Psicología Educativa

Cyberbullying in youth: A pattern of disruptive behaviour

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ABSTRACT

Despite the growing diffusion of cyberbullying among students and the numerous studies in the literature, to date relatively little is known about its relationship with school bullying. This article seeks to understand if there is an overlap between the roles of bullies and victims in traditional and electronic bullying. In order to investigate this, 5,058 Italian middle and high school students were surveyed about their experiences of cyberbullying and cybervictimisation, looking also at their involvement in school bullying. The results highlighted a significant overlap between school bullying and cyberbullying, with 12.1% of all students who bullied others at least sometimes being also cyberbullies. Similarly, there was a significant overlap between school victimisation and cybervictimisation, with 7.4% of all students who were victimised at school at least sometimes being also cybervictimised. Our findings confirm the existence of an overlap between school bullying and cyberbullying. We discuss useful intervention programs to reduce or prevent cyberbullying.

El ciberacoso en la juventud: Un patrón de comportamiento disruptivo

RESUMEN

A pesar de que aumenta la extensión del ciberacoso en estudiantes y de los muchos estudios al respecto, se sabe relativamente poco hasta el momento acerca de su relación con el acoso escolar. El artículo trata de entender si hay solapamiento entre los roles de agresor y víctima en el acoso tradicional y electrónico. Con el objeto de investigarlo se encuestó a 5,058 estudiantes italianos de secundaria y bachillerato sobre su experiencia de ciberacoso y cibervictimización, analizando igualmente la implicación en el acoso escolar. Los resultados ponen de manifiesto un solapamiento importante entre el acoso escolar y el ciberacoso: un 12.1% de todos los estudiantes que habían acosado a los demás al menos algunas veces habían sido también ciberacosadores. También había un solapamiento importante entre la victimización escolar y la cibervictimización: 7.4% de los estudiantes victimizados en la escuela al menos algunas veces habían sido también cibervictimizados. Los resultados confirman la existencia de solapamiento entre acoso escolar y ciberacoso. Se comentan programas de intervención útiles para disminuir o evitar el ciberacoso.

In the last decade, publications and public discourses on bullying online, also called cyberbullying, have increased in number (Ybarra & Mitchell, 2004). Still, however, a scientific debate is going on with regard to the relationship between school bullying and cyberbullying and whether or not cyberbullying is an alarming problem (Olweus, 2012). Some of the questions addressed in the literature refer to whether cyberbullying is affecting the same students as traditional school bullying, whether cyberbullying is affecting boys and girls in the same way as traditional school bullying, and what types of online antisocial behaviours mainly take place.

The aim of the present study is to provide prevalence data on cyberbullying in its different forms in a representative sample of

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Italian students to study gender differences and to investigate the overlap between school bullying and cyberbullying and school victimisation and cybervictimisation in a large sample of adolescents and preadolescents in Italy.

Cyberbullying can be defined as 'an aggressive act or behaviour that is carried out using electronic means by a group or an individual repeatedly and over time against a victim who cannot easily defend him or herself' (Smith et al., 2008, p. 376). Other definitions subsequently better defined cyberbullying as including the intention of harming (Slonje & Smith, 2008) and imbalance of power (Tokunaga, 2010). Patchin and Hinduja (2006, 2015) included also repetition in time and extended the means a cyberbully can use: computers, mobile phones, and other electronic devices. With regard to repetition in time, there is a debate in the literature as to whether cyberbullying, given its potential of *going viral* and reaching an infinite potential number of people even with only one single act, needs to be repeated in time by the cyberbully or not to be defined as such. Traditionally, the definition of school bullying requires repeated acts.

Even if most researchers agree that cyberbullying can be considered as a new type of aggression, made possible by the increasing diffusion of the internet and the new information and communication technologies (ICTs) among young people (Slonje, Smith, & Frisén, 2013), assessing the prevalence and nature of cyberbullying could be complex, since there is still a lack of consensus regarding how cyberbullying should be defined and measured (Kowalski, Giumetti, Schroeder, & Lattanner, 2014; Olweus, 2013; Smith, del Barrio, & Tokunaga, 2013; Tokunaga, 2010; Ybarra, Boyd, Korchmaros, & Oppenheim, 2012). Patchin and Hinduja (2015) outline how different measures of cyberbullying do not take into account all components of the definition: intention of harm, imbalance of power, and repetition in time. Also, when reporting results, different authors use different criteria to classify students as belonging to one or another category. Some use a 4-level category (only cyberbullies, only cybervictims, both cyberbully and cybervictim, and not involved), while others use a dichotomous criterion (yes/no bully or victim) regardless of the other category. Therefore, classifying a student as a cyberbully (or cybervictim) or not is not easy.

There are also differences in how to allocate a student in one or another category (cyberbullying once or twice, at least three times) and what reference period should be used (in a 2 or 6 month-period prior to data collection, ever in the life course, in the last thirty days, or in the last term). This makes it difficult to make comparisons between studies and to have a shared agreement on how often cyberbullying takes place (Del Rey et al., 2015; Patchin & Hinduja, 2015). However, by bearing these limitations in mind, we can look at what the studies have shown so far and present our study by providing prevalence data that try to explain the nature and prevalence of cyberbullying in a large Italian student sample.

Whatever the definition and methods used to study cyberbullying, it is clear that cyberbullying is a problem among young people. Year after year, due to the increasing access to technology, cheap internet contract or free wireless and the almost worldwide presence of internet, the risk of cyberbullying increases and the assessment of such risks is more and more needed (Baldry, Farrington, & Sorrentino, 2015).

Wolak, Mitchell, and Finkelhor (2007) found that, between 2000 and 2005, rates of internet harassment increased by about 50%; this might imply that the more these means are available to young people, and at a younger age, the more the rates go up (Willard, 2007). This increase has been documented also in the review by Zych, Ortega-Ruiz, and Del Rey (2015), which showed how studies on bullying are underrepresented and undercited with regard to poorer countries and minority samples.

Looking at studies conducted on prevalence rates, it emerges that cyberbullying is a widespread problem involving a significant number of children and adolescents both as cyberbullies and cybervictims (see Table 1 for a summary of main results). However, as shown in Table 1, prevalence rates vary, and direct comparisons are not always possible due to the different methods used and procedures.

What emerges from this review is that whereas studies on cyberbullying report prevalence rates for involvement in cyberbullying and cybervictimisation, few report the overlap category of cyberbully and cybervictim. We will here focus on this overlap category to identify gaps in the literature and therefore conduct a study to address them so to provide outcomes of use for dedicated intervention programs. What is worth mentioning in a first look at all studies reported in Table 1 is that prevalence rates vary from 4% up to 34% indicating a variance not so much in absolute incidence or prevalence rates, but in inconsistency of methodologies, definitions, sampling, and methods.

An early and extensive study carried out by Ybarra and Mitchell (2004) between 1999 and 2000 showed that 19% of internet users ($N = 1,501$) were involved in cyberbullying either as cyberbullies, cybervictims, or both. Wang, Iannotti, and Nansel (2009) collected data from 7,182 American students during 2005 and 2006. The study highlighted that of students involved in cyberbullying 32.6% were both cyberbullies and cybervictims. Kowalski and Limber (2007) found that 7% had been involved in cyberbullying both as a bully and a victim. In the same year, Raskauskas and Stoltz (2007) found higher cyberbullying prevalence rates. In fact 49% of the students that they surveyed ($N = 84$) reported that they were cybervictims and 21% stated that they were cyberbullies. The sample, however, was rather small and not representative.

Slonje and Smith (2008) surveyed 360 Swedish adolescents to investigate the extent and nature of cyberbullying. The results highlighted that 11.7% of the whole sample reported being a victim of cyberbullying and 10.3% reported being a cyberbully.

Smith et al. (2008) surveyed 533 secondary school students aged 11-16 years in England to investigate the relationship between school and cyberbullying. The authors found a substantial continuity of the roles of bullies and victims. Cybervictims were more often also involved as school victims, while cyberbullies were also school bullies.

Also, Beran and Li (2008), in Canada, found that 58% of the students they surveyed had experienced cybervictimisation while 26% were cyberbullies in their life course. In the same year, Hinduja and Patchin (2008), in line with Ybarra, Diener-West, and Leaf (2007), found that about 35% of the adolescents participating in their research had experienced at least one cyberbullying incident as a victim.

Ortega, Ellipe, Mora-Merchán, Calmaestra, and Vega (2009), in Spain, reported that 25% of participants were victims of some kind of bullying, 5% were cybervictims only, and 5% reported "multivictimisation" (they were both traditional victims and cybervictims).

McGuckin, Cummins, and Lewis (2010) surveyed 3,699 primary school students in Northern Ireland about their life experiences of school bullying and cyberbullying. Data were collected between 2008 and 2009 and showed that about one student in ten (10.3%) was a victim of cyberbullying and 3.4% of all respondents reported they had cyberbullied others.

Mishna, Khoury-Kassabri, Gadalla, and Daciuk (2012) in Canada examined the frequency of cyberbullying in the previous three months, among 2,186 middle and high school students. Looking at the overlap category, one in four students (25.7%) reported overlapping categories. Kowalski and Limber (2013) with their US sample had a 5.3% cyberbullies/cybervictims overlap.

Table 1
Prevalence Studies on Cyberbullying and Prevalence Rates.

Study	Method	N	Age range	Location	Reference period	Percentages of cyberbullying			
						CV	CB	CB/CV	NI
Ybarra and Mitchell (2004)	Telephone survey	1,501	10-17 years	U.S.	Past 12 months	4%	12%	3%	81%
Kowalski and Limber (2007)	Self-report survey	3,767	11-14 years	U.S.	Past couple of months	11.1%	4.1%	6.8%	78%
Ybarra, Diener-West, and Leaf (2007)	Telephone survey	1,588	10-15 years	U.S.	Past 12 months	35%	-	-	65%
Raskauskas and Stoltz (2007)	Self-report survey	84	13-18 years	U.S.	Within the current school year	49%	21%	-	-
Beran and Li (2008)	Self-report survey	432	12-15 years	Canada	In participants experience	58%	26%	-	-
Hinduja and Patchin (2008)	Online survey	1,378	< 18 years	Online recruitment	In participants experience	34.6%	16.8%	-	-
Slonje and Smith (2008)	Self-report survey	360	12-20 years	Sweden	Past couple of months	11.7%	10.3%	-	-
Smith et al. (2008)	Self-reported questionnaire	533	11-16 years	UK	From never to the last week or month	17.3%	12.4%	-	-
Ortega, Elipe, Mora- Merchán, Calmaestra, and Vega (2009)	Self-report survey	1,671	12-17 years	Spain	Past 2 months	10%	-	-	90%
Wang, Iannotti, and Nansel (2009)	Self-report survey	7,182	11-16 years	U.S.	Past couple of months	5.3%	3.8%	4.5%	86.4%
McGuckin, Cummins, and Lewis (2010)	Self-report survey	3,699	11 years	North Ireland	In participants experience	10.3%	3.4%	-	-
Kowalski, Morgan, and Limber (2012)	Self-report survey	4,531	11-19 years	U.S.	Past couple of months	17.3%	10.9%	-	-
Mishna, Khoury-Kassabri, Gadalla, and Daciuk (2012)	Self-report survey	2,186	10-17 years	Canada	Past 3 months	23.8%	8%	25.7%	42.5%
Mura and Diamantini (2013)	Self-report survey	359	14-19 years	Colombia	Past 6 months	16%	9%	53%	22%
Kowalski and Limber (2013)	Self-report survey	931	11-19 years	U.S.	Past couple of months	9.9%	6.1%	5.3%	78.7%
Sticca, Ruggieri, Alsaker, and Perren (2013)	Self-report survey	835	Mean age =13.2 years	Swiss	Past 4 months	22%	14%	-	-
Van Cleemput, Vandebosch, and Pabian (2014)	Self-report survey	2,333	9-16 years	Belgium	Past 6 months	11.1%	11.1%	3.8%	-
Yang et al. (2014)	School survey	1,173	13 years	Korea	Not mentioned	19.2%	-	-	-
Wong, Chan, and Cheng (2014)	Self-report survey	1,917	12-15 years	China	Past month	23%	31.5%	-	-
Callaghan, Kelly, and Molcho (2015)	Self-report survey	318	15-18 years	Ireland	Past couple of months	9.8%	-	-	66.3%
Tarablus, Heiman, and Olenik-Shemesh (2015)	Self-report survey	458	11-13 years	Israel	Past couple of months	8.9%	5.4%	-	85.7%
Waasdorp and Bradshaw (2015)	Self-report survey	28,104	14-18 years	U.S.	Past month	4.6%	-	-	77.3%

Note. Studies not reporting the cyberbully/cybervictim category (-) means that in those studies authors reported the percentages of cyberbullying (yes/no) and cybervictimisation (yes/no) without looking at the overlap group.

Kowalski, Morgan, and Limber (2012) investigated the relationship between students' involvement in school bullying and cyberbullying, by surveying 4,531 US youth. The results showed that 37.8% of participants were school victims and 17.3% were cybervictims, while 31.8% were school bullies and 10.9% were cyberbullies.

Mura and Diamantini (2013) analysed the cyberbullying prevalence in Colombia by surveying 359 adolescents. Their aim was to investigate if youth in developing countries such as Colombia are exposed to similar problems as adolescents living in industrialised countries. The results showed that over 2/3 of students reported being involved in cyberbullying, 16% were cybervictims, and 9% cyberbullies. In another completely different geographical area, in Switzerland, Sticca, Ruggieri, Alsaker, and Perren (2013) found that 14% of respondents were involved in cyberbullying as bullies and 22% reported some form of cybervictimisation in the past four months.

Van Cleemput, Vandebosch, and Pabian (2014) found that out of the 2,333 Flemish students they surveyed, 11.1% were involved in cyberbullying as a perpetrator, and the same percentage reported to be a victim of cyberbullying, during the previous 6 month period.

Yang et al. (2014) carried out a two-year prospective school survey and found that 19.2% of the 1,173 Korean students participating in the study were cybervictims, though these authors do not indicate the time reference period they used. In Hong Kong, China, Wong, Chan, and Cheng (2014) surveyed 1,917 secondary students to explore the prevalence of cyberbullying. The results suggested that about a third of participants (31.5%) reported being involved in cyberbullying perpetration and 23% reported being victimised by someone in the cyberworld in a period of time of one month.

Callaghan, Kelly, and Molcho (2015) surveyed 318 Irish students about their experience of school bullying and cyberbullying and found that 14.3% and 9.8% were respectively traditional victims and cybervictims, while 9.5% were involved in both school and cybervictimisation.

In Israel, Tarablus, Heiman, and Olenik-Shemesh (2015) surveyed 458 junior high school students to investigate the overlap between school bullying and cyberbullying. Results highlighted that 22.2% of students were both school and cybervictims, and that 25% of them were involved both as school bullies and cyberbullies but they did not look at the overlap between cyberbullying and cybervictimisation. This was often found in studies, no classification of cyberbullying into the four categories, as shown in Table 1, so that it is not always possible to report the overlap of the two roles.

Waasdorp and Bradshaw (2015) carried out a study involving 28,104 US adolescents and found that 4.6% were cybervictims-only, while of those involved, 50.3% reported experiencing all the four forms of victimisation considered (verbal, physical, relational, and cybervictimisation).

What these studies show is that the prevalence of cyberbullying reported varies not only with the age group and country, but mainly it could be due to differences in the methodology and measures used. Not all studies are consistent in classifying students as only cyberbullies, only cybervictims, or both (or not at all involved).

The aims of our study were:

- To investigate the prevalence rates of cyberbullying and cybervictimisation from different areas in the country.
- To investigate gender differences with regard to different levels of involvement in cyberbullying and cybervictimisation.
- To investigate the overlap between cyberbullying and school bullying.
- To investigate the overlap between cybervictimisation and school victimisation.

Method

Participants

The total sample consisted of 5,058 Italian students, 47% boys and 53% girls. This is the largest study on cyberbullying published on Italian 10-18 year old students. The mean age was 15.6 years ($SD = 2.87$) and 97.2% were Italian and the rest were born abroad. Almost all participants (99%) reported using the internet and 89.3% had at least a social network profile and on average spent 3 hours online (see Table 2).

Participants were recruited from a total of nine different schools that took part in a larger project named *Openeyes* aiming at addressing and setting up strategies to prevent and reduce cyberbullying.

Two middle schools (11-14 year-old students) and seven high schools (14-18 year-old students) located in two different Italian sites, Milan and surrounding provinces (Northern Italy) and Naples and surrounding provinces (Southern Italy), took part in the study. One middle and one high school were private schools. So, only two schools among those initially contacted declined to take part in the study due to lack of time. These were replaced by two others which were comparable with respect to socio-economic conditions.

The schools were representative of the types of schools for students aged 10-18 in Italy (middle and high schools) and represented a variety of socio-economic statuses, although schools were not randomly selected. Sampling of participants was at the school level, which implied correcting results for clustered data. Therefore, we calculated intraclass correlations (ICCs) and reported effect size (d) and their adjusted significance.

Most schools in Italy are public but there is a significant proportion of private (mostly Catholic) schools. Throughout all analyses we checked for significant differences between the private and public schools, but none emerged so the whole sample was merged together. All classes of the participating schools were included in the study, with the exception of the top class of high schools. For the description of the sample and other details, see Table 2.

Procedure

Parental consent was obtained before the start of the data collection, and a contact email address and a phone number of the main researcher was made available for teachers and parents who wished to have further information about the study and the procedure. The whole content of the questionnaire was not disclosed to students nor to parents to avoid response contamination. After obtaining parental consent, students were approached in the classrooms according to a schedule organized by the head of the school. They were told the purpose of the study and the procedure, and were told that if they wanted they could withdraw and be involved in some other activities while their peers filled in the anonymous questionnaire for approximately 30 minutes. No one contacted the

Table 2
Descriptive Statistics of the Initial Sample ($N = 5,058$).

Measures and items	
Age	Mean = 15.6, $SD = 2.87$
Gender	53% females, 47% males
Nationality	97.2% Italian, 2.8% non EU immigrants
internet at home	99% have internet at home
Number of hours a day students use the web	Mean = 2.87, $SD = 2.70$
Use of mobile phone while at school	39.3% 'yes', 60.7% 'no'
Social network profile	89.3% 'yes, at least one', 10.7% 'none'

researcher for further explanations and no student withdrew from the study.

The self-reported paper and pencil questionnaires were administered to students in their classes. The students were seated at a distance from each other to prevent interference or talking. Participants were told that it was not an exam so there were no wrong or right answers but that they had to refer to their experience with peers at school and online. They were told that they did not have to put their names on the forms so as to guarantee their anonymity. Before starting to fill in the questionnaire, the terms school bullying and cyberbullying were briefly explained to make sure that the students understood what we were referring to. The items used to measure school bullying and cyberbullying, though never directly used the term bullying but described each behaviour considered to be bullying (or cyberbullying). While completing the questionnaire, one of the research assistants was present to provide explanations if needed and to oversee the procedure. Data collection took place between October 2011 and December 2011.

Measures

The questionnaire consisted of several scales measuring the dimensions under investigation. For the purpose of the present paper two different scales were analysed: to measure *school bullying* we used the sum of 7 items measuring different types of direct and indirect bullying, that might have taken place in the previous six months (e.g., 'I called names', 'I threatened someone at school', 'I excluded someone on purpose'; α = .79). For each item respondents could answer on a 5-point scale (0-4), the categories being *it never happened*, *it happened once or twice*, *sometimes, once a week*, and *several times a week*. The final measure used was a dichotomous one created by classifying as 'not bullies' those who rated either *never* or *once or twice* in all of the 7 types of behaviours. Bullies were those who said that they did any of the listed behaviours at least sometimes in the previous six months. The same criteria were used for victimisation. The method of using the cut-off of 'at least sometimes' was preferred so as to exclude those who admitted any of the behaviours listed only once or twice, which is not considered bullying due to lack of repetition in time (Farrington, 1993).

To measure *cyberbullying* we made use of the scale developed by Willard (2007). For the purpose of the present paper, we used the following 5 items measuring different types of cyberbullying: 'I sent mean, cruel, or threatening messages online to someone I knew', 'I humiliated someone online by sending or posting offensive material or cruel messages', 'I pretended to be someone else, created a fake profile in order to send or post damaging messages about another person', 'I disclosed online private information or images without the person consent', and 'I was actively engaged in excluding someone from an online group' (α = .71). Respondents had to indicate for each of the cyberbehaviours whether it 'never happened', whether 'it happened 1 to 4 times', or '5 or more times' in the previous six months. To use the same criteria as the one used for school bullying and based on the definition and classification of cyberbullying (Patchin & Hinduja, 2006), we used the most conservative definition corresponding to at least sometimes. Each student was classified as a *cyberbully* if he or she had committed any of the behaviours listed 5 or more times in the previous six months; if they never did anything or did it from 1 to 4 times, they were classified as a *non-cyberbully*. The same criteria was used to measure cybervictimisation. These criteria are questionable due to the debate of whether, in defining online harassment as actual cyberbullying, you need repetition or not (Patchin & Hinduja, 2015). For the purpose of the current study we wanted to be conservative and use the most comparable measures of school bullying and cyberbullying.

In the questionnaire, we also asked some other descriptive questions about students' use of the web and how many hours they spent online, and whether they used their mobile phones when at school to communicate with others (details are provided in Table 2). These questions are not further analysed in this article.

Results

In order to investigate gender differences in involvement in cyberbullying, we compared means as shown in Table 3. We show *d* values because these measure the strength of the relationships; *F* and *t* tests are greatly affected by sample size as well as by the strength of the relationship and so they are not pure measures of association. The variance of *d* was corrected for clustering using the following equation (see Hedges & Hedberg, 2007):

V_{corr} = V [1 + (*n* - 1) * ICC]

where,

V_{corr} = corrected variance

V = usual variance of *d*

n = average cluster size (school size)

ICC = intraclass correlation

The intraclass correlations are shown on the right hand columns of Table 3.

Boys were more involved than girls in overall cyberbullying and in particular forms of cyberbullying such as sending mean, cruel, or threatening messages online to someone they know, whereas no significant gender differences were found with regard to cybervictimisation (see Table 3 for details and significance).

We then used the categorical classification for the four possible levels of involvement in school bullying and then for cyberbullying to look for gender differences. We used the odd ratios (*OR*) to measure strengths of relationships because (unlike chi-squared for example) they are not influenced by sample size. We corrected the variance of the *OR*s for clustering as exampled above[1].

With regard to school bullying, the odds of only bullying were 1.71 greater for boys than for girls. Comparing the percentages (16.6 vs. 10.4), boys were 1.60 times more likely to be bullies. The ICC for only school bullying was .005, and the corrected CI was 1.06-3.26 (*p* < .001, two tailed).

The odds for only victims were 1.35 greater for girls than for boys. Comparing the percentages (13.9 vs. 10.7), girls were 1.30 times more likely to be school victims. The ICC for only school victims was .007, and the corrected CI was .91-2.00 (*ns*).

The odds for school bully/victim were 1.59 greater for boys than girls. Comparing the percentages (31.6 vs. 22.5), boys were 1.44 times more likely to be school bully/victims. The ICC for school bully/victims was .036, the corrected intervals are .88-2.86 (*ns*), see (Table 4).

With regard to cyberbullying, again, the odds ratio for only cyberbullies were 3.55 greater for boys than girls. Comparing the percentages (7.1 vs. 2.1), boys were 3.38 times more likely to be only cyberbullies. The ICC for only cyberbullying was .017 and the corrected intervals were 1.30-9.77 (*p* < .001, two tailed).

Only cybervictims were not significantly different between boys and girls (*OR* = 1.09, corrected CI = .75 to 1.57 (*p* = *ns*).

The odds for cyberbully/victims were 3.59 greater for boys than girls. Comparing the percentages (3.1 vs. 0.9), boys were 3.4 times more likely to be cyberbully/victims. The ICC for cyberbully/victims was .011, the corrected CI 1.03-12.55 (*p* < .05, two tailed) (see Table 5).

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[1] Various dichotomies were created for school bullying: only school bullying versus the rest, only school victimisation vs. the rest, school bully/victim vs. the rest. For cyberbullying: only cyberbullying vs. the rest, only cybervictimisation vs. the rest, cyber bully/victim vs. the rest. This enables the calculation of *OR*s in 2 x 2 tables for gender (boys vs. girls).

Table 3
Gender Differences in Individual Types of Cyberbullying and Cybervictimisation.

	N of students	Mean score		d	p	ICC
		Girls	Boys			
Cybervictimisation						
Overall cybervictimisation	4991	.54	.53	0.01	*ns*	.021
Specific types of cybervictimisation						
'I've received online messages that made me very afraid for my safety'	4966	.10	.08	0.05	*ns*	.002
'I've been put down online by someone who has sent or posted cruel gossip, rumours, or other harmful material'	4967	.17	.14	0.08	*ns*	.016
'Someone pretended to be me and sent or posted you material that damaged my reputation or friendships'	4969	.12	.14	0.06	*ns*	.018
'Someone shared my personal secrets or images online without my permission'	4996	.11	.11	0.01	*ns*	.001
'I've been excluded on spite from an online group by people who have been mean to me'	4970	.04	.05	0.05	*ns*	.007
Cyberbullying						
Overall cyberbullying	4991	.39	.81	0.34	.016	.041
Specific types of cyberbullying						
'I sent mean, cruel or threatening messages online to someone I knew'	4955	.11	.28	0.36	.005	.035
'Put down someone online by sending cruel gossip, rumors, or other harmful material'	4970	.09	.18	0.21	.041	.022
'Pretend to be someone else and send material to damage that person's reputation or friendships'	4975	.07	.12	0.15	*ns*	.018
'Share someone's personal secrets or images online without his or her consent'	4966	.05	.10	0.16	.007	.006
'Help to exclude a peer or student from an online group'	4969	.07	.14	0.22	.026	.020

Note. With regard to cyberbullying and cybervictimisation values are measured on a 3-point scale from 0 to 2. Differences in *N* numbers are due to missing values. Effect sizes have been corrected for clustering. Adjusted significance values are presented, two tailed.
** *p* < .01, *** *p* < .001

Table 4
Gender Differences in School Bullying.

	Not involved	Only bully	Bully/Victim	Only victim	Total
Gender					
Male					
N	933	376	716	242	2267
Row%	41.2	16.6	31.6	10.7	100
Col%	40.5	58.3	55.2	40.3	46.7
Total	19.2	7.8	14.8	5.0	46.7
Female					
N	1373	269	582	359	2583
Row%	53.2	10.4	22.5	13.9	100
Col%	59.5	41.7	44.8	59.7	53.3
Total	28.3	5.5	12.0	7.4	53.3
Total					
N	2306	645	1298	601	4850
Row%	47.5	13.3	26.8	12.4	100
Col%	100	100	100	100	100
Total	47.5	13.3	26.8	12.4	100

Note. Values indicate row percentages first and then column percentages. Percentages refer to bullying other at least sometimes in the previous six months.
OR for OB vs. rest = 1.71, adjusted CI = 1.06 - 3.26 (*p* < .001).
OR for OV vs. rest = 1.35, adjusted CI = .91 - 2.00 (*ns*)
OR for BV vs. rest = 1.59, adjusted CI = .88 - 2.86 (*ns*)
OR = odds ratio.
OB = only school bully, OV = only school victim, BV = school bully/victims.

Table 5
Gender Differences in Cyberbullying.

	Not involved	Only cyberbully	Cyberbully/ cybervictim	Only cybervictim	Total
Gender					
Male					
N	1954	158	70	52	2234
Row%	87.5	7.1	3.1	2.3	100
Col%	44.6	74.5	75.3	44.4	46.5
Total	40.6	3.3	1.5	1.1	46.5
Female					
N	2432	54	23	65	2574
Row%	94.5	2.1	.9	2.5	100
Col%	55.4	25.5	24.7	55.6	53.5
Total	50.6	1.1	.5	1.4	53.5
Total					
N	4386	212	93	117	4808
Row%	91.2	4.4	1.9	2.4	100
Col%	100	100	100	100	100
Total	91.2	4.4	1.9	2.4	100

Note. Values indicate row percentages first and then column percentages. Percentages refer to cyberbullying five times or more in the previous six months.
OR for OCB vs. rest = 3.55, adjusted CI = 1.30 - 9.77 (*p* < .001).
OR for OCV vs. rest = 1.09, adjusted CI = 75 - 1.57 (*ns*)
OR for CBV vs. rest = 3.59, adjusted CI = 1.03 - 12.55 (*p* < .05)
OR = odd ratio.
OCB = only cyberbully, OCV = only cybervictim, CBV = cyberbully/victim.

The Overlap between School Bullying and Cyberbullying

We then wanted to investigate the relationship between school bullying and cyberbullying, to know whether students who bully peers at school also do it online. Of all students bullying others at least sometimes at school, 12.1% were also cyberbullies at least sometimes, compared to only 2.6% of those who did not bully at school. Bullies were 4.6 times more likely to be cyberbullies according to the odds ratio, as reported in Table 6. The ICC for school bullying was .032, and the ICC for cyberbullying was .042; therefore we used the average of .037 to correct for the clustering in schools. The corrected CI was 2.40-10.42 (*p* < .0001, two tailed).

The overlap between school victimisation and cybervictimisation

Of all students victimised at least sometimes at school, 7.4% were also cybervictims, compared to 2.2% of those were not victimised at school. Victims were 3.23 times more likely to be cybervictims according to the odds ratio, as reported in Table 7. The ICC for school victimisation was .043, and the ICC for cybervictimisation was .019, so we used the average of .031 to correct for the clustering in schools. The corrected CI was 1.79-5.84 (*p* < .0001, two tailed).

Table 6
Overlap between School Bullying and Cyberbullying (*N* = 4,817).

Cyberbullying		School bullying		
		NO	YES	Total
	NO	2813	1697	4510
	Row %	(62.4)	(37.6)	(100)
	Col %	(97.4)	(87.9)	(93.6)
	YES	74	233	307
	Row %	(24.1)	(75.9)	(100)
	Col %	(2.6)	(12.1)	(6.4)
Total		2887	1930	4817
	Row %	(59.9)	(40.1)	(100)
	Col %	(100)	(100)	(100)

Note. Values in parentheses indicate row percentages first and then column percentages. Percentages refer to bullying others at least sometimes and cyberbullying five times or more in the previous six months.
OR = 4.6, adjusted CI = 2.40 - 10.42, *p* < .0001, two tailed.

Table 7
Overlap between School Victimisation and Cybervictimisation (*N* = 4,779).

Cybervictimisation		Victimisation		
		NO	YES	Total
	NO	2846	1729	4575
	Row %	(62.2)	(37.8)	(100)
	Col %	(97.8)	(92.6)	(95.7)
	YES	65	139	204
	Row %	(31.9)	(68.1)	(100)
	Col %	(2.2)	(7.4)	(4.3)
Total		2911	1868	4779
	Row %	(60.9)	(39.1)	(100)
	Col %	(100)	(100)	(100)

Note. Values in parentheses indicate row percentages first and then column percentages. Percentages refer to victimisation others at least sometimes and cybervictimisation five times or more in the previous six months.
OR = 3.23, adjusted CI = 1.79 - 5.84, *p* < .0001, two tailed.

Discussion and Conclusions

Cyberbullying is a serious problem affecting a considerable number of children from primary to secondary school and it can go on until the high school years. In our study we found high prevalence rates and a significant overlap between students admitting bullying at school as well as bullying online and between being a cyberbully and a cybervictim. As soon as a child starts using the internet and other cyberdevices to communicate and interact, he or she is potentially at risk of becoming a target of cyberbullying or else of cyberbullying. These findings provide grounds for follow up hypotheses. On one hand, it is important to look at the relationship between these two behaviours to understand whether there is a 'continuity' of school bullying and cyberbullying; students who are school bullies will go on outside the school to do similar things to the same or different victims when at home (Raskauskas & Stoltz, 2007). On the other hand, our findings are also of use for a possible alternative interpretation: whether school victims will go online and start (cyber)bullying others, and invert their role (Ybarra & Mitchell, 2004).

Having drawn our sample from several schools, we corrected for clustering. The results indicated that, with regard to cybervictimisation, boys and girls were equally likely to be involved, whereas with regard to cyberbullying boys were up to 3 times more likely to act as either as an only cyberbully or as a cyberbully/cybervictim.

The strength of the relationship between gender and involvement in the four different categories of school bullying was less strong than in cyberbullying, indicating that school bullying still deserves attention and investigation, especially with regard to more and more girls involved in these behaviours. Age differences could explain part of these results, meaning that school bullying is

an age related issue, rather than a gender difference, with more older girls involved in school bullying. This field of research is not fully addressed and explained, since it is assumed that bullying decreases with age. Lack of information about web risks, poor parental or teacher supervision, isolation, low empathy, and moral disengagement might all be factors contributing to the rise of this phenomenon.

In our study we used a rather conservative criterion to define a student as a cyberbully (or cybervictim): whether it happened at least 5 times in the last 6 months, and not just once or twice, following the criteria first used by Ortega, Calmaestra, and Mora-Merchán (2008). This criterion led to a slightly lower prevalence rate than the one found in previous studies (Smith et al., 2008). This might be a limitation, and in future studies more detailed questions about frequency could be used. Also, a better relationship between frequency and intensity and prevalence should be measured.

One could argue that one cyberaction can potentially produce the same devastating effect as repeated actions due to how the internet works. However, we wanted to use a similar definition to the one used for school bullying to identify students who have been exposed to or committed these behaviours repeatedly.

The current study is useful also for its implications, since it stresses once more that there is an overlap between school bullying and cyberbullying, so intervention campaigns should always address both antisocial behaviours since the risk factors for them are similar (Baldry et al., 2015). Looking at the school bully/victim and cyberbully/cybervictim categories, it is interesting to note that the overlap does not imply that the students who are bullied (or cyberbullied) will eventually bully or cyberbully themselves. To understand the direction of such relationships, longitudinal studies are needed; however, we know by now that the two are related.

Limitations of the studies are related to the measures used for school and cyberbullying that were differently measured and comparisons should be made with caution. Also, given that this is a correlational study and not a longitudinal one, it is not possible to draw causal conclusions about school bullying and cyberbullying.

To conclude, and based also on the difficulty of comparing studies, as Patchin and Hinduja (2015) correctly pointed out, we would like to draw attention to the following critical points when gathering data on the prevalence of cyberbullying and provide some recommendations for researchers as well as practitioners:

Age groups: all studies should specify the age range they used and report data according to age range and not school grade since in different countries different grade systems are used.

Gender differences should always be taken into account.

In investigating prevalence, cyberbullying and cybervictimisation should be measured not by directly asking students if they are a victim (or perpetrator) of cyberbullying, because the likelihood of having socially desirable answers and different understandings of the meaning of the words is high. Therefore, separate type of behaviours should be asked about separately.

When measuring the frequency of episodes, the exact reference period should be specified (not asking 'in the last term'): in the last month, or 3 or 6 months, or ever depending on the aims of the study.

If the number of episodes are measured (1, 2-4 or more), then frequency and recency should be compared. If a pupil received intimidating messages in the last few days, 2 or 3 episodes might constitute bullying. In a 6-month period or even ever, 2 or 3 episodes could be less troubling. It is better to measure prevalence rates weekly or monthly (e.g., once or twice a week, once or twice a month).

If both school bullying and cyberbullying are measured and researchers want to draw comparisons between the two forms of bullying (online and not), the same frequency and time frame should be used for each of the two behaviours (school and cyber).

Conflict of Interest

The authors of this article declare no conflict of interest.

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