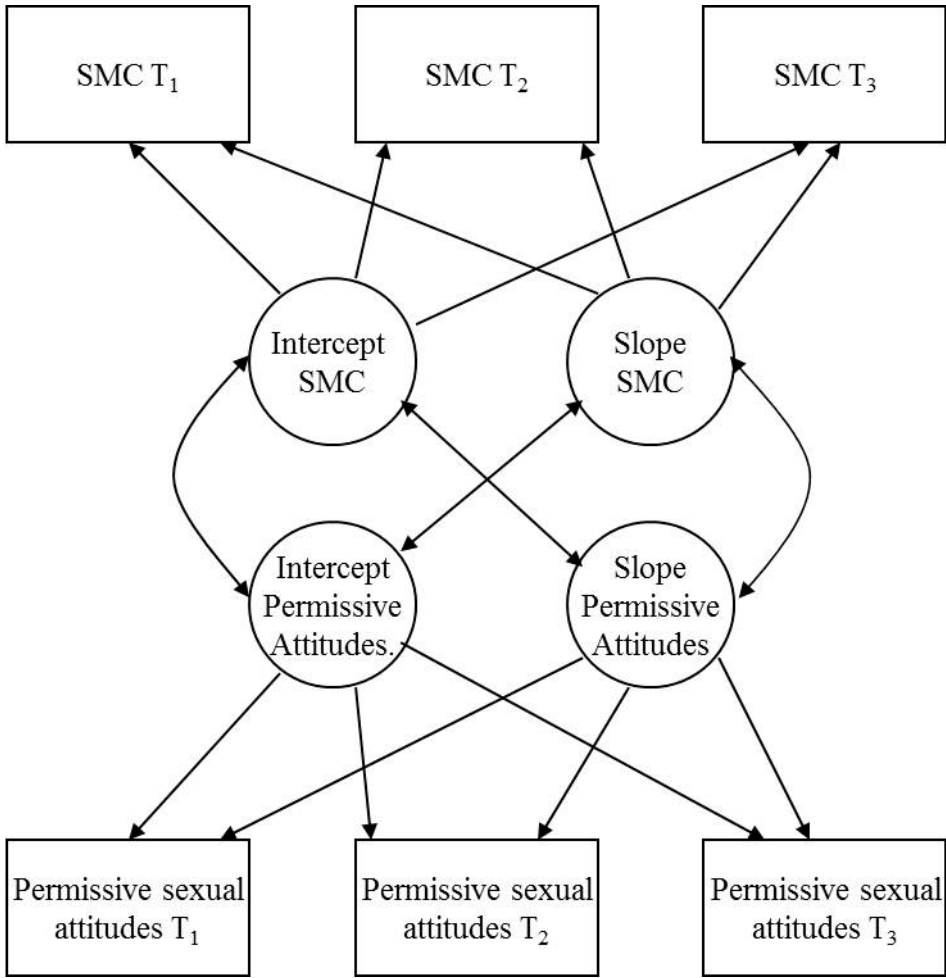
Figure 1. Conceptual parallel process linear growth model for the overall group. *Note*. SMC = Sexualized media consumption.