

## Sex and grade differences in cyberbullying of Spanish students of 5<sup>th</sup> and 6<sup>th</sup> grade of Primary Education

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**Título:** Diferencias de sexo y curso en cyberbullying en estudiantes españoles de 5º y 6º de Educación Primaria.

**Resumen:** El acoso a través de las tecnologías informáticas o cyberbullying es un fenómeno de aparición reciente, pero de gran impacto en el bienestar de los menores. El objetivo del presente estudio es analizar las diferencias de cyberbullying (víctimas, acosadores y observadores) atendiendo al sexo y curso. La muestra estuvo compuesta por 548 estudiantes de 5º y 6º de educación primaria con un rango de edad de 10 a 13 años. Los resultados indican que las chicas son significativamente más victimizadas que los chicos, y puntúan más alto en cinco conductas de victimización, siete de acoso y cuatro de observación de ciberacoso. Los alumnos de los dos cursos presentan similares puntuaciones para ser víctima, acosador y observador de cyberbullying. No obstante, los alumnos de 6º curso son más victimizados a través de videos trucados y amenazas de muerte y realizan más conductas relacionadas con chantajes para no desvelar secretos, mientras que los de 5º curso realizan más chantajes o amenazas a través de llamadas o mensajes. Con relación a los observadores, son los estudiantes de 5º curso los que afirman en mayor medida observar llamadas anónimas y de acoso sexual. Las evidencias halladas se discuten señalando las implicaciones prácticas para la elaboración de programas de intervención.

**Palabras clave:** ciberacoso, sexo, curso, educación primaria.

**Abstract:** Cyberbullying is a recent phenomenon that has a great impact on the development and well-being of children. The objective of the present study is to analyze the differences in cyberbullying (victims, bullies, and bystanders) according to the sex and grade of the participants. The sample consisted of 548 students from 5<sup>th</sup> and 6<sup>th</sup> grade of primary education. The results indicate that girls are significantly more victimized than boys, and score higher on five victimizing behaviors, seven bullying behaviors, and four behaviors of observation of cyberbullying. The students of the two courses present similar scores in being a victim, a bully, and a bystander of cyberbullying. However, 6<sup>th</sup>-graders are more victimized through manipulated videos and death threats and perform more behaviors related to blackmailing to not reveal secrets through the Internet, whereas 5<sup>th</sup>-graders stand out due to more blackmail or threats through calls or messages. In relation to the bystanders, 5<sup>th</sup>-graders claim they observe more anonymous calls and sexual harassment. The evidence found is discussed, establishing possible directions for future studies, as well as the practical implications for the development of effective intervention programs.

**Keywords:** cyberbullying, sex, grade, primary education.

### Introduction

Each year, millions of youth worldwide become victims of some type of violence (Sastre, 2016). Within the broad spectrum of violence, one of most prevalent forms and with greater impact on childhood and adolescence is school harassment or bullying (Garaigordobil & Oñederra, 2010). However, this form of face-to-face bullying has made room for other forms carried out through Information and Communication Technology (ICT) due, among other reasons, to the generalized use of electronic devices and their consumption by minors (Arnaiz, Cerezo, Giménez, & Maquilón, 2016). Likewise, there are other factors that predispose people to participate in these events, including being a member of an ethnic minority (Rice et al, 2015), lack of communication with parents (Sasson & Mesch, 2014), or not following the mainstream rules or values (Davis, Randall, Ambrose, & Orand, 2015).

Cybernetic harassment, or cyberbullying, is a phenomenon defined as repeated and intentional harm carried out by a minor or group of minors towards another minor through technological means (Salmerón, Eddy, & Morales, 2015). Bullying occurs within the school walls, but cyberbullying has no borders, so there is a continuity of the abuse no matter where the child is.

During the last few years, cyberbullying has aroused the interest of the scientific community, given the alarming prevalence rates of the participation roles: victim, bully, and bystander. In particular, Garaigordobil (2013a) in a sample of 3026 Spanish high school students, found 69.8% of involvement in cyberbullying, highlighting 30.2% as cybervictims, 15.5% as aggressors, and 65.1% as bystanders. Similarly, a recent study with a representative sample of 21487 students aged 12 to 16 reported that, nationwide, the autonomous communities with a higher incidence in cybervictimization were Andalusia (10.4%), Melilla (7.8%), Balears (7.4%) and Murcia (7.2%) (Sastre, 2016). Regarding primary education samples, Delgado, González, Vicent, Gomis, and Inglés (2014) found participation rates that reached 16.6% in the case of the victims, 6.9% in bullies, and 31.7% in observation behaviors in 548 students aged 10 to 13.

Cyberbullying behaviors have negative implications for children. In this sense, victims, bullies, and bystanders all present psychosocial (e.g., anxiety, psychosomatic problems, stress), psycho-emotional (e.g., low self-concept, low satisfaction with life, lack of emotional control), educational (e.g., truancy, poor performance, lack of concentration), and behavioral problems (e.g., consumption of tobacco, alcohol, and drugs, eating problems, etc.) (Batrina, 2014; Delgado et al., 2014; Garaigordobil, 2014; Giménez, 2015; Smith, 2015), with suicidal ideation being that of greatest concern (Batrina, 2014; Garaigordobil, 2014; Giménez, 2015; Sastre, 2016). In addition, recent studies have pointed out that the manifestation of cyberbullying and its impact vary depending on soci-

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odemographic variables such as sex (Barlett & Coyne, 2014; Giménez, 2015; Navarro, 2016; Sabater & López-Hernández, 2015) and age/grade (Álvarez-García, Dobarro, & Núñez, 2015; Balakrishnan, 2015; Garaigordobil, 2015b; Giménez, 2015).

Regarding the variable sex, almost all studies to date have focused on samples from secondary education. Thus, some have noted the absence of sex differences (Álvarez-García et al., 2015; Navarro, Ruiz-Oliva, Larrañaga, & Yubero, 2015), whereas others have found greater involvement of girls as victims and of boys as bullies (Conell, Schell-Busey, Pearce, & Negro, 2014; Schultze-Krumbholz et al., 2015).

Regarding samples of primary education, the few available findings again reveal some controversy. A recent review (Navarro, 2016) pointed out that girls had an increased risk of victimization (Conell et al., 2014; Navarro & Jasinski, 2013; Schultze-Krumbholz et al., 2015), whereas boys participated more frequently as cyberbullies (Kokkinos, Antoniadou, Dalara, Koufouzou, & Papatziki, 2013; Navarro & Jasinski, 2013; Yang, Lin, & Chen, 2014). However, other studies reported a greater participation of boys in the roles of victim and bully (Pelfrey & Weber, 2013; Yang et al., 2013).

Regarding the variable age, the results have been inconclusive. Whereas some investigations have pointed out that this variable was nonsignificant when determining differences in cyberbullying behaviors (Brown, Demaray, & Secord, 2014; Giménez, Maquilón, & Arnaiz, 2014; Varela, Pérez, Astrudillo, & Lecanelier, 2014), other studies found the existence of a peak in the means of cyberbullying behaviors in the first years of secondary education (12-14 years), subsequently decreasing (Balakrishnan, 2015; Giménez, Maquilón, & Arnaiz, 2015; Kowalski, Guimetti, Shroeder, & Lattanner, 2014; Yang et al., 2014).

The study carried out by Garaigordobil (2015b) with 3026 Spanish students aged 12 to 18 years through the *Screening for Peer Bullying* (Garaigordobil, 2013b) deserves special attention. It was found that: (a) the role of victim across the studied age range remained stable; (b) the percentage of bullying was stable in 10 of the 15 behaviors measured (disseminating private photos/videos, blackmailing/ threatening through calls or messages, sexually harassing via mobile phone or Internet, password theft and death threats); (c) the prevalence of the role of bystander increased as a function of age in 12 of the 15 behaviors evaluated (offensive and insulting messages and/or calls, dissemination of private photos and videos, anonymous calls, impersonation, password theft, manipulating photos and videos, isolation in social networks, blackmail, threats and defamation).

Regarding primary education students, there are currently very few studies specifically focused on this school stage. García-Fernández, Romera, and Ortega (2016), in a sample of 1278 Spanish students aged 10 to 13, found that 5.5% considered themselves a victim, 9.3% an aggressor, and 3.4% a bully-victim. In view of this, it is considered that the rate of cyberbullying begins to increase as of the last years of primary

school (Balakrishnan, 2015; Giménez, 2015; Polo del Río, León del Barco, Felipe, & Gómez, 2014; Yang et al., 2014).

Taking into account that cyberbullying is a relatively recent phenomenon, there are as yet no conclusive findings regarding sociodemographic variables. Similarly, evidence in samples of primary education students is scarce, even taking into account that this type of behavior begins in the last years of primary education. In addition, previous studies have left open several issues about the bystander role, due to the decision bystanders make (to take sides with the aggressor or the victim), which plays a crucial role in the perpetuation or cessation of the bullying situation (Salmivalli, 2010). Therefore, this research proposes to analyze the differences in cyberbullying behaviors of victims, bullies, and bystanders by sex and grade in a sample of students from 5<sup>th</sup> and 6<sup>th</sup> grade of primary education.

Drawing on the previous empirical evidence, we expect to find the existence of sex differences in cyberbullying, especially of girls in the role of victim (Hypothesis 1) and of boys in that of bully (Hypothesis 2). Regarding the role of bystander, we expect that girls will observe more behaviors of cyberbullying (Hypothesis 3). Regarding grade, we expect that the victims' scores will be stable in both grades (Hypothesis 4), and there will be a significant increase in bullying behaviors in 6<sup>th</sup> grade (Hypothesis 5). As to the role of bystander, we expect that older students' scores will be higher (Hypothesis 6).

## Method

### Design

The present study is a cross-sectional study that used a nonexperimental quantitative methodology. Likewise, we note that it fulfills the requirements of an *ex post facto* descriptive design, as the characteristics that the sample already possesses were analyzed.

### Participants

The reference population included students of 5<sup>th</sup> and 6<sup>th</sup> grade of primary education from the province of Alicante during the 2014-2015 academic year. Of the 108,002 students enrolled in primary schools of the province, we randomly selected four public schools and two concerted schools, calculating approximately 90 students for each school. The sample was made up of 548 students (50.2% boys) with an age range of 10 to 13 years ( $M = 10.95$ ,  $SD = 0.75$ ). The distribution of the sample according to grade was: 276 (50.4%) students from 5<sup>th</sup> grade and 272 (49.6%) of students from 6<sup>th</sup> grade of primary education. The chi-square test was used to analyze the homogeneity of the sample according to sex and grade, finding no statistically significant differences in the four groups of Sex x Grade ( $\chi^2 = 2.50$ ,  $p = .11$ ).

## Instruments

*Cyberbullying. Screening for Peer Bullying* (Garaigordobil, 2013b)

This is a self-report that assesses both face-to-face bullying (Bullying subscale) and electronic bullying (Cyberbullying subscale). In the present study, we only used the Cyberbullying subscale. This assesses 15 electronic bullying behaviors (e.g., sending offensive and insulting messages, making offensive calls, disseminating photos or videos on YouTube, making frightening anonymous calls, blackmailing or threatening someone) to identify victims, bullies, bystanders and bully-victims (although in this study, we only measured the first three). It consists of 45 questions that are rated on a 4-point Likert-type scale ranging from 0 (*never*) to 3 (*always*). The response system is triangular, as the evaluated person should indicate whether he/she has suffered bullying behaviors as a victim, has perpetrated them as a bully, or has seen another person performing them or known about their occurrence (bystander) in the past year.

The psychometric studies carried out by the original authors confirm the adequate internal consistency of the test ( $\alpha = .91$ ) and a three-factor structure (victim, bully, and bystander) that explains 40.15% of the variance (Garaigordobil, Aliri, Maganto, Bernarás, & Jaureguizar, 2014). Similarly, other previous publications confirm the reliability and validity of the instrument (Garaigordobil, 2013a; Garaigordobil et al., 2014; Garaigordobil 2015a; Garaigordobil, 2015b). The reliability indices of the subscales of the cyberbullying questionnaire in the study sample were excellent: victimization ( $\alpha = .94$ ), bullying ( $\alpha = .96$ ) and observation ( $\alpha = .95$ ).

## Procedure

An interview was conducted with the principals and psychologists of the participating schools to present the goals of the study, describe the instrument, request the relevant permissions, and promote their collaboration. Subsequently, a meeting was held with the parents of the minors to explain the study and request their explicit written informed consent, authorizing their children to participate in the investigation.

The questionnaire was completed collectively and voluntarily in the classrooms during a half class session, ensuring the participants' anonymity. The researchers were present during the administration of the tests to clarify possible doubts and verify the correct and independent completion of the questionnaire.

## Statistical analysis

After confirming sample normality and variance equality, analyses of variance (ANOVA) were conducted to determine differences in cyberbullying by sex and grade, firstly, of the total score of the subscales of victimization, bullying, and observation and, secondly, the scores of the different cyberbullying behaviors. Lastly, and in order to avoid incorrect detection of statistically significant differences, the effect size was calculated through the  $d$  index proposed by Cohen (1988), taking into account the interpretation of the author:  $0.20 \leq d < 0.50$  is a small effect size, whereas  $0.50 \leq d < 0.80$  is moderate or medium, and  $d \geq 0.80$  is large or high.

## Results

### Differences in cyberbullying by sex

The analysis of the sex differences of the total scores of cyberbullying (victimization, bullying, and observation) indicated that girls ( $M = 15.61$ ,  $SD = 12.07$ ), as compared with boys ( $M = 13.29$ ,  $SD = 12.74$ ), reported significantly more victimization,  $F(435) = 3.83$ ;  $p = .05$ ;  $d = -0.19$ , whereas the degree of cyberbullying perpetration,  $F(435) = 2.47$ ,  $p = .12$ , and observation,  $F(435) = 1.10$ ,  $p = .30$ , is similar among boys [bullying ( $M = 14.22$ ,  $SD = 14.18$ ), observation ( $M = 14.73$ ,  $SD = 13.99$ )] and girls [bullying ( $M = 16.33$ ,  $SD = 13.57$ ), observation ( $M = 16.03$ ,  $SD = 12.34$ )].

In terms of the analysis of the items of the questionnaire by sex, statistically significant differences in the three participation roles were observed. In the case of victimization behaviors, compared with the boys, the girls claimed they were victims of more aggressions disseminated on the network, anonymous calls, blackmail, impersonation, and password theft (Table 1). In all cases, the size of the effect was small.

**Table 1.** Differences in cyberbullying victimization by sex.

		$M(SD)$	$F(435)$	$p$	$d$
1. Offensive/insulting messages by mobile phone or Internet	Boys	0.72(0.97)	0.53	.476	ns
	Girls	0.79(0.99)			
2. Offensive/insulting calls by mobile phone or Internet	Boys	0.45(0.85)	1.79	.181	ns
	Girls	0.56(0.86)			
3. Recording and publishing aggression on Internet	Boys	1.08(1.30)	6.24	.013	-0.24
	Girls	1.40(1.34)			
4. Dissemination of private photos/videos by mobile phone or Internet	Boys	0.16(0.48)	0.01	.940	ns
	Girls	0.16(0.15)			
5. Dissemination of stolen photos by mobile phone or Internet	Boys	1.45(1.47)	2.16	.143	ns
	Girls	1.65(1.42)			
6. Anonymous frightening calls	Boys	0.90(1.11)	8.42	.004	-0.28

		<i>M</i> ( <i>SD</i> )	<i>F</i> (435)	<i>p</i>	<i>d</i>
	Girls	1.22(1.20)			
7. Blackmail or threats through calls or messages	Boys	1.50(1.47)	5.43	.020	-0.22
	Girls	1.83(1.44)			
8. Sexual harassment by mobile phone or Internet	Boys	1.00(1.20)	1.53	.217	ns
	Girls	1.15(1.20)			
9. Impersonation and mocking in the blog	Boys	1.23(1.31)	6.44	.011	-0.24
	Girls	1.55(1.34)			
10. Blog or e-mail password theft	Boys	0.94(1.11)	8.34	.004	-0.27
	Girls	1.26(1.19)			
11. Disseminating manipulated and humiliating videos on Internet	Boys	0.11(0.45)	0.69	.407	ns
	Girls	0.15(0.51)			
12. Bullying in social networks	Boys	0.87(1.08)	1.25	.265	ns
	Girls	0.99(1.05)			
13. Blackmailing with revealing secrets on the Internet	Boys	1.12(1.28)	0.06	.810	ns
	Girls	1.09(1.20)			
14. Threats of death through ICT	Boys	0.36(0.70)	1.04	.308	ns
	Girls	0.29(0.65)			
15. Defamation and rumors via the Internet	Boys	1.39(1.14)	2.58	.109	ns
	Girls	1.60(1.39)			

Note. ns = nonsignificant.

Regarding the bully role, the ANOVAs indicated that the girls performed significantly more behaviors such as offensive/insulting calls, recording and disseminating attacks, disseminating private videos/photos, blackmail and threats on

the Internet, sexual harassment by mobile phone or Internet, password theft, as well as defamation and rumors (see Table 2). However, the differences found had a small effect size.

**Table 2.** Differences in cyberbullying behavior by sex.

		<i>M</i> ( <i>SD</i> )	<i>F</i> (435)	<i>p</i>	<i>d</i>
1. Offensive/insulting messages by mobile phone or Internet	Boys	1.13(1.28)	0.37	.546	ns
	Girls	1.20(1.21)			
2. Offensive/insulting calls by mobile phone or Internet	Boys	1.16(1.28)	5.69	.018	-0.23
	Girls	1.45(1.28)			
3. Recording and publishing aggression on Internet	Boys	0.26(0.64)	4.36	.037	-0.20
	Girls	0.40(0.78)			
4. Dissemination of private photos/videos by mobile phone or Internet	Boys	0.77(1.06)	7.46	.007	-0.26
	Girls	1.06(1.14)			
5. Dissemination of stolen photos by mobile phone or Internet	Boys	0.97(1.18)	1.82	.178	ns
	Girls	1.13(1.20)			
6. Anonymous frightening calls	Boys	1.39(1.43)	0.99	.319	ns
	Girls	1.27(1.27)			
7. Blackmail or threats through calls or messages	Boys	0.79(1.06)	8.41	.004	-0.28
	Girls	1.10(1.18)			
8. Sexual harassment by mobile phone or Internet	Boys	1.02(1.22)	4.90	.027	-0.21
	Girls	1.29(1.28)			
9. Impersonation and mocking in the blog	Boys	1.00(1.16)	2.46	.118	ns
	Girls	1.17(1.22)			
10. Blog or e-mail password theft	Boys	1.06(1.21)	5.63	.018	-0.23
	Girls	1.35(1.27)			
11. Disseminating manipulated and humiliating videos on Internet	Boys	1.38(1.41)	2.54	.112	ns
	Girls	1.59(1.41)			
12. Bullying in social networks	Boys	1.15(1.30)	1.74	.188	ns
	Girls	1.31(1.33)			
13. Blackmailing with revealing secrets on the Internet	Boys	0.20(0.58)	0.13	.718	ns
	Girls	0.18(0.45)			
14. Threats of death through ICT	Boys	1.06(1.30)	8.96	.063	ns
	Girls	0.92(1.06)			
15. Defamation and rumors via the Internet	Boys	0.86(1.10)	7.81	.006	-0.26
	Girls	1.17(1.19)			

Note. ns = nonsignificant.

Regarding the observation of cyberbullying behaviors, the girls obtained higher scores in the observation behaviors focused on offensive/insulting calls, aggression and video dissemination, dissemination of photos/videos, sexual har-

assment, password theft, as well as defamation and rumors via the Internet (Table 3). The magnitude of the differences was very small.

**Table 3.** Differences in observation of cyberbullying behavior by sex.

		<i>M</i> ( <i>SD</i> )	<i>F</i> (435)	<i>p</i>	<i>d</i>
1. Offensive/insulting messages by mobile phone or Internet	Boys	1.32(1.34)	1.83	.177	ns
	Girls	1.49(1.27)			
2. Offensive/insulting calls by mobile phone or Internet	Boys	1.12(1.29)	0.03	.857	ns
	Girls	1.14(1.19)			
3. Recording and publishing aggression on Internet	Boys	0.73(1.00)	0.66	.416	ns
	Girls	0.66(0.87)			
4. Dissemination of private photos/videos by mobile phone or Internet	Boys	1.15(1.27)	5.40	.021	-0.22
	Girls	1.44(1.29)			
5. Dissemination of stolen photos by mobile phone or Internet	Boys	0.73(1.06)	0.02	.623	ns
	Girls	0.78(0.98)			
6. Anonymous frightening calls	Boys	0.69(0.94)	5.55	.019	-0.23
	Girls	0.91(0.97)			
7. Blackmail or threats through calls or messages	Boys	1.31(1.38)	0.85	.356	ns
	Girls	1.19(1.26)			
8. Sexual harassment by mobile phone or Internet	Boys	0.71(1.03)	7.75	.006	-0.27
	Girls	1.00(1.11)			
9. Impersonation and mocking in the blog	Boys	1.45(1.44)	4.44	.036	-0.20
	Girls	1.74(1.40)			
10. Blog or e-mail password theft	Boys	1.16(1.24)	0.23	.634	ns
	Girls	1.22(1.20)			
11. Disseminating manipulated and humiliating videos on Internet	Boys	0.92(1.50)	0.19	.666	ns
	Girls	0.88(1.06)			
12. Bullying in social networks	Boys	0.14(0.41)	0.03	.866	ns
	Girls	0.13(0.45)			
13. Blackmailing with revealing secrets on the Internet	Boys	1.05(1.23)	3.76	.053	ns
	Girls	1.28(1.26)			
14. Threats of death through ICT	Boys	0.82(1.02)	1.20	.291	ns
	Girls	0.92(0.99)			
15. Defamation and rumors via the Internet	Boys	1.36(1.42)	0.34	.558	ns
	Girls	1.29(1.23)			

Note. ns = nonsignificant.

### Differences in cyberbullying by grade

The results revealed no statistically significant differences in cyberbullying in the total score of victimization,  $F(437) = 0.26$ ,  $p = .61$ , bullying,  $F(437) = 0.03$ ,  $p = .86$ , and observation,  $F(437) = 0.03$ ,  $p = .86$ , among the 5<sup>th</sup>-graders [victimization ( $M = 14.18$ ,  $SD = 13.12$ ), bullying ( $M = 15.20$ ,  $SD = 14.76$ ), observation ( $M = 15.29$ ,  $SD = 13.94$ )] and 6<sup>th</sup>-graders of primary education [victimization ( $M = 14.79$ ,  $SD$

$= 11.72$ ), bullying ( $M = 15.44$ ,  $SD = 12.95$ ), observation ( $M = 15.52$ ,  $SD = 12.38$ )].

However, the study of the mean scores of the items showed that the 6<sup>th</sup>-graders reported significantly more victimization behaviors related to the dissemination of manipulated and humiliating videos, as well as death threats through ICTs (Table 4), although the magnitude of these differences was small.

**Table 4.** Differences in cyberbullying victimization by grade.

		<i>M</i> ( <i>SD</i> )	<i>F</i> (437)	<i>p</i>	<i>d</i>
1. Offensive/insulting messages by mobile phone or Internet	5th Primary	0.80(1.03)	1.15	.284	ns
	6th Primary	0.70(0.92)			
2. Offensive/insulting calls by mobile phone or Internet	5th Primary	0.48(0.84)	0.45	.501	ns
	6th Primary	0.53(0.87)			
3. Recording and publishing aggression on Internet	5th Primary	1.28(1.37)	0.25	.614	ns
	6th Primary	1.21(1.29)			
4. Dissemination of private photos/videos by mobile phone or Internet	5th Primary	0.13(0.46)	1.64	.201	ns
	6th Primary	0.19(0.47)			
5. Dissemination of stolen photos by mobile phone or Internet	5th Primary	1.49(1.47)	0.95	.331	ns
	6th Primary	1.62(1.42)			

		<i>M</i> ( <i>SD</i> )	<i>F</i> (437)	<i>p</i>	<i>d</i>
6. Anonymous frightening calls	5th Primary	1.16(1.26)	3.34	.068	ns
	6th Primary	0.96(1.06)			
7. Blackmail or threats through calls or messages	5th Primary	1.58(1.47)	1.79	.182	ns
	6th Primary	1.76(1.45)			
8. Sexual harassment by mobile phone or Internet	5th Primary	1.06(1.22)	0.12	.732	ns
	6th Primary	1.10(1.19)			
9. Impersonation and mocking in the blog	5th Primary	1.35(1.35)	0.42	.515	ns
	6th Primary	1.44(1.31)			
10. Blog or e-mail password theft	5th Primary	1.15(1.23)	0.06	.457	ns
	6th Primary	1.07(1.09)			
11. Disseminating manipulated and humiliating videos on Internet	5th Primary	0.06(0.33)	10.90	.001	-0.31
	6th Primary	0.21(0.59)			
12. Bullying in social networks	5th Primary	0.91(1.07)	0.27	.607	ns
	6th Primary	0.96(1.06)			
13. Blackmailing with revealing secrets on the Internet	5th Primary	1.12(1.29)	0.06	.812	ns
	6th Primary	1.09(1.18)			
14. Threats of death through ICT	5th Primary	0.22(0.57)	11.53	.001	-0.32
	6th Primary	0.43(0.74)			
15. Defamation and rumors via the Internet	5th Primary	1.43(1.43)	0.97	.324	ns
	6th Primary	1.56(1.37)			

Note. ns = nonsignificant.

Regarding the role of bully, the 5<sup>th</sup>-graders presented significantly higher scores in the perpetration of threats through calls or messages, whereas the 6<sup>th</sup>-graders obtained higher

scores in the perpetration of blackmail for not disclosing intimate aspects on the Internet (see Table 5). The differences found were very small.

**Table 5.** Differences in cyberbullying behavior by grade.

		<i>M</i> ( <i>SD</i> )	<i>F</i> (437)	<i>p</i>	<i>d</i>
1. Offensive/insulting messages by mobile phone or Internet	5th Primary	1.19(1.31)	0.24	.627	ns
	6th Primary	1.13(1.17)			
2. Offensive/insulting calls by mobile phone or Internet	5th Primary	0.48(0.84)	1.01	.316	ns
	6th Primary	0.53(0.84)			
3. Recording and publishing aggression on Internet	5th Primary	1.28(1.37)	1.63	.203	ns
	6th Primary	1.21(1.29)			
4. Dissemination of private photos/videos by mobile phone or Internet	5th Primary	0.85(1.10)	1.98	.160	ns
	6th Primary	1.00(1.11)			
5. Dissemination of stolen photos by mobile phone or Internet	5th Primary	1.16(1.29)	3.42	.054	ns
	6th Primary	0.94(1.07)			
6. Anonymous frightening calls	5th Primary	1.27(1.36)	0.86	.355	ns
	6th Primary	1.39(1.34)			
7. Blackmail or threats through calls or messages	5th Primary	1.10(1.24)	7.36	.007	0.26
	6th Primary	0.80(0.99)			
8. Sexual harassment by mobile phone or Internet	5th Primary	1.13(1.29)	0.26	.609	ns
	6th Primary	1.19(1.23)			
9. Impersonation and mocking in the blog	5th Primary	1.06(1.21)	0.27	.606	ns
	6th Primary	1.12(1.18)			
10. Blog or e-mail password theft	5th Primary	1.11(1.25)	2.91	.089	ns
	6th Primary	1.31(1.24)			
11. Disseminating manipulated and humiliating videos on Internet	5th Primary	1.47(1.45)	0.08	.776	ns
	6th Primary	1.51(1.38)			
12. Bullying in social networks	5th Primary	1.25(1.35)	0.04	.844	ns
	6th Primary	1.22(1.29)			
13. Blackmailing with revealing secrets on the Internet	5th Primary	0.12(0.40)	8.34	.004	-0.28
	6th Primary	0.27(0.61)			
14. Threats of death through ICT	5th Primary	0.86(1.20)	0.16	.688	ns
	6th Primary	0.91(1.18)			
15. Defamation and rumors via the Internet	5th Primary	1.11(1.24)	2.76	.097	ns
	6th Primary	0.93(1.05)			

Note. ns = nonsignificant.

Lastly, the 5<sup>th</sup>-graders, compared with the 6<sup>th</sup>-graders, observed significantly more behaviors of cyberbullying such as frightening anonymous calls as well as sexual harassment

via mobile phone or the Internet (Table 6), although the effect size was small.

**Table 6.** Differences in observation of cyberbullying by grade.

		<i>M</i> ( <i>SD</i> )	<i>F</i> (437)	<i>p</i>	<i>d</i>
1. Offensive/insulting messages by mobile phone or Internet	5th Primary	1.40(1.33)	0.03	.865	ns
	6th Primary	1.42(1.28)			
2. Offensive/insulting calls by mobile phone or Internet	5th Primary	1.78(1.29)	0.57	.453	ns
	6th Primary	1.09(1.19)			
3. Recording and publishing aggression on Internet	5th Primary	0.62(0.90)	3.33	.069	ns
	6th Primary	0.78(0.98)			
4. Dissemination of private photos/videos by mobile phone or Internet	5th Primary	1.30(1.34)	0.00	.995	ns
	6th Primary	1.30(1.23)			
5. Dissemination of stolen photos by mobile phone or Internet	5th Primary	0.72(0.98)	0.50	.482	ns
	6th Primary	0.79(1.07)			
6. Anonymous frightening calls	5th Primary	0.92(1.04)	6.75	.010	0.25
	6th Primary	0.68(0.85)			
7. Blackmail or threats through calls or messages	5th Primary	1.23(1.34)	0.02	.885	ns
	6th Primary	1.25(1.30)			
8. Sexual harassment by mobile phone or Internet	5th Primary	1.05(1.20)	14.08	<.001	0.36
	6th Primary	0.66(0.91)			
9. Impersonation and mocking in the blog	5th Primary	1.51(1.45)	1.63	.203	ns
	6th Primary	1.68(1.40)			
10. Blog or e-mail password theft	5th Primary	1.20(1.27)	0.04	.837	ns
	6th Primary	1.18(1.16)			
11. Disseminating manipulated and humiliating videos on Internet	5th Primary	0.80(1.10)	4.08	.064	ns
	6th Primary	1.01(1.11)			
12. Bullying in social networks	5th Primary	0.10(0.35)	2.53	.113	ns
	6th Primary	0.16(0.41)			
13. Blackmailing with revealing secrets on the Internet	5th Primary	1.09(1.24)	1.77	.184	ns
	6th Primary	1.25(1.25)			
14. Threats of death through ICT	5th Primary	0.88(1.07)	0.03	.868	ns
	6th Primary	0.87(1.01)			
15. Defamation and rumors via the Internet	5th Primary	1.30(1.35)	0.09	.765	ns
	6th Primary	1.34(1.31)			

*Note.* ns = nonsignificant.

## Discussion and conclusions

This study analyzed the differences of cyberbullying (victimization, bullying, and observation) by sex and grade in Spanish students of 5<sup>th</sup> and 6<sup>th</sup> grade of primary education.

In terms of the variable sex, although a priori, significant differences were only observed in favor of the girls in the role of victim, after analysis of the questionnaire items, sex differences in all three participation roles were found. These findings confirm the first hypothesis, as girls were more victimized than boys both in the total score and in the independent analysis of five of the items. These results are consistent with previous research that highlights the greater participation of girls in the role of victim (Barlett & Coyne, 2014; Conell et al., 2014; Schultze-Krumbholz et al., 2015; Wachs, Junger, & Sittichai, 2015). This finding can be explained according to the preferences of boys and girls in relation to the use of ICT. Thus, whereas boys associate the use of electronic devices with action activities (e.g., leisure and games), for girls, their function is more relational (e.g., use of

social networks) (Del Río, Sabada, & Bringué, 2010). Therefore, girls are more likely to participate in these events.

The results do not confirm the second hypothesis of the study, as girls stood out in the performance of certain bullying behaviors. In particular, girls obtained higher scores in 7 of the 15 analyzed behaviors. These findings are contrary to investigations that found boys' greater participation in bullying behaviors (Kokkinos et al., 2013; Navarro & Jasinski, 2013; Yang et al., 2014), but they are consistent with the works that establish greater participation by girls in behaviors of victimization and bullying (Barboza, 2015; Kowalski et al., 2014; Smith, 2015). In this regard, García (2013) points out that indirect bullying (e.g., spreading rumors and lies) appears more frequently in girls, whereas direct bullying (e.g., physical violence) is more characteristic of boys. Therefore, it can be stated that the indirect bullying that is characteristic of girls has adapted to new forms of communication through electronic media, and therefore, it continues to be carried out by girls, in the form of victimization, bullying, and observation. Likewise, girls may try to compensate through the In-

ternet for the restraint of physical aggression (Eroglu, Aktepe, Akbaba, Isik, & Özkprumak, 2015).

The third hypothesis could be confirmed, as results highlight that girls identified themselves significantly more as bystanders in four cyberbullying behaviors. These findings support the results obtained by Garaigordobil and Aliri (2013) with 3026 high school students, in which there were differences in observation in favor of the girls in 10 of the 15 behaviors measured, including those found in the present study. Once again, it seems that the greater exposure of girls to the more relational aspect of electronic media causes them to participate to a greater extent in the observation of this type of behavior (Giménez, 2015).

With regard to the variable grade, despite not revealing differences in the total score in any of the roles, some differences were detected in the analysis by items. In this sense, the fourth hypothesis is partially confirmed, as the findings indicated that the 6<sup>th</sup>-graders were only more victimized in behaviors related to manipulated videos and death threats. These results are consistent with research that found a slight increase in victimization with age (Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2012). These findings may be due to the fact that 6<sup>th</sup>-graders are more autonomous in the use of technological means and social networks and therefore, they may be more exposed to situations of cyberbullying (Giménez, 2015). In any case, most of the behaviors analyzed in the two grades are stable, so changes in behaviors of cybervictimization seem to be minimal or non-existent, as observed in other studies (e.g., Hemphill, Tollit, & Kotevski, 2012; Lauren & Ratliffe, 2011; Walrave & Heirman, 2011).

In terms of the bully role, the fifth hypothesis is partially confirmed, as 5<sup>th</sup>-graders obtained higher scores on the behaviors of threatening by phone calls or messages, whereas 6<sup>th</sup>-graders performed more behaviors of blackmailing to not disclose others' secrets. As the age range was minimal, the results support the evidence of studies that found no age differences in perpetration (Monks, Robinson, & Worlidge, 2012), although they contrast with other studies with adolescents that determined that bullying increases with age (e.g., Garaigordobil, 2015b; Lauren & Ratliffe, 2011; Mishna et al., 2012). These conflicting results may be explained by the different ages of the samples of the studies that examined cyberbullying in secondary education students. In any case, certain behaviors, such as blackmailing/threatening through calls or messages, appear both in secondary school (Garaigordobil, 2015b) and in students of the last year of primary education.

Finally, and considering the role of bystander, the sixth hypothesis was not confirmed, as 5<sup>th</sup>-graders observed more behaviors such as anonymous frightening calls and sexual harassment by mobile phone or Internet. These results contradict the findings of previous studies that placed the peak of observed violence through ICT at 13 years of age, subsequently decreasing (Álvarez-García et al., 2011). Moreover, they contradict those found in a sample of adolescents by Garaigordobil (2015b), who notes that as age increases, the

number of bystanders also increases. These contradictory findings may be due to the lack of consensus in defining the role of bystander because, at present, there is no clear and exhaustive definition of bystander behavior. This phenomenon can change each person's interpretation of a bullying situation (Sastre, 2016). Moreover, as bullying behaviors begin in 5<sup>th</sup> grade, it is also likely that, compared to 6<sup>th</sup>-graders, 5<sup>th</sup>-graders will act as bystanders of situations of older classmates or of another group of friends outside the school, which in turn, can contribute to the fact that in the last year of primary school, they will not behave so much as bystanders but instead as victims and bullies (Giménez, 2015).

However, age is not a determining factor of cyberbullying at this period (10-13 years), as the means in cyberbullying behaviors (victims, bullies, and bystanders) remain practically unchanged across the grades. We also note that the effect sizes were small in all cases, so some caution should be taken when interpreting the results, as well as in establishing their theoretical and practical relevance. The fact of finding small and even insignificant effect sizes does not mean that such differences do not exist, but rather that the theoretical and practical relevance of such differences is not empirically supported (Cohen, 1988). Thus, it can be concluded that the empirical relevance of the differences found is not sufficient to consider that students from 5<sup>th</sup> and 6<sup>th</sup> grade of primary education differ with regard to the manifestation of cyberbullying behaviors or that the implementation of specific interventions for these students is necessary.

As noted in the scientific literature and on the basis of the obtained results, cyberbullying is a current and real fact (Sastre, 2016), present at such early ages as primary education (Balakrishnan, 2015; Giménez, 2015; Yang et al., 2014). These findings indicate the great importance of this phenomenon, above all because of the informative gap that still exists about the impact of cyberbullying in children who begin to use ICT.

This study has several limitations. First, although the sampling used guarantees the representativeness of the recruited sample compared to the target population, the results found in this research are not generalizable to Spanish students from other educational levels (Nursery School, Secondary School, High School and higher education). Future research should examine possible differences in cyberbullying behavior among students of primary education and other educational levels. In addition, the cross-sectional design used in the study precludes establishing causal relationships. For this reason, longitudinal studies that provide information on the evolution of the phenomenon over the years would be advisable. Also cyberbullying was measured through a single self-report measure, so it would be suitable to include other assessment strategies (e.g., interviews, observation) and other sources of information such as parents, teachers, and peers. Finally, due to the continuous innovation in the technological field (e.g., applications, social networks, devices), future research should include possible new forms of perpetration that have not been evaluated at this time.



Even taking into account the aforementioned limitations, this research provides new and relevant information for the study of cyberbullying in primary education, not only because of the scarcity of previous evidence focused on this age group, but also because of the results of the three roles of cyberbullying in relation to sex and the students' grade. School violence has already exceeded the boundaries of the

school and, more than a problem of coexistence, it has become a social problem. For this reason, it is necessary to continue analyzing this phenomenon in order to better understand it and provide children with skills to deal with this new form of bullying, thus contributing to the fight against peer violence.

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