



Published in final edited form as:

J Adolesc. 2019 June ; 73: 36–41. doi:10.1016/j.adolescence.2019.03.008.

Longitudinal Associations between Sexting, Cyberbullying and Bullying: Cross-Lagged Panel Analysis

Joris Van Ouytsel, PhD^a, Yu Lu, PhD^b, Koen Ponnet, PhD^c, Michel Walrave, PhD^a, and Jeff R. Temple, PhD^b

^aDepartment of Communication Studies, University of Antwerp, Sint-Jacobsstraat 2, 2000 Antwerp, Belgium

^bDepartment of Ob/Gyn, UTMB Health, 301 University Blvd, Galveston, TX 77555-0587, USA

^cDepartment of Communication Studies, IMEC-MICT Ghent University, Korte Meer 11, 9000 Ghent, Belgium

Abstract

Introduction—While adolescent sexting, or the sending of sexually explicit images, has been cross-sectionally associated with bullying and cyberbullying, there is a lack of longitudinal studies in this area. To address this gap in the literature, we examined the longitudinal link between sexting and 1) traditional, in-person, bullying victimization and 2) cyberbullying victimization.

Methods—We used data from a longitudinal study of ethnically diverse adolescents recruited from multiple public high schools in southeast Texas. Three waves of data were used (T2, T3 and T4). Cross-lagged panel analysis was performed in Mplus to analyze the data.

Results & Conclusions—Cross-lagged panel analyses identified autoregressive effects for all three variables, and cross-lagged effects for cyberbullying. Sexting was associated with subsequent cyberbullying victimization across all time points, and T3 cyberbullying victimization was associated with engagement in sexting one year later. Furthermore, T2 cyberbullying victimization indirectly associated with T4 sexting via T3 cyberbullying victimization. For traditional bullying, a cross-lagged effect was found between T3 sexting and T4 offline bullying victimization. Although T2 sexting did not directly link to subsequent traditional bullying victimization, a significant mediation effect was identified such that T3 sexting mediated the effects of T2 sexting on T4 traditional bullying victimization. Results show that sexting adolescents may be at risk for (cyber)bullying victimization and highlight the need to address both sexting and bullying in prevention and intervention efforts.

Corresponding author: Joris Van Ouytsel, Sint-Jacobsstraat 2, 2000 Antwerp – Belgium, joris.vanouyttsel@uantwerpen.be, +32 – 32655279.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Conflict of Interest: The authors report no conflicts of interest.

Keywords

sexting; bullying; cyberbullying; sexual pressure

Sexting is defined as the sending or receiving of sexually explicit messages, images, or videos through the internet or mobile phone (Barrense-Dias, Berchtold, Surís, & Akre, 2017; Englander & McCoy, 2018). As demonstrated by a recent meta-analysis on the prevalence of sending (14.8%) and receiving (27.4%) sexts, (Madigan, Ly, Rash, Van Ouytsel, & Temple, 2018) this is a relatively common behavior among teenagers, especially among older adolescents (Madigan et al., 2018). For instance, Ybarra and Mitchell (2014) found that among thirteen year olds 2.0% of the boys and 1.2% of the girls had engaged in sexting in their sample, while the percentage increased to 9.2% and 12.7% respectively for the 18 year old participants. While teen sexting is increasingly identified as a normative part of sexual identity and development, it can still be associated with certain risks (Temple, 2015). These risks are heightened when sexting is accompanied by pressure from peers or romantic partners to engage in sexting (Van Ouytsel, Van Gool, Walrave, Ponnet, & Peeters, 2017). In one qualitative study, Ringrose, Gill, Livingstone, and Harvey (2012) found that, for some adolescent girls, sexting was an online extension of the sexual pressure and harassment they endured in the offline world. Moreover, it has been suggested that girls who refuse to sext may be perceived by peers as “prude” or “stuck up” (Lippman & Campbell, 2014). The role of peer pressure in sexting is further evidenced by research showing that perceived favorable peer social norms towards sexting are significantly associated with adolescents’ own engagement in this behavior (Van Ouytsel, Ponnet, Walrave, & d’Haenens, 2017; Walrave, Heirman, & Hallam, 2014; Walrave et al., 2015). Youth who engage in sexting experience more pressure from their peers to do so (David, L., Maria, B., & Poco, 2018), and adolescents who engage in sexting may have a greater need for peer popularity (Vanden Abeele, Campbell, Eggermont, & Roe, 2014). Research also shows that adolescents may feel pressure to engage in sexting to get into or maintain a romantic relationship (Van Ouytsel, Van Gool, et al., 2017). In a retrospective study, Englander and McCoy (2017) found that over half of respondents who had engaged in sexting during high school reported that they experienced some form of pressure or bullying to engage in sexting. Sexting has also been linked to dating violence and sexual harassment among samples of adolescents and young adults (Choi, Van Ouytsel, & Temple, 2016; Drouin, Ross, & Tobin, 2015; Morelli, Bianchi, Baiocco, Pezzuti, & Chirumbolo, 2016; Van Ouytsel, Ponnet, & Walrave, 2018). Qualitative research found that youth who engaged in sexting may be pressured to send additional images under the threat that non-compliance will result in previously sexted images being forwarded or published online (Van Ouytsel, Van Gool, et al., 2017).

While adolescents may experience pressure to and criticism for not sexting, they may also be ostracized for sexting (Walker, Sanci, & Temple-Smith, 2013). Indeed, qualitative research has found that adolescents may be criticized, bullied, or “slut-shamed” by peers (Lippman & Campbell, 2014; Van Royen, Poels, Vandebosch, & Walrave, 2018; Walker et al., 2013). Sexted images/videos can also be shown or forwarded to others and published online, which could result reputational damage, especially when done within a school setting (Van Ouytsel, Van Gool, et al., 2017).

Despite research showing that sexting may occur within the context of peer pressure and the potential that it results in reputational damage and bullying victimization, empirical research in this area is lacking. Cross-sectional studies have shown associations between sexting (images and text messages) and (cyber)bullying (Dake, Price, Maziarz, & Ward, 2012; Wachs & Wolf, 2015; West et al., 2014). Another cross-sectional study found a relationship between sending and receiving sexts (images) and a composite measure of cyberbullying and offline bullying perpetration and victimization, respectively (Woodward, Evans, & Brooks, 2017). A recent longitudinal study by Gámez-Guadix and Mateos-Pérez (2019) found among a sample of youth between 12 and 14 years old that the sending of sexting messages, defined as written text messages, images, or videos, was significantly associated with cyberbullying victimization in the following year. Cyberbullying victimization was also linked to sexting involvement in the following year, but only among boys.

Our study aims to extend previous research by investigating longitudinal relationships between sexting, traditional bullying, and cyberbullying among an older age group and over a longer period of time. We also use a narrower definition of sexting than most prior studies by defining the behavior as the sending of sexually explicit images only. Given the possibility that bullying can either precede (i.e., due to pressure or harassment by romantic partner or peers) or follow (i.e., as a result of the sexting images being forwarded) sexting, we use cross-lagged panel analyses.

Methods

Participants and Procedure

We used data from an ongoing longitudinal study of 1,042 ethnically diverse adolescents ($M_{\text{age}} = 15.1$; range = 13–18) recruited from seven public high schools in southeast Texas (Temple & Choi, 2014). Three waves of data were used: Time 2 (T2, spring 2011; $N = 964$, retention rate: 92.5%, 55.9% female), Time 3 (T3, spring 2012; $N = 894$, retention rate: 85.8%, 55.8% female), and Time 4 (T4, spring 2013; $N = 776$, retention rate: 57.6% female). Time 1 (T1) did not include questions on sexting. At T2, participants consisted of 31.7% Hispanic, 30.3% White, 26.6% African-American, 3.4% Asian, and 8.0% other youth, with a mean age of 16.1 years ($SD = .79$). Parental consent and child assent were obtained from each participant during recruitment at T1 (spring, 2010). Participants consented when they turned 18. The study procedure was approved by the relevant institutional review board.

Measures

Three items were developed to assess sexting: “In the past year, have you sent naked pictures of yourself to another through text or email?,” “In the past year, have you asked someone to send naked pictures of themselves to you?,” and “In the past year, have you been asked to send naked pictures of yourself through text or email?”¹ Participants responded yes/no to each question. The sum score of the scale was used for subsequent analyses with larger

¹In T4 Snapchat was added as an example in the first and last item. The questions were: “In the past year, have you been asked to send a naked picture of yourself through text, e-mail, or things like SnapChat?” and “In the past year, have you sent naked pictures of yourself to another through text, e-mail or SnapChat?”.

values corresponding to more engagement in sexting behaviors. The scale had Cronbach's α s of .72, .72, and .76 at T2, T3, and T4, respectively.

The question "How often have you been bullied in the past 12 months?" was used to measure traditional bullying victimization on a 4-point scale (1 = never, 4 = many times). This question was preceded by the following short definition of bullying: "Bullying is, for example, when another student or students repeatedly say or do nasty and unpleasant things to someone. For example, when others take away, destroy, or hide another student's stuff or when others hit or push another student. The bullied kid is usually unable to defend him/herself. It is not bullying when two students of about the same strength argue or fight."

Two items adapted from the Youth Internet Safety Survey (Jones, Mitchell, & Finkelhor, 2013) were used to measure cyberbullying victimization in the past year: "has anyone (not a boyfriend/girlfriend) used the internet, email, or text messaging to threaten, harass, or embarrass you by posting information or sending messages about you?" and "has anyone (not a boyfriend/girlfriend) posted a message on your personal website (Facebook or other websites) to threaten, harass, or embarrass you?" Participants responded yes/no to each question. The sum score was used for subsequent analyses with larger values corresponding to more cyberbullying victimization. The scale had Cronbach's α s of .73, .72, and .69 at T2, T3, and T4, respectively.

Data Analysis

Cross-lagged panel analysis was performed in Mplus 7.4 to test the hypothesized model (see Figure 1). Two separate cross-lagged panel models were assessed, one between sexting and traditional bullying victimization and the other between sexting and cyberbullying victimization. Gender, age, and race were controlled for in the analyses. We used maximum likelihood estimation method with bias corrected bootstrapping of 10,000 times to handle the slightly skewed data and to test possible indirect effects. Missing data (attrition of 92.5%, 85.8%, and 74.5% for Times 2–4, respectively, and less than 3% of skipped answers) were handled with full information maximum likelihood, a procedure shown to reduce negative effects of attrition (Graham, 2012; Little, Jorgensen, Kyle, & Moore, 2013).

Results

Table 1 shows the frequencies, means, and standard deviations of sexting, traditional bullying victimization, and cyberbullying victimization. As shown in Figure 2, autoregressive effects were significant for both sexting and traditional bullying victimization. That is, sexting at T2 was significantly associated with T3 sexting and T3 sexting with T4 sexting. The same pattern was shown for traditional bullying victimization. A cross-lagged effect was found between T3 sexting and T4 traditional bullying victimization. Although T2 sexting did not directly link to subsequent traditional bullying victimization, a significant mediation effect was identified such that T3 sexting mediated the effects of T2 sexting on T4 traditional bullying victimization ($b = .05$, 95% *CI*: .02, .09). The model fits were evaluated using several fit indices. A Root Mean Square Error of Approximation (RMSEA) of .06 or smaller, a comparative Fit Index (CFI) of .95 or larger, a Standardized Root Mean Square Residual (SRMR) of .08 or smaller indicate adequate

model fit (Hu & Bentler, 1999). This cross-lagged panel model had acceptable fit, $\chi^2(13) = 50.10$, $p < .001$, RMSEA = .05, CFI = .96, SRMR = .03.

Figure 3 shows the cross-lagged model of sexting and cyberbullying victimization. The model fit was acceptable, $\chi^2(12) = 48.13$, $p < .001$, RMSEA = .06, CFI = .95, SRMR = .03. Significant autoregressive effects were identified for both sexting and cyberbullying victimization. For the cross-lagged effects, T2 sexting was associated with T3 cyberbullying victimization, T3 sexting was associated with T4 cyberbullying victimization, and T3 cyberbullying victimization was associated with T4 sexting. Significant mediation effects were identified for T2 sexting on T4 cyberbullying victimization that both T3 sexting ($\beta = .04$, 95% CI: .01, .08) and T3 cyberbullying victimization ($\beta = .04$, 95% CI: .02, .07) showed mediation effects. Furthermore, T2 cyberbullying victimization indirectly associated with T4 sexting via T3 cyberbullying victimization ($\beta = .02$, 95% CI: .01, .05).

Discussion

Although a link between sexting and bullying victimization is often assumed, few studies have investigated this relationship over time. Using a cross-lagged panel analysis, we found that sexting adolescents tend to continue sexting over time. It may be that once adolescents perceive sexting as normative, they are less inhibited to continue engaging in this behavior.

Sexting was cross-sectionally associated with cyberbullying victimization at each time point, as well as longitudinally associated with subsequent cyberbullying victimization between time points. This finding is consistent with previous studies that found cross-sectional associations between sexting and cyberbullying victimization (Dake et al., 2012; Wachs & Wolf, 2015; West et al., 2014) and extends these findings by showing that this link held over time. This finding also echoes previous research showing that cyberbullying victimization is often associated with engagement in other types of online risk behavior, such as sharing passwords with friends, sharing personal information online, or talking to strangers online (Agaston, Kowalski, & Limber, 2012; Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2012; Vandebosch & Van Cleemput, 2009). Engaging in these risky online behaviors, such as sexting, could make adolescents particularly vulnerable for cyberbullying victimization and contribute to the (technological) power imbalance between perpetrator and victim. Together, this study provides empirical evidence that youth engaged in sexting are at heightened risk for cyberbullying victimization, underscoring the need for integrating messages about safer sexting behavior within cyberbullying prevention and vice versa (Van Ouytsel, Walrave, & Van Gool, 2014). Further, educational materials on sexting could provide resources to youth on how to protect themselves against cyberbullying, and how to respond to cyberbullying and bullying that might result from their engagement in sexting (Van Ouytsel et al., 2014).

In addition to sexting predicting cyberbullying victimization, we also found the reverse (cyberbullying predicting sexting), a direct effect from T3 to T4 and an indirect effect from T2 to T4 via T3 cyberbullying. This finding adds to existing evidence that teen sexting may occur as a result of pressure, abuse, or coercion (Choi et al., 2016; David et al., 2018; Ringrose et al., 2012; Ross, Drouin, & Coupe, 2016). That cyberbullying predicted sexting could also mean that cyberbullies are pressuring their victims, for instance, to obtain

additional pictures (Van Ouytsel, Van Gool, et al., 2017). The indirect effect possibly indicates that victimization of abusive behaviors over longer periods of time could be associated with engagement in sexting. Future research should focus on pressured and nonconsensual sexting, as well as the context in which abusive forms of sexting takes place (Englander & McCoy, 2018; Madigan et al., 2018). From a prevention perspective, these findings underscore the need to provide young people with resources on how to deal with peer pressure surrounding sexting behavior and provide them with the necessary skills to refuse participating in sexting when unwilling (David et al., 2018).

The relatively weaker associations between sexting and traditional bullying victimization (compared to cyberbullying) could be explained by the fact that sexting is an online behavior, and, therefore, mostly linked with digital forms of bullying and online forms of risk behavior. The link between sexting and traditional (or offline) bullying victimization were not as strong as cyberbullying victimization. Traditional bullying victimization did not predict sexting behavior overtime. We did find a direct relationship from T3 sexting to T4 traditional bullying and an indirect effect of T2 sexting to T4 traditional bullying through T3 sexting. This indirect effect could indicate that the effects of sexting on offline victimization could appear over extended periods of time. Alternatively, extended engagement in sexting over time could result in traditional bullying victimization.

Although the current study has significant strengths, including being among the first to longitudinally investigate sexting behaviors, there are also limitations, including the use of self-report measures, and the use of a regional-based convenience sample. Another limitation might be the fact that there is one year separating waves, which might have made it harder to find associations between sexting and (cyber)bullying. Future research could employ a shorter follow-up period between waves to detect short-term effects. Moreover, the cyberbullying victimization measure excluded victimization by boyfriends or girlfriends. Consequently, we were not able to capture the associations between sexting and cyberbullying victimization by abusive romantic partners, such as in the context of ‘revenge pornography’ or dating violence. Future research would also benefit from measuring different sources of aggression. Finally, identifying the term “bullying” in our measure of traditional bullying, as opposed to asking respondents about specific behaviors, likely impacted our findings.

Conclusion

The main findings of our study indicate that sexting is associated with a higher risk for cyberbullying victimization, both cross-sectionally and longitudinally. A reverse longitudinal relationship between cyberbullying victimization and subsequent sexting was also found. The results also showed weaker but significant relationships between sexting and subsequent offline bullying victimization. These findings underscore the need for sexting prevention and intervention efforts to include information on cyberbullying and vice versa, and further suggest the need for healthy relationship programs that address multiple problem behaviors by targeting their shared risk and protective factors.

Acknowledgments:

This research was supported by Award Number K23HD059916 (PI: Temple) from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) and 2012-WG-BX-0005 (PI: Temple) from the National Institute of Justice (NIJ). The work of Joris Van Ouytsel is supported by the Research Foundation - Flanders. The content is solely the responsibility of the authors and does not necessarily represent the official views of any of the funding institutions. This work would not have been possible without the permission and assistance of the schools and school districts.

Financial Disclosure: The authors have indicated they have no financial relationships relevant to this article to disclose.

References

- Agaston P, Kowalski R, & Limber S (2012). Youth Views on Cyberbullying In Patchin J & Hinduja S (Eds.), *Cyberbullying prevention and response: Expert perspectives* (pp. 57–71). New York: Routledge.
- Barrense-Dias Y, Berchtold A, Surís J-C, & Akre C (2017). Sexting and the Definition Issue. *Journal of Adolescent Health, 61*(5), 544–554. doi:10.1016/j.jadohealth.2017.05.009 [PubMed: 28734631]
- Choi H, Van Ouytsel J, & Temple JR (2016). Association between sexting and sexual coercion among female adolescents. *Journal of Adolescence, 53*, 164–168. doi: 10.1016/j.adolescence.2016.10.005 [PubMed: 27814493]
- Dake JA, Price JH, Maziarz L, & Ward B (2012). Prevalence and Correlates of Sexting Behavior in Adolescents. *American Journal of Sexuality Education, 7*(1), 1–15. doi: 10.1080/15546128.2012.650959
- David G, L. SC, Maria PF, H. S. B, & Poco K. (2018). Sexting Rates and Predictors From an Urban Midwest High School. *Journal of School Health, 88*(6), 423–433. doi:10.1111/josh.12628 [PubMed: 29749003]
- Drouin M, Ross J, & Tobin E (2015). Sexting: A new, digital vehicle for intimate partner aggression? *Computers in Human Behavior, 50*(0), 197–204. doi: 10.1016/j.chb.2015.04.001
- Englander E, & McCoy M (2017). Pressured Sexting and Revenge Porn in a Sample of Massachusetts Adolescents. *International Journal of Technoethics, 8*(2), 16–25.
- Englander E, & McCoy M (2018). Sexting-Prevalence, Age, Sex, and Outcomes. *JAMA Pediatrics, 172*(4):317–318. doi: 10.1001/jamapediatrics.2017.5682 [PubMed: 29482201]
- Gámez-Guadix M, & Mateos-Pérez E (2019). Longitudinal and reciprocal relationships between sexting, online sexual solicitations, and cyberbullying among minors. *Computers in Human Behavior, 94*, 70–76. doi: 10.1016/j.chb.2019.01.004
- Graham JW (2012). *Missing Data: Analysis and Design*. New York: Springer.
- Hu LT, & Bentler PM (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55. doi: 10.1080/10705519909540118
- Jones LM, Mitchell KJ, & Finkelhor D (2013). Online harassment in context: Trends from three youth internet safety surveys (2000, 2005, 2010). *Psychology of violence, 3*(1), 53–69. doi: 10.1037/a0030309
- Ke-Hai Y, & B. P M. (2000). Three Likelihood-Based Methods For Mean and Covariance Structure Analysis With Nonnormal Missing Data. *Sociological Methodology, 30*(1), 165–200. doi: 10.1111/0081-1750.00078
- Lippman JR, & Campbell SW (2014). Damned If You Do, Damned If You Don't...If You're a Girl: Relational and Normative Contexts of Adolescent Sexting in the United States. *Journal of Children and Media, 8*(4), 371–386. doi:10.1080/17482798.2014.923009
- Little TD, Jorgensen TD, Lang KM, & Moore EWG (2013). On the joys of missing data. *Journal of pediatric psychology, 39*(2), 151–162. doi:10.1093/jpepsy/jst048 [PubMed: 23836191]
- Madigan S, Ly A, Rash CL, Van Ouytsel J, & Temple JR (2018). Prevalence of multiple forms of sexting behavior among youth: a systematic review and meta-analysis. *JAMA Pediatrics, 172*(4): 327–335. doi: 10.1001/jamapediatrics.2017.5314. [PubMed: 29482215]

- Mishna F, Khoury-Kassabri M, Gadalla T, & Daciuk J (2012). Risk factors for involvement in cyber bullying: Victims, bullies and bully–victims. *Children and Youth Services Review*, 34(1), 63–70. doi: 10.1016/j.childyouth.2011.08.032
- Morelli M, Bianchi D, Baiocco R, Pezzuti L, & Chirumbolo A (2016). Not-allowed sharing of sexts and dating violence from the perpetrator’s perspective: The moderation role of sexism. *Computers in Human Behavior*, 56, 163–169. doi: 10.1016/j.chb.2015.11.047
- Ringrose J, Gill R, Livingstone S, & Harvey L (2012). *A qualitative study of children, young people and ‘sexting’: A report for the nspcc*. London, UK: NSPCC.
- Ross JM, Drouin M, & Coupe A (2016). Sexting Coercion as a Component of Intimate Partner Polyvictimization. *Journal of Interpersonal Violence*. doi:10.1177/0886260516660300
- Temple JR (2015). A Primer on Teen Sexting. *JAACAP Connect*, 2(4), 6–8.
- Temple JR, & Choi H (2014). Longitudinal Association Between Teen Sexting and Sexual Behavior. *Pediatrics*, 134(5), e1287–e1292. doi:10.1542/peds.2014-1974 [PubMed: 25287459]
- Van Ouytsel J, Ponnet K, & Walrave M (2018). Cyber Dating Abuse Victimization Among Secondary School Students From a Lifestyle-Routine Activities Theory Perspective. *Journal of Interpersonal Violence*, 33(17), 2767–2776. doi:10.1177/0886260516629390 [PubMed: 26872506]
- Van Ouytsel J, Ponnet K, Walrave M, & d’Haenens L (2017). Adolescent sexting from a social learning perspective. *Telematics and Informatics*, 34(1), 287–298. doi: 10.1016/j.tele.2016.05.009
- Van Ouytsel J, Van Gool E, Walrave M, Ponnet K, & Peeters E (2017). Sexting: adolescents’ perceptions of the applications used for, motives for, and consequences of sexting. *Journal of Youth Studies*, 20(4), 446–470. doi:10.1080/13676261.2016.1241865
- Van Ouytsel J, Walrave M, & Van Gool E (2014). Sexting: Between Thrill and Fear How Schools Can Respond. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 87(5), 204–212. doi:10.1080/00098655.2014.909380
- Van Royen K, Poels K, Vandebosch H, & Walrave M (2018). Slut-Shaming 2.0 In Walrave M, Van Ouytsel J, Ponnet K, & Temple JR (Eds.), *Sexting: Motives and risk in online sexual self-presentation* (pp. 81–98). Cham: Springer International Publishing.
- Vandebosch H, & Van Cleemput K (2009). Cyberbullying among youngsters: profiles of bullies and victims. *New Media & Society*, 11(8), 1349–1371. doi:10.1177/1461444809341263
- Vanden Abeele M, Campbell SW, Eggermont S, & Roe K (2014). Sexting, Mobile Porn Use, and Peer Group Dynamics: Boys’ and Girls’ Self-Perceived Popularity, Need for Popularity, and Perceived Peer Pressure. *Media Psychology*, 17(1), 6–33. doi:10.1080/15213269.2013.801725
- Wachs S, & Wolf DK (2015). Zusammenhänge zwischen deviantem und risikoreichem Onlineverhalten 12- bis 13-jähriger Kinder aus drei Ländern In Hugger K-U, Tillmann A, Iske S, Fromme J, Grell P, & Hug T (Eds.), *Jahrbuch Medienpädagogik 12: Kinder und Kindheit in der digitalen Kultur* (pp. 71–97). Wiesbaden: Springer Fachmedien Wiesbaden.
- Walker S, Sanci L, & Temple-Smith M (2013). Sexting: young women’s and men’s views on its nature and origins. *Journal of Adolescent Health*, 52(6), 697–701. doi:10.1016/j.jadohealth.2013.01.026 [PubMed: 23587784]
- Walrave M, Heirman W, & Hallam L (2014). Under pressure to sext? Applying the theory of planned behaviour to adolescent sexting. *Behaviour & Information Technology*, 33(1), 86–98. doi: 10.1080/0144929X.2013.837099
- Walrave M, Ponnet K, Van Ouytsel J, Van Gool E, Heirman W, & Verbeek A (2015). Whether or not to engage in sexting: Explaining adolescent sexting behaviour by applying the prototype willingness model. *Telematics and Informatics*, 32(4), 796–808. doi:10.1016/j.tele.2015.03.008
- West JH, Lister CE, Hall PC, Crookston BT, Snow PR, Zvietcovich ME, & West RP (2014). Sexting among peruvian adolescents. *BMC Public Health*, 14(1), 811. doi:10.1186/1471-2458-14-811 [PubMed: 25100162]
- Woodward VH, Evans M, & Brooks M (2017). Social and Psychological Factors of Rural Youth Sexting: An Examination of Gender-Specific Models. *Deviant Behavior*, 38(4), 461–476. doi: 10.1080/01639625.2016.1197020
- Ybarra ML, & Mitchell KJ (2014). “Sexting” and Its Relation to Sexual Activity and Sexual Risk Behavior in a National Survey of Adolescents. *Journal of Adolescent Health*, 55(6), 757–764. doi: 10.1016/j.jadohealth.2014.07.012 [PubMed: 25266148]

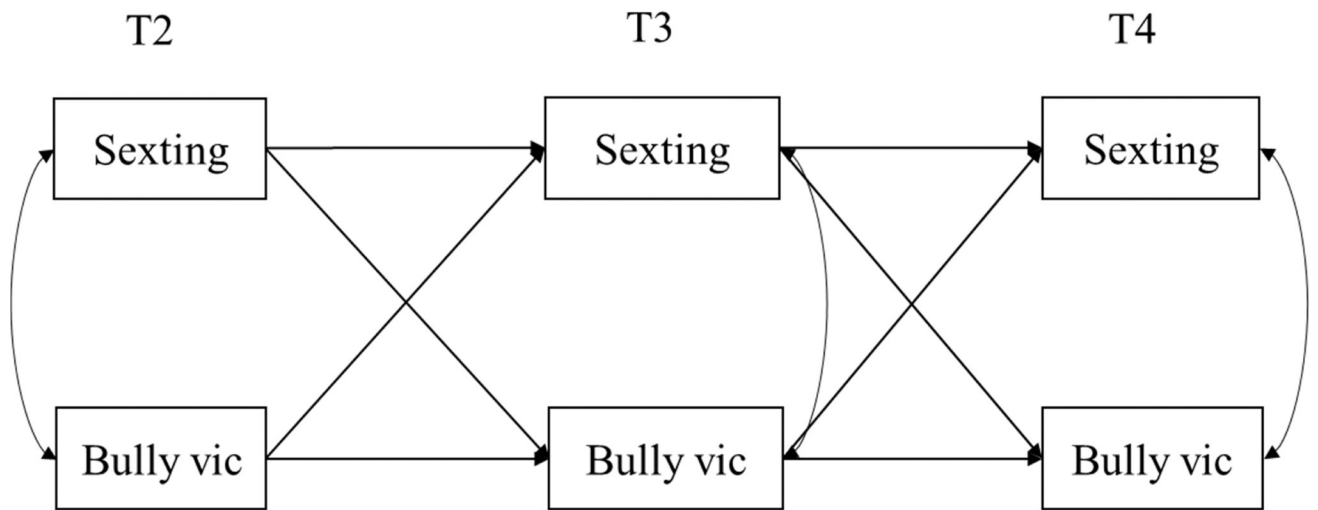


Figure 1.
Hypothesized Cross-lagged Panel Model

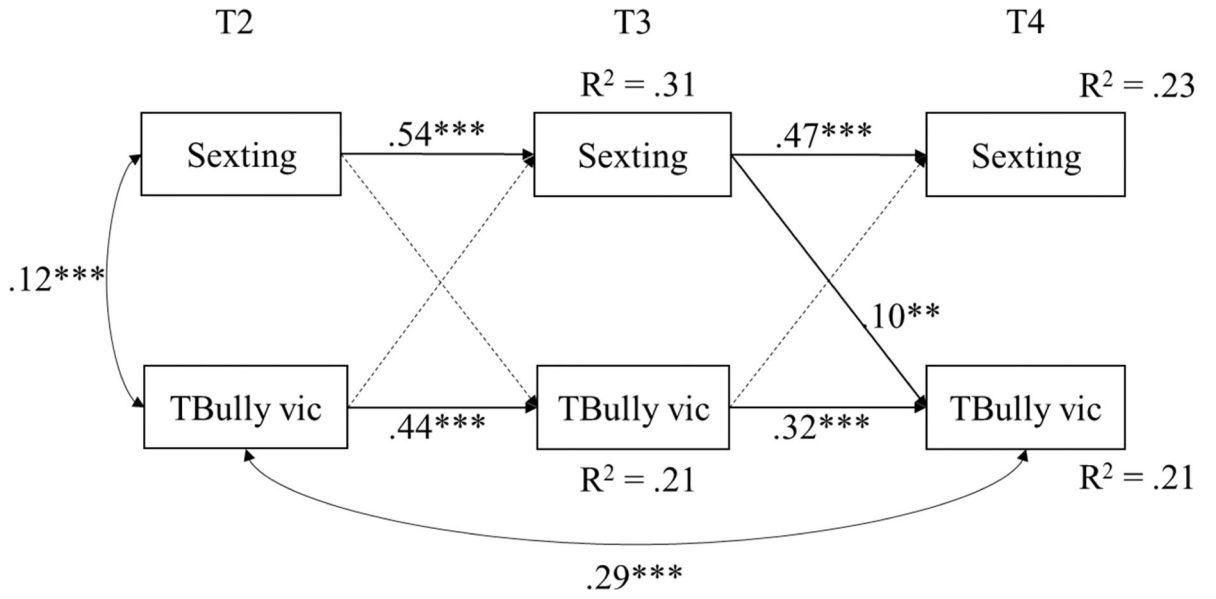


Figure 2. Cross-lagged Panel Model of Sexting and Traditional Bullying Victimization Numbers are standardized coefficients.
 *** $p < .001$

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

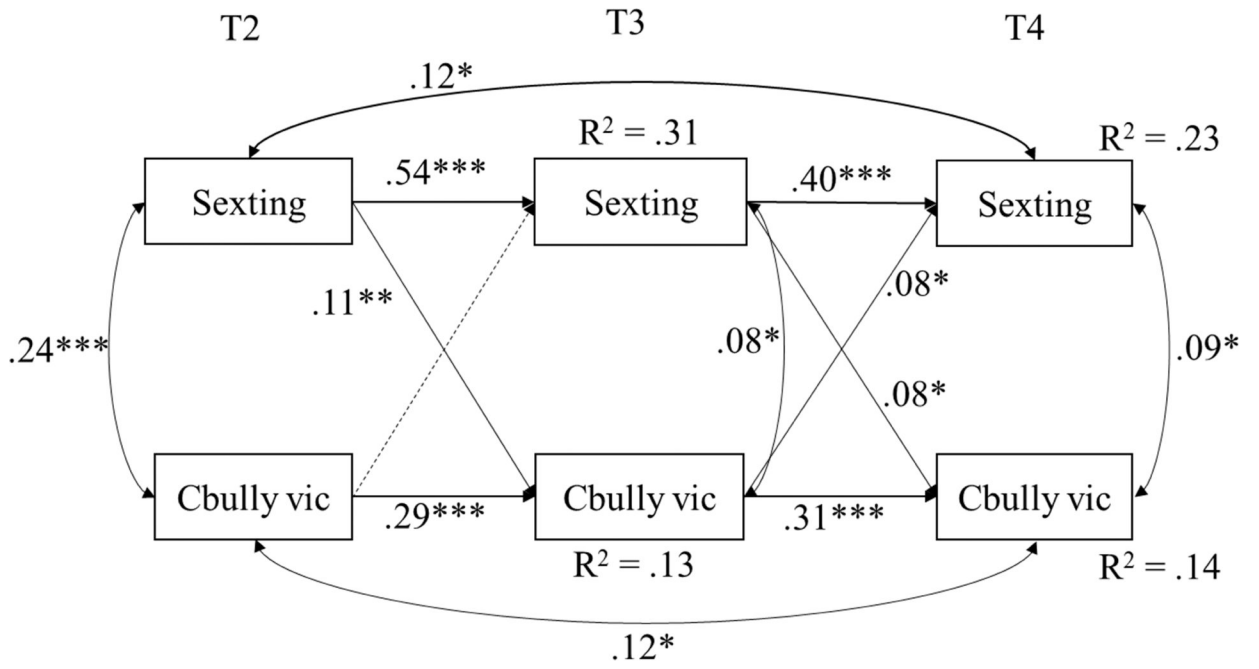


Figure 3. Cross-lagged Panel Model of Sexting and Cyberbullying Victimization Numbers are standardized coefficients.
 * $p < .05$, ** $p < .01$, *** $p < .001$

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Frequencies, Means, Standard Deviations, and Correlations among Sexting, Traditional Bullying Victimization, and Cyberbullying Victimization

Table 1.

	Frequency (%)	Scale range	Mean	SD	1	2	3	4	5	6	7	8
1. SextingT2	592 (63.9%)	0-3	1.14	1.13	-							
2. Sexting T3	435 (49.7%)	0-3	.86	1.06	.55**	-						
3. Sexting T4	336 (44.0%)	0-3	.81	1.07	.35**	.47**	-					
4. TBV T2	301 (31.3%)	1-4	1.44	.74	1.1**	11**	.09*	-				
5. TBV T3	229 (25.8%)	1-4	1.35	.66	.08*	.10**	.08*	.45**	-			
6. TBV T4	184 (24.1%)	1-4	1.32	.64	.06	.13**	11**	.43**	.47**	-		
7. CBV T2	232 (24.1%)	0-2	.36	.68	.25**	.14**	.08*	.31**	.25**	.22**	-	
8. CBV T3	184 (20.7%)	0-2	.30	.63	.20**	.17**	.16**	.19**	.34**	.28**	.33**	-
9. CBV T4	94 (12.3%)	0-2	.17	.49	.17**	.13**	.16**	.20**	.21**	.32**	.25**	.36**

Note.

* p < .05,

** p < .01,

TBV = traditional bullying victimization, CBV = cyber bullying victimization. Frequency of sexting is the number of participants who have experienced at least one type of sexting in the past year. Frequency of traditional bullying victimization is the number of participants who reported having “never” been bullied in the past 12 months. Frequency of cyber bullying victimization is the number of participants who have experienced at least one type of cyber bullying in the past year.