

Social Media Use, and Real-life Support From Friends Versus Online Support From Friends in Relation to Sexual Risk Behavior

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Abstract (English)

Adolescents are most at risk for showing sexual risk behavior. Two factors that are linked to sexual risk behavior are support from friends and social media use. Yet, insufficient knowledge was available about the role of online support from friends. In this study is examined whether social media use, and real-life and online support from friends were related to sexual risk behavior, defined as no condom use or birth control pill. Also is investigated whether support from friends can buffer the relation between social media use and sexual risk behavior. As both family support (negatively) and alcohol use (positively) are important predictors of sexual risk behavior, these factors were controlled for. The data were derived from the 2017 Health Behavior in School-aged Children (HBSC) study conducted in the Netherlands. A total of 622 participants (52,1% girls) were included with a mean age of 15.89 ($SD = 1.36$). The logistic regression analysis showed, contrary to expectations, that social media use, and real-life support from friends were not related to sexual risk behavior. For online support from friends a significant interaction effect was found. Alcohol use was not associated with sexual risk behavior, whereas family support was found as an important predictor.

Keywords: sexual risk behavior, social media, online support from friends, real-life support from friends

Abstract (Dutch)

Jongeren lopen het meeste risico op het vertonen van seksueel risicogedrag. Twee factoren die hier een rol in spelen, zijn support van vrienden en social mediagebruik. Echter, is er nog weinig bekend over de rol van online vriendschappen op seksueel risicogedrag. In deze studie is gekeken in hoeverre sociale mediagebruik en support van vrienden gerelateerd zijn aan seksueel risicogedrag, met een onderscheid tussen condoomgebruik en de anticonceptiepil. Daarnaast is er gekeken of support van vrienden als buffer kan dienen op de relatie tussen sociale mediagebruik en seksueel risicogedrag. Ook is gecontroleerd voor support van familie (negatief) en alcoholgebruik (positief), omdat dit belangrijke voorspellers zijn voor seksueel risicogedrag. De data zijn verkregen uit de Health Behavior in School-Aged Children (HBSC) studie, afgenomen in 2017 in Nederland. In totaal zijn er 622 participanten (52,1% meisje) geïnccludeerd met een gemiddelde leeftijd van 15.89 ($SD = 1.36$). Uit de logistische regressie is gebleken dat sociale mediagebruik en real-life support van vrienden, geen significant effect hebben op seksueel risicogedrag. Voor online support van vrienden is wel een significant interactie-effect gevonden. Daarnaast bleek alcoholgebruik geen voorspeller te zijn voor seksueel risico gedrag; support van familie daarentegen wel.

Keywords: seksueel risicogedrag, social media, online support van vrienden, real-life support van vrienden

Introduction

Since the 1970's sexual activity among adolescents has steadily increased. As a consequence, a public health concern has emerged (Ramirez-Valles et al., 1998). Adolescents in particular are most at risk for various negative health consequences related to sexual risk behavior such as having multiple sexual partners and a lack of consistent condom use (Kotchick et al., 2001; Stevens et al., 2017). In 2012, 37% of boys between the age of 12 and 25 reported to have used a condom with their last bedpartner, whereas in 2017 this has decreased to 29%. For girls this decrease went from 21% in 2012 to 19% in 2017 (De Graaf et al., 2017). This decrease is problematic, since sexual risk behavior can lead to negative health consequences such as the infection with human immunodeficiency virus (HIV), other sexually transmitted infections (STI's), and the occurrence of unintended pregnancies (Kotchick et al., 2001). Two important factors that are found to be related to sexual risk behavior are support from friends (Corcoran, 2000; Brady et al., 2010; Huang et al., 2014) and social media use (Gommans et al., 2015; Kosenko et al., 2017).

During adolescence, friendships become an important source of intimacy and the emotional support one receives from peers is highly significant for adolescents (Yau & Reich, 2017). Poor quality friendships during adolescence are associated with lower levels of self-worth and higher levels of behavioral problems (Hiatt et al., 2015). Supportive friendships seem to be associated with a decreased likelihood of engaging in externalizing behaviors, including sexual risk behavior (McElhaney et al., 2006) and were also linked to having fewer sexual partners (Henrich et al., 2006).

Social media use on the other hand has been linked to early sexual initiation and risky sexual behavior among adolescents (Stevens et al., 2017). Furthermore, social media use among adolescents has increased dramatically over the past years. Whereas in 2006 the percentage of social media use among adolescents was around 55%, this has increased up to 76% in 2015 (Lenhart, 2015). As a consequence, contact between adolescents is more often mediated through social media platforms (Yau & Reich, 2017). This online form of communication for developing and maintaining friendships has partly replaced the traditional face-to-face contact (Gommans et al, 2015) and has resulted in the development of the so-called 'online friendship' (Chan & Cheng, 2004). With the advent of this online friendship, it is important to consider whether this online friendship can offer the same level of support compared to real-life support and to what extent this online support is associated with adolescents' sexual risk behaviors.

The aim of this study was therefore to investigate whether social media use, real-life support from friends and online support from friends were related to sexual risk behavior.

Moreover, this study was intended to investigate whether support from friends can buffer the relation between social media use and sexual risk behavior.

Theoretical and empirical substantiation

To explain the relationship between supportive friendships and sexual risk behavior, the concept social capital is used. Someone has social capital when one is part of a social group and can be seen within a structure of networks (Ahn, 2012). Social capital in this study was defined as “the value derived from resources embedded in social ties with others” (De Zúñiga et al., 2017, p.2). This comprises a set of central factors, including reciprocity and trust among members of the network, and supportive interactions within friends and families (Crosby, 2003). Social capital can be separated into bridging social capital versus bonding social capital. Bridging social capital refers to the ‘weak ties’ between individuals. These ‘weak tie’ relationships are considered temporarily and are lacking in depth and in providing emotional support (Johnston et al., 2013). Bonding social capital, the so-called strong ties, exists between close friends and family and consists of emotionally close, strong relationships (Johnston et al., 2013). Emotional support is closely linked to bonding social capital, since strong ties are an essential source of emotional support (Johnston et al., 2013; Trepte et al., 2015). Emotional support can be defined as empathy and the positive affirmation towards peers and family we like or love. This form of support provides feelings of belonging and offers the opportunity to discuss feelings (Trepte et al., 2015). Expressing and discussing your feelings with others is one of the most helpful forms of support (Trepte et al., 2015).

With the rise of social media, the structure and nature of social capital has changed (Johnston et al., 2013; Trepte et al., 2015). Traditional face-to-face friendships fulfill core qualities, such as intimacy and commitment. These friendships are associated with emotional and social well-being and are very important for adolescents’ developmental needs (Yau & Reich, 2017). There are some crucial conditions necessary for developing these friendships, such as physical availability, frequency of exposure and actors’ dynamic nonverbal cues such as posture and facial expressions. However, social media platforms are lacking these crucial conditions (Chan & Cheng, 2014) with the consequence that relationship-building and relationship-maintenance is more difficult in online settings (Trepte et al., 2015).

To resume, bonding social capital is linked to emotional support (Trepte et al., 2015) which is associated with a decreased likelihood of engaging in sexual risk behavior (McElhaney et al., 2006).

Other determinants and control variables of sexual risk behavior

Bonding social capital does also exist between family members (Johnston et al., 2013). The role of family support is therefore relevant as well. Studies show that adolescents who receive a higher level of family support and who have a higher level of connectedness with their parents, have less unprotected sexual intercourse, have less sexual partners and are making safer sexual decisions (Henrich et al., 2006).

Another important factor that may play a role in the engagement in sexual risk behavior is alcohol use. Researchers found that people who drink more alcohol are more likely to use less contraception (Weinhardt & Carey, 2000) and have a higher level of different sexual partners (Thompson, Kao & Thomas, 2005). Also, Leigh, Temple and Trocki (1994) found that people who drink more alcohol are more likely to have more than one sexual partner.

Several background variables were also found to be related to sexual risk behavior. Gender differences were found between men and women in the engagement in sexual risk behavior; men were associated with a greater number of nonromantic sexual partners (Chen et al., 2010). For age, studies showed that the older someone gets, the less he or she is inclined towards risky behavior and risky decision making (Garnder & Steinberg, 2005). Besides that, different studies showed that a lower educational level was associated with more risk behavior. Tuinstra et al. (1998) found a strong relationship between drug use and educational level and The Health Behavior in School-aged Children (HBSC) study found that adolescents with a lower educational level showed more risk behavior. At last, studies showed that living in a single parent family is related to an earlier onset of intercourse, but also to less contraceptive use among adolescents (Miller, 2002; Anderson, 2017).

Current study

The current study tried to fill in the gap in literature by looking at how real-life support from friends versus online support from friends were related to adolescents' engagement in sexual risk behavior. Specifically, this study aimed to investigate (RQ1) the association between social media use and sexual risk behavior, (RQ2) real-life support from friends versus online support from friends in relation to sexual risk behavior and (RQ3) the role of real-life support from friends and online support from friends as potential buffering factor in the relationship between social media use and sexual risk behavior.

The findings in the literature suggested that for adolescents creating bonding social capital via social media is more difficult, due to the fact that social media platforms are lacking in the availability of crucial conditions for developing close friendships (Chan & Cheng, 2014). Since these bonding type of relationships were essential for providing and receiving emotional

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support (Johnston et al., 2013), it was expected that online support will not provide the same level of support as real-life support does with regard to sexual risk behavior. Both of these forms of support, as well as family support, will be added as moderator variables to the association between social media use and sexual risk behavior. This will result in the following hypotheses (Figure 1):

H1 = More frequent social media use is associated with an increase in sexual risk behavior.

H2 = More real-life support from friends is associated with a decrease in sexual risk behavior.

H3 = More online support from friends is associated with no or a slight decrease in sexual risk behavior.

H4 = More support from family is associated with a decrease in sexual risk behavior.

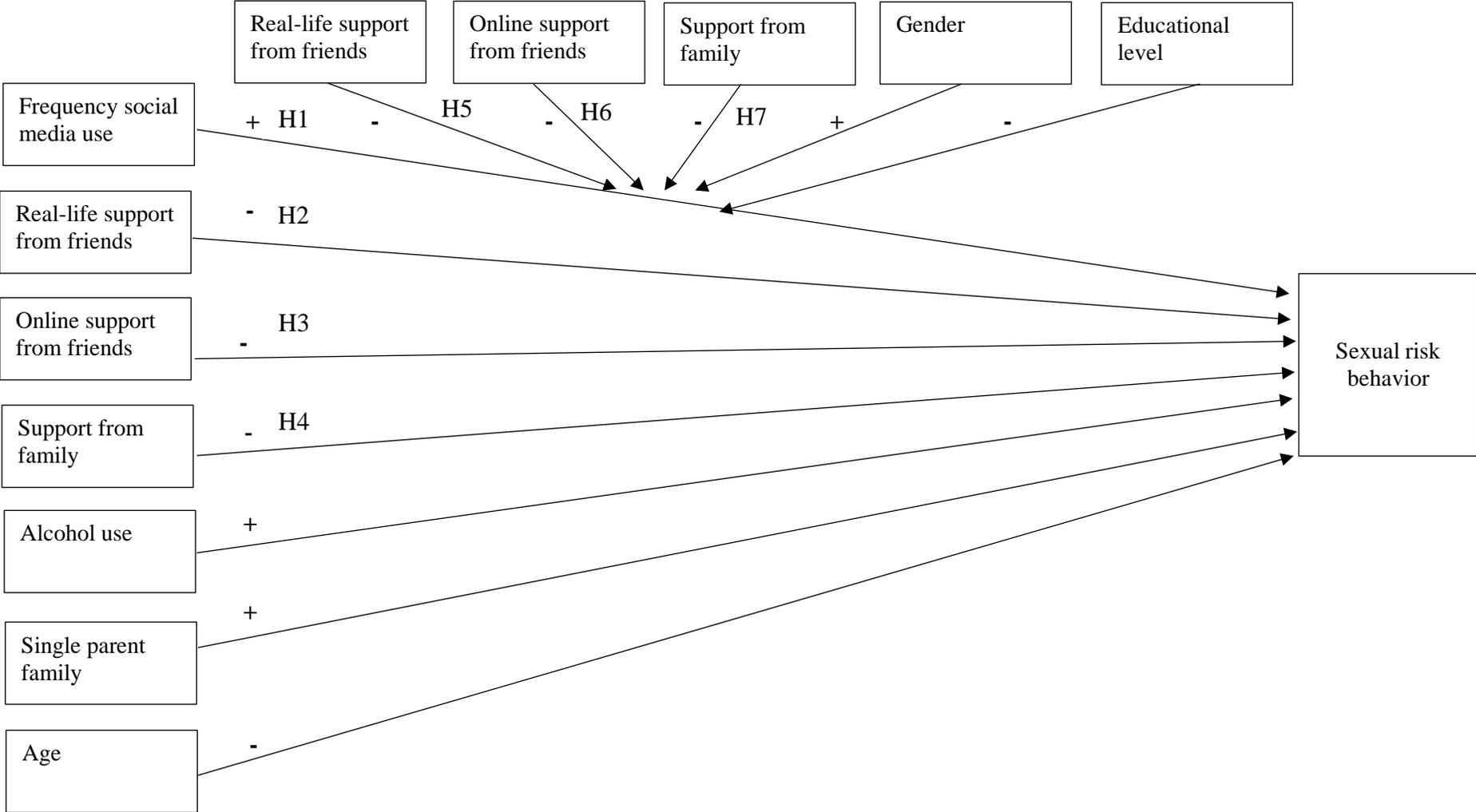
H5 = Real-life support from friends will weaken the relationship between social media use and sexual risk behavior.

H6 = Online support from friends will not or slightly weaken the relationship between social media use and sexual risk behavior.

H7 = Support from family will weaken the relationship between social media use and sexual risk behavior.

Figure 1

Research model illustrating the underlying hypotheses



Method

Design and procedure

Data for this study were taken from the 2017 Health Behavior in School-aged Children (HBSC) study conducted in the Netherlands. HBSC is an international survey-based study, that collects data on the health and wellbeing, health behaviors and social context of young people. The self-completed questionnaires were administered during school lessons and the data were gathered anonymously. The sample frame for the HBSC study was young people attending school aged 11, 13 and 15 years of age. This consisted of children attending their last year of primary school and children who were in their first four years of high school (VMBO, HAVO and VWO). In the sample of 2017-2018 also the fifth and sixth graders of HAVO and VWO were included in the research. The original total sample consisted of 7329 participants with a mean age of 14.2 ($SD = 1.17$). However, this study used a subsample of 622 participants who met the following three criteria: they had to be in secondary education, they should have had sexual intercourse, and given answers to the questions whether they had used birth control pill and/or a condom during their last sexual intercourse.

Measures

Frequency social media use

As an indicator of the frequency of social media use, adolescents were asked how often they had online contact with other people. This behavior was queried based on the following question: 'How often do you have online contact with the following people?'. This question was asked for three categories: *Good friends* (1), *Other friends than your good friends* (2), and *Friends who you know from the Internet* (3). Adolescents were asked to answer these questions using a five-point Likert scale ranging from *almost never* (1) to *almost the whole day* (5). An average score of these three questions indicated the frequency of social media use. Higher scores indicated higher levels of social media use. Cronbach's $\alpha = .600$. Also, the KMO & Barlett's Test suggested that the data were acceptable and suitable for factor analysis (KMO = .570 and sig. < .00).

Sexual risk behavior

To measure sexual risk behavior, adolescents were asked whether they have used a condom and/or birth control pill at their last intercourse. Answering categories: *yes* (1), *no* (2) or *don't know* (3). These two questions were recoded into two separate dichotomous variables with the answer categories *did not use a condom/birth control pill* (0) and *did use a condom/birth control pill* (1).

Real-life support friends

For measuring the level of real-life support from friends, adolescents were asked to answer four statements: *My friends really try to help me* (1), *I can count on my friends when something goes wrong* (2), *I have friends to whom I can tell everything to* (3) and *I can talk about my problems with friends* (4). They could answer these on a seven- point Likert scale ranging from *totally disagree* (1) to *totally agree* (7). Higher scores indicated higher levels of real-life support from friends. A Cronbach's $\alpha = .941$ showed that the internal consistency was high for this sample.

Online support friends

To measure the amount of online support from friends, adolescents were asked to answer three statements: *On the Internet it is easier for me to talk about secrets than in real-life* (1), *On the Internet it is easier for me to talk about my feelings than in real-life* (2) and *On the Internet it is easier for me to talk about my worries than in real-life* (3). These were answered on a five-point Likert scale ranging from *totally disagree* (1) to *totally agree* (5). These are recoded into one variable about how much someone dares to talk about his or her feelings online. There were five answer categories, ranging from *not easily* (1) to *very easily* (5). Higher scores indicated higher levels of online support from friends. The internal consistency of this sample showed to be reliable (Cronbach's $\alpha = .927$).

Support family

To indicate the level of family support, they were asked to answer four statements: *The people in my family do their best to help me* (1), *At home I receive the emotional support and help I need* (2), *I can talk about my problems with my family* (3) and *My family helps me to make decisions* (4). These four statements were recoded into one variable that measures the level of family support with answering categories ranging from *no support* (1) to *a lot of support* (7). Higher scores indicated a higher level of family support. Cronbach's $\alpha = .926$, which showed the sample to be reliable.

Alcohol use

For measuring alcohol use the question: "On how many days did you drink alcohol in the last four weeks?" was asked. Answering categories: *never* (1), *1 or 2 days* (2), *3 to 5 day* (3), *6 to 9 days* (4), *10 to 19 days* (5), *20 to 29 days* (6), *30 days or more* (7).

Single parent family

As an indicator for single parent family, two questions out of the questionnaire were taken together and were recoded into a dichotomous variable with the question about the marital status of their parents. Answering categories: *still together* (0) or *divorced* (1).

Gender

Studies showed that men are associated with a greater number of nonromantic sexual partners (Chen et al., 2010) and therefore gender is included as a control variable named *girl* (0) and *boy* (1).

Educational level

For measuring educational level the variable 'education_level' with the answering categories *VMBO-b/k* (1), *VMBO-g/t* (2), *HAVO* (3), *VWO* (4) was recoded into a dichotomous variable 'schoollevel'. *VMBO-b/k* and *VMBO-g/t* were taken together into the answering category *low* (0); *HAVO* and *VWO* were taken together into the answering category *high* (1).

Analyses

In this study IBM SPSS statistics Version 27 was used to analyze the data. Descriptive analyses were run to create an overview for the demographic variables. After this, a Pearson correlation analysis was conducted to observe possible correlations between the variables included in this study. In order to estimate the links between predictors and the probability of engaging in sexual risk behavior a binary logistic regression analysis was executed. To test whether social media use and support from friends were related to sexual risk behavior, and to what extent support from friends can function as buffer on the relation between social media use and sexual risk behavior, five models were conducted. The background variables were included in model 1; in model 2 frequency of social media use was added. In model 3 the different forms of support were included without frequency of social media use, whereas model 4 included all the different forms of support and frequency of social media use as predictors. Lastly, model 5 consisted of all the background variables, main effects and interaction variables. All these models were analyzed twice: one time for condom use as form of sexual risk behavior and the second time for using the birth control pill as form of sexual risk behavior.

Results

Descriptive Analyses

The descriptive statistics for both boys and girls are shown in Table 1. The subsample used in this study consisted of a total of 622 participants, 298 boys (47,9%) and 324 girls (52,1%). The mean age of the total sample group was 15.89 years ($SD = 1.36$). There was a difference in using a birth control pill during the last intercourse between boys and girls: 63,1% of the boys answered that during their last intercourse there was used a birth control pill compared to 69,4% of the girls.

Table 1

Descriptive Statistics of All Variables of Interest (N = 622)

| | Girls (52,1%) | Boys (47,9%) | Total (N = 622) |
|---|---------------|--------------|-----------------|
| Age, mean in years (SD) | 15.91 (1.21) | 15.86 (1.52) | 15.89 (1.36) |
| Educational level, mean (SD) (scale 0-1) | .63 (.48) | .63 (.48) | .63 (.48) |
| Condom use, mean (SD) (scale 0-1) | .57 (.50) | .57 (.49) | .57 (.49) |
| Birth control pill (scale 0-1) | .69 (.46) | .63 (.48) | .66 (.47) |

Note. SD = standard deviation.

Correlations

The results of the Pearson correlation analysis are presented in Table 2. Condom use was negatively significant related to age ($R_s = -.09, p < .05$) and educational level ($R_s = -.09, p < .05$). Between condom use and social media use no significant correlation was found ($R_s = .01, p = .88$). For real-life support from friends ($R_s = -.06, p = .15$), online support from friends ($R_s = .02, p = .58$) and support from family ($R_s = -.03, p = .52$) no significant correlation with condom use was found. However, there was a significant negative correlation between condom use and birth control pill ($R_s = -.12, p < .01$), which indicates that the more often an adolescent uses a birth control pill during their sexual intercourse, the less likely he or she is to use a condom.

Furthermore, the birth control pill was positively correlated to age ($R_s = .21, p < .001$) and educational level ($R_s = .10, p < .05$). No significant relation between social media use and the birth control pill was found ($R_s = -.07, p = .07$). However, support from family was

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positively correlated to the birth control pill ($R_s = .15, p < .001$), which indicates that the higher the level of family support, the more likely an adolescent is to use the birth control pill. For real-life support from friends ($R_s = -.02, p = .59$) and online support from friends ($R_s = -.00, p = .93$) no significant association was found with the birth control pill.

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Table 2

Descriptive statistics and Pearson correlations for all variables of interest in this study (N=622)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-------------------------------|---------|-------|--------|--------|------|--------|------|------|--------|----|
| 1. Age, mean | - | | | | | | | | | |
| 2. Educational level | .44*** | - | | | | | | | | |
| 3. Frequency social media use | -.18*** | -.07 | - | | | | | | | |
| 4. Real-life support friends | .02 | .04 | .18*** | - | | | | | | |
| 5. Online support friends | -.00 | -.01 | .04 | -.07 | - | | | | | |
| 6. Support family | .04 | .10* | .06 | .33*** | -.07 | - | | | | |
| 7. Alcohol use | .20*** | .04 | .13** | .05 | -.01 | -.07 | - | | | |
| 8. Single parent family | -.01 | -.07 | -.03 | -.06 | -.03 | -.06 | .05 | - | | |
| 9. Condom use | -.09* | -.09* | .01 | -.06 | .02 | -.03 | -.02 | -.02 | - | |
| 10. Birth control pill | .21*** | .10* | -.07 | -.02 | -.00 | .15*** | .06 | .00 | -.12** | - |

*p < .05, ** p < .01, *** p < .001

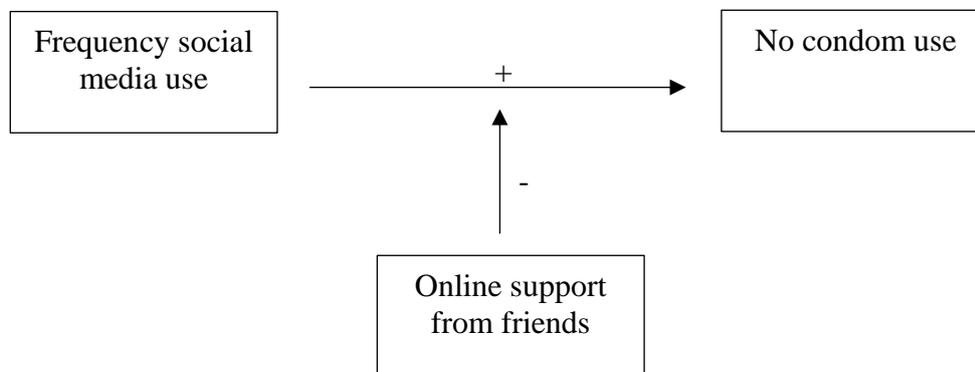
Social media use, and different forms of support in relation to sexual risk behavior

Condom use

The results of a logistic regression testing all the background variables on condom use are shown in Table 3, Model 1. None of these effects were found to be significant. In Table 3, Model 2 frequency of social media use was added to the model. Still, none of these were found to be significant. Also, in Model 3, where the different forms of support were added, and in Model 4, which included frequency of social media use and the different forms of support, no significant effects were found. To assess whether the relationship between the frequency of social media use and condom use was moderated by gender, by receiving real-life support from friends, by online support from friends, by support from family or by educational level, the interaction terms were added to Model 5. The results showed a significant interaction effect between social media use and online support an adolescent receives from friends ($OR = .84$, $CI = .73, .98$, $p < .05$). This means that the relationship between social media use and condom use is weaker when adolescents receive online support from friends (Figure 2).

Figure 2

Research model illustrating the association between frequency of social media use and condom use, and the interaction effect of online support from friends



Birth control pill

In Table 4, Model 1 the results of a logistic regression testing all the background variables on the use of birth control pill are shown. In Table 4, Model 2 the frequency of social media use was added. In Model 3 the different forms of support were added as predictors. In Model 4, Table 4 frequency of social media use and the different forms of support were included. In Model 5 all the interaction terms were added as well. However, none of these effects were found to be significant and are therefore not mentioned in the table. The results of

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Model 4 showed that gender ($OR = .67, CI = .47, .95, p < .05$), and age ($OR = 1.36, CI = 1.17, 1.57, p < .001$) were both significant predictors for using the birth control pill. This indicates that being a boy decreased the odds of using a birth control pill, whereas adolescent's age increased the odds. Support from family was also found to be a significant predictor for using the birth control pill ($OR = 1.30, CI = 1.15, 1.47, p < .001$). Real-life support from friends however no longer predicted the use of the birth control pill after adding frequency of social media use to Model 4 ($OR = .87, CI = .76, 1.00, p = .05$).

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Table 3

Logistic Regression Analysis of Social Media Use, Real-Life Support From Friends and Online Support from Friends in Relation to Condom Use (*N* = 622)

| | Model 1 | | | | Model 2 | | | | Model 3 | | | | Model 4 | | | | Model 5 | | | |
|--|---------|--------------|--------------|-----|---------|--------------|--------------|-----|---------|--------------|--------------|------|---------|--------------|--------------|------|---------|--------------|--------------|------|
| | OR | 95% CI OR | | p | OR | 95% CI OR | | p | OR | 95% CI OR | | p | OR | 95% CI OR | | p | OR | 95% CI OR | | P |
| | | <i>Lower</i> | <i>Upper</i> | | | <i>Lower</i> | <i>Upper</i> | | | <i>Lower</i> | <i>Upper</i> | | | <i>Lower</i> | <i>Upper</i> | | | <i>Lower</i> | <i>Upper</i> | |
| Gender ^a | 1.02 | .74 | 1.41 | .91 | 1.02 | .74 | 1.40 | .92 | 1.00 | .73 | 1.40 | .96 | 1.01 | .73 | 1.40 | .96 | 1.20 | .37 | 3.87 | .76 |
| Age | .92 | .80 | 1.05 | .20 | .91 | .80 | 1.05 | .19 | .91 | .80 | 1.05 | .19 | .91 | .80 | 1.05 | .20 | .92 | .80 | 1.05 | .22 |
| Educational level ^b | 1.31 | .90 | 1.90 | .16 | 1.31 | .90 | 1.90 | .16 | 1.30 | .90 | 1.89 | .17 | 1.30 | .90 | 1.89 | .17 | 1.12 | .33 | 3.81 | .86 |
| Alcohol use | 1.00 | .89 | 1.13 | .99 | 1.00 | .89 | 1.13 | .97 | 1.00 | .89 | 1.13 | .94 | 1.00 | .89 | 1.14 | .94 | .99 | .88 | 1.13 | .92 |
| Single parent family | .90 | .62 | 1.32 | .60 | .90 | .62 | 1.32 | .60 | .89 | .61 | 1.31 | .56 | .89 | .61 | 1.31 | .56 | .89 | .60 | 1.31 | .54 |
| Frequency social media use | | | | | .98 | .82 | 1.17 | .80 | | | | | 1.00 | .83 | 1.20 | .99 | 1.73 | .66 | 4.53 | .27 |
| Real-life support friends | | | | | | | | | .92 | .81 | 1.04 | .20 | .92 | .81 | 1.05 | .20 | .85 | .56 | 1.28 | .44 |
| Online support friends | | | | | | | | | 1.03 | .90 | 1.18 | .67 | 1.03 | .90 | 1.18 | .67 | 1.81 | 1.09 | 3.02 | .02* |
| Support family | | | | | | | | | 1.00 | .89 | 1.12 | 1.00 | 1.00 | .89 | 1.12 | 1.00 | 1.18 | .78 | 1.78 | .44 |
| Frequency social media use * | | | | | | | | | | | | | | | | | .94 | .66 | 1.34 | .75 |
| Gender | | | | | | | | | | | | | | | | | | | | |
| Frequency social media use * real life support friends | | | | | | | | | | | | | | | | | 1.03 | .90 | 1.17 | .68 |
| Frequency social media use * online support friends | | | | | | | | | | | | | | | | | .84 | .73 | .98 | .02* |

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| | | | | |
|---------------------------------|------|-----|------|-----|
| Frequency social media use * | .95 | .83 | 1.08 | .41 |
| support family | | | | |
| Frequency social media use * | 1.07 | .75 | 1.52 | .73 |
| Educational level | | | | |

Note. ^a Reference category = girl. ^b Reference category = low. *OR* = odds ratio; *CI* = confidence interval. **p* < .05, ** *p* < .01, *** *p* < .001

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Table 4

Logistic Regression Analysis of Social Media Use, Real-Life Support From Friends and Online Support from Friends in Relation to the use of the Birth Control Pill (*N* = 622)

| | Model 1 | | | | Model 2 | | | | Model 3 | | | | Model 4 | | | |
|--------------------------------|---------|--------------|--------------|--------|---------|--------------|--------------|--------|---------|--------------|--------------|--------|---------|--------------|--------------|--------|
| | OR | 95% CI OR | | p | OR | 95% CI OR | | p | OR | 95% CI OR | | p | OR | 95% CI OR | | p |
| | | <i>Lower</i> | <i>Upper</i> | | | <i>Lower</i> | <i>Upper</i> | | | <i>Lower</i> | <i>Upper</i> | | | <i>Lower</i> | <i>Upper</i> | |
| Gender ^a | .76 | .54 | 1.07 | .11 | .76 | .54 | 1.07 | .11 | .67 | .47 | .96 | .03* | .67 | .47 | .95 | .03* |
| Age | 1.38 | 1.19 | 1.60 | .00*** | 1.36 | 1.17 | 1.58 | .00*** | 1.38 | 1.19 | 1.60 | .00*** | 1.36 | 1.17 | 1.57 | .00*** |
| Educational level ^b | .96 | .66 | 1.42 | .85 | .96 | .65 | 1.41 | .84 | 1.02 | .69 | 1.51 | .94 | 1.01 | .68 | 1.50 | .95 |
| Alcohol use | 1.04 | .92 | 1.18 | .51 | 1.06 | .93 | 1.20 | .42 | 1.08 | .95 | 1.23 | .24 | 1.09 | .96 | 1.25 | .18 |
| Single parent family | .99 | .66 | 1.48 | .94 | .98 | .65 | 1.47 | .91 | .99 | .66 | 1.51 | .98 | .99 | .65 | 1.50 | .96 |
| Frequency social media use | | | | | .91 | .76 | 1.10 | .33 | | | | | .90 | .75 | 1.10 | .31 |
| Real-life support friends | | | | | | | | | .86 | .75 | .99 | .03* | .87 | .76 | 1.00 | .05 |
| Online support friends | | | | | | | | | 1.00 | .87 | 1.16 | .96 | 1.01 | .87 | 1.16 | .92 |
| Support family | | | | | | | | | 1.30 | 1.15 | 1.46 | .00*** | 1.30 | 1.15 | 1.47 | .00*** |

Note. ^aReference category = girl. ^bReference category = VWO. *OR* = odds ratio; *CI* = confidence interval. **p* < .05, ** *p* < .01, *** *p* < .001

Discussion

The current study aimed to examine whether social media use and support from friends were related to sexual risk behavior and to what extent support from friends could buffer the relationship between social media use and sexual risk behavior. No effects for social media use were found, contrary to expectations. For condom use, friends' online support was found to be an effective predictor, indicating that more online support from friends increased the likelihood of using a condom. The results also showed that online support from friends functioned as buffering factor on the relationship between social media use and condom use. Family support was included as control variable and was found as significant predictor for the use of the birth control pill.

Social media use

The current study showed that social media use was not related to sexual risk behavior. This result contradicted the finding of Gommans et al. (2015) and Kosenko et al. (2017), who found that social media use seemed to be related to more sexual risk behavior.

A first possible explanation that no association was found between social media use and sexual risk behavior, may be related to the fact that forms of contact via electronic media are now, more than ever, substituting interpersonal relationships, some of which would presumably entail sexual intercourse (Lei & South, 2021). Furthermore, the increasing availability of communication via social media platforms may limit the desire or need for adolescents to have face-to-face interactions. When adolescents see each other less in real-life, there are less opportunities to engage in sexual risk behavior (Tillman et al, 2019). This corresponds with research done by Arnett (2018) who argued that social media detracts adolescents from time available for types of unstructured socializing, which may lead to sexual intercourse. In order to obtain more insight into the changing role of social media on sexual (risk) behavior of adolescents, future research is needed. Another possible explanation for the lack of effect of social media use on sexual risk behavior could be related to the sample size used in this study compared to the sample size used in the study of Gommans et al. (2015), which consisted of 5642 (*N*) participants. A small sample decreases the predictive power of the study. The sample of adolescents who engaged in sexual risk behavior used in this study was relatively small, which limited the predictive power of the factors. This means that specific effects for social media use may have been undetected or underestimated but may still be present.

Different forms of support from friends

Based on literature, the expectation was that real-life support from friends, and online support from friends would have an effect on the engagement in sexual risk behavior. However,

based on findings in this study, real-life support from friends was not associated with sexual risk behavior. Online support from friends did have an effect on condom use and indicated that online support from friends increased the likelihood of using a condom. Results also showed that online support from friends functions as buffering factor, indicating that the relationship between social media and condom use is weaker for adolescents who receive online support from friends than for adolescents who do not receive online support from friends. These results corresponded with the findings in the study of McElhaney et al. (2006), who found that supportive friendships seemed to be associated with a decreased likelihood of engaging in externalizing behavior, including sexual risk behavior. Also, Henrich et al. (2006) found that supportive friendships were linked to having fewer sexual partners.

Support from family

The focus in this study was on social media use and support from friends, but the results showed that family support is more relevant, at least with regard to the use of the birth control pill. Results indicated that support from family is an influential predictor for engaging in sexual risk behavior. More support from family is associated with an increased likelihood of using the birth control pill. These findings were in line with the results from Henrich et al. (2006). They found that adolescents who receive a higher level of support from their family and who have a higher level of connectedness with their parents, have less unprotected sexual intercourse, and are making safer sexual decisions.

Strengths & limitations

There are some strengths and limitations that need to be mentioned regarding the current study. As strength, this study has contributed to filling the gap in literature about different forms of support and the engagement in sexual risk behavior by making a distinction between real-life support from friends and online support from friends in relation to sexual risk behavior. Besides that, within this study was also given attention to the question to what extent these forms of support may function as possible buffering factor on the relationship between social media use and sexual risk behavior.

Furthermore, some results of this study should be interpreted with a number of cautions in mind. An important limitation is related to the measurement invariance. The measurement invariance refers to whether an instrument is interpreted in the same way across different groups of individuals (Holden, Gower and Chmielewski, 2020). In this study real-life support from friends and online support from friends were measured differently, with the consequence that the measurement invariance cannot be guaranteed. The possible different outcomes related to these two forms of support therefore may be explained by the difference in measurement instead

of by the form of support. Another limitation is related to the way the data is gathered, which is done with self-report questionnaires filled in by the adolescents. These self-reports may have been biased since self-reports can lead to socially desirable answers, especially due to the private and sensitive nature of sexual behaviors (Mirzaei et al., 2015). This social desirability bias could lead to an underestimation of sexual risk behavior (DiClemente, 2015). However, the use of self-report questionnaires reduced also the need for respondents to disclose sensitive behavior to an interviewer, which makes it a reliable and valid method to measure sexual behavior (Fenton et al., 2001).

Future research should focus on the age of the first sexual intercourse of adolescents. Research done by De Graaf et al. (2017) showed that in 2017 the mean age for the first sexual intercourse was at the age of 18, whereas in 2012 this was at the age of 17. In the current study age was only added as control variable, indicating that the engagement in sexual risk behavior would decrease as someone gets older. However, since research showed that adolescents are starting at a later age with sexual intercourse, further exploration on this age shift is recommended in order to say something about the influence of age on the engagement in sexual (risk) behavior.

Another recommendation for future research would be to focus on more forms of contraception. In the current study there has only paid attention to condom use and the use of the birth control pill, while research done by De Graaf et al. (2017) showed that other forms of contraception became more often used as well. Among girls the use of the birth control pill has decreased from 74% in 2012 to 64% in 2017. Instead of the birth control pill, the use of the intra-uterine device (IUD) has increased in popularity. In 2017 11% of the girls used the IUD, which is a duplication compared to 2012. In order to give a complete overview of sexual risk behavior among adolescents, it is therefore necessary to study other forms of contraception as well.

Conclusions & implications

The current study has addressed social media use, and different forms of support in relation to the engagement in sexual risk behavior among adolescents. No association between social media use and either condom use, or the use of the birth control pill was found. Online support from friends by contrast seemed to be associated with a higher level of condom use. Online support from friends was also found to function as a buffer on the relationship between social media and condom use. Level of family support was found to be related to an increased likelihood of using the birth control pill. No evidence was found that real-life support from friends or support from family could function as buffering factor in the relationship between

social media use and sexual risk behavior. However, due to the limitations in this study regarding the measurement of support from friends, it is difficult to draw definite conclusions based on these results.

Despite these limitations, this study has demonstrated how support from family and friends can help to mitigate adolescents' sexual risk behavior. Since especially support from family seemed to play a big role in the use of the birth control pill, government should focus more on their role when looking for risk-reduction interventions regarding sexual risk behavior. Future research should therefore examine effective ways to teach parents how they can give the right support to their children and how they can communicate about sexual behavior. The role of the different forms of support from friends should still receive some more attention before putting it into practice. When more research has been done on the role of real-life support, and online support from friends on sexual risk behavior, municipalities and schools can come up with more effective intervention strategies.

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