

**Affective Experiences with Sex and Sexual Satisfaction among
Dutch Adolescents: the Consequences of Online and Offline
Communication about Sexuality with Friends**

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Submission date: June 17, 2014

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A B S T R A C T

Introduction. The current study addresses the relationship between online as well as offline communication about sexuality with friends and adolescents' affective experiences with sex and sexual satisfaction. **Method.** Data were used from a longitudinal study on the relational and sexual development of 1297 Dutch adolescents (aged 10-18 years), using two measurement waves with a 12-month time interval. 150 (wave 1) and 180 participants (wave 2) reported to have actual sexual experiences. Both cross-sectional and longitudinal analyses were conducted. **Results.** Cross-sectional results show that boys are more satisfied with their sexuality when they communicate online about sexuality. Boys also experience more positive affect regarding their sexual experiences when they communicate offline about sexuality. Girls, however, experience less positive affect regarding their sexual experiences when they communicate offline about sexuality. Moreover, longitudinally, sexual experienced adolescent boys are more satisfied with their sexuality when they communicate offline about sexuality, whereas such an effect was not shown for sexual inexperienced boys. For girls, no significant effect of their sexual (in)experience was found on the relationship between online and offline communication about sexuality and sexual satisfaction. **Conclusions.** This study highlights the importance of analyzing specific adolescent' characteristics to determine the exact mechanism behind the effects of online and offline communication about sexuality with friends. Implications of these specific characteristics for adolescents' sexual development are discussed.

Keywords: Adolescents, Internet, Online and Offline communication, Sexuality, Sexual experience, Sexual satisfaction, Affective experiences with sex

Acknowledgment

I would like to thank my supervisor dr. Regina van den Eijnden for her useful comments, remarks and engagement throughout the process of writing this article. Although this mostly has been an individual process, without this level of supervision I am not sure I would have accomplished this level.

Since its existence, the Internet has been an extremely popular medium among Dutch adolescents and its popularity is still expanding due to mobile possibilities (Van Rooij & Schoenmakers, 2013). The amount of hours Dutch adolescents spent on the Internet is still growing, with an average of 16 hours per week in 2013. The communication functions of the Internet are particularly popular, being used by more than 60% of the Dutch adolescents (Van Rooij et al., 2008). Van Rooij et al. (2008) concluded that during the last 30 years there has been a notable change in the way Dutch adolescents communicate with one another. The Internet has become an important means of peer communication. Nevertheless, remarkably little research exists on the overall consequences of such 'online communication'. Recent studies have shown that online communication may also include communication about sexuality (Subrahmanyam et al., 2004). Unfortunately, hardly any research exists on the association between online communication about sexuality and sexual development during adolescence. Therefore, the aim of the current study is to gain more insight into the consequences and possibilities of online communication about sexuality for the sexual development of adolescents.

The sexual development is an important element of adolescents' identity formation. The development of a sexual identity is a crucial developmental task during adolescence (Stortelder & Ploegmakers-Burg, 2008). The Dutch study by De Graaf et al. (2012) highlights many positive aspects of the sexual development of Dutch adolescents, but also emphasizes a problem. One important conclusion of this study is that especially adolescent girls experience more negative and less positive emotions about sex. Adolescent girls more often feel ashamed about their sexual behaviors than adolescent boys and they more often experience sex as dirty. These results reflect a negative affective sexual experience. Vanwesenbeeck (2011) stresses the importance of an impaired experience of sexuality and sexual health during adolescence. She states that an impaired sexual experience not only influences the sexual health of adolescents, but also the formation of a(n) (sexual) identity. Since it's being assumed that adolescents' sexual identity is a blueprint for later adult romantic and sexual relationships, more research on this topic is warranted to reduce the lack of scientific knowledge on this theme. Therefore, the current study focuses on the relationship between online as well as offline communication about sexuality and the affective and cognitive way in which adolescents experience their sexuality.

During adolescence, peers become the most accessible and most important information resource (Dilorio, 1999; Aseltine, 1995). Adolescents feel more comfortable to communicate with peers than with their parents, especially about sexual behaviors and their sexual identity.

This peer communication improves knowledge about healthy sexual behavior (Berten, 2010) and also stimulates discussions about intimate topics (Diloro, 1999). When sexuality is discussable among peers, it is suggested that adolescents will have less reasons to feel ashamed about their sexuality. Therefore, it is hypothesized that frequent peer communication about sexuality will be linked to more positive affective experiences with sex and a higher sexual satisfaction (H1a, see Figure 1).

Affective Benefits of Online Communication over Offline Communication

Unfortunately there seems to be more research about the disadvantages of online communication, than about the possible benefits. More specifically, hardly any research exists on the possible (dis)advantages of online communication about sexuality. However, about one out of three adolescents seems to prefer online communication over offline communication when it comes to intimate topics such as love and sex (Schouten et al., 2007). Recently a few researchers have suggested some possibilities and affective benefits of online communication, by emphasizing special characteristics of online communication compared to offline communication. The enhanced controllability of self-presentation and self-disclosure seems to be an important explanation for the attractiveness of online communication for adolescents. Valkenburg and Peter (2011) suggest that, inter alia, the asynchronous and anonymous character of online communication encourages this enhanced controllability of self-presentation and self-disclosure. The asynchronicity of online conversations allows adolescents to edit their messages before sending it, whereby adolescents can optimize their self-presentation and self-disclosure (Walter, 2007). The audio-visual anonymous character of the Internet may lead to less concern for adolescents about what others may think about their self-presentation and their physical appearance. This may stimulate their online self-disclosure. Online communication may also facilitate sexual self-exploration among adolescents (Valkenburg & Peter, 2011), especially because of the aforementioned online anonymity. Therefore, adolescents can be expected to address sensitive sexual issues online more easily than during offline communication. Subrahmayam and Greenfield (2004) also argue that: *'the Internet provides a place to discuss embarrassing topics in an anonymous social context'*. Therefore, it is hypothesized that due to these specific characteristics of online communication, which result in several affective benefits, online communication about sexuality can be more advantageous for adolescents to stimulate more positive affective experiences with sex and a higher sexual satisfaction than offline communication (H1b).

One of the most popular motives for the use of online communication for adolescents is ‘social compensation’. This reflects the wish to overcome shyness and to talk more easily about certain topics, like sexuality (Valkenburg, Schouten & Peter, 2005). Later research of Valkenburg and Peter (2007) confirmed the ‘social compensation hypothesis’, specifically that lonely and social anxious adolescents perceived online communication as more valuable than offline communication for communication about intimate topics. Other researches confirmed these results (e.g. Subrahmanyam & Greenfield, 2008, Bonetti, Campbell & Gilmore, 2010). Specifically the aforementioned enhanced controllability of online communication seems to be advantageous for adolescents who are often shy (Harter, 1999 in: Valkenburg & Peter, 2011) because it creates a sense of security and freedom in their interpersonal interactions (Walther, 1966). Subrahmanyam and Greenfield (2008) also note that adolescents’ online communication may have affective benefits such as relieving social anxiety. Due to the experienced embarrassing character of sexuality, online communication could function as a solution to reduce social anxiety (Shephard & Edelman, 2005). Therefore, it seems plausible that online communication about sexuality can fulfill the urge for ‘social compensation’ particularly for those adolescents who perceive affective benefits of online communication. It is therefore hypothesized that the relationship between online communication about sexuality with friends and both positive affective experiences with sex and sexual satisfaction will be moderated by the perceived affective benefits of online communication over offline communication (H2, see Figure 1).

Sexual Experience

Due to these repeated indications that online communication about sexuality may be beneficial for particular groups of adolescents, it seems plausible that increased knowledge about other specific characteristics of adolescents could determine the exact mechanism behind the use of online and offline communication about sexuality. Although most Dutch youngsters start their sexual career during adolescence, huge individual differences exist in sexual experience (De Graaf et al., 2012). Namely, almost a fifth of the fourteen-year-old Dutch adolescents has experience with sexual intercourse, while the same amount of the nineteen-year-old adolescents has no experience yet with French kissing. According to the Social Comparison Theory (Festinger, 1954), individuals compare themselves to others to stimulate a more positive self-image. Researchers suggest that specifically peer crowds serve an important function during adolescence. Via social comparison peer crowds may promote the identity development of adolescents (Brown & Lohr, 1987). Possibly, adolescents’ self-

image could improve when their sexual experiences induce a higher social status and confirm to the standards of their group. Moreover, adolescents may experience feelings of uncertainty when their sexual inexperience seems to be found non-normative. Unfortunately, remarkably little research exists on this topic. Therefore, this current study will examine the hypothesis that online as well as offline communication about sexuality with friends will stimulate a higher sexual satisfaction for sexual experienced adolescents, than sexual inexperienced adolescents (H3, see Figure 2).

Boys versus Girls

De Graaf et al. (2012) found several gender differences in adolescents' affective and cognitive experiences with sex. Girls seem to have less positive affective experiences with sex, but a higher sexual satisfaction than boys. Also, adolescent boys and girls seem to differ in their communication about sexuality. Girls seem to communicate more often about sexuality with parents and friends than boys, though, no gender differences appear for the use of online communication (Van den Eijnden et al., 2008). Despite all these findings with regard to gender differences, remarkably little research exists on the influence of gender differences on the relationship between online as well as offline communication about sexuality with friends and adolescents' affective experiences with sex and sexual satisfaction. This current study will therefore also examine the influence of gender differences on this relationship.

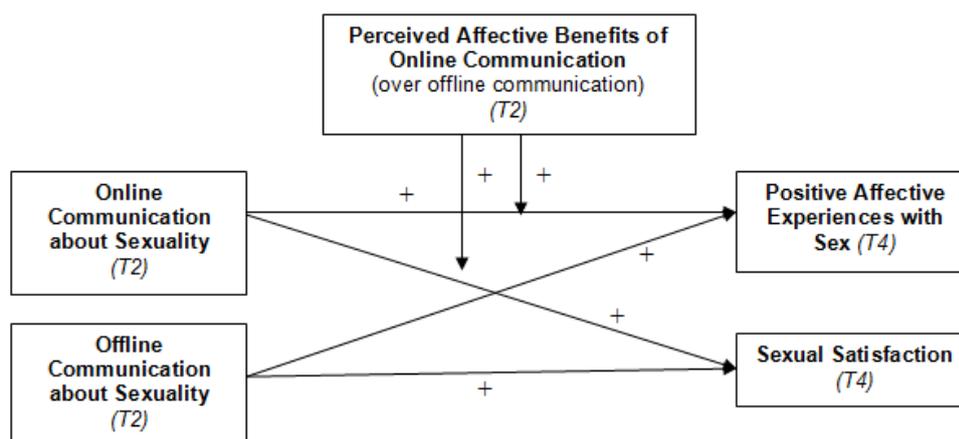


Figure 1. Conceptual model of the relationships between online and offline communication about sexuality, perceived affective benefits of online communication and affective experiences with sex and sexual satisfaction.

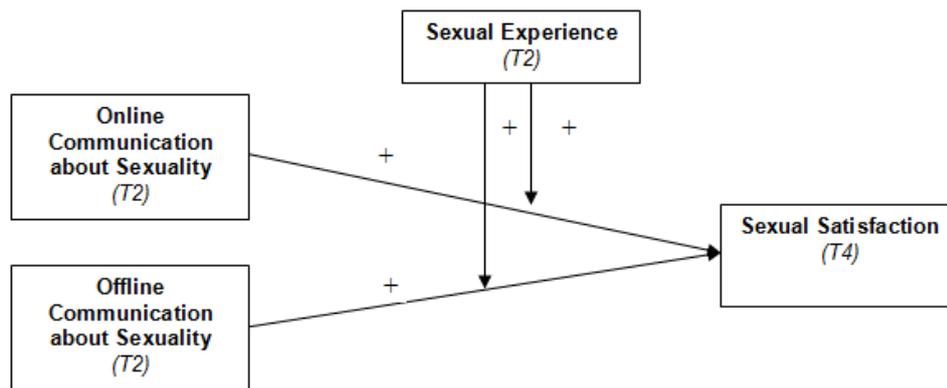


Figure 2. Conceptual model of the relationships between online and offline communication about sexuality, sexual experience and sexual satisfaction.

Method

Procedure

The current study used data from a large-scaled research on puberty, love, romantic relationships and sexuality with the aim to highlight the relational and sexual development of Dutch adolescents. This longitudinal study contained four measurement waves (six months interval), which started in Autumn 2011 (T1). This current study used data from two measurement waves (T2 and T4). Participating adolescents were recruited via Dutch elementary- and high schools. Participants and their parents, specifically parents with children aged below 16, were given the opportunity to refuse participation. Questionnaires were completed at school, during a regular class. A research-assistant was present during completion to introduce the questionnaire, to guarantee the confidentiality of the answers and to answer possible questions. Participants who would switch in schools during this longitudinal research, were personally contacted to complete the questionnaire online by themselves. Participants retrieved compensation after completing the questionnaire.

Participants

A total of 1297 Dutch adolescents (691 boys and 606 girls) participated in this study. Overall, the participants ranged in age from 10 to 18 years ($M=13.6$, $SD=1.36$). The majority of the high-school participants were highly educated (HAVO or higher, $N=676$, 59.5%). 150 (T2) and 180 participants (T4) reported to have actual sexual experiences.

Measures

Participants completed an online self-report questionnaire about their relationships and sexuality. In addition, it asked for demographic information including gender, age, ethnic

background and educational level. The current study only used items referring to online and offline communication about sexuality with friends; the perceived affective benefits of online communication versus offline communication; positive affective experiences with sex, sexual satisfaction, sexual experience, gender (0=boy, 1=girl), education (0=VMBO, 1=HAVO or higher) and age.

Online and offline communication about sexuality were measured with three items. Participants were asked: ‘How often do you communicate online (for example via MSN, e-mail, Skype or chat)/in real-life with your friends about: (1) What you prefer and do not prefer sexually?, (2) With who you want to have sex with and why, (3) How you can do sexual things?’ Items were rated along a 6-point scale ranging from 0 (*never*) to 5 (*very often*). Responses were summed, but due to extreme skewness the scales have been dichotomized (0=no use of online/offline communication, 1=use of online/offline communication). The scales showed good reliability at both measurements (T2; Online: Cronbach’s alpha=.92, Offline: Cronbach’s alpha=.89, T4; Online: Cronbach’s alpha=.93, Offline: Cronbach’s alpha=.90).

Perceived affective benefits of online communication were measured with four items. Participants were asked: ‘If you compare your online conversations (for example via MSN, e-mail, Skype or chat) with your conversations in real-life, do you experience any differences?: (1) I can express my feelings better via online conversations than via real-life conversations, (2) I can be more myself than via real-life conversations, (3) I am less shy than via real-life conversations, (4) I feel less ashamed than via real-life conversations?’ Items were rated along a 6-point scale ranging from 0 (*never*) to 5 (*very often*). Responses were summed, with higher scores indicating higher levels of perceived affective benefits of online communication. The scale showed good reliability at both measurements (T2: Cronbach’s alpha=.86, T4: Cronbach’s alpha=.88).

Positive affective experiences with sex were measured with three items. Participants were asked: ‘How do you feel after having sex (from touching, fondling till sexual intercourse)? How often do you feel (1) Happy, (2) Proud and (3) Loved?’ Items were rated along a 6-point scale ranging from 0 (*never*) to 5 (*very often*). Responses were summed, with higher scores indicating higher levels of positive affective experiences with sex. The scale showed good reliability at both measurements (T1: Cronbach’s alpha=.73, T4: Cronbach’s alpha=.83).

Satisfaction with sexuality was measured with one item. Participants were asked: ‘How satisfied are you with your sexual experiences? If you do not have any sexual experiences, how satisfied are you with that?’ Items were rated along a 10-point scale ranging from 0 (*very unsatisfied*) to 9 (*very satisfied*). Responses were summed, with higher scores indicating higher levels of sexual satisfaction.

Sexual experience was measured with one item. Participants were asked: ‘Have you ever had sex with somebody? By sex, we mean everything from touching, fondling till sexual intercourse.’ Participants received two response options (0=No, 1=Yes).

Strategy of Analyses

Statistical analyses were conducted in SPSS Statistics 22 (IBM, Armonk, NY). To examine the relationships between the variables tested in this study, Pearson correlations (r) were calculated between the continuous variables and Spearman correlations were calculated when at least one variable was dichotomous (Table 3). Checking for multicollinearity between the predictors showed no problems, $VIF < 10$, $r < .60$. To test the hypotheses and the explorative research question, two measurement waves were used (T2 and T4) to analyze two models. Model 1 included cross-sectional relations between online and offline communication about sexuality and positive affective experiences with sex and sexual satisfaction at T4. Model 2 included longitudinal relations between online and offline communication about sexuality at T2 and positive affective experiences with sex and sexual satisfaction at T4. These models were analyzed using Linear Regression Analyses. Age, gender and education (and the dependent variables at T1 for longitudinal analyses) were included in step 1 as control variables. The main effects of online and offline communication about sexuality were included in step 2. Possible moderator variables and interaction terms between (1) online communication and perceived affective benefits, (2) online and offline communication and sexual experience and (3) online and offline communication and gender, were analyzed in step 3. The analyses with regard to moderating effect of sexual experience, could only be conducted for the dependent variable sexual satisfaction (Figure 2). Participants without sexual experience did not receive the questions referring to positive affective experiences with sex, but they did receive the question referring to sexual satisfaction.

Results

Use of Online and Offline Communication about Sexuality at both Measurements

With regard to online communication about sexuality, almost a third of the participants reported to communicate online about sexuality with their friends (T2: 27.4%, T4: 28.7%). With regard to offline communication about sexuality, at both measurement waves, more than the half of the participants reported to communicate offline about sexuality with their friends (T2: 58.9%, T4: 67.9%).

A Chi-Square Test of Independence was conducted to compare the use of online and offline communication about sexuality between boys and girls, at T2 and T4 (Table 1). Only at T4 there was a significant difference in the use of *online* communication about sexuality between boys and girls, $\chi^2(1)=3.98$, $N=993$, $p<.05$. Boys (31.6%) more often reported that they communicate online about sexuality with friends than girls (25.9%) at T4.

Table 1.

Descriptive Statistics of the use of Online and Offline Communication about Sexuality with Friends by Boys and Girls at two Measurement Waves (T2 & T4)

	T2		T4	
	Frequency (%)		Frequency (%)	
	Boys	Girls	Boys	Girls
Use of Online Communication				
No	451 (71.5%)	417 (73.8%)	338 (68.4%)	370 (74.1%)
Yes	180 (28.5%)	148 (26.2%)	156 (31.6%)	129 (25.9%)
Use of Offline Communication				
No	253 (40.1%)	283 (42.1%)	154 (31.2%)	165 (33.0%)
Yes	387 (59.9%)	327 (57.9%)	340 (68.8%)	335 (67.0%)

Levels of Positive Affective Experiences with Sex and Sexual Satisfaction

With regard to positive affective experiences with sex, on average participants scored above the midpoint of the scale (T1: $M=11.6$, T4: $M=11.8$, range: 3.0-15.0), which means that there were more participants with many positive experiences with sex than with few positive experiences with sex. This also accounts for sexual satisfaction (T1: $M=7.31$, T4: $M=7.9$, range: 1.0-10.0); there were more participants with a high level of sexual satisfaction than with a low level of sexual satisfaction (Table 2).

Another Chi-Square Test of Independence was conducted to compare the scores of boys and girls for positive affective experiences with sex and sexual satisfaction, at T1 and T4. With regard to positive experiences with sex, there was no difference between boys and girls. However, boys and girls differ significantly in their sexual satisfaction at T1, $t(1200)=-2.95$, $p<.05$, and at T4, $t(971)=-6.08$, $p=.000$. On average, girls (T1: $M=7.53$, T4: $M=8.37$) are more satisfied with their sexuality than boys (T1: $M=7.09$, T4: $M=7.48$).

Table 2.

Descriptive Statistics of the Scores at the Positive Affective Experiences with Sex and Sexual Satisfaction for Girls and Boys at two Measurement Waves (T1 & T4).

	T1						T4		
	Mean (SD)						Mean (SD)		
	Range	Boys	Girls	Range	Boys	Girls	Boys	Girls	
Positive Affective Experiences with Sex	4.0-15.0	11.87 (2.54)	11.10 (2.20)	3.0-15.0	11.75 (2.75)	11.82 (2.11)			
Sexual Satisfaction	1.0-10.0	7.09 (2.60)	7.53 (2.56)	1.0-10.0	7.48 (2.47)	8.37 (2.14)			

Correlations between Study Variables

Correlations between the study variables are presented in Table 3. Girls perceived more affective benefits of online communication versus offline communication at T2, used less online communication about sexuality at T4 and more often demonstrated a higher level of sexual satisfaction than boys.

The use of both online and offline communication about sexuality were related to more frequent use of online and offline communication about sexuality and to a lower sexual satisfaction. A high perception of affective benefits of online communication was related to online communication about sexuality. Adolescents with sexual experience more often used offline and online communication about sexuality.

Cross-sectional and Longitudinal Relationships between Online and Offline Communication about Sexuality with Friends and Affective Experiences with Sex and Sexual Satisfaction

Positive Affective Experiences with Sex. Neither the cross-sectional model nor the longitudinal model showed significant relations between online or offline communication about sexuality with friends and positive affective experiences with sex, $p=ns$ (Table 4).

Sexual Satisfaction. With regard to the cross-sectional model, contrary to the expectations, online communication about sexuality with friends was related to a *lower* sexual satisfaction, $\beta = -.10$, $t = -2.75$, $p < .01$. No relationship was found between offline communication about sexuality with friends and sexual satisfaction, $p = ns$ (Table 5).

With regard to the longitudinal model, this negative relationship was found between offline communication about sexuality with friends at T2 and sexual satisfaction at T4, $\beta = -.14$, $t = -3.57$, $p = .000$. No relationship was found between online communication about sexuality with friends at T2 and sexual satisfaction at T4, $p = ns$.

Moderating Effects of Perceived Affective Benefits of Online versus Offline Communication

It was hypothesized (H2) that the expected positive relation between online communication about sexuality and positive affective experiences with sex and sexual satisfaction (H1) would be stronger for adolescents who perceive affective benefits of online communication over offline communication. However, no significant moderating effects of perceived affective benefits were found for both the relationships between online as well as offline communication about sexuality and positive affective experiences with sex and sexual satisfaction (Table 4 and 5), $p = ns$.

Moderating Effects of Sexual Experience versus No Sexual Experience

It was hypothesized (H3) that the relationship between online as well as offline communication about sexuality with friends and sexual satisfaction, would be moderated by whether adolescents already had sexual experience. The cross-sectional model with regard to sexual satisfaction, showed a significant moderating effect of sexual experience on the relationship between *offline* communication about sexuality and sexual satisfaction, $\beta = .10$, $t = 2.37$, $p < .05$, which means that adolescents who communicate offline about sexuality with friends are more satisfied with their sexuality, when they have sexual experience. Such an effect of offline communication was not shown for adolescents who have no sexual experience. No moderating effect of sexual experience was found on the relation between *online* communication about sexuality and sexual satisfaction, $p = ns$ (Table 5).

The longitudinal model with regard to sexual satisfaction, showed a similar moderating effect of sexual experience at T2 on the relationship between *offline* communication about sexuality at T2 and sexual satisfaction at T4, $\beta = .25$, $t = 2.94$, $p < .01$ (see Figure 3). A similar, non-significant, trend moderating effect was found of sexual experience on the relation between *online* communication about sexuality and sexual satisfaction, $\beta = .07$, $t = 1.71$, $p < .10$.

Table 3. Correlations Between the Study Variable

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Time 1:</i>															
1. Gender ¹	-														
2. Age	-0.02	-													
3. Education ²	0.08**	0.08**	-												
4. Sexual Satisfaction T1	0.09**	<u>-0.05</u>	0.16**	-											
5. Positive Affective Experience of Sex T1	-0.18	<u>0.26**</u>	0.13	<u>0.29**</u>	-										
<i>Time 2:</i>															
6. Online Communication T2	-0.03	0.24**	-0.07*	-0.08*	0.15	-									
7. Offline Communication T2	-0.02	0.27**	0.00	-0.08*	0.02	0.49**	-								
8. Affective Benefits Online Communication vs. Offline Communication T2	0.07*	<u>-0.08**</u>	-0.03	<u>-0.01</u>	<u>-0.01</u>	0.12**	0.09**	-							
9. Sexual Experience T2	-0.05	0.31**	-0.07*	-0.02	0.07	0.35**	0.28**	0.00	-						
<i>Time 4:</i>															
10. Online Communication T4	-0.06*	0.16**	-0.07*	-0.09**	-0.09	0.46**	0.34**	0.10**	0.24**	-					
11. Offline Communication T4	-0.02	0.21**	0.00	-0.07*	-0.01	0.35**	0.50**	0.08*	0.17**	0.40**	-				
12. Affective Benefits Online Communication vs. Offline Communication T4	0.01	<u>-0.03</u>	-0.02	<u>-0.04</u>	<u>-0.02</u>	-0.01	0.01	<u>0.41**</u>	-0.01	0.12**	0.06*	-			
13. Sexual Experience T4	-0.02	0.28**	-0.08*	-0.04	-0.16	0.35**	0.26**	0.10**	0.56**	0.34**	0.22**	-0.01	-		
14. Positive Affective Experience of Sex T4	0.01	<u>0.07</u>	0.02	<u>0.11</u>	<u>0.46**</u>	0.04	0.10	<u>0.14</u>	0.02	0.12	0.10	<u>-0.04</u>	a	-	
15. Sexual Satisfaction T4	0.21**	-0.15**	0.11**	0.16**	<u>0.02</u>	-0.15**	-0.24**	-0.08*	-0.10*	-0.19**	-0.20**	-0.09**	-0.06	0.40**	-

** . p<.01. * . p<.05. a. Cannot be computed because at least one of the variables is constant.

¹ Gender is coded 0=boy, 1=girl, ²Education is coded 0= VMBO, 1= HAVO or higher

Underscored values are Pearson correlations, other values are Spearman correlations.

Table 4.

Standardized Regression Coefficients for the Prediction of Positive Affective Experiences with Sex

	Cross-sectional model (T4)		Longitudinal model (T2→T4)	
	N=160		N=180	
	ΔR^2	β	ΔR^2	β
Step 1:	0.001		0.22	
Time 1 Positive Affective Experiences with Sex	-	-		0.49**
Age		0.01		0.04
Education ¹		0.02		-0.05
Gender ²		-0.01		0.09
Step 2:	0.03		0.02	
Online communication about sexuality ³		0.07		-0.10
Offline communication about sexuality ³		0.13		0.15
Step 3a:	0.01		0.06	
Perceived affective benefits of online communication		0.09		0.01
Online communication x Perceived affective benefits		-0.15		0.25
Step 3:	0.03		0.01	
Online communication x Gender		0.01		0.01
Offline communication x Gender		-0.24*		-0.01

Note:

¹ Education is coded 0=VMBO, 1= HAVO or higher* $p \leq .05$, ** $p \leq .01$ ² Gender is coded 0=boy, 1=girl³ Communication is coded 0=no use of, 1=use of**Table 5.**

Standardized Regression Coefficients for the Prediction of Sexual Satisfaction

	Cross-sectional model (T4)		Longitudinal model (T2 →T4)	
	N=907		N=818	
	ΔR^2	β	ΔR^2	β
Step 1:	0.09		0.11	
Time 1 Sexual Satisfaction	-	-		0.12***
Age		-0.21***		-0.20***
Education ¹		0.14***		0.12***
Gender ²		0.18***		0.18***
Step 2:	0.02		0.02	
Online communication about sexuality ³		-0.10**		0.003
Offline communication about sexuality ³		-0.05		-0.14***
Step 3a:	0.01		0.007	
Perceived affective benefits of online communication		-0.10**		-0.09*
Online communication x Perceived affective benefits		0.02		0.01
Step 3b:	0.02		0.02	
Sexual experience		0.07†		-0.25**
Online communication x Sexual experience		0.02		0.07†
Offline communication x Sexual experience		0.10*		0.25**
Step 3c:	0.005		0.004	
Online communication x Gender		-0.11*		-0.09†
Offline communication x Gender		0.02		-0.003

Note:

¹ Education is coded 0=VMBO, 1= HAVO or higher† $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.² Gender is coded 0=boy, 1=girl³ Communication is coded 0=no use of, 1=use of

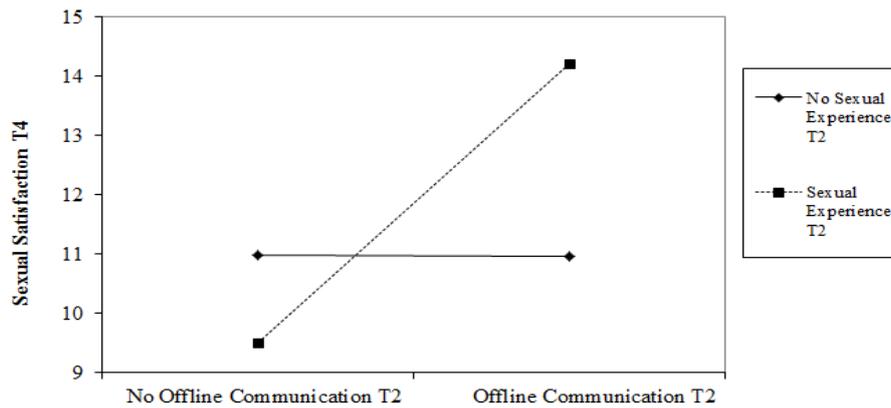


Figure 3. Longitudinal relationship between offline communication about sexuality and sexual satisfaction, moderated by sexual experience.

Moderating Effects of Gender (Boys versus Girls)

It was questioned whether the relationship between online and offline communication about sexuality with friends and the positive affective experiences with sex and sexual satisfaction, would be moderated by gender.

Positive Affective Experiences with Sex. The cross-sectional model showed a moderating effect of gender on the relationship between *offline* communication about sexuality and positive affective experiences with sex, $\beta = -.24$, $t = -2.29$, $p < .05$, meaning that boys have more positive affective experiences with sex, when they communicate offline about sexuality with friends. Girls, however, have less positive affective experiences with sex, when they communicate offline about sexuality with friends (see Table 4 & Figure 4). No moderating effect of gender was found on the relationship between *online* communication about sexuality and positive affective experiences with sex, $p = ns$. The longitudinal model did not show a moderating effect of gender.

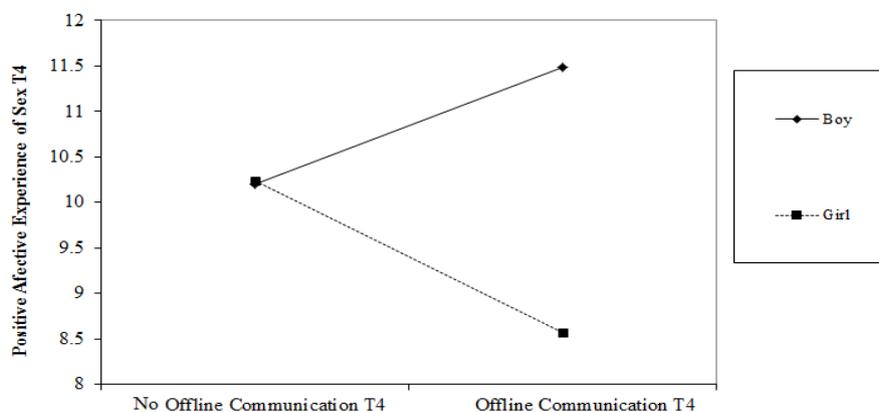


Figure 4. Cross-sectional relationship between offline communication about sexuality and positive affective experiences with sex, moderated by gender.

Sexual Satisfaction. The cross-sectional model showed a significant moderating effect of gender on the relationship between *online* communication about sexuality with friends and sexual satisfaction, $\beta=-.11$, $t=-2.18$, $p<.05$, indicating that boys are more satisfied with their sexuality, when they communicate online about sexuality with friends, whereas such an effect of online communication was not shown for girls (see Figure 5). No moderating effect of gender was found on the relationship between *offline* communication about sexuality and sexual satisfaction, $p=ns$ (Table 5).

The longitudinal model showed a similar, non-significant, trend moderating effect of gender on the relationship between *online* communication about sexuality and sexual satisfaction, $\beta=-.09$, $t=-1.66$, $p<.10$.

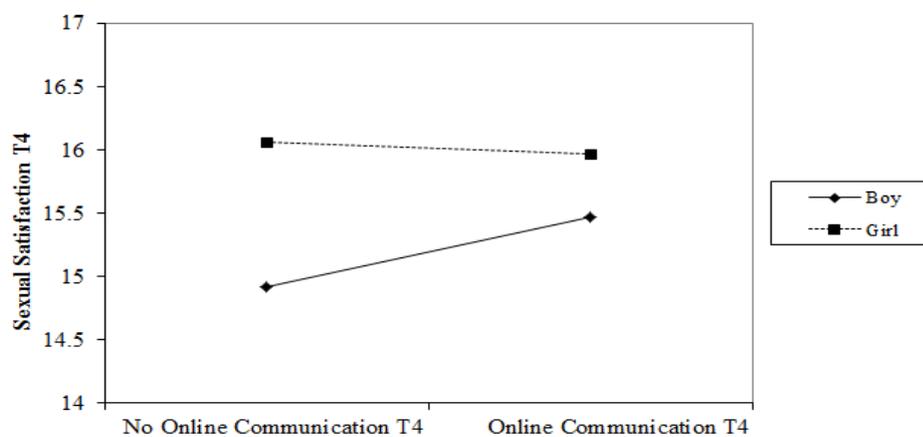


Figure 5. Cross-sectional relationship between online communication about sexuality with friends and sexual satisfaction, moderated by gender.

Additional Analyses

Moderating Effect of Sexual Experience for Boys

Due to aforementioned moderating effects of both gender and sexual experience, it was additionally questioned how sexual experience would moderate the relationship between online as well as offline communication about sexuality and sexual satisfaction for boys only.

The cross-sectional model with regard to sexual satisfaction among boys showed a moderating effect of sexual experience on the relationship between *offline* communication about sexuality with friends and sexual satisfaction, $\beta=.17$, $t=2.83$, $p<.01$; sexual experienced boys are more satisfied with their sexuality, when they communicate offline about sexuality with friends. Such an effect of offline communication was not shown for sexual inexperienced boys. No moderating effect of sexual experience was found on the relationship between *online* communication about sexuality with friends and sexual satisfaction, $p=ns$.

The longitudinal model with regard to sexual satisfaction among boys, showed a similar moderating effect of sexual experience on the relationship between *offline* communication about sexuality with friends and sexual satisfaction, $\beta=.32$, $t=2.51$, $p<.05$ (see Figure 3). No moderating effect of sexual experience was found on the relationship between *online* communication about sexuality with friends and sexual satisfaction, $p=ns$.

Discussion

The current study provides more insight into the role that the Internet communication as well as real-life communication, can play in adolescents' sexual development. Results indicate that adolescents' gender and the sexual experience of adolescents are important characteristics of adolescents that influence the relationship between the use of online and offline communication about sexuality and adolescents' affective experiences with sex and sexual satisfaction. The cross-sectional results show that boys are more satisfied with their sexuality when they communicate *online* about sexuality with friends. Boys also experience more positive affect regarding their sexual experiences when they communicate *offline* about sexuality with friends. Girls, however, experience less positive affect regarding their sexual experiences when they communicate offline about sexuality. Moreover, longitudinally, sexual experienced adolescent boys are more satisfied with their sexuality when they communicate *offline* about sexuality with friends, whereas such an effect of offline communication was not shown for sexual inexperienced boys. For girls, no significant effect of their sexual (in)experience was found on the relationship between online and offline communication about sexuality and sexual satisfaction.

First, unexpectedly, data with regard to sexual satisfaction showed that the use of *online* (cross-sectional) and *offline* (longitudinal) communication about sexuality with friends was related to a lower sexual satisfaction. These findings are not in line with the reasoning that the more sexuality is discussed among friends, the less reasons adolescents should have to feel ashamed about their sexuality. However, as was already suggested, the relationship between online and offline communication about sexuality with friends and adolescents' affective experiences with sex and their sexual satisfaction showed to be more complicated than a simple direct relationship.

Affective Benefits of Online Communication over Offline Communication

Second, unexpectedly, this study did not show any significant results regarding the moderation effect of the perception of affective benefits of online communication over offline

communication on the relationship between online communication about sexuality with friends and both positive affective experiences with sex and sexual satisfaction. A possible explanation for the lack of moderation effects may be the few significant findings regarding online communication about sexuality with friends in this study. Another possible explanation may be that perceived affective benefits of online communication has a mediating effect instead of the hypothesized moderating effect. Which would mean that adolescents who repeatedly communicate online about sexuality, will eventually perceive more affective benefits of online communication when comparing it to offline communication. These affective benefits, as suggested earlier, would stimulate more positive affective experiences with sex and a higher sexual satisfaction.

Sexual Experience

Third, with regard to the role of sexual experience of adolescents, results seem to suggest that sexual experienced adolescents are more satisfied with their sexuality when they communicate *offline* about sexuality, whereas such an effect of offline communication was not shown for sexual inexperienced adolescents. With regard to *online* communication about sexuality, longitudinal data indicated a similar, but marginally significant, moderating effect of sexual experience. Thus, some evidence exists that the same mechanism operates for the use of both *offline* and *online* communication about sexuality. These findings with regard to the moderating role of adolescents' sexual experience on the relationship between the use of online and offline communication about sexuality and sexual satisfaction, are innovatory. However, the findings for sexual experienced adolescents are in line with previous studies on sexual behaviors and sexual satisfaction showing positive links between sexual activity, sexual interest (Mulligan & Palguta, 1991), frequent intercourse, early start of sexual life (Haavio-Mannila & Kontula, 1997) and sexual satisfaction. The current study, however, indicates innovative findings with regard to the role of online and offline communication about sexuality on the relationship between sexual experienced adolescents and their sexual satisfaction. The findings for sexual experienced adolescents seem to be in line with the hypothesis derived from the Social Comparison Theory (Festinger, 1954) which states that individuals compare themselves to others, to stimulate a more positive self-image. Adolescents' self-image may improve when they encounter that they confirm to the standards of their group by being a 'normal', sexually experienced adolescent.

Boys versus Girls

Fourth, results seem to suggest that boys are more satisfied with their sexuality, when they communicate *online* about sexuality, whereas such an effect of online communication was not shown for girls. Longitudinal, there are indications for a similar result. Also, cross-sectional, boys seem to experience more positive affect regarding their sexuality, when they communicate *offline* about sexuality. Whereas girls seem to experience less positive affect regarding their sexuality, when they communicate offline about sexuality. These findings with regard to the moderating role of gender on the relationship between online and offline communication about sexuality with friends and affective experiences with sex and sexual satisfaction are innovative. However, the findings seem to be in line with a previous study of Rose et al. (2007) which suggests that frequent peer communication about personal issues seems not to improve, but to sometimes worsen the emotional state of girls, because those conversations are mostly not focused on solutions, but merely on confirmation of their negative emotions. Possibly, when communicating with their friends, boys use these conversations more pragmatic by focusing more on the solutions of their problems instead of their emotions. However, it should be noted that the cross-sectional findings with regard to positive affective experiences with sex show a co-occurrence of two behaviors and not a causal relationship. Possibly, these findings simply indicate that experiencing less positive affect regarding sexuality is a justified reason for girls to start a conversation about this subject with friends.

Fifth, to provide more insight into the mechanism behind the interaction between gender, sexual experience, communication about sexuality and sexual satisfaction, the combination of the effect with regard to gender and sexual experience was analyzed for only the male sample. The results suggest that sexual experienced boys are more satisfied with their sexuality, when they communicate *offline* about sexuality with friends, whereas such an effect of offline communication was not shown for sexual inexperienced boys. These findings for sexual experienced boys are also in line with the aforementioned Social Comparison Theory. That these findings only apply to boys, may be explained by the fact that 'sex' is more important to boys than it is to girls and that girls already have a higher level of sexual satisfaction than boys (Table 2 & De Graaf, 2012).

Before the limitations of this current study will be discussed, an important strength will be highlighted. Most of the studies with regard to online communication are cross-sectional by nature (Valkenburg & Peter, 2007). The current study, however, is based on longitudinal data,

providing the opportunity to examine the order of events to indicate the possible direction of causal relationships.

However, some limitations should be considered when the results are being interpreted. First, the scales measuring online and offline communication about sexuality were dichotomized, due to an extreme skewed distribution of the reported use of communication. Hence, a part of the variance in the scores on these scales has been lost. Findings are possibly less accurate than would have been the case when continuous scales would have been used. Second, the level of participants' required self-knowledge differed for the questions referring to sexual satisfaction and affective experiences with sex. Only one simple question measured the level of sexual satisfaction. Three questions concerning high affective mental states (happiness, proudness and being loved) measured the level of positive affective experiences with sex. This could be an explanation for the fact that the amount of participants that answered these questions about positive affective experiences with sex was small (N=180). Another explanation for this small amount of participants could be that only sexual experienced participants answered this question. Hence, only large effect sizes could be detected with regard to the association between communication about sexuality and positive affective experiences with sex.

Despite these limitations, the findings of this study have valuable implications. Due to the innovative character of this study new insights are provided into the consequences of adolescents' online and offline communication about sexuality with friends. The combination of specifically online communication about sexuality and adolescents' affective experiences with sex and sexual satisfaction provides a new perspective on possibilities of the communication functions of the Internet for the sexual development of Dutch adolescents. In conclusion, the current study stresses the importance of analyzing specific characteristics of adolescents to determine the exact mechanism behind the use of online and offline communication about sexuality. Specifically, whether adolescents already have sexual experience and whether you are a girl or a boy seem to be important characteristics. When the importance of the influence of these specific characteristics will be respected, subsequently, the consequences of the Internet to communicate online about sexuality with friends will possibly no longer only be rated as disadvantageous in general, but advantageous for particular groups of adolescents.

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