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ORIGINAL ARTICLE

Risk factors associated with cybervictimization in adolescence

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Cybervictimization;
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Abstract The aim of this work is to analyze the predictive value of several variables that may affect the likelihood of occasional or severe cibervictimization in adolescence, including sociodemographic (gender and age), psychological (self-esteem and shyness-social anxiety), educational (off-line school victimization, training and socio-emotional support, and academic achievement), family (parental control), and technological (frequency of use and risky Internet behaviors) factors. To achieve this, three self-reports were applied to 3,180 Compulsory Secondary Education students from Asturias (Spain), aged between 11 and 19 years old. The multinomial logistic regression results show that age, off-line school victimization, parental control, risky Internet behaviors, using online social networks or instant messaging applications and frequency of Internet use during weekends are statistically significant risk factors for both occasional and severe cybervictimization. Self-esteem is a protective factor for occasional cybervictimization. Having their own mobile phone, playing on-line with others and frequency of Internet use during weekdays are risk factors for severe cybervictimization. The implications of these results are discussed with regard to prevention, detection and treatment of cybervictimization.

PALABRAS CLAVE
Cibervictimización;
factores de riesgo;
adolescencia;

Factores de riesgo asociados a cibervictimización en la adolescencia

Resumen El objetivo de este trabajo es analizar la capacidad predictiva de diversos factores de carácter sociodemográfico (género y edad), psicológico (autoestima y timidez-ansiedad social), educativo (victimización escolar off-line, formación y apoyo en el centro educativo, y

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Educación Secundaria; estudio *ex post facto*

trendimiento académico), familiar (control parental) y tecnológico (frecuencia de uso y conductas de riesgo) sobre la probabilidad de padecer cibervictimización ocasional o severa, en una muestra de adolescentes españoles. Para ello, se aplicaron tres autoinformes a 3.180 estudiantes de Educación Secundaria Obligatoria de Asturias (España), de entre 11 y 19 años. Los análisis de regresión logística multinomial muestran que la edad, la victimización escolar off-line, el control parental, las conductas de riesgo en Internet, el uso de redes sociales o programas de mensajería instantánea y la frecuencia de uso de Internet durante el fin de semana son factores de riesgo estadísticamente significativos tanto de cibervictimización ocasional como severa. La autoestima es factor protector de cibervictimización ocasional. Tener móvil propio, jugar on-line con otras personas y la frecuencia de uso de Internet de lunes a viernes son factores de riesgo de cibervictimización severa. Se discuten las implicaciones de estos resultados de cara a la prevención, detección y tratamiento de la cibervictimización.

The great technological development in communication and entertainment over the last few years has changed adolescents' way of socialization. The possibility of long-distance communication at any time of day provided by these devices presents great advantages to establish new relationships or to maintain contact with family or friends. However, their inadequate use can lead to some potential risks. One of these risks is the use of these means to attack other people, that is, to annoy, offend, or harm them deliberately. In this text, the term *cybervictimization* will be used to refer to suffering peer aggression by cellphone or Internet, which mainly consist of written-verbal or visual aggressions, exclusion, and impersonation (Nocentini et al., 2010). When the cybervictimization suffered consists of varied aggressions, and these aggressions are frequent and maintained over time, generally due to the victim's inferiority, they are usually called *severe victimization* (Buelga, Cava, & Musitu, 2010) or *cyberbullying victimization* (Tokunaga, 2010), to differentiate them from occasional and less severe cybervictimization.

Currently, it is estimated that between 20 and 50% of adolescents have been victims of peer aggression by electronic means at some time, and between 2 and 7% have suffered severe victimization (Garaigordobil, 2011). Especially in more severe cases, cybervictimization can harm the mental health of the affected person, contributing to the onset of depressive symptomatology and suicidal ideation (Bonanno & Hymel, 2013). It is therefore important to identify the variables that can significantly affect the probability of an adolescent becoming the victim of cyberaggression, in order to optimize its prevention, detection, and treatment.

The study of the risk factors of cybervictimization is relatively recent and it still has some gaps and inconsistencies. This work focuses on the analysis of some sociodemographic, psychological, educational, family, and technological factors, whose capacity to predict cybervictimization is still under debate.

Among the factors of sociodemographic a nature, *gender* has been one of most frequently studied. In spite of this, it has also yielded the most inconsistent results. Most of the studies conclude that gender is not significantly associated with cybervictimization (Tokunaga, 2010). In a minority of works that report gender differences, the tendency is to find more girls among the victims (Beckman, Hagquist, & Hellström, 2013; Félix-Mateo, Soriano-Ferrer, Godoy-Mesas, & Sancho-Vicente, 2010; Walrave, & Heirman, 2011). Another sociodemographic variable that has been studied considerably is *age*. As with gender, research has found mixed results. The review by Tokunaga (2010) shows that most of the studies conclude a lack of relation between age and cybervictimization; and that, among the studies finding a relationship, some report a positive relation and others, a negative one. In view of these results, this author proposes a hypothesis of a curvilinear relation, peaking at 7th-8th grade (12-14 years), which would explain the fact that studies with broad age ranges around those ages did not find a statistically significant linear relation and, as a function of the age range analyzed, opposite tendencies were obtained.

Some psychological factors, such as self-esteem and social anxiety, have been related to the probability of suffering cybervictimization. Victims of cyberaggression often have lower levels of *self-esteem* (Patchin & Hinduja, 2010; Yang et al., 2013) and higher levels of *social anxiety* (Juvonen & Gross, 2008; Kowalski, Giumetti, Schroeder, & Lattanner, 2014; Navarro, Yubero, Larrañaga, & Martínez, 2012). Nevertheless, their association with other variables also related to cybervictimization, such as traditional school victimization (Tillfors, Persson, Willén, & Burk, 2012) or the frequency and type of Internet usage (Casas, Ruiz-Olivares, & Ortega-Ruiz, 2013), makes it interesting to continue to analyze their independent effect as risk factors of cybervictimization.

Among the educational variables, *traditional school victimization*, also called offline victimization (Runions, Shapka, Dooley, & Modecki, 2013) is one of the factors more closely associated with cybervictimization, according to the available empirical evidence (Álvarez-García et al., 2011). Student victims of presential school violence are more likely than non-victims to also be victims of violence through electronic devices (Del Rey, Elipe, & Ortega-Ruiz, 2012; Kowalski et al., 2014; Modecki, Minchin, Harbaugh, Guerra,

& Runions, 2014). The *training* received at school about co-existence and the risks of Internet also has shown its impact as a protective factor. Some intervention programs like ConRed (Del Rey, Casas, & Ortega, 2012), Cyberprograma 2.0 (Garaigordobil, & Martínez-Valderrey, 2014), KiVa (Williford et al., 2013), Noncadiamointrappola (Palladino, Nocentini, & Menesini, 2012), or ViSC (Gradinger, Yanagida, Strohmeier, & Spiel, 2015) have achieved positive results for the decrease of cybervictimization. Nevertheless, this consistent outcome could also be due to a ''publication bias'' (Perestelo-Pérez, 2013) towards works reporting the results of efficacious treatments. It would be of interest, therefore, to analyze whether the training adolescents are receiving at their schools, which does not necessarily coincide with that published, significantly reduces the risk of cybervictimization. Regarding *academic performance*, there is empirical evidence that cybervictimization is associated with low academic performance (Yang et al., 2013). Nevertheless, the relationship of this variable with many others also related to being a cybervictim requires more research on its role as an independent risk factor.

Regarding family factors, one of the most frequently analyzed has been *parental control*, that is, the control of Internet usage and of the adolescent's contacts by parents or guardians, although there is no solid body of evidence firmly upholding its efficacy as a protective factor. Some studies have found that families of non-victimized adolescents usually establish rules about Internet usage and they use filter software more habitually than families of victimized adolescents (Mesch, 2009). In contrast, other studies suggest that there is no statistically significant relation between parental control and cybervictimization (Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2012; Zhou et al., 2013).

Lastly, technological factors refer to the relation of the adolescents with the electronic devices with which they communicate. Some authors have found that *Internet usage frequency* correlates positively with cybervictimization (Kowalski et al., 2014); other studies suggest that this is so for cyberaggression but not for cybervictimization (Walrave & Heirman, 2011). *Internet risk behaviors*, such as revealing one's personal password, publishing personal information on a blog, or communicating with strangers, are some of the variables more consistently associated with cybervictimization (Mishna et al., 2012; Navarro & Yubero, 2012; Walrave & Heirman, 2011).

Ultimately, cybervictimization is a phenomenon that emerges with considerable prevalence and that can lead to very serious consequences for the victim. Therefore, it is important to attempt to identify more accurately the main risk factors, in order to orient its prevention, detection, and treatment. The study of risk factors for cybervictimization is relatively recent and still presents many gaps and inconsistencies. Therefore, this study is an attempt to contribute to define the independent predictive capacity of each one of the variables analyzed, as well as to identify possible confounding factors. The goal of this work, therefore, is to analyze the predictive capacity of diverse sociodemographic (gender and age), psychological (self-esteem and shyness-social anxiety), educational (offline school victimization, training and support at school, and academic performance), family (parental control), and technological factors (usage frequency and risk behaviors) for the probability of suffering occasional or severe cybervictimization in a sample of Spanish adolescents. As working hypotheses, gender is not expected to have a statistically significant relation with cybervictimization, but if found, being female will be a risk factor; no statistically significant relation between age and cybervictimization will be found, but if one exists, a tendency to decrease with age will be observed; self-esteem will be a protective factor; shyness and social anxiety will be risk factors; offline school victimization will be a risk factor; training will be a protective factor; low academic performance will be a risk factor; parental control will not have a statistically significant association, but if any is found, it will be a protective factor; Internet usage frequency and risk behaviors will be risk factors of cybervictimization.

Method

Participants

The sample is made up of 3180 students of Compulsory Secondary Education (CSE) from 16 schools, 11 public schools and 5 subsidized schools, of Asturias (Spain). Of the assessed students, 28.1% are studying first grade of CSE, 26.5% are in second grade, 24.3% are third-grade students, and 21.1% are in fourth grade. Their ages range between 11 and 19 years ($M = 13.99$, $SD = 1.38$). Concerning gender, 48.5% are boys and 51.5% are girls. Table 1 presents the main descriptive statistics of the sample in the variables analyzed in this study.

Assessment instruments

Ad hoc questionnaire about sociodemographic data and handling of communication technologies. This questionnaire contains 10 items concerning students' age, gender, grade, and academic performance, as well as use of electronic devices for communication and the frequency with they are used. Age and grade were assessed by means of two fill-in-the-blank items where the respondents were asked to write their age in years and their school year level. Gender and academic performance were assessed with dichotomic items (male student/female student) and the item ''I've sometimes repeated a course'' (Yes/No). The use of electronic devices for communication was assessed with four items -''I have my own cellphone'', ''In my free time, I participate in social networks (Tuenti, Facebook or other)'', ''In my free time, I use instant messaging programs (Messenger, WhatsApp or other)'', and ''I play on-line with other people'', with a dichotomic response format (Yes/No). Usage frequency of Internet for tasks other than homework was assessed with two items (''In general, how many hours a day do you use Internet for tasks other than homework, from Monday to Friday?'' and ''In general, how many hours a day do you usually use Internet for tasks other than homework over the weekend?''), with a multiple choice format (None/Less than one hour/Between one and two hours/Between two and three hours/More than three hours).

Cybervictimization Questionnaire (CBV) (Álvarez-García, Dobarro, & Núñez, 2015). This instrument has 26 items, each one describing an instance of aggression suffered

Table 1 Descriptive analyses of the sample and comparison in the variables analyzed of adolescents who do not suffer cybervictimization, those who suffer occasional cybervictimization, and those who suffer severe cybervictimization.

Variable	Total ($N = 3,180$)	No-CBV ($n = 690$)	O-CBV ($n = 2,313$)	S-CBV ($n = 177$)	Test	p
Sociodemographic data						
Gender (Girls)[c]	1619 (51.5)	317 (46.5)	1211 (52.9)	91 (51.7)	8.49[a]	.014
Age[d,e]	13.99 (1.38)	13.74 (1.34)	14.04 (1.39)	14.43 (1.23)	43.80[b]	<.001
Psychological						
Self-esteem[d,f]	3.46 (0.54)	3.57 (0.49)	3.44 (0.54)	3.20 (0.64)	69.05[b]	<.001
Shyness and social anxiety[d,f]	2.06 (0.76)	2.00 (0.75)	2.07 (0.76)	2.18 (0.76)	8.80[b]	.012
Educational						
Offline school victimization[d,f]	1.53 (0.53)	1.34 (0.47)	1.54 (0.51)	2.15 (0.60)	339.99[b]	<.001
Training and support at school[d,f]	3.15 (0.59)	3.17 (0.60)	3.15 (0.58)	3.03 (0.59)	8.92[b]	.012
I repeated a course[c]	646 (22.2)	127 (20.2)	473 (22.3)	46 (28.8)	5.52[a]	.063
Family						
Parental control[d,f]	1.91 (0.71)	1.86 (0.70)	1.93 (0.71)	1.90 (0.72)	4.90[b]	.086
Technological						
Risk behaviors[d,f]	1.85 (0.64)	1.57 (0.54)	1.89 (0.62)	2.38 (0.70)	259.91[b]	<.001
I own a cellphone[c]	2979 (94.3)	613 (89.6)	2197 (95.5)	169 (96.6)	35.35[a]	<.001
In my free time, I participate in social networks[c]	2511 (79.3)	457 (66.6)	1894 (82.2)	160 (90.4)	91.92[a]	<.001
In my free time, I use instant messaging programs[c]	2933 (92.5)	578 (84.1)	2182 (94.6)	173 (97.7)	90.67[a]	<.001
I play on-line with other people[c]	1358 (42.9)	266 (38.8)	996 (43.2)	96 (54.2)	14.16[a]	.001
I usually use the Internet more than three hours a day from Monday to Friday for tasks other than homework[c]	812 (25.6)	104 (15.1)	624 (27.0)	84 (48.0)	88.77[a]	<.001
I usually use the Internet more than three hours a day during the weekend for tasks other than homework[c]	1302 (41.0)	186 (27.0)	1006 (43.5)	110 (62.5)	96.10[a]	<.001

No-CBV = No cybervictimization; O-CBV = Occasional cybervictimization; S-CBV = Severe cybervictimization.
[a] Pearson χ^2 test
[b] Kruskal-Wallis H test
[c] Frequency (Percentage)
[d] M (SD)
[e] Minimum = 11, Maximum = 19
[f] Minimum = 1, Maximum = 4

through cellphone or internet. The students should mark the frequency with which they were the victim of each one of these situations *in the past three months*, by means of a 4-point Likert-type scale (1 = *Never*, 2 = *A few times*, 3 = *Often*, and 4 = *Always*). Drawing on the classification proposed by Nocentini et al. (2010), the sentences cover four types of cybervictimization: written-verbal (e.g., ''I have received calls insulting me or making fun of me'', ''They have made fun of me with offensive or insulting comments on the social networks'', or ''I have received insults via SMS or instant messaging programs (e.g., WhatsApp)''); visual (e.g., ''I have been forced to do something humiliating that they recorded and later diffused to make fun of me'', ''They have uploaded trick photos (modified) of me on Internet to hurt me or make fun of me'', or ''They have uploaded real compromising photos or videos of me on the Internet without my permission to harm me or make fun of me''); exclusion (e.g., ''They kicked me out or did not accept me in the contact list of some chat, social network — e.g., Tuenti — or instant messaging programs — e.g., Messenger, WhatsApp—, without having done anything wrong, just because it was me'', ''Someone has not admitted me or has expelled me from his team in on-line games, without having done anything wrong to justify it'' or ''They agree to ignore me on social networks''); and impersonation (e.g., ''They have impersonated me in Twitter, Tuenti,., creating a false user profile — photo, personal data,.— with which they insulted me or ridiculed me'', ''They impersonated me on the Internet, publishing comments in my name, as if it were me'', or ''Someone has impersonated another person to ridicule me through Internet or cellphone''). Although the design of the questionnaire was based on this theoretical model of four types of cyberaggression, confirmatory factor analyses carried out with 2,490 students of CSE, aged between 11

and 19 years, from Asturias (Spain), showed that this model had a very similar fit to the one-factor model, which was finally preferred in view of its more parsimonious nature. Test reliability, assessed in terms of internal consistency, was adequate ($\alpha = .85$).

Cuestionario de Factores de Riesgo para la Cibervictimización (FRC [Cybervictimization Risk Factors Questionnaire]; Dobarro & Álvarez-García, 2014). This self-report aims to identify the degree to which the responder has certain habits, is exposed to certain situations, or makes certain self-appraisals that may constitute a risk or protection factor for cybervictimization, according to available prior evidence. It is made up of 34 items, and responders rate the degree to which each statement is true on a 4-point Likert-type response format (1 = *Completely false*, 2 = *Rather false*, 3 = *Rather true*, 4 = *Completely true*). It was validated with 670 students from CSE, between 11 and 19 years, from Asturias (Spain), and the factor analysis yielded a six-factor model. The Factor *Training and Support at School* refers to the socio-emotional support received from classmates and teachers, as well as the training received at school about co-existence and the risks of Internet (e.g. ''In my school, they have explained the risks of Internet and how to prevent them'', ''In class, we usually work on activities concerning education in values (the value of friendship, respect,...)'', or ''I have a good friend in class, who listens to me and helps me when I have some problem''). The Factor *Offline School Victimization* refers to violent acts suffered at school, without the mediation of electronic devices (e.g., ''Some classmates reject me in games, walks, or recess activities'', ''My classmates mock me and laugh at me'', or ''Some students of the school have hit me, either in school or outside the school grounds''). The Factor *Risk Behaviors* includes usage habits with electronic communication devices that make people more susceptible to cyberaggression (e.g., ''I have sometimes met someone whom I only knew from Internet'', ''I allow other people to upload my photos or videos on the Internet'', or ''I usually publish personal information on my social networks: what I'm going to do, where and with whom, personal photos or videos, family photos or videos;.''). The Factor *Parental Control* refers to the supervision and establishment of limits on the use of Internet by the family (e.g., ''My parents limit the contents I have access to on Internet at home with filters on the computer'', ''My parents know my lists of contacts'', or ''My parents limit my time on the Internet (either by word or by configuring the computer)''). The Factor *Self-esteem* refers to the respondent's self-rating (e.g., ''I like myself the way I am'', ''I can do things at least as well as most of my classmates'' or ''I am proud of what I do''). Lastly, the Factor *Shyness-Social Anxiety* includes sentences about inhibition and the feeling of discomfort with regard to others, particularly with people one does not know very well (e.g., ''I'm shy and not very talkative, except with my friends'', ''I find it difficult to meet new people, make friends, start talking with people whom I do not know'', or ''I get uptight if I meet an acquaintance on the street''). Reliability, assessed in terms of internal consistency, was as follows: Training and support at school ($\alpha = .75$), Offline School Victimization ($\alpha = .75$), Risk Behaviors ($\alpha = .54$), Parental Control ($\alpha = .80$), Self-esteem ($\alpha = .73$), and Shyness and Social Anxiety ($\alpha = .70$).

Procedure

By means of simple random sampling, 16 schools were selected from the total of centers financed with public funds (public and subsidized) in which CSE is taught in Asturias. A second list of 16 alternate centers was also selected. We contacted, first by letter and later by telephone, the Directors of the centers, to request their cooperation. Two Directors refused to participate, and were substituted by the first two alternatives. Each board of directors was informed of the objectives and procedures of the study, its voluntary and anonymous nature, and the confidential treatment of the results. The schools managed the request to the parents for authorization of the students to participate in the investigation, by means of passive consent.

The questionnaires were applied in all the schools in the second or third trimester of the school year 2013-2014. Before completing the questionnaire, the students were also informed of the purpose of the study and of the anonymous and confidential nature of the survey. In general, the students had 20 minutes to complete the questionnaires, although this was flexible depending on the age and characteristics of the students. The test was applied by the research team to all the groups in each of the centers, during the regular school schedule.

Data analysis

After the data were entered on a spreadsheet, the possible presence of missing values or outliers on the data matrix was examined. Subjects with 5 or more missing or null items in any of the questionnaires were eliminated from the study. After eliminating these participants, the missing values or outliers still present in the two of the Likert-type tests—the CBV Questionnaire and the FRC Questionnaire —were replaced with the sample item means. The polytomic variables ''In general, how many hours a day do you use Internet for tasks other than homework from Monday to Friday?'' and ''In general, how many hours a day do you use Internet for tasks other than homework on the weekends?'' were recoded as dichotomic variables (Three hours or less/More than three hours).

The sample was divided into three subgroups according to their degree of cybervictimization. The No-Cybervictimization Group is made up of students who responded *Never* to all the CBV questionnaire sentences. The Severe Cybervictimization Group includes students who scored higher than percentile 95 on the CBV (raw score ≥ 41). To determine this cut-off point, the prevalence of students who suffer severe cybervictimization according to recently published review studies was taken into account: between 2 and 7% (Garaigordobil, 2011). The Occasional Cybervictimization Group consists of students who have reported suffering from some of the cyberaggression types assessed, but whose total score on the CBV was below percentile 95. In order to appraise the pertinence of identifying different explanatory models for occasional and severe cybervictims, we verified whether the groups established differed in the predictor variables analyzed. For this purpose, we used Pearson's chi-square test for dichotomous

variables and the Kruskal-Wallis *H* for continuous variables (the assumptions to use parametric statistics were not met).

Next, we examined the degree to which each variable analyzed increases or decreases the risk of being an occasional or severe cybervictim, as well as the possible presence of confounding factors, using multinomial logistic regression analysis. For this purpose, firstly, we calculated the unadjusted Odds Ratio (univariate analysis). Subsequently, we calculated the adjusted Odds Ratio of each variable, statistically controlling for the effect of the rest of the variables by including them in the regression model (multivariate analysis). All the analyses were performed with the statistical program SPSS 19.0 for Windows.

Results

Descriptive analyses

The no-cybervictims, occasional cybervictims, and severe cybervictims were statistically and significantly different in all the variables analyzed, except for academic performance and reported parental control (Table 1).

Multinomial logistic regression

With regard to occasional cybervictimization, the univariate analyses showed that all the independent variables analyzed, except for training and support at school and having repeated a course, had a statistically significant effect on the probability of being an occasional cybervictim (Table 2). Of the significant variables, only self-esteem was a protective factor, whereas the rest were risk factors. When statistically controlling for possible confounding factors by introducing all the independent variables analyzed in the regression model, gender, shyness and social anxiety, owning a cellphone, playing on-line with other people, and using Internet more than three hours a day from Monday to Friday for tasks other than homework ceased to be statistically significant predictors. In contrast, self-esteem continued to be a protective factor; and age, offline school victimization, parental control, performing risk behaviors on Internet, using social networks and instant messaging software, and using Internet for more than three hours a day during the weekend for tasks other than homework continued to be statistically significant risk factors (Table 2). The factors with the greatest predictive capacity were, in this order, offline school victimization, the use of instant messaging programs, and performing risk behaviors on Internet.

Regarding severe cybervictimization, the univariate analyses showed that all the independent variables analyzed, except for gender and parental control, had a statistically significant effect on the probability of being a severe cybervictim (Table 2). Of them, only self-esteem and training and support at school were protective factors. The rest were risk factors. When statistically controlling for possible confounding factors by including all the independent variables analyzed in the regression model, parental control became statistically significant risk factor, whereas self esteem, shyness and social anxiety, training and support at school, and being a repeater ceased to be statistically significant predictors. Age, offline school victimization, and all the technological variables continued to be statistically significant risk factors (Table 2). Offline school victimization was, with a large difference, the greatest risk factor. The increase by one unit in this variable increases by 14.7 the probability of being a severe cybervictim, after controlling for the effect of the rest of the variables.

Discussion

The goal of this work was to analyze the predictive capacity of different socio-demographic, psychological, educational, family, and technological factors for the probability of suffering occasional or severe cybervictimization in a sample of Spanish adolescents.

With regard to the sociodemographic variables, the results obtained support the absence of a statistically significant relation between *gender* and degree of cybervictimization. Nevertheless, in the present study, we used as reference score the general score in the Cybervictimization Scale, which includes various types of aggression. It would be appropriate to delve into which specific types of cybervictimization are associated with one or the other gender. In contrast to our expectations, *age* was shown to be a slight, albeit statistically significant, risk factor both for being an occasional and a severe cybervictim. Drawing on the hypothesis of a curvilinear relation among these variables proposed by Tokunaga (2010) and on the characteristics of the sample in the present study (broad age range, broader as of 14 than as of 12 years), we did not expect to find a statistically significant relation or, in any case, we expected a decreasing tendency. Future studies should analyze in greater depth the possibility of a nonlinear relation between age and cybervictimization, as well as the peaking with age at which cybervictimization is more frequent.

With regard to the psychological variables, *self-esteem* was shown to be a statistically significant protective factor against occasional cybervictimization. In contrast, after including the possible confounding factors in the model, self-esteem was not a statistically significant predictor for being a severe cybervictim. Prior studies have shown that self-esteem is significantly associated with other variables in this study that have been shown to be statistically significant independent risk factors of cybervictimization, such as offline school victimization, frequency and type of use of Internet, or excessive parental control (Boudreault-Bouchard et al., 2013; Casas et al., 2013; Guerra, Williams, & Sadek, 2011). The other psychological variable analyzed in this study, *shyness and social anxiety*, seems to have an indirect effect on cybervictimization. Although the univariate analyses show that this variable statistically and significantly increases the risk of being a cybervictim—both occasional and severe—, after statistically controlling for the rest of the variables analyzed, we observed that shyness and social anxiety cease to have independent predictive capacity. There is prior evidence of a significant relation between shyness and social anxiety and some variables such as age, offline school victimization, parental control, or the frequency and type of use of the Internet (Caballo et al., 2008; Caplan, 2007; Lewis-Morrarty et al., 2012; Storch, Brassard, & Masia-Warner, 2003) that have been shown to be independent predictors of cybervictimization in this study.

Table 2 Results of the Multinomial Logistic Regression Analysis of the probability of being an Occasional Cybervictim and a Severe Cybervictim ($N = 3{,}180$).

	Occasional cybervictimization				Severe cybervictimization			
	Univariate analysis		Multivariate analysis		Univariate analysis		Multivariate analysis	
Variable	OR_{NA} (IC 95%)	*p*	OR_A (IC 95%)	*p*	OR_{NA} (IC 95%)	*p*	OR_A (IC 95%)	*p*
Sociodemographic data								
Gender (Girls)	1.29 (1.09-1.53)	.004	1.15 (0.91-1.45)	.244	1.23 (0.88-1.71)	.223	1.31 (0.80-2.14)	.286
Age	1.17 (1.10-1.25)	<.001	1.11 (1.02-1.21)	.015	1.44 (1.27-1.62)	<.001	1.31 (1.11-1.56)	.002
Psychological								
Self-esteem	0.60 (0.50-0.72)	<.001	0.78 (0.63-0.98)	.029	0.31 (0.24-0.41)	<.001	0.69 (0.47-1.02)	.063
Shyness and social anxiety	1.15 (1.02-1.28)	.019	0.97 (0.84-1.11)	.631	1.36 (1.10-1.69)	.005	0.81 (0.61-1.07)	.141
Educational								
Offline school victimization	2.88 (2.30-3.61)	<.001	2.82 (2.19-3.64)	<.001	11.99 (8.82-16.28)	<.001	14.72 (9.95-21.76)	<.001
Training and support at school	0.96 (0.83-1.11)	.539	1.02 (0.86-1.22)	.793	0.70 (0.53-0.91)	.008	1.10 (0.76-1.58)	.619
I repeated a course	1.14 (0.92-1.42)	.244	0.93 (0.71-1.22)	.621	1.60 (1.08-2.37)	.020	0.67 (0.40-1.14)	.140
Family								
Parental control	1.14 (1.01-1.29)	.033	1.43 (1.22-1.67)	<.001	1.08 (0.85-1.36)	.539	1.75 (1.27-2.42)	.001
Technological								
Risk behaviors	2.71 (2.29-3.20)	<.001	1.92 (1.57-2.34)	<.001	7.69 (5.87-10.07)	<.001	3.94 (2.80-5.54)	<.001
I own a cellphone	2.45 (1.79-3.35)	<.001	1.33 (0.87-2.02)	.189	3.26 (1.39-7.64)	.006	4.18 (1.02-17.14)	.047
In my free time, I participate in social networks	2.31 (1.91-2.80)	<.001	1.44 (1.13-1.82)	.003	4.72 (2.79-7.97)	<.001	2.16 (1.10-4.26)	.025
In my free time, I use instant messaging programs	3.29 (2.51-4.32)	<.001	2.14 (1.47-3.13)	<.001	8.16 (2.96-22.44)	<.001	6.07 (1.55-23.71)	.009
I play on-line with other people	1.20 (1.01-1.43)	.038	1.24 (0.98-1.57)	.068	1.87 (1.34-2.61)	<.001	1.76 (1.08-2.85)	.023
I usually use the Internet more than 3 hours a day from Monday to Friday for tasks other than homework	2.09 (1.66-2.62)	<.001	1.23 (0.92-1.64)	.172	5.20 (3.62-7.47)	<.001	2.09 (1.25-3.48)	.005
I usually use the Internet more than 3 hours a day during the weekend for tasks other than homework	2.09 (1.73-2.52)	<.001	1.36 (1.07-1.74)	.012	4.52 (3.19-6.40)	<.001	1.89 (1.15-3.10)	.012

[a]The reference group was the group of students who were not victims of any type of cybervictimization.
OR_{NA} = Unadjusted Odds Ratio; OR_A = Adjusted Odds Ratio.

With regard to the educational variables, *offline school victimization*, in accordance with our expectations, has been shown to be a risk factor for cybervictimization among adolescents. In fact, it is the variable with the most predictive capacity among those analyzed in this study. Being a victim of offline school violence increases the probability of being an occasional cybervictim, and, especially, of being a severe cybervictim. This result is added to the already abundant empirical evidence of the positive relation between both types of victimization (Cappadocia, Craig, & Pepler, 2013; Del Rey, Elipe et al., 2012; Kowalski et al., 2014; Melioli, Sirou, Rodgers, & Chabrol, 2015; Raskauskas & Stoltz, 2007; Sourander et al., 2010; Zhou et al., 2013). Some studies have found that, when the cybervictim knows the aggressor, in most cases, the aggressor belongs to the same school as the victim (Smith et al., 2008). On-line and offline victimization seem to form part of the same phenomenon, which manifests in a certain way according to the characteristics of the setting in which it occurs (Ortega & Núñez, 2012).

In contrast to our expectations, in this work, *Training and Support at School* was not a protective factor against being a cybervictim. The degree of cybervictimization reported by the adolescents of this study is independent of the training in coexistence and risks of Internet they reported having received. The successful results obtained by some published intervention programs (Del Rey, Casas et al., 2012; Garaigordobil, & Martínez-Valderrey, 2014; Gradinger et al., 2015; Palladino et al., 2012; Williford et al., 2013) cannot therefore be generalized to the training commonly being received by students. Hence, greater efforts are required in the design and administration of this type of interventions. Nevertheless, it should not be forgotten that prevention of cybervictimization is not only the responsibility of the schools, and that the families and mass media should also play an active role in the transmission of values and promotion of responsible use of cellphones and the Internet.

Low *academic performance* by itself, was not shown to be a significant predictor of suffering cybervictimization. Its positive and statistically significant relation with severe cybervictimization in the univariate analyses could be explained by its relationship with confounding factors like gender, self-esteem or, particularly, offline school victimization and the frequency and type of cellphone and Internet usage. Prior studies have shown that low academic performance is statistically related to offline school victimization (Espelage, Hong, Rao, & Low, 2013) and to problematic use of the Internet (Rial, Golpe, Gómez, & Barreiro, 2015).

With regard to the family variable analyzed, *parental control* obtained an unexpected result. According to prior available evidence, it had been hypothesized that parental control would not show a statistically significant relationship, or if it was related, it would be a protective factor. In contrast, the data obtained in this study show that parental control of Internet usage and of adolescents' contacts increases the probability of being a cybervictim slightly but significantly. The inefficacy of parental control to prevent cybervictimization could be explained by the fact that, although cybervictimization is positively related to the use of electronic devices, it is not necessary to use them in order to suffer this type of aggression. In addition, in adolescence, it is complicated to exert rigorous control and supervision of access to Internet content. Adolescents spend a lot of time with their group of friends so they can access Internet from other terminals or use mobile devices outside of family control. In contrast, excessive parental control may be a symptom of the scarce trust and communication between parents and children. Prior studies suggest that family communication quality constitutes an important protective factor against cybervictimization (Lereya, Samara, & Wolke, 2013; Park, Na, & Kim, 2014).

Lastly, in accordance with our expectations, the technological variables, both *frequency of use* and *risk behaviors* on Internet have been shown to be significant risk factors of cybervictimization. Both variables lead to greater risk of being a severe cybervictim than an occasional victim. The type of applications that spells greater risk of cybervictimization are the instant messaging programs, even more than social networks. Occasional cybervictimization is more strongly associated with frequent use of the Internet for tasks other than homework during the weekend than during the weekdays. In contrast, severe cybervictimization is associated with frequent use of Internet for tasks other than homework during all the week (even more, although slightly, during weekdays).

Summing up, the present study is a contribution to the identification of predictors of cybervictimization in adolescence, as well as of confounding factors. From a practical viewpoint, the results obtained suggest that prevention should begin before first grade of CSE, and that factors like offline school victimization, parental control, or the use of cellphones and Internet by adolescents are of particular interest for the prevention and the early identification of cybervictimization. Given their high degree of relationship with offline school victimization, prevention and treatment of cybervictimization should include common aspects such as education in values and social skills. To this should be added elements specifically referring to the use of cellphones and Internet. Children and adolescents should receive adequate digital literacy, showing them the advantages of electronic devices for communication, but also their potential dangers and how to prevent them. Training in these values, knowledge, and skills should be a responsibility shared by the school, the family, and society. With regard to the family sphere, the results obtained suggest that good communication among parents and children can be more efficacious than parental control of Internet usage and of the adolescent's contact list.

To conclude, we acknowledge some limitations of the study, such as those inherent to the use of self-reports, the difficulty of establishing causal relationships with the methodology employed, or the analysis of a sample limited to certain ages and geographical areas, which means that any generalization of the results of this study to different samples must be done with precaution.

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References

Álvarez-García, D., Dobarro, A., & Núñez, J. C. (2015). Validity and reliability of the Cybervictimization Questionnaire in secondary education students. *Aula Abierta*, *43*, 32–38. http://dx.doi.org/10.1016/j.aula.2014.11.001

Álvarez-García, D., Núñez, J. C., Álvarez, L., Dobarro, A., Rodríguez, C., & González-Castro, P. (2011). Violence through information and communication technologies in secondary students. *Anales de Psicología*, *27*, 221–231.

Beckman, L., Hagquist, C., & Hellström, L. (2013). Discrepant gender patterns for cyberbullying and traditional bullying - An analysis of Swedish adolescent data. *Computers in Human Behavior*, *29*, 1896–1903.

Bonanno, R. A., & Hymel, S. (2013). Cyber bullying and internalizing difficulties: Above and beyond the impact of traditional forms of bullying. *Journal of Youth and Adolescence*, *42*, 685–697. http://dx.doi.org/10.1007/s10964-013-9937-1

Boudreault-Bouchard, A. M., Dion, J., Hains, J., Vandermeerschen, J., Laberge, L., & Perron, M. (2013). Impact of parental emotional support and coercive control on adolescents' self-esteem and psychological distress: Results of a four-year longitudinal study. *Journal of Adolescence*, *36*, 695–704. http://dx.doi.org/10.1016/j.adolescence.2013.05.002

Buelga, S., Cava, M. J., & Musitu, G. (2010). Cyberbullying: Adolescent victimization through mobile phone and Internet. *Psicothema*, *22*, 784–789.

Caballo, V. E., Salazar, I. C., Irurtia, M. J., Arias, B., Hofmann, S. G., & CISO-A Research Team. (2008). Social anxiety in 18 nations: Sex and age differences. *Behavioral Psychology/Psicología Conductual*, *16*, 163–187.

Caplan, S. E. (2007). Relations among loneliness, social anxiety, and problematic internet use. *CyberPsychology & Behavior*, *10*, 234–242. http://dx.doi.org/10.1089/cpb.2006.9963

Cappadocia, M. C., Craig, W. M., & Pepler, D. (2013). Cyberbullying. Prevalence, stability, and risk factors during adolescence. *Canadian Journal of School Psychology*, *28*, 171–192.

Casas, J. A., Ruiz-Olivares, R., & Ortega-Ruiz, R. (2013). Validation of the Internet and Social Networking Experiences Questionnaire in Spanish adolescents. *International Journal of Clinical and Health Psychology,*, *13*, 40–48.

Del Rey, R., Casas, J. A., & Ortega, R. (2012). The ConRed Program, an Evidence-based Practice. *Comunicar*, *39*, 129–138. http://dx.doi.org/10.3916/C39-2012-03-03

Del Rey, R., Elipe, P., & Ortega-Ruiz, R. (2012). Bullying and cyberbullying: Overlapping and predictive value of the co-occurrence. *Psicothema*, *24*, 608–613.

Dobarro, A., & Álvarez-García, D. (2014). *Psychometric properties of the Risk Factors for Cybervictimization Questionnaire*. Manuscript submitted for publication.

Espelage, D. L., Hong, J. S., Rao, M. A., & Low, S. (2013). Associations between peer victimization and academic performance. *Theory into Practice*, *52*, 233–240. http://dx.doi.org/10.1080/00405841.2013.829724

Félix-Mateo, V., Soriano-Ferrer, M., Godoy-Mesas, C., & Sancho-Vicente, S. (2010). Cyberbullying in compulsory education. *Aula Abierta*, *38*, 47–58.

Garaigordobil, M. (2011). Prevalence and Consequences of Cyberbullying: A review. *International Journal of Psychology and Psychological Therapy*, *11*, 233–254.

Garaigordobil, M., & Martínez-Valderrey, V. (2014). *Cyberprogram 2.0. Programa de intervención para prevenir y reducir el ciberbullying*. Madrid: Pirámide.

Gradinger, P., Yanagida, T., Strohmeier, D., & Spiel, C. (2015). Prevention of cyberbullying and cyber victimization: Evaluation of the ViSC Social Competence Program. *Journal of School Violence*, *14*, 87–110. http://dx.doi.org/10.1080/15388220.2014.963231

Guerra, N. G., Williams, K. R., & Sadek, S. (2011). Understanding bullying and victimization during childhood and adolescence: A mixed methods study. *Child Development*, *82*, 295–310. http://dx.doi.org/10.1111/j. 1467-8624.2010.01556.x

Juvonen, J., & Gross, E. F. (2008). Extending the school grounds? - Bullying experiences in cyberspace. *Journal of School Health*, *78*, 496–505. http://dx.doi.org/10.1111/j. 1746-1561.2008.00335.x

Kowalski, R. M., Giumetti, G. W., Schroeder, A. N., & Lattanner, M. R. (2014). Bullying in the digital age: A critical review and meta-analysis of cyberbullying research among youth. *Psychological Bulletin*, *140*, 1073–1137. http://dx.doi.org/10.1037/a0035618

Lereya, S. T., Samara, M., & Wolke, D. (2013). Parenting behavior and the risk of becoming a victim and a bully/victim: A meta-analysis study. *Child Abuse & Neglect*, *37*, 1091–1108. http://dx.doi.org/10.1016/j.chiabu.2013.03.001

Lewis-Morrarty, E., Degnan, K. A., Chronis-Tuscano, A., Rubin, K. H., Cheah, C. S. L., Pine, D. S., Henderon, H. A., & Fox, N. A. (2012). Maternal over-control moderates the association between early childhood behavioral inhibition and adolescent social anxiety symptoms. *Journal of Abnormal Child Psychology*, *40*, 1363–1373.

Melioli, T., Sirou, J., Rodgers, R. F., & Chabrol, H. (2015). Étude du profil des personnes victimes d'intimidation réelle et d'intimidation sur Internet [Study of the profile of victims of real and Internet intimidation]. *Neuropsychiatrie de l'Enfance et de l'Adolescence*, *63*, 30–35. http://dx.doi.org/10.1016/j.neurenf.2014.07.007

Mesch, G. S. (2009). Parental mediation, online activities, and cyberbullying. *CyberPsychology & Behavior*, *12*(4), 387–393. http://dx.doi.org/10.1089/cpb.2009.0068

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*, 63–70. http://dx.doi.org/10.1016/j.childyouth.2011.08.032

Modecki, K. L., Minchin, J., Harbaugh, A. G., Guerra, N. G., & Runions, K. C. (2014). Bullying prevalence across contexts: A meta-analysis measuring cyber and traditional bullying. *Journal of Adolescent Health*, *55*, 602–611. http://dx.doi.org/10.1016/j.jadohealth.2014.06.007

Navarro, R., & Yubero, S. (2012). Impact of Social Anxiety, Social Skills and Cyberbullying on online Communication. *Escritos de Psicología*, *5*, 4–15.

Navarro, R., Yubero, S., Larrañaga, E., & Martínez, V. (2012). Children's cyberbullying victimization: Associations with social anxiety and social competence in a Spanish sample. *Child Indicators Research*, *5*, 281–295.

Nocentini, A., Calmaestra, J., Schultze-Krumbholz, A., Scheithauer, H., Ortega, R., & Menesini, E. (2010). Cyberbullying: Labels, behaviours and definition in three European countries. *Australian Journal of Guidance & Counselling*, *20*, 129–142.

Ortega, R., & Núñez, J. C. (2012). Bullying and cyberbullying: Research and intervention at school and social contexts. *Psicothema*, *24*, 603–607.

Palladino, B. E., Nocentini, A., & Menesini, E. (2012). Online and offline peer-led models against bullying and cyberbullying. *Psicothema*, *24*, 634–639.

Park, S., Na, E. Y., & Kim, E. M. (2014). The relationship between online activities, netiquette and cyberbullying. *Children and Youth Services Review*, *42*, 74–81.

Patchin, J. W., & Hinduja, S. (2010). Cyberbullying and self-esteem. *Journal of School Health*, *80*, 614–621. http://dx.doi.org/10.1111/j.1746-1561.2010.00548.x

Perestelo-Pérez, L. (2013). Standards on how to develop and report systematic reviews in Psychology and Health. *International Journal of Clinical and Health Psychology,*, *13*, 49–57, doi:10.1016/S1697-2600(13)70007-3.

Raskauskas, J., & Stoltz, A. D. (2007). Involvement in traditional and electronic bullying among adolescents. *Developmental Psychology, 43*, 564–575.

Rial, A., Golpe, S., Gómez, P., & Barreiro, C. (2015). Variables related with problematic internet use among adolescents. *Health and Addictions, 15*, 25–38.

Runions, K., Shapka, J. D., Dooley, J., & Modecki, K. (2013). Cyber-aggression and victimization and social information processing: Integrating the medium and the message. *Psychology of Violence*, *3*, 9–26. http://dx.doi.org/10.1037/a0030511

Smith, P. K., Mahdavi, J., Carvalho, M., Fisher, S., Russell, S., & Tippett, N. (2008). Cyberbullying: Its nature and impact in secondary school pupils. *Journal of Child Psychology and Psychiatry, 49*, 376–385.

Sourander, A., Klomek, A. B., Ikonen, M., Lindroos, J., Luntamo, T., Koskelainen, M., Ristkari, T., & Helenius, H. (2010). Psychosocial risk factors associated with cyberbullying among adolescents. A population-based study. *Archives of General Psychiatry*, *67*, 720–728. http://dx.doi.org/10.1001/archgenpsychiatry.2010.79

Storch, E. A., Brassard, M. R., & Masia-Warner, C. L. (2003). The relationship of peer victimization to social anxiety and loneliness in adolescence. *Child Study Journal, 33*, 1–18.

Tillfors, M., Persson, S., Willén, M., & Burk, W. J. (2012). Prospective links between social anxiety and adolescent peer relations. *Journal of Adolescence*, *35*, 1255–1263. http://dx.doi.org/10.1016/j.adolescence.2012.04.008

Tokunaga, R. S. (2010). Following you home from school: A critical review and synthesis of research on cyberbullying victimization. *Computers in Human Behavior, 26*, 277–287.

Walrave, M., & Heirman, W. (2011). Cyberbullying: Predicting victimisation and perpetration. *Children & Society*, *25*, 59–72. http://dx.doi.org/10.1111/j. 1099-0860.2009.00260.x

Williford, A., Elledge, L. C., Boulton, A. J., DePaolis, K. J., Little, T. D., & Salmivalli, C. (2013). Effects of the KiVa Antibullying Program on cyberbullying and cybervictimization frequency among Finnish youth. *Journal of Clinical Child & Adolescent Psychology*, *42*, 820–833. http://dx.doi.org/10.1080/15374416.2013.787623

Yang, S. J., Stewart, R., Kim, J. M., Kim, S. W., Shin, I. S., Dewey, M. E., Maskey, S., & Yoon, J. S. (2013). Differences in predictors of traditional and cyber-bullying: A 2-year longitudinal study in Korean school children. *European Child & Adolescent Psychiatry, 22*, 309–318.

Zhou, Z., Tang, H., Tian, Y., Wei, H., Zhang, F., & Morrison Ch, M. (2013). Cyberbullying and its risk factors among Chinese high school students. *School Psychology International*, *34*, 630–647. http://dx.doi.org/10.1177/0143034313479692