Computers in Human Behavior 100 (2019) 60–69

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Exploring which factors contribute to teens' participation in sexting

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ARTICLE INFO

Keywords:
Sexting
Need for popularity
Social competence
Cybergossip
Willingness to sext
Normalization

ABSTRACT

An increasing proportion of adolescents appear to see sexting as something normal, despite the serious consequences it can have on their well-being. Only little is known about the factors that facilitate teens' participation, and even less about whether the same factors influence different types of sexting behaviors – sending, receiving, forwarding, or receiving via an intermediary – in different ways. Here we analyze whether the need for popularity, participation in cybergossip, social competence, the level of normalization of sexting and willingness to sext predicts to what extent teens participate in the activity, while at the same time investigating how gender influences this participation. In total, 1431 (46.4% female) Spanish adolescents, aged 11–18 years, participated in a two-wave longitudinal study with a time lag of four months. All factors under study predicted involvement in all four sexting behaviors, but the relative importance of the factors differed depending on the behavior, and between boys and girls. Participation in cybergossip and the need for popularity were the two most important factors for girls. For boys, the levels of normalization and willingness to sext mattered most. Our results highlight the importance of including these factors and accounting for gender differences in sexting prevention strategies.

1. Introduction

The digital environment has opened up a host of opportunities and advantages for teens in their social lives, enabling new behaviors, attitudes and beliefs. Technology also offers many new ways of exploring sexuality; and, new forms of sexual expression and relationships are being normalized. The exchange of sexual content via computer and Internet-enabled devices can be understood as technology-mediated sexual interaction (Courtice & Shaughnessy, 2017), and sexting as one example of this new form of interaction (Schubert & Wurf, 2014). Sexting has aroused great public and scientific concern (Gewirtz-Meydan, Mitchell, & Rothman, 2018), in part due to its potential negative consequences that media and society find alarming (Klettke, Hallford, & Mellor, 2014).

The literature shows there are associations between sexting, health problems and psychosocial conditions (Van Ouytsel, Walrave, Ponnet, & Heirman, 2015). Sexting has been related to other phenomena such as blackmail, bullying, cyberbullying and extortion (Kopecký, 2015; Strassberg, McKinnon, Sustaíta, & Rullo, 2013). Its potential negative consequences make it essential to understand the phenomenon in all its complexity. This includes knowing which factors contribute to teens' participation in sexting (Smith et al., 2016). Several facilitating factors related to the peer network, such as the normalization of sexting (Gámez-Guadix, Santisteban, & Resett, 2017), willingness to sext (van Oosten & Vandenbosch, 2017), the need for popularity (Vanden Abeele, Campbell, Eggermont, & Roe, 2014), participation in cybergossip (Ringrose, Harvey, Gill, & Livingstone, 2013)), and social competence (Bauman, 2015), among others, have already been identified. However, to date, they have only been studied as isolated factors and mostly with cross-sectional study designs. No studies yet exist that analyze the relationship between sexting and these factors jointly and over time.

1.1. Definition and prevalence of sexting

Different studies have used different definitions of sexting. The most simple ones refer to sending sexually explicit images (Choi, Van Ouytsel, & Temple, 2016; Marume, Maradzika, & January 2018; Wolak, Finkelhor, & Mitchell, 2012; Ybarra & Mitchell, 2014). Forwarding of sexual content is not included in most studies, even though it has the highest potential to do harm (Livingstone & Görzig, 2014; Madigan, Ly, Rash, Van Ouytsel, & Temple, 2018; Strassberg, Cann, & Velarde, 2017). Forwarding refers to sending someone else's sexual content to another person (Strassberg et al., 2017). Active and passive sexting have also been distinguished. The former includes creating, sending and

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https://doi.org/10.1016/j.chb.2019.06.010
Received 5 September 2018; Received in revised form 14 June 2019; Accepted 20 June 2019
Available online 23 June 2019
0747-5632/

forwarding, whereas only receiving content is seen as passive sexting (Barrense-Dias, Berchtold, Surís, & Akre, 2017). Further distinctions relate to content (sexual images, videos and text messages); sexual characteristics (suggestive or explicit); the distribution method (mobile phone, the Internet, social networking sites, electronic devices) (Schubert & Wurf, 2014; Wurtele & Miller-Perrin, 2014); and the presence or absence of consent (Barrense-Dias et al., 2017).

One of the most complete definitions describes sexting as sending, receiving and forwarding sexually suggestive and explicit images, videos or text messages using a mobile phone, Internet and other electronic devices (Mitchell, Finkelhor, Jones, & Wolak, 2012).

Unsurprisingly, in view of the different definitions, estimates of sexting prevalence among teens vary considerably (Barrense-Dias et al., 2017). Those studies with a focus on **sending** sexual content report rates between 11.9% and 28% (Madigan et al., 2018; Temple et al., 2012). Studies which include **receiving** sexts present figures from 8.4% to 31.5% (Fleschler Peskin et al., 2013), and between 10% and 25% of teens have been found **forwarding** sexual content (Patrick, Heywood, Pitts, & Mitchell, 2015).

1.2. Gender differences in sexting

Studies have found different prevalence rates for girls and boys, but the direction of the difference is not always the same. In some studies girls are more likely to share sexual images (Reyns, Burek, Henson, & Fisher, 2013; Ybarra & Mitchell, 2014), while in others, it is the boys who mainly do it (Gámez-Guadix et al., 2017; West et al., 2014). In general, more boys than girls appear to forward and request sexual images and messages, whereas more girls receive requests for sexual content than boys (Norman, 2017).

But differences run deeper than just prevalence. For both boys and girls, to participate in sexting is to participate in sexual activity (Wurtele & Miller-Perrin, 2014). However, sexting is not a gender neutral activity, and is influenced by existing gender dynamics and stereotypes (Walker, Sanci, & Temple-Smith, 2013). The roles that boys and girls adopt in the negotiation process are different, with boys usually seen as asking for photos and girls as being responsible for setting limits (Symons, Ponnet, Walrave, & Heirman, 2018). Peer pressure and coercion, is the most common answer given by teens when asked why they participate in sexting (Lee, Chang-Hun, Moak, Stacy, Walker, Lee, Moak, & Walker, 2016), especially among girls, who can end up falling victim to involuntarily sharing sexual content (Klettke et al., 2014).

Besides, as pointed out by Ringrose et al. (2013), the significance of shared images through sexting depends on the person's gender. A new form of “feminine desirability” emerges when a girl is asked to send a picture of her body, whereas for boys, acquiring these images is a test of their “desirability”, a new norm of masculinity and masculine performance. A double standard exists according to which, girls who send images are considered by both sexes as – in the language of adolescents – “skets/sluts” or girls who “do not respect themselves”, whereas these photos have an exchange value for boys; they gain popularity by sharing these images with their male peers.

In line with the above, research also found the consequences of sexting to differ by gender: for girls these are more often negative than for boys; the latter frequently even experiencing positive consequences, such as increased popularity (Burén & Lunde, 2018; Speno, 2016). This means a sexist element underlies the phenomenon: it is the female population that largely suffers the consequences, including greater negative emotional impact, and reputational harm (Wood, Barter, Stanley, Aghtaie, & Larkins, 2015).

1.3. Facilitating factors

Identifying which factors facilitate teen sexting will help reach a better understanding of the phenomenon. Besides previous sexting involvement (Smith, Thompson, & Davidson, 2014), other important factors, related to the social network, appear to be its normalization (Gámez-Guadix et al., 2017), willingness to sext (van Oosten & Vandenbosch, 2017), the need for popularity (Vanden Abeele et al., 2014), participation in cybergossip (Ringrose et al., 2013), and social competence (Bauman, 2015).

The **normalization** of sexting refers to the belief that – with the exception of forwarding – sending and receiving sexts is a normal practice within intimate adolescent relationships (Gámez-Guadix et al., 2017; Strassberg et al., 2017). Holding such beliefs increases the likelihood of engaging in sexting (Wood et al., 2015); in fact, it is said to be one of the strongest factors in young people's decision to participation (Walrave et al., 2015). Teens themselves believe that the attention given to sexting, including through media coverage, influences their tendency to participate, by making them think it is a normal practice (Smith et al., 2014). However, despite the seemingly increasing normalization of sexting among teens and young people (Wood et al., 2015), with prevalence rates generally below 32%, it cannot be considered a normative practice (Van Ouytsel et al., 2015).

Another facilitating factor is the **willingness to sext**, that is the extent to which teens have a willingness, drive or impulse to engage in sexting. The willingness to engage in a behavior refers to the likelihood with which people think they would engage in a behavior when the situation lends itself to this behavior (van Oosten & Vandenbosch, 2017). Although research to date has focused mostly on the reasons given by teens for actual participation, which include peer pressure and coercion, being in a dating relationship, to have fun, as a form of self-presentation (Kopecký, 2015), out of feeling sexy, to initiate a sexual encounter, to attract attention (Henderson, 2011), and boredom; in this study we are not interested in the specific reasons to sext but in the disposition of the adolescent to participate in sexting regardless of specific reasons. Besides, the willingness to engage in this kind of behavior, regardless of the specific reasons for each, has been shown to be a good predictor of risky behavior (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008; Gibbons & Gerrard, 1995).

The **need for popularity** has also been associated with sexting and with the use of social networking sites in general (Utz, Tanis, & Vermeulen, 2012). Adolescence is a time when social status gains particular importance (Chalfen, 2009; Ling, 2004). Sexting presents or may present an opportunity for teens to boost their popularity (Baumgartner, Sumter, Peter, & Valkenburg, 2015; Gewirtz-Meydan et al., 2018). This applies to both boys and girls, although in different ways (Vanden Abeele et al., 2014). When boys sext, they increase their social capital and gain popularity in their peer group. For girls, it is more complex. Being asked to sext, positively affects their status (Ringrose et al., 2013), but if they actually engage in sexting, in most cases, not only do they fail to gain popularity, but they are also insulted and rejected and they often experience negative feelings after sexting (Burén & Lunde, 2018; Temple et al., 2012). This indicates that although the need for popularity facilitates sexting in both genders, different theoretical models may be needed to explain these behaviors (Vanden Abeele et al., 2014).

Cybergossip is a common element of teens' and young people's online behavior (Subrahmanyam, Reich, Waechter, & Espinoza, 2008). It takes place when two or more people make evaluative comments about a third person who is not present via the use of electronic devices (Romera, Herrera-López, Casas, Ruiz, & Del Rey, 2018). Although there are few studies to date that have examined cybergossip (Subramanian, 2013), links between cybergossip and sexting have been shown. The diffusion of sexual images of girls can trigger rumors and give rise to insults (Ringrose et al., 2013), and threats of cybergossip have also led to sexting. Thomas (2018) found that 38% of the participants in their study (462 adolescent people; more than 90% girls) reported to have been coerced into sending photos of themselves, and that part of this coercion took the form of threats to spread rumors or distribute photos that were shared earlier. This shows the relevance of checking the

association between cybergossip and the involvement in different sexting behaviors.

As a final factor we looked at **social competence**. This involves having the skills and behaviors needed to succeed in a social context. It includes knowing and being able to play by the unwritten rules and giving and acquiring peer support (Berger & Rodkin, 2012; Gest, Sesma, Masten, & Tellegen, 2006). Prosocial attitudes offline and the prosocial use of the Internet, which are a reflection of higher social competence, can reduce online risks (Ma, Li, & Pow, 2011). For example, in the case of cyberbullying, the active participation of bystanders can reduce harm (Bauman, 2015). Therefore, social competence might also play an important role in sexting, particularly in relation to forwarding content, which implies non-consensual sharing of sexual material.

1.4. Objectives

Given the prevalence of sexting and its potential impact, it is important to understand the factors that facilitate various types of sexting for girls and boys. Currently, research is limited to studies that include only one or two predictors of sexting, or only one or two types of sexting (e.g., only sending, only receiving), as well as to cross-sectional designs. However, to understand the relative importance of multiple predictors of sexting and whether these are true facilitators rather than just associated, longitudinal research that includes multiple facilitators concurrently, is needed. It is also important to examine how gender influences these relationships because gender is a prominent factor in young people's sexual experiences, including sexting experiences. Thus, in this study, we sought to:

1. Identify whether the degree of normalization, willingness to sext, need for popularity, participation in cybergossip, social competence, and previous sexting experience predict sending, receiving, forwarding, and receiving via an intermediary sexting material.
2. Analyze whether there are gender differences in the factors that predict involvement in each of the four sexting behaviours.

Considering the reviewed literature, we hypothesize:

a) All mentioned factors will be associated, in some degree, to the four sexting behaviors examined. In this way, the degree of normalization, willingness to sext, need for popularity, participation in cybergossip, and previous sexting experience will increase the frequency of sending, receiving, forwarding, and receiving via an intermediary and sexting material. However, social competence will decrease the frequency of participation in these four indicated behaviors.

We expect to find differences, regarding gender, in the relative importance of each factor to predict sexting. Concretely, according to some previous research data, we hypothesize a greater importance of normalization and willingness to sext in boys and a greater need for popularity and cybergossip in girls.

2. Material and methods

Based on the proposed objectives, this research followed a longitudinal *ex post facto* design, which is used when studying causal relationships without the ability to manipulate the independent variables (León & Montero, 2007). There was a 4-month interval between the first and second waves of data collection.

2.1. Participants

One thousand, four hundred and thirty-one (1431) students (46.4% female) participated in this study. They came from 76 classes across the four academic years that make up secondary education in the south of Spain (38.4% = 1st year; 22.9% = 2 nd year; 22.4% = 3rd year; 16.3% = 4th year), and were aged between 11 and 18 (M = 13.61; SD = 1.31). Their presence on instant messaging applications and social networks was as follows: 90.3% used WhatsApp, 80.6% Instagram; 25.2% Twitter; 27.8% Facebook; 43.5% Snapchat; and 0.4% used Tinder. Several schools of the region were invited, using a mailing, to take part in the study. Those who manifested their interest were included in the study.

2.2. Instruments

First, following guidelines set out in numerous research studies (Choi et al., 2016; Gewirtz-Meydan et al., 2018; Temple & Choi, 2014), four direct questions were asked about active and passive involvement: sending: *I have sent erotic-sexual videos, images or messages to my boyfriend/girlfriend* (this relates to content about the sender); receiving: *I have received erotic-sexual videos, images or messages from my boyfriend/girlfriend*; forwarding: *I have forwarded or shared erotic-sexual videos, images or messages of other boys or girls*; and receiving via an intermediary: *Someone sent me erotic-sexual videos, images or messages of other boys or girls*. Each item had five response options: 0 = Never, 1 = Rarely, 2 = Occasionally, 3 = Often, and 4 = Frequently.

We also included two dimensions from the *Normalization Sexting Questionnaire* (NSQ) (Del Rey, Elipe, & Casas, under review). The first dimension relates to normalization and comprises five items that allude to sexting as something normal and usual, for example, *Sending erotic/sexual videos, photos, or messages is normal, it's fine.* The combination of items refers to content about oneself and about others. The reliability of the dimension in our sample was $\alpha = 0.76$, and the confirmatory factor analysis (CFA) showed an adequate fit: $\chi^2_{S-B} = 78.85$; $p = .00$; RMSEA = 0.06; SRMR = 0.05; CFI = 0.95; NNFI = 0.98. The second dimension relates to willingness to sext and is made up of six items that capture the most frequent reason given to engage in these behaviors, for example, *I would send erotic/sexual messages or photos/videos as a way to have fun with my boyfriend/girlfriend*. All items were phrased in the conditional form as in the example, and jointly capture the level of willingness to sext. Again, the combination of items refers to content about oneself and about others. The reliability of the second dimension in our sample was $\alpha = .93$ and the CFA indexes again showed adequate fit: $\chi^2_{S-B} = 67.81$; $p = .00$; RMSEA = 0.034; SRMR = 0.026; CFI = 0.99; NNFI = 0.99. All items in both dimensions had five response options ranging from 0 = Strongly disagree to 4 = Strongly agree.

We also used the Need for Popularity Scale (Santor, Messervey, & Kusumakar, 2000; Utz et al., 2012), comprising 12 items on a 5-point Likert-type scale: 0 = Strongly disagree to 4 = Strongly agree. This scale assesses the extent to which popularity forms the willingness for certain behaviors. It includes items such as *On occasion, I've changed the way I dress in order to be more popular*. The reliability of the scale in our sample was $\alpha = 0.93$.

The Cybergossip Questionnaire for Adolescents GCQ-A (Romera et al., 2018) was used to assess cybergossip behavior. This 9-item questionnaire covers the four main functions of gossip: to inform, influence, build new friendships, and to have fun. Items included: *I talk with my friends on social networks or WhatsApp about what's going on with other classmates for fun* and *I have told things about a classmate or friend on social networks or WhatsApp to make the group change their opinion about him/her*. Each of the nine items has a frequency Likert scale with the following values: 0 = Never; 1 = Hardly ever; 2 = Sometimes; 3 = Almost always; and 4 = Always. The reliability of the one-dimensional scale was optimal, $\alpha = 0.86$.

Finally, we used the adapted version of the Perceived Social Competence Scale (PSCSII) (Anderson-Butcher et al., 2016), validated into Spanish by Romera, Cano, García-Fernández, and Ortega-Ruiz (2016). This 5-item tool assesses children's and youth's perceptions about their own social competence using statements such as *I help other*

Table 1
Descriptive statistics.

	N	M	SD	Skewness	Kurtosis
I have sent erotic-sexual videos … W1	1265	0.15	0.51	4.36	22.16
I have sent erotic-sexual videos … W2	1189	0.18	0.58	4.11	19.17
I have received erotic-sexual videos … W1	1263	0.34	0.74	2.70	8.02
I have received erotic-sexual videos … W2	1190	0.37	0.77	2.36	5.72
I have forwarded or shared erotic-sexual videos … W1	1264	0.13	0.45	4.56	24.93
I have forwarded or shared erotic-sexual videos … W2	1191	0.13	0.44	4.30	22.81
Someone sent me erotic … messages of other boys or girls W1	1264	0.41	0.75	2.28	5.99
Someone sent me erotic … messages of other boys or girls W2	1189	0.38	0.73	2.32	5.84
Normalization W1	1229	0.52	0.63	1.63	3.45
Willingness to sext W1	1246	0.19	0.48	3.75	17.20
NFP W1	1194	0.63	0.68	1.62	3.05
CG W1	1232	0.43	0.45	1.30	1.99
SC W1	1246	3.16	0.74	−1.25	2.40

Note: NFP = Need for Popularity; CG= Cybergossip; PSC= Social Competence.

classmates and *I lend* support *to other people*, with response options ranging from 0 = Not at all true to 4 = Really true. The reliability of the scale in our sample was $\alpha = 0.90$.

2.3. Procedure

We obtained permission from the Andalusian Biomedical Research Ethics Coordinating Committee and sought consent from the schools. Several schools of the region were sent an invitation letter by mail. In this letter, directed to school board, we explain the research and requested their collaboration. Once schools boards agreed, and their approval had been received, we proceeded with data collection.

The questionnaires were administered by teachers in paper-and-pencil format during class hours. Teachers gave their prior consent and the administering process lasted approximately 40 min. Before commencing, everyone was informed about the voluntary nature of participation, anonymity and data confidentiality, and the importance of responding truthfully. A second data collection wave was conducted four months later under the same conditions and including the same measures.

2.4. Data analysis

First, we performed descriptive analysis (*M*, *SD*, Skewness and Kurtosis) on all studied variables. Subsequently, boys' and girls' scores on the four direct sexting participation questions were compared using Mann Whitney U tests, and we established the bivariate correlations (Spearman correlation coefficient) between all variables. In order to address the first objective, four structural equation panel models were estimated, one for each of the sexting behaviors at both waves (W1 and W2). Thus, the dependent variables of *Model 1* are Sending W1 and Sending W2. Equivalently, Models 2 through 4 looked at receiving, forwarding and receiving via an intermediary, each with two dependent variables (W1 and W2). Latent constructs were created from the responses at wave 1 for each of the facilitating factors using factor analysis, and these were included in all four models as independent variables. Therefore, each model tests the relationship between the independent variables at wave 1 with the dependent variable at wave 1 (cross-sectionally) and with the dependent variable at wave 2 (longitudinally). In addition, the relationship between the dependent variable at wave 1 and at wave 2 is included in all models, testing the effect of previous involvement in sexting. We chose to use a separate model for each of the dependent variables for both theoretical and practical reasons. As described in the Introduction, different relationships are expected for the different types of sexting behavior, and this allows simpler and more understandable models.

The models were estimated using the Robust Least Squares method, adjusted for the ordinal nature and non-normal distribution of the studied variables (Flora & Curran, 2004). The fit of the models was tested using the following indexes: the Satorra-Bentler scaled chi-square (χ^2_{S-B}) (Satorra & Bentler, 2001); the comparative fit index (CFI) and the non-normality fit index (NNFI) (≥ 0.90 is adequate, ≥ 0.95 is optimal); the root means square error of approximation (RMSEA) and the standardized root means square residual (SRMR) (≤ 0.08 is adequate, ≤ 0.05 is optimal) (Hu & Bentler, 1999). The Akaike information criterion (AIC) was used to compare the obtained models, where lower values indicate better fit.

To address the second objective, the degree of robustness of the factorial structure or invariance of the models was tested through multigroup analysis, with gender as the analysis criterion. This analysis consists of comparing sets of increasingly restrictive models (models A and B). In Model A, configural invariance is tested by imposing the same factorial structure on both subsamples and checking whether the fit indexes of the combined model indicate good model fit. Subsequently, in Model B the factorial loads are restricted and the fit indexes of Models A and B are compared. Changes (Δ) in NNFI, CFI, RMSEA and SRMR of > 0.01 between the models indicate the condition of measurement invariance is not met (Dimitrov, 2010), which would signal gender differences. As a further test of invariance, the chi-square difference test ($\Delta\chi^2_{S-B}$) was used, where significant differences demonstrate variance between both models (Bollen, 1989; Bryant & Satorra, 2012) and indicate gender differences. The equation models were carried out in EQS 6.2 and SPSS version 20 was used for all other analyses.

3. Results

Descriptive statistics of the study variables are shown in Table 1.

Gender differences with respect to the four questions about sending, receiving, forwarding and receiving via an intermediary are presented in Table 2. Boys were found to participate significantly more than girls in all four sexting behaviors and in both waves of data collection.

The Spearman correlation coefficient was used to obtain bivariate correlations of the variables in this study. All variables show significant correlations (see Table 3).

Four structural equation models, combining the responses of girls and boys, and including sexting behavior at both W1 and W2 were run to achieve objective 1. All four models had optimal fit index values (see Table 4). The explained variance of the models lay between 51% and 80%. Here we do not show the estimated relationships in detail, but we will do so for the gender disaggregated models below.

To address the second objective, multi-group analyses were run on the four models with a focus on gender differences. The configuration and measurement invariance tests revealed significant differences between boys and girls in all four sexting behavior models: the chi-squared differences ($\Delta\chi^2_{S-B}$) between the compared models were

Table 2
Results of the Mann–Whitney *U* test exploring gender differences.

	Gender	N	Mean rank	U	Z	p
I have sent erotic-sexual videos … W1	Girl	630	1654.76	1261396.98	−2.26	.00
	Boy	635	1756.46			
I have sent erotic-sexual videos … W2	Girl	589	1668.99	1391396.50	−2.39	.01
	Boy	600	1707.81			
I have received erotic-sexual videos … W1	Girl	592	1434.07	1027530.50	−2.55	.01
	Boy	671	1475.81			
I have received erotic-sexual videos … W2	Girl	576	1614.22	1301827.00	−5.78	.00
	Boy	614	1753.60			
I have forwarded or shared erotic-sexual videos … W1	Girl	603	1392.63	968568.50	−5.84	.00
	Boy	661	1511.83			
I have forwarded or shared erotic-sexual videos … W2	Girl	580	1635.82	1337142.50	−5.94	.00
	Boy	611	1737.09			
Someone sent me erotic … messages of other boys or girls W1	Girl	605	1634.54	1335035.00	−3.92	.00
	Boy	659	1739.24			
Someone sent me erotic … messages of other boys or girls W2	Girl	589	1420.85	1008694.50	−2.69	.00
	Boy	600	1484.83			

significant, and the deltas (Δ) of the CFI, NNFI, RMSEA and SRMR indexes were above the cut-off point of .01 in all comparisons (see Table 5).

For Model 1 (**sending**), values of the fit indexes for both the girls' and boys' models were within the acceptable range, but the girls model had a slightly better fit (see Table 5). In the girls' model, participation in cybergossip had the strongest association with the sending of sexts at W1 (β = 0.64), and the need for popularity variable did at W2 (β = 0.58) (see Fig. 1). The independent variables explained 60% of the variance in the dependent variable at W1 and 64% at W2.

In the boys' model, the variable representing the degree of willingness to sext had the highest explanatory power at both W1 (β = 0.50) and W2 (β = 0.54) (see Fig. 1). The explained variance in the boys' model was 58% at W1 and 65% at W2.

Within Model 2 for **receiving** sexts, the girls' model had the better fit again (see Table 5), as was also the case in the remaining two models. The estimated relationship between receiving sexts and participation in cybergossip was strongest at both W1 (β = 0.67) and W2 (β = 0.89) (Fig. 2). This model had an explained variance of 65% at W1 and 74% at W2. In the boys' model, normalization had the highest coefficient at both W1 (β = 0.70) and W2 (β = 0.74). Explained variance stood at 54% at W1 and 59% at W2.

In the **forwarding** model (Model 3) for girls, the cybergossip variable at W1 (β = 0.79) and W2 (β = 0.89) had the strongest relationships with forwarding sexts (see Fig. 3). The model explained 71% and 78% of the variance in this participation at W1 and W2, respectively. The explained variance in the boys' model was lower: 60% at W1 and 62% at W2, and the most important variable at both waves was the degree of sexting normalization (β = 0.70 at W1; and β = 0.72 at W2).

In modelling participation in the **receiving of sexts via an intermediary** (Model 4), we again find that the explained variance is higher in the girls' model (65% at W1 and 70% at W2) than in the model estimated for boys (59% at W1 and 62% at W2). Looking at the associations between the individual independent variables and the dependent variables, cybergossip has the largest coefficient at W1 in both gender models (β girls = 0.78; β boys = 0.65). At W2 cybergossip again had the strongest association in the girls' model and the need for popularity did in the model for boys (see Fig. 4).

4. Discussion

In this study, we sought to increase knowledge about sexting by analyzing the phenomenon not only from the perspective of sending erotic/sexual messages, photos, or videos, but by also exploring other forms of sexting, namely receiving, forwarding and receiving via an intermediary. Specifically, we have examined whether previous sexting behavior, the degree to which respondents normalized sexting and were motivated to sext, their need for popularity, involvement in cybergossip and their social competence can predict the level of participation in the different sexting behaviors. All the above mentioned factors proved to be associated, explaining both concurrent participation and future involvement, while future involvement was itself also predicted by earlier participation. The relative importance of each of the factors depended on the specific sexting behavior that was modelled and on gender.

Looking at the different sexting behaviors in turn, the level of involvement in cybergossip and the need for popularity best predicted the **sending** of sexts among girls, whereas the level of willingness to sext and the degree of normalization were the most relevant factors among

Table 3
Spearman correlation coefficients of all variables.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. I have sent… W1	–												
2. I have sent… W2	.53**	–											
3. I have received… W1	.52**	.38**	–										
4. I have received … W2	.42**	.56**	.44**	–									
5. I have forwarded… W1	.38**	.19**	.37**	.21**	–								
6. I have forwarded… W2	.20**	.30**	.23**	.33**	.32**	–							
7. Someone sent me… W1	.24**	.13**	.41**	.24**	.39**	.25**	–						
8. Someone sent me… W2	.24**	.29**	.27**	.49**	.25**	.48**	.40**	–					
9. Willingness to sext W1	.46**	.41**	.39**	.34**	.33**	.22**	.25**	.24**	–				
10. Normalization W1	.26**	.24**	.25**	.27**	.19**	.16**	.28**	.27**	.40**	–			
11. NFP W1	.12**	.07*	.13**	.08**	.16**	.16**	.14**	.17**	.19**	.20**	–		
12. CG W1	.18**	.16**	.21**	.18**	.19**	.13**	.29**	.22**	.27**	.34**	.37**	–	
13. SC W1	-.28*	-.25**	-.13**	-.09*	-.16**	-.15**	-.25**	-.25**	-.21**	-.23**	-.13**	-.23**	–

*p < .05; **p < .01.

Table 4
Model fit indexes of the combined models.

	χ^2_{S-B}	p	NNFI	CFI	RMSEA	SRMR	AIC
Model 1, I have sent …	13290.57	.00	.97	.98	.05	.09	3906.57
Model 2, I have received …	13368.20	.00	.95	.95	.05	.06	4982.20
Model 3, I have forwarded …	13216.01	.00	.95	.96	.06	.08	5830.02
Model 4, Someone sent me …	13337.84	.00	.98	.98	.02	.05	2987.06

Table 5
Multi-group analysis by gender.

		χ^2_{S-B}	df	p	NNFI	CFI	RMSEA	SRMR	$\Delta_{\chi 2S-B}$	Δp	Δ NNFI	Δ CFI	Δ RMSEA	Δ SRMR
Model 1	Boys	6274.71	631	.00	.96	.95	.04	.08	364,11	.00	.02	.03	.02	.02
	Girls	6638.82	634	.00	.98	.98	.02	.06						
Model 2	Boys	6809.09	657	.00	.95	.95	.07	.07	265.02	.00	.02	.01	.03	.02
	Girls	6543.89	669	.00	.97	.96	.04	.05						
Model 3	Boys	7009.69	700	.00	.94	.95	.08	.09	22.03	.00	.02	.01	.02	.03
	Girls	6987.66	689	.00	.96	.96	.06	.06						
Model 4	Boys	6304.34	699	.00	.95	.95	.08	.09	323.78	.00	.04	.04	.03	.03
	Girls	5980.56	659	.00	.99	.99	.05	.06						

boys. So, while for girls this behavior seems to be mainly linked to social relationships and their sociometric status, for boys the underlying willingness to sext and the extent to which they think sexting is a normal form of sexual interaction are important, as also found in other studies (e.g., Gewirtz-Meydan et al., 2018; van Oosten & Vandenbosch, 2017). For boys and girls, the same respective factors ranked highest in both the W1 and W2. Moreover, sending in wave 1 was an important predictor of sending in wave 2 for both genders. With regard to **receiving,** we find that the strongest factors were again the same as those found in sending: participation in cybergossip and the need for popularity ranked highest for girls in both waves, and normalization and willingness to sext (therefore in reverse order to sending) were the strongest predictors for boys in both waves. Earlier involvement again predicted future participation, in this case more strongly in the boys than the girls model. The **forwarding** of sexual content, that refers to sending someone else's sexual content to another person, can be considered the form of sexting with greater risk because the content can more easily spread and reach a large target audience without consent (Kopecký, 2015; Madigan et al., 2018). For girls, cybergossip was again the most important predictor of forwarding in waves 1 and 2. For boys, the strongest predictor in both waves was normalization, followed by willingness to sext. To have forwarded in wave 1 was also a predictor of the same activity in wave 2 for both boys and girls. The two most important facilitating factors for **receiving via an intermediary** for girls were again cybergossip and the need for popularity. This was the case in both waves. For this behavior we find these same factors were strongest for boys, also at both waves. For boys therefore, this activity seems to be different in some sense to the others. Involvement in wave 1 again predicted the participation in wave 2, among both genders.

Taken together, the results of this research are in line with previous studies in demonstrating the importance of the normalization and willingness to sext among teens (Marganski, 2017; van Oosten & Vandenbosch, 2017). However, these factors pointed out, are especially relevant among boys. Cybergossip and the need for popularity were also shown to be important facilitating factors, mainly among girls. These factors have traditionally been linked to social status and the need to gain peer recognition (Vanden Abeele et al., 2014) and the impact of cybergossip had already been shown in relation to other social relationships (Romera et al., 2018), but, as far as we know, this is the first study that shows the importance of both factors in explaining different sexting behaviors. Moreover, our results support the idea that sexting can not only lead to cybergossip (Ringrose et al., 2013), but that the latter can also be a facilitator of the former, pointing to a possible reciprocal relationship between the two phenomena. Finding that the

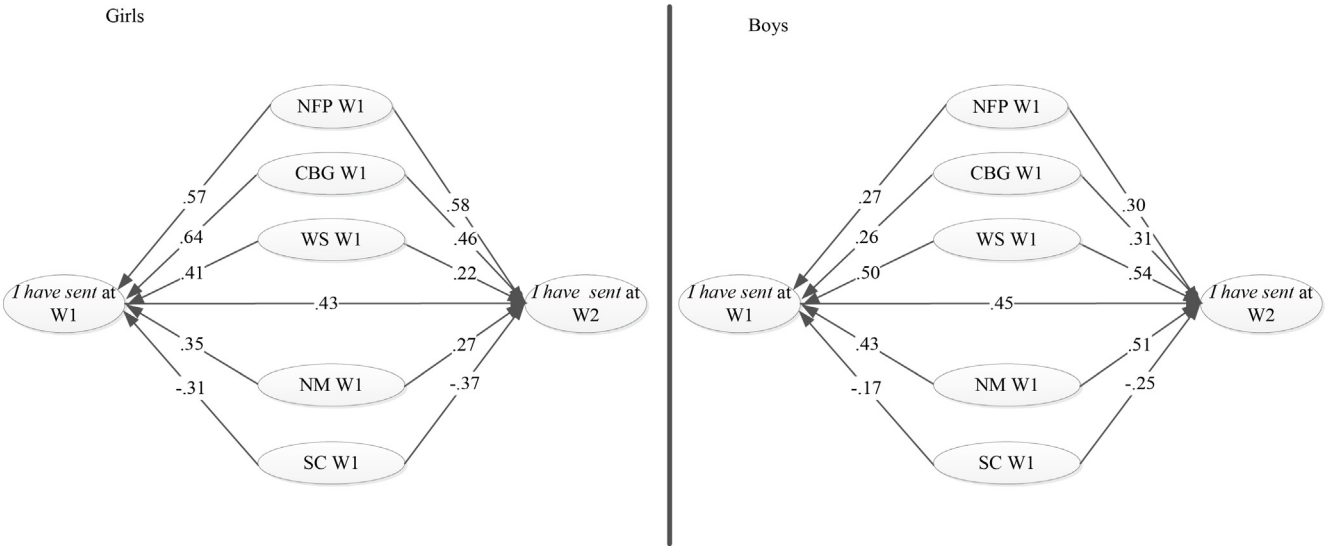

Fig. 1. Graphic presentation of Model 1 (sending) by gender; note: CBG = cybergossip; WS = willingness to sext; NM = normalization.

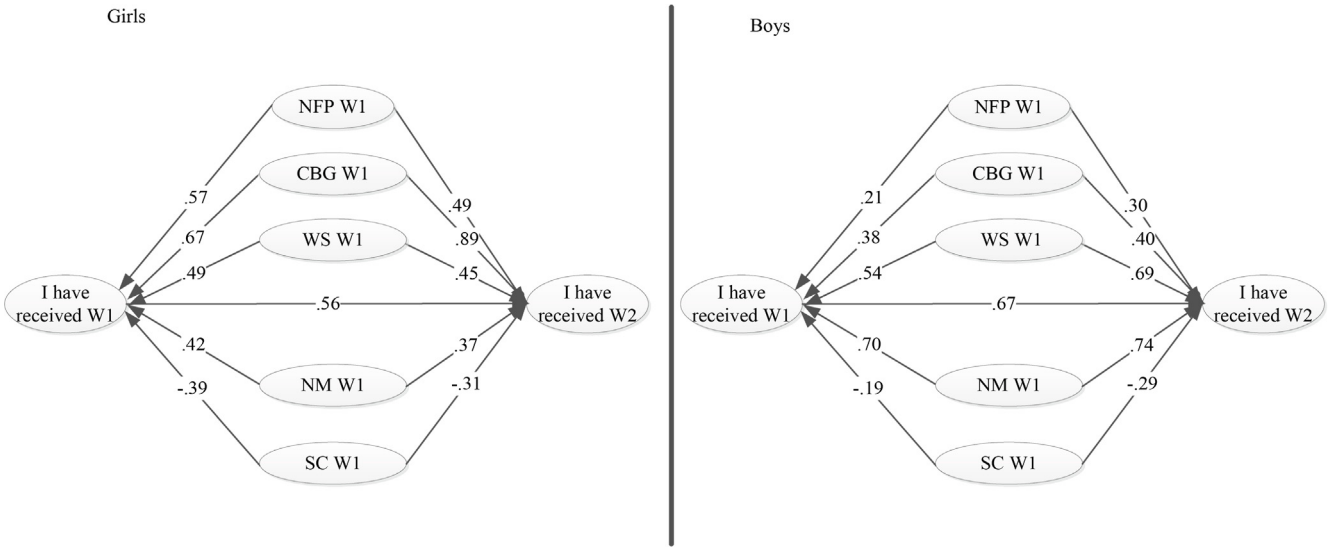

Fig. 2. Graphic presentation of Model 2 (receiving) by gender.

need for popularity was a strong predictor of sexting supports previous studies that highlighted the role of sexting in boosting one's popularity (Gewirtz-Meydan et al., 2018), and is also in line with the previously demonstrated point, that mainly boys increase their status by showing images that have been forwarded to them (Ringrose et al., 2013).

The gender differences we found match earlier studies that showed sexting patterns are different (Burén & Lunde, 2018; Wood et al., 2015) and add to the evidence that sexting is not a gender neutral activity (Ringrose et al., 2013; Symons et al., 2018; Walker et al., 2013). The fact that involvement in cybergossip together with the need for popularity emerged as the most relevant variables for girls fits the idea that cybergossip can also be seen as a way to increase online presence and gain popularity (Subrahmanyam et al., 2008) Previous studies show that girls also seek acceptance and popularity through sexually permissive behavior (Vanden Abeele et al., 2014); however, although both boys and girls seem to expect to obtain the same results, that is, an increase in popularity, the consequences of this practice are different for girls than for boys. Girls face greater and more complex social pressure around sexting (Wood et al., 2015) and those that sext are judged more harshly than their male peers, by both boys and girls (Ringrose et al., 2013), while if they refuse, they are criticized for being "goody" or "stuck up" (Lippman & Campbell, 2014). As pointed out by Ringrose et al. (2013), girls feel that to be respected by both sexes requires a complex display of femininity: their status grows when they are requested to send images, but they must refrain from doing so or face criticism. As for boys, our results again confirm earlier studies in finding that beliefs about sexting being a normal activity and willingness to sext predicted the behavior (Marganski, 2017; van Oosten & Vandenbosch, 2017). Moreover, the fact that normalization had the strongest influence on specifically receiving and forwarding supports the suggestion that for boys acquiring these images is seen as a test of their "desirability" and as a new norm of masculinity (Ringrose et al., 2013; Symons et al., 2018). These behaviors apparently are not only instigated by individual willingness to sext, but are seen as normal elements of the "adolescent culture". The only behavior for which no gender differences were found was receiving via an intermediary; cybergossip and the need of popularity were the most important predictors for both boys and girls, showing the "social" character of this behavior. Finally, the fit of the girls' models was always better than that of the boys' models, and, with the exception of sending, which was quite similar, the explained variance was also higher in the girls' models, indicating that, in general, the included factors explain girls' sexting behavior slightly better than boys'. The highest explained variance in the girls' models was for forwarding and the lowest for sending sexts, while there was not a lot of difference in the boys' models.

Given the short time frame of the study design allowed us to show that being involved in sexting at one point, makes later participation more likely. Moreover, we found that the relationships did not differ

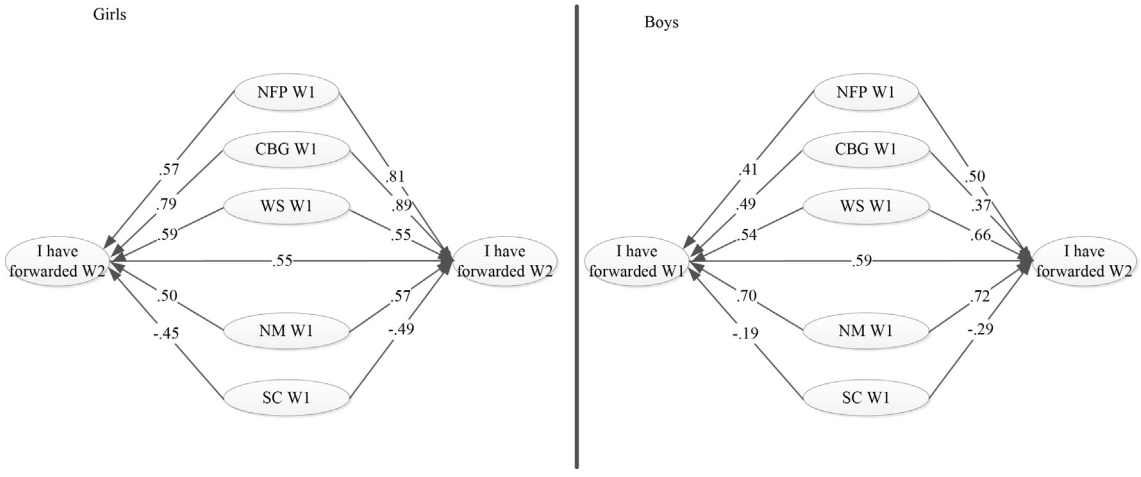

Fig. 3. Graphic presentation of Model 3 (forwarding) by gender.

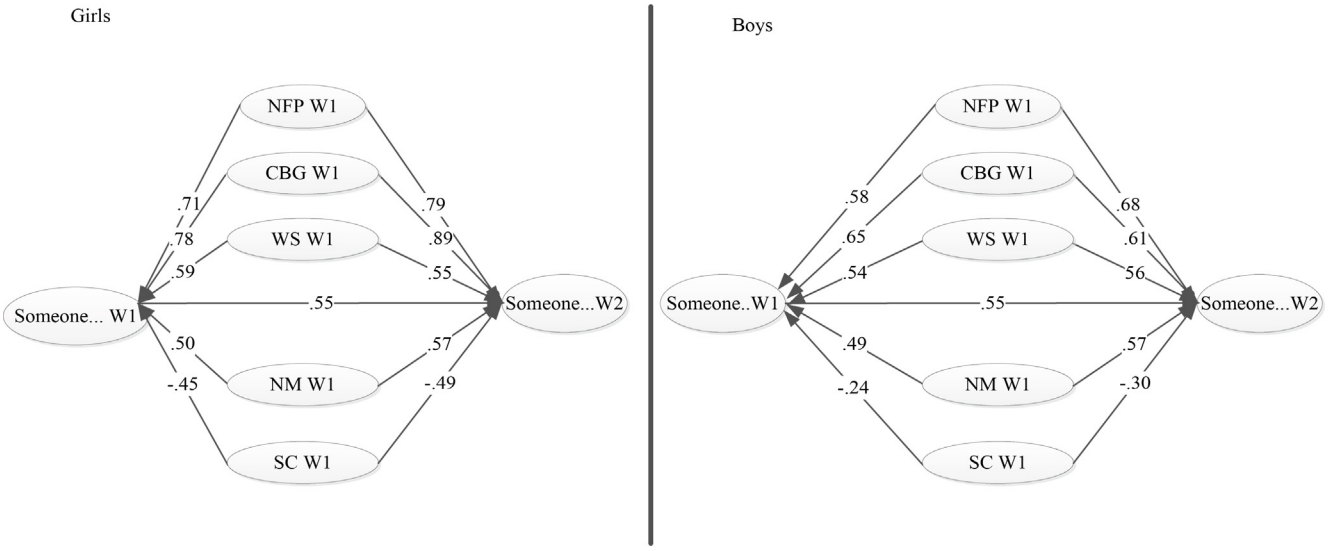

Fig. 4. Graphic presentation of Model 4 (receiving via an intermediary) by gender.

much between wave 1 and wave 2, which could indicate that without intervention not only is sexting likely to continue but that the associated factors will also probably remain stable over time too. Both these findings point to the importance of not only focusing interventions on preventing adolescents from sexting in the first place, but also targeting those already involved, and to therefore design multi-level prevention interventions (O'Connell, Boat, & Warner, 2009).

It is important to emphasize that, although it was not the most important factor in any of the models, the level of social competence was a significant negative predictor of sexting behavior in every model we ran. Higher social competence – as measured here, especially higher prosocial behavior – therefore means lower involvement levels in all of the sexting behaviors. The association with social competence was stronger in girls than in boys. No previous empirical studies demonstrated the protective role played by this variable in relation to sexting, although its importance has been observed in studies about other risks associated with virtual behavior (Hutson, Kelly, & Militello, 2018). Our results indicate that social competence should be considered when designing sexting prevention strategies.

Summarizing, the results show that the four sexting behaviors included in this study are facilitated by all the factors included in the study. Besides, the most important factors to predict each sexting behavior were, in general, the same within each gender in the cross-sectional analysis and along the time, four months later. There were differences in the strength of the relationships in the different studied behaviors, and in the total variance explained, which besides was higher for girls. We therefore do recommend differentiating between these behaviors rather than grouping them together as sometimes done, for example when joining sending and forwarding under a heading of "active sexting" (e.g., Barrense-Dias et al., 2017). In fact, according to these results receiving and forwarding are more similar in relation to predictive factors than, for instance, sending and receiving. However, these differences should not lead the various expressions of sexting to be treated as completely separate or isolated behaviors. They are variations within the same phenomenon, as also shown by the positive significant correlations between the behaviors.

4.1. Limitations

The main limitations of this study are related to the use of self-report instruments, which always carries the risk of eliciting socially desirable answers. Regarding social desirability, some studies have found sex differences in self-reported sexual behavior influenced by normative expectations for men and women (Alexander & Fisher, 2003). Therefore, maybe the gendered sexual scripts, which make more acceptable, and even desirable, the engagement in sexual activities for boys but not the same for girls, could affect to the answers. In this sense, boys could recognize, or even overestimate, his sext practices whereas girls could do the contrary.

However, even if this has affected results, it is still important to have information about the behaviors admitted to by adolescents. On the other hand, the relatively short time to follow-up (4 months) and the use of a closed-question survey design should also be mentioned as limitations. Since sexting is a complex phenomenon, and given that we have tried to simplify the factors analyzed in previous studies, it is more than possible that not all factors that may lead teens to become involved in this phenomenon have been considered. It is also necessary to take into account that some of the factors studied, such as normalization, could be related to culture so, we need to be extremely cautious regarding the generalization of these results to other cultural contexts. In addition, the non-random sampling used could also limit the generalization of the results. Finally, given the relationship of sexting with sexual desire, as a future line of research, it would be interesting to analyze the phenomenon considering the affective and sexual diversity (sexual identity and orientation).

4.2. Conclusions and implications

Although this research revealed that differentiation and precise definition of sexting behavior matters, the variations should not be treated as separate or isolated behaviors, but as nuances within the same phenomenon. With regard to gender, the same factors were found to facilitate involvement in sexting among both boys and girls, but their relative importance differed considerably between the two groups, and we found different levels of explained variance, as well. Consideration must therefore be given to these gender differences when designing psychoeducational programs aimed at preventing the negative consequences of sexting (Gámez-Guadix et al., 2017). Our results further show that a focus on increasing social competence (prosocial behavior) should have the potential to reduce participation in sexting. Finally, the longitudinal element of this study showed the importance of multi-level prevention interventions that target both adolescents who have not yet started sexting and those who are already doing it (O'Connell et al., 2009).

Acknowledgements

This work has been developed in the framework of the Project "Interpersonal violencein adolescence: a new generation of evidence-based interventions" (PSI2017-86723-R) funded by the National Research Plan(Government of Spain). The authors are grateful for the support received. And The work of Mónica Ojeda is supported by a research grant from the Ministry of Science, Innovation, and Universities of the Government of Spain for the Training of University Teachers (FPU 15/05037)

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