Sending one's own intimate image: sexting among middle-school teens

Authors: Yara Barrense-Dias[1] PhD, Lorraine Chok[1] MSc, Stadelmann Sophie[1] MSc, André Berchtold[2], PhD, Joan-Carles Suris[1] MD, MPH, PhD

[1]Department of Epidemiology and Health Systems, Research Group on Adolescent Health, Center for Primary Care and Public Health (Unisanté), University of Lausanne, Switzerland.

[2] Swiss Center of Competence in Research LIVES, University of Lausanne, Lausanne, Switzerland

Corresponding author: Dr Yara Barrense-Dias, PhD, Centre universitaire de médecine générale et santé publique (UNISANTE), Lausanne, Suisse, Département Epidémiologie et Systèmes de Santé, Groupe de Recherche sur la Santé des Adolescents (GRSA). Route de la Corniche 10, CH 1010 Lausanne Switzerland, [yara.barrense-dias@unisante.ch], Phone : +41 21 314 69 46.

Aknowledgments: The survey was financed by the Direction Générale de la Santé du canton de Vaud.

Conflicts of interest: The authors have no relevant financial or non-financial interests to disclose.

Abstract

BACKGROUND: There is a gap in the literature regarding data on sexting among youth under the age of 16 whereas the problems related to this practice could affect them more because of their ongoing development. This study aims to determine the prevalence rate and characteristics of sending one's own sexually-related image among middle-school teens. **METHODS**: Data were obtained from a web-based in-school survey conducted between October 2019 and February 2020.The sample comprised 3006 (Mean age 13.7; 50.2% males) 10th grade pupils in the canton of Vaud (Switzerland). Participants were asked "Have you ever sent a sexually-related/sexy image of yourself?". ANOVA/Chi-square tests and multinomial regression analyses were used to compare the groups. **RESULTS**: Overall, 93.0% reported never, 3.7% once and 3.3% several times. No gender differences were found. Sending was associated with older age, low academic performance, cyberbullying victimization and reception of unsolicited sexy-related images. **CONCLUSIONS**: Education and health professionals should be aware that it is necessary to discuss the theme, perhaps with a more global approach including pressure, consent, exchange of non-sexual images, etc. from an early age. The context and reasons for sending remain to be explored, particularly to determine if the pressure is greater at this age.

BACKGROUND

Although its definition is still not agreed upon (1-3), sexting can be defined as an electronic exchange of sexually-related personal content between two persons. Debate persists over whether to consider sexting as possibly being part of normal sexual practices and development among youth or as a negative and dangerous behavior (4-6). Since the first study conducted in 2008 (7) among youth, sexting has been mainly studied from a negative point of view. More recently, this activity was also defined from an experimental and developmental perspective (8-12). This controversy can also be found in the prevention field with abstinence *versus* safe sexting approaches that include risk reduction messages (4). Still, even with a safe sexting approach, sexting involves risks, the main one being the dissemination of received intimate content to other people without consent (13-15). In this line, sexting could lead to bullying and violence, especially from peers towards the victim of dissemination and it can also be done under pressure (10, 16-18). In such a context, we could expect sexting behaviors to be associated with mental health issues, but the literature (3, 19-21) is not consistent on this point. However, it seems that sexting and mental health are mainly associated with younger adolescents (22).

As part of the cognitive development of adolescents, sexual desire, thoughts and attractions arise during early puberty (23). In this context, sexting can be particularly attractive for younger adolescents who are in the process of developing their identity, together with their relational and communication skills. Yet there is a current gap in the literature regarding data on sexting among youth under the age of 16 (2, 24). The rates found in the few studies (24-26) that have exclusively focused on this age group range between 3% and 7% who sent personal sexually-related content. Despite this lack of data and research on sexting among young middle-school adolescents, it is certainly among them that problems linked to sexting

would most likely appear in relation to their immaturity, vulnerability and ongoing development (24, 27).

In order to quantify its use in early adolescence and discuss education and punitive considerations in a developmental perspective, it is therefore necessary to study sexting use among younger adolescents. This study aims to determine the prevalence rate of sending one's sexually-related image among middle-school pupils and identify the characteristics of the adolescents who engage in such a practice. In addition, we aim to specify which kinds of content are sent by adolescents of this age. Such an understanding might help to orient the way in which the phenomenon is addressed in terms of prevention, education and legislation. According to previous studies (28, 29), we hypothesized that suggestive (e.g. underwear) content would be used more than explicit (e.g. nudity) content. Compared to the few studies (24-26) that have focused on children under 16 so far, our study provides additional information. Thus, in addition to updating data (25, 26), our study does not limit its focus on at-risk adolescents (25) and provides data on the content sent and the frequency of sending, as well as additional explanatory factors such as family socio-economic status or school performance. Furthermore, with the exception of the study carried out in Belgium (24), the other two studies(25, 26) report data from the USA, a country whose context may differ greatly from the one in Western Europe.

METHODS

Participants

Data were obtained from a web-based in-school survey on the Internet and media use of young adolescents conducted in the canton of Vaud, in the French-speaking part of Switzerland, between October 2019 and February 2020. The department of education, randomly selected 32 public schools (96% of pupils attended to public schools in Switzerland in 2019) ensuring an

equal distribution of schools in rural and urban areas. Each school was responsible for distributing the required documents: 1) an information form, including topics and aims of the research, confidentiality issues and help contacts if needed, intended for potential participants, 2) an information form intended for parents including a passive consent, 3) an information form for teachers who had to supervise the students during the survey completion in class. It took the students ~30-35 minutes to fill in the questionnaire in the computer-science class. They were informed that they could indicate from the first question that they did not want to participate and that they could stop at any time.

In the French part of Switzerland, students have compulsory computer-science courses. It is during these classes that schools participate in this type of survey. Each pupil has a computer or a tablet at disposal, which makes it possible to reach a large number of young people while leaving them the choice to participate or not. In addition, the randomized selection of schools allows us to have a very diverse sample. Participants are accompanied by a teacher who is neutral but can help them in case of problems or questions. Finally, it has been proven that this mode of data collection and school setting brings a higher rate of participation and more honest responses for risky behaviors (30, 31).

The initial sample consisted of 4138 10^{th} grade (13-14 year-olds) pupils corresponding to the number of pupils enrolled at the start of the school year in August 2019 in the 32 selected schools. In 21 cases (0.5%), parents refused to let their child participate. Initially, 3814 (92.6%) questionnaires were partially or fully completed. After removing duplicates (3.6%), incomplete questionnaires (11.4%) and participants who indicated not wanting to participate (2.8%) or not giving sincere answers (3.3%), the final sample comprised 3006 (78.8%) 10^{th} grade pupils in the canton of Vaud. The Ethics Committee of the canton of Vaud approved the study protocol (#2019-01232).

Instruments

Dependent variable.

Participants (mean age 13.7; 50.2% males) were divided according to their answer to the following question *"Have you ever sent a sexually-related / sexy image (picture/video) of yourself?"* with three possible answers: Never, Once or Several times. A small introduction on sexting, including the term *nude* (a term more familiar for youths) and the definition of sexually-related/sexy were given before the question to ensure its understanding. A broad definition of sexually-related/sexy (flirtatious but dressed, semi-nude, nude) was given to include any type of sending. We were then able to detail the content with a development question to determine the type of content. Therefore, participants who answered Once or Several times to the basic question were then asked: *"How were you featured on the sexually-related/sexy image that you sent?"*. Four responses were offered: In a suggestive, sexy or flirtatious position but dressed; Partially nude (underwear, low-necked, etc.); Completely nude (buttocks, breast, genitals, etc.); Other (n=17). Free-text answers in the Other category were coded into the predefined categories and remaining free-text answers (n=4) were deleted as they were unclear or irrelevant. Participants who answered Several times to the basic question could choose multiple answers. To deal with this, we kept the most extreme answer as this was the one that could have more impact. For example, if someone answered partially nude and completely nude, we kept the latter for the analysis.

Independent variables.

Sociodemographic variables included gender, age, place of birth (Switzerland/other), place of residence (urban / rural), perceived academic performance (good or average student/below average), parental situation (parents together/other) and perceived family socioeconomic status. To assess the socioeconomic status, we used the European School Survey Project on

Alcohol and Other Drugs project measure (32) asking how they perceived their family financial situation compared to other families in Switzerland and dichotomized the possible answers into average or better and below average.

As sexting is mainly performed with mobile phones thanks to applications such as Snapchat©, we asked participants if they had their own Smartphone.

Emotional well-being was assessed through the World Health Organization-Five Well-Being Index (WHO-5) (33). This index includes five items referred to the last two weeks (e.g. "I have felt calm and relaxed") scored from 0 (at no time) to 5 (all of the time) with a score under 13/25 being considered as poor emotional wellbeing (34, 35).

As a possible way of pressuring someone to obtain an intimate image or as a reaction toward the person depicted on the image, we measured cyberbullying experience as a victim (36, 37). Inspired from a study conducted in Switzerland on victimization and delinquency among youth (38), we created two questions. After an introduction presenting that the Internet or mobile phones could also be used to disseminate insulting or threatening messages/images, the two questions on cyberbullying experiences were: in the last 12 months, 1) has someone sent you insulting or threatening messages (text or picture) (for example, by SMS, WhatsApp, Facebook, Twitter, Instagram, Snapchat) and/or 2) have other youths published or sent to their friends insulting or embarrassing messages (text or images) or rumors about you (for example, by SMS, WhatsApp, Facebook, Twitter, Instagram, Snapchat). Five possible answers ranging from Never to Several times a week were offered. A participant was then defined as a victim when at least one of the two experiences was reported with a frequency of at least once a week (38). We also measured unsolicited reception of sexually-related/sexy images, portraying either an unknown or a known person: "*Have you ever received sexually-related/sexy images or videos without asking?"* The possible responses were Never, Once and Several times.

Data analysis

To correct a potential bias and ensure the representativeness of the studied population in the canton of Vaud, data were weighted according to known characteristics of the population under study (gender and academic track).

We first ran bivariate analyses using Chi-square tests for categorical variables and ANOVA tests for continuous variables to compare the three groups (Never, Once, Several times). All significant variables at the bivariate level ($p<.05$), including gender and age as control variables, were then entered into a multinomial regression using the group Never as the reference category. Results are given as relative risk ratios (RRRs) with 95% confidence intervals (95% CIs). As the sample size was relatively large and as we performed multiple comparisons, we applied Bonferroni correction in the regression analysis to avoid Type I errors. However, we also discussed trends with the significance level of 5%. Subsequently, we compared the two groups of senders (Once and Several) on the type of content sent. In this second regression, results are given as odd ratios (OR), using Once as the reference category. We used Stata 14 (StatCorp, College Station, Texas) for all analyses.

RESULTS

Overall, 93.0% of participants reported never having sent their own intimate image, 3.7% once and 3.3% several times. No gender difference were found with a distribution, respectively, of 93.0%, 3.3% and 3.7% for girls and 93.1%, 4.0% and 2.9% for boys.

At the bivariate level, significant differences between the three groups were found for age, parental situation, perceived socioeconomic status, academic performance, emotional well-being, cyberbullying victimization and non-solicited reception of sexually-related images. Overall, the more they practiced sexting, the more they were in the problematic categories of the variables. For example, those who answered having sent their own intimate image several

times had more odds to report a poor well-being or below average school performance than those in the Never or Once group. No significant differences were found for gender, place of residence, place of birth and owning a smartphone. (Table 1)

At the multivariate level, compared to participants who had never sent their own intimate image, those who did it only once had higher odds of having received unsolicited sexy-related image (RRR: 5.22 for once; RRR: 7.37 for several times). There was also a trend for being older (RRR: 1.59). Compared to those who had never sent their own sexually-related image, those who had sent it several times had higher odds of being a victim of cyberbullying (RRR: 4.50) and having received unsolicited sexy-related images (RRR: 6.79 for once; RRR: 23.00 for several times). Trends were also found for being older (RRR: 1.43) and perceiving their academic performance as low (RRR: 1.91). (Table 2)

Regarding the content sent by participants, overall, 18.0% sent suggestive content, 40.2% were partially nude and 41.8% were depicted nude with explicit content. The only significant difference was found between suggestive and explicit content with those reporting explicit content having higher odds of having sent their own sexually-related image several times (RRR: 6.35). (Table 3)

DISCUSSION

In this paper, 7% of 13-14 year-old pupils reported to have already sent a sexually-related image of themselves. This rate is in line with the results of a meta-analysis (39) that found 4% among 12-year-olds and 9% among 14-year-olds. The increase in the rates of this meta-analysis study with the age of the respondents is also in line with our result showing that an older age is associated with the practice of sending such images. This was also reported in previous studies (1) and is not very surprising given the pubertal, biological and relational

changes faced by older adolescents leading to the development of sexual interest and activity (40).

Compared to previous research that focused exclusively on middle-school adolescents (24-26), this rate (7%) is in the upper range but is quite similar to the most recent study (24). The similarity in terms of higher rates with the most recent study shows that the practice has certainly increased over the years (39, 41) because of the democratization of smartphones and access to the Internet, and the development of applications facilitating the private sharing of digital images (42).

Contrary to public opinion, certainly fueled by the one-way gendered scenarios of prevention campaigns (4) and by more violent reactions towards girls who engage in sexting, no gender difference was found in terms of sending one's own sexually-related image. It is therefore important to use a universal, non gender specific, common message in prevention and education to avoid stigmatizing girls and feeding stereotypes (8, 11, 43, 44). However, motivations for sending one's own intimate image may differ depending on gender. Although the majority of youth reported consensual reasons (45), girls might be more likely to send this kind of content because of direct or indirect pressure (17, 44, 46), including the fear of losing their partner, while boys would be more likely to send images to satisfy their sexual needs (47) or by pride of their body (48).

We also found an association between sending one's own intimate image and the unsolicited reception of sexually-related images. Several hypotheses can be put forward. First, a sending could be made in response to such a reception as a reciprocal behavior (50-52). While such an action could be seen as a form of indirect pressure (49, 53), especially because of the unsolicited characteristic of such a reception, it can also allow the two persons to prove that they can trust each other (51). Second, such a reception can be considered in the context of

the peer group effect (54, 55). Receiving this kind of content, whether by disseminating the image of someone else or an image taken on the Internet, could normalize the sending of this kind of image and lead to sending one's own intimate image with less apprehension. Third, unsolicited sexually-related images could also be received as a reaction towards the person who sent an image of oneself because of a dissemination of the image without consent (example: boys who received the image of a girl victim of unauthorized sharing and who would send unsolicited images to ask for more).

In line with the above explanations concerning sexual harassment or violent reactions from peers, we found an association between cyberbullying victimization experience and sending one's own sexually-related image several times. The association with "several times" could be explained by the fact that the bullying might rely on the first image to request additional ones. Cyberbullying could also appear before sending to push someone to do it or after to mock or harass the person (1). This association is in agreement with previous studies (16, 36, 37) concluding that sexting predicted cyberbullying victimization and the reverse.

In a pressure context, we might think that young people who practice sexting by sending images of themselves might have mental health issues. However, we found no association between mental health and sending. This finding demonstrated that mental health, as measured by this one specific scale, is not directly related to sexting and that it is certainly more a situation of pressure, harassment and violent reactions from peers that could have effects on mental health (19, 49).

Despite the young age of the participants, the suggestive content remained rare compared to more explicit images, especially among those who reported having sent their own intimate image several times. Very few studies have looked at the different types of content and when this has been the case, the results were not in line with ours. Mitchell et al. (28) found a

decrease in the prevalence rates of sending nude or nearly nude images when explicit content were specified (breasts, genitals, or bottoms), suggesting that explicit content was less prevalent than suggestive one. In the same line, a qualitative study (29) reported that youth were more likely to use suggestive terms to define sexting. However, these two studies were conducted on a sample of older adolescents, which might suggest that older youth may be more aware of the risks or less attracted by explicit content, especially if they have already engaged in sexual activity. Explicit contents are particularly present among those who reported having sent intimate images of themselves several times. This could illustrate an escalation in terms of content by learning the practice or gaining confidence. Such a result should be read in the light of the legal context. In several countries, including Switzerland, child pornography legislation can be used for sexting when an adolescent under the age of 16 is involved (creating, sending, receiving and/or disseminating). However, several issues arise with the use of the child pornography law in such a context (12, 44). First, in the case of non-consensual dissemination involving youth under the age of 16, the author of the dissemination may be convicted of distributing pornographic content but the person on the image, in other words, the victim of the dissemination, may also be punished for producing and distributing pornographic content. This point has been strongly criticized with the concept of victim blaming or culture of rape, which consists in holding victims responsible for what they have suffered (43). Another issue with the use of the child pornography legislation for sexting is the definition of what exactly is pornographic content. Indeed, in a qualitative study (29), young people depicted a wide range of possible contents varying from very explicit content to a person fully dressed but in a suggestive position. In Switzerland, judges must assess the image on a case-by-case basis to consider whether it is pornographic or not and the appearance of the genitals will systematically generate a positive assessment. Based on our results, the vast majority of young people would then be condemned as being

creator and distributor of child pornography, while voices have been raised to limit such prosecution to nonconsensual and violent acts (56). Consensual sexting must rather be considered in terms of health, prevention and education, and discussion must be initiated at an early age, as this practice seems to be part of sexual development for some youths. In this line, it is also important to consider the initial exchange in the legislative decision-making process to determine if there was consent.

This study helps to reduce the gap that currently exists in the literature regarding sexting among young adolescents before the age of 16. Based on a 2019-2020 school-year study, it provides new data on this practice, which are important in view of the speed of technological development and the preventive actions being implemented. Additionally, it offers deeper insights into content sent by young adolescents. However, this study also presents certain limitations that should be highlighted. First, as with all population-based surveys, data are collected based on respondents' self-reports, which may lead to underestimation of certain behaviors because young people might know that it is not allowed under age 16. On the contrary, some may have exaggerated to show off. This risk is mitigated, however, by the self-administration and anonymity of the questionnaire. Moreover, the high response rate indicated that adolescents were not embarrassed by the topics covered. Second, this study was cross-sectional allowing no conclusion about causality. Third, we did not collect data to specify if the sending was solicited, consensual or not. We also did not have any data on the reasons or the context of the initial sending. The context and reasons for the initial sending remain to be determined for younger adolescents, particularly to determine if the pressure is greater at this age.

Fourth, although there were no differences regarding socioeconomic status, we used a proxy with the perception of family financial situation. Therefore, we cannot assure that this actually reflects reality. Fifth, our data were collected in a context specific to Switzerland

and, more specifically, to its French part. Therefore, our results may not be generalizable to other contexts and should be interpreted with caution. However, this study, in addition to addressing a small part of the gap that exists regarding sexting among adolescents under the age of 16, can pave the way for further studies, including other countries to compare results.

Finally, given the social and physical distancing that the recent covid-19 pandemic, and more particularly containment, generated, the eventual impact on the practice of sexting and other online sexual behaviors among adolescents remains to be determined by further studies.

IMPLICATIONS FOR SCHOOL HEALTH

Education and health professionals should be aware that the practice of sexting is also reported among adolescents under the age of 16. The question should be raised in order to be able to detect possible problems and do appropriate prevention. It is necessary to discuss the theme, perhaps with a more global approach including relationship to the body, pressure, consent, exchange of non-sexual images, etc., from an early age as 7% of 13-14 year-olds in this study reported having already sent their own sexually-related image, most of them with very explicit content. Furthermore, because of the legal aspect for children under 16, this rate might be conservative.

Our study showed no gender difference in sending one's own sexually-related image. Instead of using one-way gendered scenarios that systematically depict a girl who sends her intimate image and then becomes a victim of a boy who disseminates the image, it is necessary to use a universal non-gendered common message.

Consensual sexting must be differentiated from sexting under coercion and unauthorized sharing. In this line, using a safer sexting approach rather than abstinence education was considered as more effective and appropriate (4). In addition, prevention and discussion must focus more on the perpetrators of the problems linked to sexting, and not on the potential

victims only. Consent and pressure issues are particularly important to discuss and schools are key resources to open discussion on it, including in sex education classes.

Human Subjects Approval Statement

The Ethics Committee of the canton of Vaud approved the study protocol (#2019-01232).

References

1. Barrense-Dias Y, Berchtold A, Surís J-C, Akre C. Sexting and the Definition Issue. J Adolesc Health. 2017;61:544-54.

2. Van Ouytsel J, Walrave M, Ponnet K. Adolescent sexting research: The challenges ahead. JAMA Pediatr. 2018;172:405-6.

3. Klettke B, Hallford DJ, Mellor DJ. Sexting prevalence and correlates: A systematic literature review. Clin Psychol Rev. 2014;34:44-53.

4. Döring N. Consensual sexting among adolescents: Risk prevention through abstinence education or safer sexting? Cyberpsychology. 2014;8:1-13.

5. Wolfe SE, Marcum CD, Higgins GE, Ricketts ML. Routine Cell Phone Activity and Exposure to Sext Messages:Extending the Generality of Routine Activity Theory and Exploring the Etiology of a Risky Teenage Behavior. Crime Delinquency. 2016;62(5):614-44.

6. Levine D. Sexting: a terrifying health risk ... or the new normal for young adults? J Adolesc Health. 2013;52:257-8.

7. The National Campaign to Prevent Teen and Unplanned Pregnancy. Sex and Tech: Results From a Survey of Teens and Young Adults. Washington, DC: The National Campaign to Prevent Teen and Unplanned Pregnancy and CosmoGirl.com; 2008.

8. Ringrose J, Harvey L, Gill R, Livingstone S. Teen girls, sexual double standards and 'sexting': Gendered value in digital image exchange. Feminist Theory. 2013;14(3):305-23.

9. Van Ouytsel J, Walrave M, Ponnet K. Sexting within adolescents' romantic relationships: How is it related to perceptions of love and verbal conflict? Computers in Human Behavior. 2019;97:216-21.

10. Lippman JR, Campbell SW. 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. 2014;8:371-86.

11. Albury K, Crawford K. Sexting, consent and young people's ethics: Beyond Megan's Story. Continuum. 2012;26:463-73.

12. Holoyda B, Landess J, Sorrentino R, Friedman SH. Trouble at teens' fingertips: Youth sexting and the law. Behavioral sciences & the law. 2018;36:170-81.

13. Celizic M. Her teen committed suicide over 'sexting' 2009 [Today:[Available from: https://www.today.com/parents/her-teen-committed-suicide-over-sexting-2D80555048.

14. Crimmins DM, Seigfried-Spellar KC. Peer attachment, sexual experiences, and risky online behaviors as predictors of sexting behaviors among undergraduate students. Comput Hum Behav. 2014;32:268-75.

15. Kaye R. How a cell phone picture led to girl's suicide 2010 [CNN:[Available from: http://edition.cnn.com/2010/LIVING/10/07/hope.witsells.story/index.html.

16. Van Ouytsel J, Lu Y, Ponnet K, Walrave M, Temple JR. Longitudinal associations between sexting, cyberbullying, and bullying among adolescents: Cross-lagged panel analysis. Journal of Adolescence. 2019;73:36-41.

17. Walker S, Sanci L, Temple-Smith M. Sexting: young women's and men's views on its nature and origins. J Adolesc Health. 2013;52:697-701.

18. Gámez-Guadix M, Mateos-Pérez E. Longitudinal and reciprocal relationships between sexting, online sexual solicitations, and cyberbullying among minors. Computers in Human Behavior. 2019;94:70-6.

19. Gassó AM, Klettke B, Agustina JR, Montiel I. Sexting, Mental Health, and Victimization Among Adolescents: A Literature Review. Int J Environ Res Public Health. 2019;16(13):2364.

20. Frankel AS, Bass SB, Patterson F, Dai T, Brown D. Sexting, Risk Behavior, and Mental Health in Adolescents: An Examination of 2015 Pennsylvania Youth Risk Behavior Survey Data. The Journal of school health. 2018;88(3):190-9.

21. Temple JR, Le VD, van den Berg P, Ling Y, Paul JA, Temple BW. Brief report: Teen sexting and psychosocial health. J Adolesc. 2014;37(1):33-6.

22. Mori C, Temple JR, Browne D, Madigan S. Association of Sexting With Sexual Behaviors and Mental Health Among Adolescents: A Systematic Review and Meta-analysis. JAMA Pediatrics. 2019;173(8):770-9.

23. Fortenberry JD. Puberty and adolescent sexuality. Horm Behav. 2013;64(2):280-7.

24. Van Ouytsel J, Walrave M, Ponnet K. An Exploratory Study of Sexting Behaviors Among Heterosexual and Sexual Minority Early Adolescents. J Adolesc Health. 2019;65(5):621-6.

25. Houck CD, Barker D, Rizzo C, Hancock E, Norton A, Brown LK. Sexting and Sexual Behavior in At-Risk Adolescents. Pediatrics. 2014;133(2):e276-e82.

26. Rice E, Gibbs J, Winetrobe H, Rhoades H, Plant A, Montoya J, et al. Sexting and Sexual Behavior Among Middle School Students. Pediatrics. 2014;134(1):e21-e8.

27. Ševčíková A. Girls' and boys' experience with teen sexting in early and late adolescence. Journal of Adolescence. 2016;51:156-62.

28. Mitchell KJ, Finkelhor D, Jones LM, Wolak J. Prevalence and Characteristics of Youth Sexting: A National Study. Pediatrics. 2012;129(1):13.

29. Barrense-Dias Y, Surís J-C, Akre C. “When It Deviates It Becomes Harassment, Doesn’t It?” A Qualitative Study on the Definition of Sexting According to Adolescents and Young Adults, Parents, and Teachers. Archives of Sexual Behavior. 2019;48(8):2357-66.

30. Berra S, Ravens-Sieberer U, Erhart M, Tebé C, Bisegger C, Duer W, et al. Methods and representativeness of a European survey in children and adolescents: the KIDSCREEN study. BMC Public Health. 2007;7:182.

31. Brener ND, Eaton DK, Kann L, Grunbaum JA, Gross LA, Kyle TM, et al. The Association of Survey Setting and Mode with Self-Reported Health Risk Behaviors among High School Students. Public Opinion Quarterly. 2006;70(3):354-74.

32. ESPAD Group. ESPAD Report 2015: Results from the European School Survey Project on Alcohol and Other Drugs. Luxembourg: Publications Office of the European Union; 2016.

33. de Wit M, Pouwer F, Gemke RJ, Delemarre-van de Waal HA, Snoek FJ. Validation of the WHO-5 Well-Being Index in adolescents with type 1 diabetes. Diabetes care. 2007;30(8):2003-6.

34. Halliday JA, Hendrieckx C, Busija L, Browne JL, Nefs G, Pouwer F, et al. Validation of the WHO-5 as a first-step screening instrument for depression in adults with diabetes: Results from Diabetes MILES – Australia. Diabetes Research and Clinical Practice. 2017;132:27-35.

35. Psychiatric Research Unit WHO Collaborating Centre in Mental Health. WHO (Five) Well-Being Index (1998 version) Denmark: Frederiksborg General Hospital; 1998.

36. West JH, Lister CE, Hall PC, Crookston BT, Snow PR, Zvietcovich ME, et al. Sexting among peruvian adolescents. BMC Public Health. 2014;14(1):811.

37. Dake JA, Price JH, Maziarz L, Ward B. Prevalence and Correlates of Sexting Behavior in Adolescents. American Journal of Sexuality Education. 2012;7(1):1-15.

38. Lucia S, Stadelmann S, Ribeaud D, Gervasoni J. Enquêtes populationnelles sur la victimisation et la délinquance chez les jeunes dans le canton de Vaud. Lausanne: Institut universitaire de médecine sociale et préventive (IUMSP); 2015.

39. Molla-Esparza C, Losilla JM, López-González E. Prevalence of sending, receiving and forwarding sexts among youths: A three-level meta-analysis. PloS one. 2020;15(12):e0243653.

40. Baumgartner SE, Sumter SR, Peter J, Valkenburg PM, Livingstone S. Does country context matter? Investigating the predictors of teen sexting across Europe. Computers in Human Behavior. 2014;34:157-64.

41. Madigan S, Ly A, Rash CL, Van Ouytsel J, Temple JR. Prevalence of Multiple Forms of Sexting Behavior Among Youth: A Systematic Review and Meta-analysis. JAMA Pediatrics. 2018;172(4):327-35.

42. Mori C, Cooke JE, Temple JR, Ly A, Lu Y, Anderson N, et al. The Prevalence of Sexting Behaviors Among Emerging Adults: A Meta-Analysis. Archives of Sexual Behavior. 2020;49(4):1103-19.

43. Krieger MA. Unpacking "Sexting": A Systematic Review of Nonconsensual Sexting in Legal, Educational, and Psychological Literatures. Trauma, violence & abuse. 2017;18(5):593-601.

44. Salter M, Crofts T, Lee M. Beyond criminalisation and responsibilisation: Sexting, gender and young people. Current Issues in Criminal Justice. 2013;24(3):301-16.

45. Perkins AB, Becker JV, Tehee M, Mackelprang E. Sexting Behaviors Among College Students: Cause for Concern? International Journal of Sexual Health. 2014;26(2):79-92.

46. Ringrose J, Gill R, Livingstone S, Harvey L. A qualitative study of children, young people and'sexting': a report prepared for the NSPCC. 2012.

47. Springston KM. Gender differences in participation in and motivations for sexting: The effects of gender role attitudes, masculinity, and femininity. Butler Journal of Undergraduate Research. 2017;3(1):9.

48. Salter M. Privates in the online public: Sex(ting) and reputation on social media. New Media & Society. 2015;18(11):2723-39.

49. Klettke B, Hallford DJ, Clancy E, Mellor DJ, Toumbourou JW. Sexting and Psychological Distress: The Role of Unwanted and Coerced Sexts. Cyberpsychology, Behavior, and Social Networking. 2019;22(4):237-42.

50. Oswald F, Lopes A, Skoda K, Hesse CL, Pedersen CL. I'll Show You Mine so You'll Show Me Yours: Motivations and Personality Variables in Photographic Exhibitionism. The Journal of Sex Research. 2020;57(5):597-609.

51. Waling A, Kerr L, Bourne A, Power J, Kehler M. 'It's nice to be appreciated': Understanding heterosexual men's engagements with sexting and sharing Dick Pics. Sexualities. 2020:1363460720947297.

52. Ricciardelli R, Adorjan M. 'If a girl's photo gets sent around, that's a way bigger deal than if a guy's photo gets sent around': gender, sexting, and the teenage years. Journal of Gender Studies. 2019;28(5):563-77.

53. Drouin M, Tobin E. Unwanted but consensual sexting among young adults: Relations with attachment and sexual motivations. Computers in Human Behavior. 2014;31:412-8.

54. Rice E, Rhoades H, Winetrobe H, Sanchez M, Montoya J, Plant A, et al. Sexually Explicit Cell Phone Messaging Associated With Sexual Risk Among Adolescents. Pediatrics. 2012;130(4):667.

55. Ricketts ML, Maloney C, Marcum CD, Higgins GE. The Effect of Internet Related Problems on the Sexting Behaviors of Juveniles. American Journal of Criminal Justice : AJCJ. 2015;40(2):270-84.

56. Strasburger VC, Zimmerman H, Temple JR, Madigan S. Teenagers, Sexting, and the Law. Pediatrics. 2019;143(5):e20183183.

Tables

Table 1: Bivariate analysis comparing the three groups of sexting sending experience

	Never (N=2796, 93.0%)	**Once (N=110, 3.7%)**	**Several (N=100, 3.3%)**	**pvalue**
Gender (Male)	50.2	55.0	43.9	ns
Age at time of survey (mean±SD)	**13.7±.01**	**14.0±.08**	**14.0±.08**	**<.01**
Residence area (urban)	52.8	49.9	57.1	ns
Parental situation (other)	**30.5**	**40.9**	**43.6**	**<.01**
Perceived SES (below average)	**4.9**	**8.9**	**10.3**	**<.05**
Place of birth (Switzerland)	81.0	77.9	80.2	ns
Perceived academic performance (below average)	**7.1**	**11.5**	**19.3**	**<.01**
Smartphone owning	96.1	99.3	97.3	ns
Well-being (poor)	**24.5**	**34.2**	**41.5**	**<.01**
Unsolicited reception of sexual-related image (yes)				**<.01**
Never	**68.3**	**21.9**	**9.6**	
Once	**15.1**	**29.4**	**38.0**	
Several	**16.6**	**48.7**	**72.4**	
Cyberbullying victim experience	**4.3**	**9.1**	**24.7**	**<.01**

Note. ns: no significant

Table 2: Multinomial Regression Analysis for sexting sending experience with the Never group as the reference category

	Once **RRR [95 CI]**	**pvalue**	**Several** **RRR [95 CI]**	**pvalue**
Gender (Male)	1.14 [0.73-1.77]	0.570	0.73 [0.44-1.21]	0.225
Age at survey (mean)	*1.59** [1.18-2.16]	0.03	*1.43** [1.03-2.00]	0.034
Residence area (urban)				
Parental situation (other)	1.18 [0.73-1.89]	0.500	1.27 [0.78-2.08]	0.331
Perceived SES (below average)	1.38 [0.60-3.13]	0.447	1.06 [0.48-2.34]	0.880
Perceived academic performance (below average)	1.21 [0.59-2.47]	0.605	*1.91** [1.02-3.59]	0.044
Smartphone owning				
Well-being (poor)	1.28 [0.81-2.02]	0.282	1.40 [0.84-2.34]	0.190
Unsolicited reception of sexual-related image (yes)				
Never				
Once	**5.22** [2.81-9.68]**	<.01	**6.79** [2.60-17.74]**	<.01
Several	**7.37** [4.12-13.16]**	<.01	**23.00** [10.08-52.48]**	<.01
Cyberbullying victim experience	1.47 [0.68-3.16]	0.328	**4.50** [2.43-8.35]**	<.01

* Trends (<.05)

** Significant (with corrected Bonferonni pvalue < 0.002778)

Table 3: Bivariate and multinomial regression analysis for the content of the personal sexually-related image sent using suggestive content as the reference category

	Bivariate level				**Multivariate level**	
	Suggestive content (n=37; 18.0%)	*Partially nude (n=84; 40.2%)*	*Nude (n=87 ; 41.8%)*	pvalue	Partially nude RRR [95% CI]	Nude RRR [95% CI]
Gender (Male)	58.9	40.2	53.8	ns	0.50 [0.19-1.34]	1.11 [0.41-2.99]
Age at survey (mean)	14.11	14.00	14.02	ns	0.91 [0.53-1.56]	0.86 [0.49-1.50]
Sending own sexually-related image (Several vs. Once)	26.2	34.9	69.0	<.01	1.35 [0.48-3.82]	**6.35 *[2.25-17.91]**

ns: no significant

*Significance <.01