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RESEARCH ARTICLE

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Assessing image-based sexual abuse: Measurement, prevalence, and temporal stability of sextortion and nonconsensual sexting ("revenge porn") among adolescents

Manuel Gámez-Guadix[1] | Estibaliz Mateos-Pérez[2] | Sebastian Wachs[3] | Michelle Wright[4] | Jone Martínez[1] | Daniel Íncera[1]

[1]Biological and Health Psychology Department, Universidad Autónoma de Madrid, Madrid, Spain

[2]Department of Social Psychology and Methodology of Behavior Science, University of Basque Country, Leioa, Spain

[3]Department of Educational Sciences, University of Potsdam, Potsdam, Germany

[4]Department of Psychology, Child Study Center, Pennsylvania State University, State College, Pennsylvania, USA

Correspondence

Manuel Gámez-Guadix, Biological and Health Psychology Department, Faculty of Psychology, Autonomous University of Madrid, Madrid 28049, Spain.
Email: mgamezguadix@gmail.com

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Abstract

Introduction: The aim of this study is to develop a new measure of victimization and perpetration of two frequent forms of image-based sexual abuse, namely sextortion (i.e., the threat of distributing sexual images to pressure the victim into doing something) and nonconsensual sexting (i.e., distributing sexual images of someone without the consent of the victim). Additional aims were to analyze the prevalence of these forms of victimization and perpetration and to examine their temporal stability over a 1-year period.

Methods: The sample was made up of 1820 Spanish adolescents (mean age = 13.38, SD = 1.42; 929 girls, 878 boys, 3 nonbinary, and 10 did not indicate gender) who completed self-report instruments on image-based sexual abuse and related variables (e.g., cyberbullying victimization).

Results: Confirmatory factor analysis supported a structure composed of the four hypothesized factors: sextortion victimization and perpetration, and nonconsensual sexting victimization and perpetration. Higher sexting, cyberbullying victimization, and symptoms of depression and anxiety had stronger associations with image-based sexual victimization than with perpetration, which showed evidence of concurrent validity. Prevalence was 2.6% and 0.7% for sextortion victimization and perpetration, respectively, and 3.4% and 4.9% for nonconsensual sexting victimization and perpetration, respectively. Temporal stability over 1 year was .26 for sextortion victimization, .19 for nonconsensual sexting victimization, .33 for nonconsensual sexting perpetration (all $ps < .001$), and nonsignificant for sextortion perpetration. The stability of nonconsensual sexting victimization was significantly higher for girls compared to boys, whereas nonconsensual sexting perpetration was more stable over 1 year for boys.

Conclusions: Future studies must advance the analysis of the predictors and consequences of image-based sexual abuse among adolescents to better prevent this problem. Prevalence of sextortion and nonconsensual sexting is not negligible, and these problems should be particularly addressed in prevention programs.

KEYWORDS

image-based sexual abuse, online sexual victimization, revenge porn, sexual abuse, sexual coercion

1 | INTRODUCTION

The creation and sending of one's own sexual images, a phenomenon known as *sexting*, have become frequent behavior in the last decade (Barrense-Dias et al., 2017; Gámez-Guadix & Mateos-Pérez, 2019; Morelli et al., 2020; Molla-Esparza et al., 2020). Sexting, when it is voluntary and consensual, can fulfill positive functions, such as increasing the feeling of intimacy with a partner, fostering greater well-being, and the exploration of sexual identity (Döring & Mohseni, 2018; Holmes et al., 2020; Wachs et al., 2021). When the sending of sexual content is unwanted or forced under threats of blackmail, however, it can lead to negative outcomes, such as greater discomfort, symptoms of depression, anxiety, and suicidal ideation and attempts (Gassó et al., 2020; Idoiaga Mondragon et al., 2020; Medrano et al., 2018; Morelli et al., 2016; Nilsson et al., 2019). Forced or unwanted situations related to sexting are known as image-based sexual abuse and include the nonconsensual distribution, posting, or threats to distribute or post nude or sexual images (e.g., photographs or videos; Henry & Powell, 2018; Powell et al., 2019).

Typical forms of image-based sexual abuse are sextortion (i.e., threatening with distributing sexual images to pressure the victim into doing something) and nonconsensual sexting (i.e., distributing sexual images of someone without the consent of the victim). More specifically, *Sextortion* refers to "the threat to expose a sexual image to coerce the victim into doing something, even if exposure of the image never actually occurs" (Wolak et al., 2018, p. 73). Similarly, Patchin and Hinduja (2020, p. 31) define sextortion as "the threatened dissemination of explicit, intimate, or embarrassing images of a sexual nature without consent, usually for the purpose of procuring additional images, sexual acts, money, or something else." The sexual content involved in sextortion could initially be sent voluntarily by the person who created it, but it may later be used by the recipient to threaten the victim to obtain more content, to participate in cybersex, or coerce the victim to have sexual relations in person (Wolak et al., 2018). Wolak et al. (2018) described incidents of sextortion that involved minors and young adults. In two-thirds of the cases, the minor had knowingly provided the sexual images to the aggressor, although a high percentage also felt pressured to do so. Half of the minors did not tell anyone about these incidents, and few reported the offenses to the police or to websites. Minors (compared to adults) reported that perpetrators were more likely to have pressured them to produce sexual images initially, demanded additional images, and threatened them for a longer period. Studies on the prevalence of sextortion—especially among adolescents—are scarce. Patchin and Hinduja (2020) analyzed the prevalence of sextortion in both lifetime victimization and perpetration among adolescents aged 12–17 years old. They found that 5% of adolescents reported being victims of sextortion, and 3% admitted to having perpetrated sextortion. Both perpetration and victimization of sextortion were more prevalent for boys than for girls. Overall, Patchin and Hinduja (2020) did not find differences as a function of age.

Nonconsensual sexting is another worrisome form of image-based sexual abuse, often referred to as revenge porn or nonconsensual pornography (Branch et al., 2017; Krieger, 2017; Madigan et al., 2018; Wachs et al., 2021). Walker and Sleath (2017) define *revenge sexting* as nonconsensual sharing of sexually explicit images with the main motivation related to revenge. *Nonconsensual sharing* is the distribution of sexually explicit photographs or videos without the consent of the victim, where the motivation is unclear (not necessarily linked to revenge) (Walker & Sleath, 2017). The term "revenge porn" could be misleading in many cases since there may be other motivations beyond revenge, (e.g., seeking social reinforcement or sexual gratification, or as a joke; Henry et al., 2019). In addition, revenge porn implicitly presumes that the victim has done something to deserve the aggressor's punishment, which, in turn, could lead to victim-blaming (Henry & Powell, 2018; Ruvalcaba & Eaton, 2019). For this reason, putting the focus on the "nonconsensual" nature of the images rather than on the "revenge" could be more appropriate conceptually and terminologically. Ruvalcaba and Eaton (2019) pointed out that the defining feature of *nonconsensual sexting* is the distribution without the permission of sexually explicit images of a victim, not necessarily the reception or production of these contents. Nonconsensual sexting does not include, however, being pressured or coerced to send sexual images (i.e., "pressured sexting") and the reception of unsolicited sexual content, such as "dick pics," which has been classified instead as types of "online sexual harassment" or "unwanted sexual attention" (which are, in turn, other types of technology-facilitated sexual violence) (Powell et al., 2018; Wachs et al., 2021).

As in sextortion, the sexual images may have been sent by the victim voluntarily in an intimate context (i.e., sexting) and later distributed by the aggressor for a number of motives. Various studies have shown that the prevalence of nonconsensual sexting is high among adults (Branch et al., 2017; Gámez-Guadix, Almendros, et al., 2015; Henry et al., 2019). The evidence among adolescents is scarcer and more fragmented. Henry et al. (2019) found that 11.1% of respondents had perpetrated image-based sexual abuse behaviors since the age of 16. This percentage was significantly higher for men than for women. Strohmaier et al. (2014) found that 11% of university students reported a sext they had sent as minors had been shared with others or forwarded by the recipient to someone else. Patrick et al. (2015) found that 10% of adolescents had sent a nearly nude or sexually explicit nude image of someone else. In this study, it is not specified whether the image was distributed without the consent of the person displayed in the image. In another study, Frankel et al. (2018) found that 3% of adolescents reported that a sexual image of them had been distributed or posted electronically without their permission during the last month. Additionally, Van Ouytsel et al. (2019) found that 4.5% of adolescents have shown or forwarded a sexually explicit image of someone to another person without permission, or they have posted such an image on the internet. Being older increased the probability of this behavior, but no gender differences were found. In a meta-analysis (Madigan et al., 2018),

12.0% of adolescents had perpetrated nonconsensual sexting, and 8.4% of youth had been victims of nonconsensual sexting. Sex or age did not appear to affect the prevalence of either victimization or perpetration. This meta-analysis included only five studies of perpetration and four studies of victimization, illustrating the paucity of studies to date.

Although knowledge of image-based sexual abuse has grown rapidly in recent years, this is a relatively new field that requires advancing research in a number of avenues. First, there is a need for valid and reliable instruments to operationalize, measure, and understand image-based sexual abuse. Although the information provided by prior studies is of great value, most of the studies have used single questions to measure forms of sextortion and nonconsensual sexting. To our knowledge, no instruments with adequate psychometric properties are available, including information on factor validity and concurrent validity with measures expected to be related to image-based sexual abuse, such as symptoms of depression and anxiety, and the broader construct of cyberbullying. Second, perhaps in a way related to inconsistency in measurements, the results related to differences as a function of gender and age have been mixed. Furthermore, while some studies have focused exclusively on perpetration or victimization, there is little information on the relationship between the two. Finally, although perpetration and victimization are relatively frequent among adults (e.g., Powell et al., 2019), little information is available about adolescents. It is, therefore, necessary to advance the measurement of the construct among adolescents, which will then allow a more comprehensive analysis of these issues.

Another limitation of the research to date is the lack of information on the specific or stable nature of image-based sexual abuse incidents. Studies on other forms of cyberbullying have shown that aggression and victimization in cyberspace tend to be stable. Stability refers to the repetition of incidents over a given period of time (e.g., 1 year) (e.g., Rueger et al., 2011). For example, Jose et al. (2012) found significant stability ($b = 0.28$) of cybervictimization over a period of 1 year. Gámez-Guadix, Gini, et al. (2015) found that approximately 6% of cyberbullying victims reported victimization at both times 1 and 2 during a 1-year period. Being stable victims of abuse over time has been associated with worsening indicators of psychosocial adjustment (e.g., higher rates of depression and anxiety; Menesini et al., 2009; Rueger et al., 2011). To our knowledge, however, it is not known if forms of image-based sexual abuse are stable over time or if they are occasional and sporadic phenomena.

1.1 | The present study

The first objective of this study is to develop a comprehensive instrument to assess both the perpetration and victimization of forms of image-based sexual abuse. To this end, factor validity, concurrent validity, and reliability will be examined. To study concurrent validity, we will analyze the relationship of image-based sexual abuse forms with sexting (i.e., the voluntary creation and sending of sexual content), victimization and perpetration of cyberbullying, and mental health outcomes that have previously been associated with sextortion and nonconsensual sexting (i.e., symptoms of depression and anxiety). We expected that (a) sexting would be more associated with victimization than with perpetration since sending sexual content can fuel the nonconsensual sending of image-based sexual abuse; (b) the forms of victimization and perpetration of cyberbullying will be more associated with the corresponding forms of victimization and perpetration of the image-based sexual abuse, respectively; and (c) victimization of sextortion and nonconsensual sexting will be more associated with the symptoms of anxiety and depression than perpetration is.

A second aim was to examine the prevalence of sextortion and nonconsensual sexting during the last year and the differences by gender and age. Since previous evidence has been scarce and inconsistent regarding differences by sex and age, we proceeded in an exploratory manner with no initial hypotheses.

Finally, an additional objective consisted of analyzing the temporal stability of the different forms of image-based sexual abuse over a 1-year period. Previous studies have shown that other forms of offline victimization, such as bullying (Rueger et al., 2011) or online victimization, such as cyberbullying (Jose et al., 2012), tend to show temporal stability. On the basis of these results, therefore, we expect a moderate degree of stability in the forms of image-based sexual abuse. In addition, given previous studies have shown gender differences in the characteristics and dynamics of different types of image-based sexual abuse (e.g., Barrense-Dias et al., 2020; Clancy et al., 2020), we also explored whether the stability of victimization and perpetration differed between girls and boys.

2 | METHODS

2.1 | Participants

The study sample was made up of 1820 adolescents between 12 and 17 years old ($M_{age} = 13.90$, SD = 1.27). Among them, 929 were girls, 878 were boys, 3 were nonbinary, and 10 did not indicate gender. Most of the adolescents (89.7%) were heterosexual, 5.7% were bisexual, 1.7% homosexual, and 1% indicated other sexual orientations (e.g., asexual, pansexual, queer, aromantic). Most of the participants (87.2%) were born in Spain. The parents of most of the adolescents were married

or living together (71.6%), while 12.7% were divorced, 11.1% were separated, 3% were single parents, and 1.6% were widowed. A subsample of 902 participants (50% of the initial sample) completed the measurements again after 1 year. Among them, 494 were girls, 406 were boys, and 2 were nonbinary.

2.2 | Instruments

2.2.1 | Image-based sexual abuse scales

In the absence of previously validated instruments to measure image-based sexual abuse among adolescents, we developed a new instrument to assess both perpetration and victimization of sextortion and nonconsensual sexting. We elaborate on parallel items for victimization and perpetration (e.g., threats or behaviors of showing, posting, or forwarding images without consent) that have been suggested in previous research (e.g., Van Ouytsel et al., 2019). Three items were developed for the sextortion scales (e.g., "You have been threatened with showing a sexual image of yourself to another person," "You have threatened someone with showing a sexual image of them to another person) and three items for nonconsensual sexting (e.g., "Someone has forwarded a sexual image of you (photos or videos) without your consent" or "You have forwarded a sexual image of someone without their consent"). A preliminary version of the forms of victimization has shown adequate exploratory factorial validity in a previous study (Gámez-Guadix & Incera, 2021). For the present study, we dropped one item that referred to threatening to disclose sexual intimacy with the victim on the internet, with the aim to focus specifically on the image-based sexual abuse forms. The complete list of items appears in Table 1. The participants answered based on the item's frequency during the last 12 months. The response options were: 0 = never, 1 = one or two times, 2 = three or four times; and 3 = five times or more.

2.2.2 | Sexting

The sexting questionnaire (Gámez-Guadix, Gini, et al., 2015) was used to assess how often adolescents had sent sexual content online in the past year. Adolescents were asked to indicate how many times they had done the following things voluntarily: (a) "Send written information or text messages with sexual content about you," (b) "Send pictures with sexual content (e.g., naked) about you," or (c) "Send images (e.g., via webcam) or videos with sexual content about you." The response scale was: 0 = never, 1 = from 1 to 3 times, 2 = from 4 to 10 times, and 3 = more than 10 times in the last year. This scale has shown good psychometric properties in samples of adolescents (Gámez-Guadix et al., 2017). Its internal consistency in the present study was 0.75.

2.2.3 | Cyberbullying

To assess the presence of cyberbullying, the following definition was given to adolescents. This definition is based on widely-accepted conceptualization of cyberbullying, which considers the three central characteristics (repetition, imbalance of power, and helplessness; Smith et al., 2008):

"Cyberbullying is the use of information and communication technologies (e.g., Messenger, WhatsApp), social media pages (e.g., Facebook, Instagram, Twitter), or a computer, laptop, tablet, or smartphone to harm other people by threatening or insulting them, spreading rumors about them, or scaring them in any way. It is important that the person who is cyberbullied is not able to defend himself/herself and that the offenses occur frequently over a period of time."

After receiving this description, the adolescent was asked how many times they had cyberbullied other people in the last 12 months (i.e., perpetration) and how many times they had been cyberbullied by other people in the last 12 months (i.e., victimization). The response options were "never," "1 or 2 times," "between 3 and 5 times," "between 6 and 9 times," and "more than 10 times."

2.2.4 | Depression and anxiety subscales

Depression and anxiety symptoms subscales of the Brief Symptom Inventory (BSI) were used (Derogatis & Fitzpatrick, 2004) to assess the presence of depressive and anxiety symptoms among adolescents. Participants were required to indicate how frequently they had experienced each symptom (e.g., "feeling sad" or "feeling fearful") during the past 2 weeks. Each subscale included six items with a response format that ranged from 1 (not at all) to 5 (extremely). The BSI has good psychometric properties in the Spanish population, including content and factorial validity (Pereda et al., 2007). Internal consistency (Cronbach's α) in the present study was .89 for the depression symptoms subscale and .87 for the anxiety symptoms subscale.

TABLE 1 Descriptive statistics for the items included in the images-based sexual abuse and victimization scales

Items	*M* (SD)	Frequency rates				Gender differences			Significant level
		Never	1 or 2 times	3 or 4 times	5 or more times	Girls	Boys	χ^2	
Sextortion victimization									
1. You have been threatened to show a sexual image of yourself to another person.	0.03 (0.20)	98.1%	1.5%	0.2%	0.2%	2.4%	1.5%	1.91	0.17
2. You have been threatened to post a sexual image of you on the internet.	0.02 (0.17)	98.7%	1.1%	0.1%	0.2%	1.4%	1.3%	0.08	0.78
3. You have been threatened to resend a sexual image of you.	0.02 (0.20)	98.4%	1.2%	0.2%	0.2%	1.8%	1.4%	0.64	0.42
Sextortion perpetration									
5. You have threatened someone by showing a sexual image of him/her to another person.	0.01 (0.15)	99.3%	0.4%	0.1%	0.2%	0.3%	1.0%	3.35	0.06
6. You have threatened someone by posting a sexual image of him/her on the internet.	0.01 (0.12)	99.7%	0.2%	0.1%	0.1%	0.1%	0.6%	2.89	0.09
7. You have threatened someone to forward a sexual image of him/her.	0.01 (0.11)	99.6%	0.3%	0%	0.1%	0.1%	0.7%	3.86	**0.05**
Nonconsensual sexting victimization									
9. Someone has shown another person a sexual image of you (photos or videos) without your consent.	0.04 (0.27)	96.7%	2.5%	0.4%	0.3%	3.9%	2.7%	1.89	0.17
10. Someone has posted a sexual image of you (photos or videos) on the internet without your consent.	0.01 (0.10)	99.2%	0.7%	0.1%	0%	0.7%	0.9%	0.40	0.53
11. Someone has forwarded a sexual image of you (photos or videos) without your consent.	0.02 (0.21)	98.5%	1%	0.2%	0.3%	1.8%	1.1%	1.50	0.22
Nonconsensual sexting perpetration									
12. You have shown someone a sexual image (photos or videos) of another person without his/her consent.	0.06 (0.31)	95.5%	3.4%	0.6%	0.4%	5%	3.9%	1.30	0.26
13. You have posted a sexual image (photos or videos) of another person on the internet without his/her consent.	0.01 (0.09)	99.6%	0.4%	0%	0.1%	0.2%	0.6%	1.45	0.23
14. You have forwarded a sexual image (photos or videos) of another person without his/her consent.	0.03 (0.24)	97.8%	1.6%	0.3%	0.3%	2.1%	2.2%	0.02	0.87

Note: Bold value denotes significant level $p = .0495$.

2.3 | Procedure

Ten schools in a region of central Spain, including eight public schools and two private schools, participated in this study. Parents received a document requesting signed consent for their child's participation in the study. Likewise, students were given an informed consent document with all the information about the study, which was read and signed by the participants before completing the questionnaires. To promote honesty, the teens were informed that their participation was strictly voluntary and that the responses were confidential. Participants were told that they could choose not to answer any question and that study participation could be discontinued at any time for any reason without consequences. The adolescents completed the questionnaire in their classrooms with a study assistant present. Participants were encouraged to ask questions if they had trouble answering any of the items. The questionnaire required approximately 30–40 min to complete. After completing the questionnaire, participants received a written document with information on community resources and the researchers' email contacts. This study is part of a larger research project on the sexual abuse of minors online, which was reviewed and approved by the Ethics Committee of the Autonomous University of Madrid.

3 | RESULTS

3.1 | Descriptive statistics

The mean, standard deviation, and prevalence for each item are presented in Table 1. As shown, the items, "you have shown someone a sexual image (photos or videos) of another person without his/her consent" and "someone has shown another person a sexual image of you (photos or videos) without your consent," were most endorsed, with rates of 4.5% and 3.3% during the last year, respectively. The rest of the items showed rates of less than 2% during the past year. Just one behavior showed significant differences between boys and girls (i.e., "You have threatened someone to forward a sexual image of him/her") with rates higher for boys (0.7% of boys and 0.1% of girls; $\chi^2 = 3.86$; $p < .05$).

3.2 | Confirmatory factor analysis

As a first step, we examined the factorial validity of the image-based sexual abuse scales (IBSAS) with confirmatory factor analysis using the EQS. 6.1 program (Bentler & Wu, 2005). The models were tested using the robust maximum likelihood method with the Satorra–Bentler scaled χ^2, because a non-normality distribution was observed in the data (Mardia's coefficient = 4801). The goodness of fit was assessed with the comparative fit index (CFI), the non-normative fit index (NNFI), the root-mean-square error of approximation (RMSEA), and the standardized root mean residual (SRMR). CFI and NNFI values of 0.90 or higher, and RMSEA and SRMR values less than 0.08 indicate an acceptable fit (Byrne, 2013). A small percentage of participants presented missing values in one or more items ($n = 22$), and listwise deletion was used (Acock, 2005).

Confirmatory factor analyses showed support for a factorial structure that included four correlated factors: sextortion victimization, sextortion perpetration, nonconsensual sexting victimization, and nonconsensual sexting perpetration. The estimated model showed good fit indexes: $\chi^2(48, N = 1797) = 51.18$, $p = .35$, CFI = 0.98, NNFI = 0.97, RMSEA = 0.006, and SRMR = 0.059. All factor loadings of the items were higher than 0.31. Figure 1 shows the final estimated model, including factor loadings and correlations. According to Cohen (1992), correlations of .10, .30, and .50 reflect small, medium, and large correlations, respectively. Thus, the correlation between sextortion victimization and nonconsensual sexting victimization was high (.69, $p < .001$), and the correlation between sextortion perpetration and victimization was medium (.35, $p < .001$). The rest of the correlations were small (around .10).

3.3 | Concurrent validity

We analyzed the concurrent validity of the instrument through Spearman's correlations of image-based sexual abuse forms with sexting, cyberbullying perpetration and victimization, and mental health outcomes (symptoms of depression and anxiety). The results are presented in Table 2. Sexting showed stronger correlations with sextortion and nonconsensual sexting victimization than with perpetration. Overall, forms of image-based sexual abuse victimization and perpetration showed stronger correlations with their counterparts, cyberbullying victimization, or perpetration. Regarding the associations between image-based sexual abuse and mental health outcomes, all were significant for victimization and stronger for victimization than for perpetration.

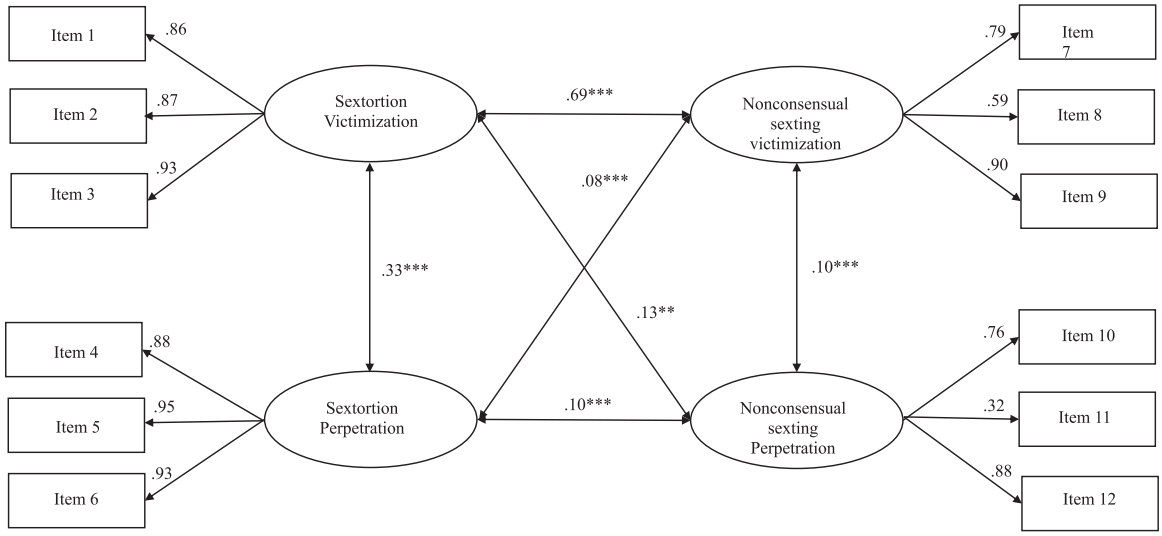

FIGURE 1 Estimated structural equation model. $^{**}p < .01$, $^{***}p < .001$.

TABLE 2 Prevalence of forms of image-based sexual abuse and differences as a function of sex and gender

	Total	Girls $n = 929$	Boys $n = 878$	χ^2	Significant level	12–13 years old $n = 996$	14–15 years old $n = 712$	16–17 years old $n = 88$	χ^2	Significant level
Sextortion victimization	2.6%	3.1%	1.9%	2.55	0.28	1.6%	3%	10.8%	26.62	$p < .001$
Sextortion perpetration	0.7%	0.9%	0.7%	0.88	0.35	0.4%	1%	2.4%	5.34	0.07
Nonconsensual sexting victimization	3.4%	4.6%	2.2%	7.63	$p < .01$	2.2%	4.8%	6.1%	10.19	$p < .01$
Nonconsensual sexting perpetration	4.9%	5.4%	4.5%	0.83	0.36	2.5%	7.7%	13.4%	34.92	$p < .001$

3.4 | Reliability

Internal consistency (Cronbach's α) for the scales was .91 and .93 for sextortion victimization and perpetration, respectively. The internal consistency for nonconsensual sexting was 0.76 for perpetration and 0.65 for victimization.

3.5 | Prevalence of image-based sexual abuse and differences by gender and age

Table 3 shows the prevalence of each type of image-based sexual abuse as a function of sex and age. Overall prevalence was 2.6% sextortion victimization and 0.7% for sextortion perpetration. For nonconsensual sexting prevalence was 3.4% for victimization and 4.9% for perpetration. Girls were more often victims of nonconsensual sexting victimization, at double the rate of boys (girls: 4.6%, boys: 2.2%; $p < .01$). For sextortion victimization and perpetration and for nonconsensual sexting perpetration, differences were not significant between girls and boys. Regarding age, sextortion victimization and nonconsensual sexting victimization and perpetration significantly increased as age increased. Sextortion perpetration showed a similar pattern and approached significance ($p < .10$).

3.6 | Stability of sextortion and nonconsensual sexting

Finally, we analyze the temporal stability of the forms of sextortion and nonconsensual sexting when measured 1 year apart. Spearman's correlation for variables at baseline and after 1 year was .37 ($p < .001$) for sextortion victimization, .00 ($p = .95$) for sextortion perpetration, .29 ($p < .001$) for nonconsensual sexting victimization, and .24 ($p < .001$) for nonconsensual sexting perpetration. Differences in temporal stability were analyzed by gender. Stability for nonconsensual sexting victimization was significantly higher for girls than for boys (0.33 and 0.17, respectively; $z = 2.59$, $p < .01$), whereas nonconsensual sexting

TABLE 3 Analysis of concurrent validity of sextortion and nonconsensual sexting perpetration and victimization (Spearman correlations)

Study variables	Sextortion victimization	Sextortion perpetration	Nonconsensual sexting victimization	Nonconsensual sexting perpetration
Sexting	.28***	0.04 ns	.24***	.17***
Cyberbullying victimization	.20***	0.03 ns	.15***	.08***
Cyberbullying perpetration	.06**	.05*	0.03 ns	.11***
Depression symptoms	.12***	0.04 ns	.15***	.13***
Anxiety symptoms	.12***	0.04 ns	.14***	.10***

Abbreviation: ns, not significant.
*$p < .05$; **$p < .01$; ***$p < .001$.

perpetration was higher for boys than for girls (0.36 and 0.14, respectively; $z = 3.49$, $p < .001$). There were no significant differences for either victimization or perpetration sextortion.

Expressing the significant associations in percentages, 35% of those sextortion victims at baseline were also victims a year later; however, among those who were *not* sextortion victims at baseline, only 1% were sextortion victims at follow-up ($\chi^2 = 119.84$, $p < .001$). Similarly, 35% of those victims of nonconsensual sexting at baseline were also victims 1 year later; however, among those who were *not* victims of nonconsensual sexting at baseline, only 2.2% were victims of nonconsensual sexting at follow-up ($\chi^2 = 75.18$, $p < .001$). Finally, 25.7% of those who perpetrated nonconsensual sexting at baseline also perpetrated nonconsensual sexting at follow-up; however, only 2.8% of those who did *not* perpetrate nnconsensual sexting at baseline, then perpetrated nonconsensual sexting 1 year later ($\chi^2 = 50.11$, $p < .001$).

4 | DISCUSSION

The aim of the present study is to analyze two worrisome forms of image-based sexual abuse: sextortion (i.e., use of sexual content to threaten someone) and nonconsensual sexting (i.e., dissemination of sexual content of someone without consent). This study provides a new instrument to assess the victimization and perpetration of these problems, shows that prevalence was greater than desired, and suggests that image-based sexual abuse can become stable over time. These results are discussed below.

Results for the IBSAS confirmed the structure composed of four factors resulting from combining the type of abuse (i.e., sextortion and nonconsensual sexting) and the dimensions of victimization and perpetration. The internal consistency of the subscales was generally adequate. The correlation between sextortion victimization and nonconsensual sexting victimization was high. These findings suggest that the victims could present some characteristics that put them at a higher risk for both sextortion and nonconsensual sexting victimization. Elucidating these characteristics may be an essential aspect of prevention in the future. On the other hand, correlations between image-based sexual abuse victimization and perpetration forms were also significant. Caution is advised, however, when interpreting these results, not to presume victimization was the cause of the perpetration or vice versa (Powell et al., 2019). Future studies should explore the common context and predictors of victimization and perpetration to account for these results.

The analysis of the correlations of the IBSAS with additional variables provided evidence of the concurrent validity of the instrument. As expected, the voluntary sending of sexual content (i.e., sexting) showed higher correlations with victimization than with perpetration. Sexting, although having positive effects, can also fuel image-based sexual abuse incidents. It should be noted, however, that the correlation between sexting and forms of image-based sexual abuse victimization was small-to-medium in size (Cohen, 2013). This finding indicates that sexting and image-based sexual abuse share a significant but limited amount of variance, and other causes besides sexting could explain image-based sexual abuse. Other variables, such as the attitudes that support this type of aggression, the traits of lack of empathy or callousness of the perpetrator, or the role of traditional gender roles, should be explored to explain image-based sexual abuse. In this regard, the blanket injunction against sexting based on its side effects is not warranted by our data, which is congruent with other previous research (Wachs et al., 2021).

Regarding the relationship between image-based sexual abuse and cyberbullying, as expected, the forms of image-based sexual abuse victimization were stronger associated with cyberbullying victimization than with perpetration. In addition, image-based sexual abuse perpetration showed higher correlations with cyberbullying perpetration than with victimization. Although significant, these correlations were small, which could suggest that image-based sexual abuse constitutes a type of abuse qualitatively different from traditional cyberbullying. In this sense, image-based sexual abuse tends to be more severe (e.g., involving sexual images), while cyberbullying includes a broader range of behaviors (e.g., spreading rumors about

someone, excluding someone from online groups). Future research should investigate the differential and convergent predictors of image-based sexual abuse and cyberbully.

Finally, regarding the relationship between image-based sexual abuse and mental health outcomes, as expected, victimization was more related to symptoms of depression and anxiety than was perpetration, providing additional data on the convergent validity of the instrument. The results indicate that image-based sexual abuse may have a significant impact on psychological adjustment, in line with previous studies' findings (Nilsson et al., 2019). Future studies should clarify the temporal order of these associations and indicate whether image-based sexual abuse victimization precedes mental health outcomes or whether—alternatively or additionally—mental health outcomes could precede image-based sexual abuse victimization. As with other forms of sexual victimization (e.g., Rapsey et al., 2019), image-based sexual abuse could be a major stressor with significant mental health consequences for victims. Alternatively, minors with mental health issues could be vulnerable targets for motivated aggressors, as occurs in other forms of online sexual victimization (De Santisteban & Gámez-Guadix, 2018).

The second objective of this study is to analyze the prevalence, along with gender and age differences, of image-based sexual abuse. Prevalence ranged from 0.7% for sextortion perpetration to 4.9% for nonconsensual sexting perpetration. Overall, these figures are congruent with the scarce data from previous studies (Frankel et al., 2018; Patchin & Hinduja, 2020). Sextortion victimization was more prevalent among women. In the remaining image-based sexual abuse forms, there were no differences based on sex. Beyond prevalence, future studies should delve into the role of gender in the severity of image-based sexual abuse incidents, as well as whether an incident with similar characteristics could have worse consequences for women than for men. Regarding age, we found a clear evolutionary pattern of the forms of image-based sexual abuse among adolescents. At older ages, the prevalence of image-based sexual abuse was also higher. These results contrast with those of previous studies with adolescents in which no clear age pattern is found (Madigan et al., 2018; Patchin & Hinduja, 2020). In any case, the findings underscore the fact that it is necessary to start sexting education early in adolescence since the risks of sexting are already present at the age of 12.

Finally, the data showed significant stability of the forms of image-based sexual abuse throughout 1 year, except for sextortion perpetration. The degree of stability was small-to-medium in size for forms of image-based sexual abuse victimization, which is consistent with what was found by previous studies on other types of cybervictimization (e.g., Jose et al., 2012). The degree of stability for nonconsensual sexting perpetration over 1 year was even higher than for victimization, showing a medium effect size (Cohen, 2013). Approximately, one-third of those who perpetrated nonconsensual sexting in the year before the baseline assessment were also perpetrators 1 year later. These results indicate considerable repetition among perpetrators in the dissemination of sexual content without the consent of the victim. Future studies should analyze the variables that moderate the recurrent perpetration of nonconsensual sexting to develop strategies to combat this recurrent perpetration. Finally, this is important to underline that the stability of nonconsensual sexting victimization was greater for girls compared to boys. However, the stability of nonconsensual sexting perpetration was higher for males. These data suggest important differences in the persistence of these types of aggression as a function of gender. Future studies should explore reasons linked to traditional gender roles to explain these differences.

This study has some limitations that need to be pointed out. First, the sample, although large, is not representative, so future studies should replicate these results in additional samples and in other cultural contexts. Second, we examined only some psychometric properties of image-based sexual abuse (i.e., construct validity, reliability, convergent validity). Other forms of validity also need to be studied, including the predictive validity of the instrument. Relatedly, due to the small number of participants who endorsed several items, it was not possible to estimate the factorial invariance by gender of the scale. Future studies including a larger sample for each gender are needed to carry out these analyses. Moreover, the questionnaire was completed in the classroom by students with their classmates. Although the students were separated from one another and encouraged to focus on their own questionnaire, social desirability biases from the presence of others could have affected the responses. Future measurements based on online surveys completed in private settings could be useful to minimize this effect. Finally, this study focused specifically on sextortion and nonconsensual sexting, which are the forms of image-based sexual abuse that have previously received the most empirical attention. Future studies should analyze additional forms of image-based sexual abuse such as taking images without the victim's knowledge (e.g., through hidden cameras) or the so-called upskirting or "down-blousing."

This is the first study to our knowledge to develop and examine the psychometric properties of a measure of image-based sexual abuse among adolescents. Furthermore, this study adds to the scarce information available on the prevalence of this problem. In this sense, it should be noted that the prevalence is not negligible, and these phenomena should be particularly addressed in prevention programs. The IBSAS can be used in future research to analyze the predictors and consequences of sextortion and nonconsensual sexting. In addition, when analyzing the consequences of voluntary sexting, it should be explicitly differentiated from sending content under threats or from nonconsensual sexting. In this sense, it is necessary to decatastrophize the behavior of sexting itself, considering that it is a normative behavior among many adolescents and can fill developmental functions as the exploration of identity and intimacy. Rather, when addressing the negative consequences of sending sexual images, it is necessary to focus on unethical behaviors (e.g., threats or nonconsensual uses of the sexual images

of others) rather than on voluntary sexting behaviors. Finally, the stability of this phenomenon shows that intervention to both victimization and perpetration is necessary to break the recursive cycle of online sexual abusive behaviors.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

ETHICS STATEMENT

This study is a part of larger research project on the sexual abuse of minors online, which was reviewed and approved by the Ethics Committee of the Autonomous University of Madrid.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Manuel Gámez-Guadix http://orcid.org/0000-0002-1575-1662

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