

Bullying and cyberbullying: Overlapping and predictive value of the co-occurrence

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Several studies show certain co-occurrence of the traditional bullying and the cyberbullying. However, the results about relation and homogeneity among the roles of each of them are not unanimous. The present study intends to advance in the knowledge about the above-mentioned co-occurrence by exploring the dimensions of victimization and traditional aggression and cyber-victimization and cyber-aggression and by identifying its eventual directionality. A short-term longitudinal design was developed. The sample was formed by 274 adolescents, aging 12 to 18 years-old, belonging to 2 schools of Andalusia (South of Spain). In order to value the impact of bullying and cyberbullying the European Cyberbullying Intervention Project Questionnaire (ECIPQ) and the European Bullying Intervention Project Questionnaire (EBIPQ) were used. The results show important simultaneity among both phenomena and suggest that although in cyberbullying —cyber-victimization and cyber-aggression— may be predicted because of previous involvement of the subject in traditional bullying, on the contrary it does not happen. In addition, previous victimization is a risk factor for traditional bullying and for cyberbullying. Results are discussed in relation to the process and socio-group dynamics arising from the bullying and cyberbullying phenomena, and in terms of their prevention.

Bullying y cyberbullying: solapamiento y valor predictivo de la co-ocurrencia. Diversos estudios han puesto de manifiesto cierta co-ocurrencia de los fenómenos bullying tradicional y cyberbullying. No obstante, los resultados sobre la relación y homogeneidad en los roles que conforman cada uno de estos fenómenos distan de ser unánimes. El presente estudio pretende avanzar en el conocimiento sobre dicha co-ocurrencia explorando las dimensiones de victimización y agresión tradicional y cybervictimización y cyberagresión, e identificando su posible direccionalidad. Se realizó un diseño longitudinal a corto plazo. La muestra fueron 274 adolescentes, entre 12 y 18 años, pertenecientes a 2 centros educativos de Andalucía (sur de España). Para valorar bullying y cyberbullying se utilizaron el European Cyberbullying Intervention Project Questionnaire (ECIPQ) y el European Bullying Intervention Project Questionnaire (EBIPQ). Los resultados constatan la importante simultaneidad de los dos fenómenos y sugieren que, mientras la implicación en cyberbullying —cybervictimización y cyberagresión— puede ser predicha, en parte, a partir de la implicación en bullying tradicional, no ocurre lo mismo en dirección opuesta. Además, la victimización previa es un factor de riesgo tanto en bullying tradicional como en cyberbullying. Se discuten los resultados en relación a los procesos y dinámicas sociogrupales que subyacen a los fenómenos bullying y cyberbullying y en términos de prevención de ambos fenómenos.

Bullying is a well known peer violence phenomenon characterized by persistence, intentionality and power imbalance between the perpetrator(s) and the victim (Olweus, 1993). In recent years we have seen the appearance of a new form of bullying known as cyberbullying (Bringué & Sabadá, 2011; Paul, Smith, & Blumberg, 2012; Schenk & Fremouw, 2012; Smith, 2009; Vandebosch, Beirens, D'Haese, Wegge, & Pabian, 2012) on account of the use it makes of digital devices (Huang & Chou,

2010; Juvonen & Gross, 2008; Li, 2007; Raskauskas & Stoltz, 2007). Although cyberbullying is essentially the same as bullying, it does have its own distinguishing features; for example anonymity and a potentially much larger audience (Slonje & Smith, 2008). To date, no unanimously accepted definition of cyberbullying has yet been established. Vandebosch and Van Cleemput (2008) found that adolescents saw its intentionality, its repetition and its associated power imbalance as its most distinguishing factors, but Menesini et al. (2012) considered power imbalance the most crucial issue and attached less importance to repetition. Indeed, controversy still rages over whether or not cyberbullying can in fact be considered as a phenomenon clearly differentiated from traditional bullying (Dooley, Pyżalski, & Cross, 2009; Heirman & Walrave, 2012; Law, Shapka, Domene, & Gagné, 2012; Palladino, Nocentini, & Menesini, 2012; Wachs, Wolf, & Pan, 2012).

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Involvement in bullying and cyberbullying seems to be influenced by sex and age variables. Boys have traditionally been more involved than girls, above all in direct physical abuse (Smith et al., 1999), whereas girls have played a more prominent role in different types of social abuse (Scheithauer, 2002). Since cyberbullying is considered a form of indirect abuse (Mc Guckin, Cummins, & Lewis, 2010; Smith et al., 2008), it might therefore be reasonable to expect that girls would be more involved in it than boys. However, no evidence exists to support this assumption.

Some studies have shown greater involvement by boys in cyber-victimization and/or cyber-abuse (Calvete, Orue, Estévez, Villardón, & Padilla, 2010; Dehue, Bolman, & Völlink, 2008; Dilmaç, 2009; Garaigordobil, 2011; Gradinger, Strohmeier, & Spiel, 2009; Li, 2006), but others have found just the opposite (Mark & Ratliffe, 2011; Smith et al., 2008; Tokunaga, 2010; Wang, Iannotti, & Nansel, 2010) and some have found no sex-based differences (Hinduja & Patchin, 2008; Juvonen & Gross, 2008; Slonje & Smith, 2008).

With regard to age, we know that in traditional bullying the number of victims decreases between primary and secondary education (Schäfer, Korn, Brodbeck, Wolke, & Schulz, 2005; Smith et al., 1999) although in Spain involvement peaks in the first level of Secondary Education (Defensor del Pueblo [Spanish Ombudsman], 2007). In cyberbullying the results are contradictory. While some studies have revealed a greater degree of cyber-victimization in U.S. grades seven and eight (corresponding to the first level of Secondary Education in Spain) followed by a subsequent decrease (Schneider, O'Donnell, Stueve, & Coulter, 2012; Tokunaga, 2010), others have reflected an age-related increase (Mark & Ratliffe, 2011) and some have found no relationship with age whatsoever (Hinduja & Patchin, 2008; Juvonen & Gross, 2008; Smith et al., 2008). In the different evolution curves that have been plotted for cyber-victimization and cyber-abuse, cyber-victimization has been shown to be more prevalent in the first level of Secondary Education and cyber-abuse in the second and third years of Secondary Education (Garaigordobil, 2011; Ortega, Calmaestra, & Mora-Merchán, 2008).

Bullying and cyberbullying: co-occurrence and stability

One issue that has been studied as part of the theoretical debate concerning the two phenomena is co-occurrence (Beran & Li, 2005). Some researchers have reported up to 80% of overlap (Campbell, 2005; Juvonen & Gross, 2008; Riebel, Jäger, & Fischer, 2009), but others have found little co-involvement (Calvete et al., 2010; Hemphill et al., 2012). Wang and colleagues (2010) analyzed co-occurrence in five types of peer violence and found that, whereas some boys were victims of all five forms, including cyber-victimization, others were victims only of traditional bullying (Wang et al., 2010). Cyber-aggressors therefore seem more likely to be involved in traditional bullying, either as aggressor or victim, than traditional bullies are likely to be involved in cyber-abuse (Li, 2007; Riebel et al., 2009; Schneider et al., 2012). Tokunaga (2010) suggested that traditional bullies may use the virtual environment to maximize the damage they cause and Smith and colleagues (2008) affirmed that victims of traditional bullying are often also victims and bullies online. Different studies have suggested the stability of traditional bullying roles in virtual environments (Hinduja & Patchin, 2008; Raskauskas & Stoltz, 2007). Li (2007) found that the best predictor of cyber-victimization was involvement in bullying, in either of its two basic roles — aggressor or victim —

and regardless of sex; cyber-abuse was predicted by both abuse and abuse/victimization (bully/victim) with boys being most likely to become aggressors. Everything would seem to indicate that cyber-abuse may be predicted, at least partly, by both abuse (Hemphill et al., 2012; Werner, Bumpus, & Rock, 2010) and cyber-victimization (Werner et al., 2010) but not by traditional victimization (Gradinger et al., 2009). Nevertheless, Hinduja and Patchin (2008) suggested that cyber-abuse may also occur “in isolation”, since there are some boys and girls who do not attack others face to face but do via ICTs. With regard to cyber-victimization, results have shown that this is partly predicted by traditional victimization (Gradinger et al., 2009; Li, 2007; Raskauskas & Stoltz, 2007; Smith et al., 2008). In a longitudinal analysis carried out over two years, Hemphill and colleagues (2012) found that traditional bullying helped to predict cyberbullying; it therefore appears that, although cyberbullying may sometimes take place as a continuation of traditional bullying, it is not at all clear that the same thing happens in reverse.

The objective of this study was to analyze the extent to which involvement in traditional bullying, either victimization (henceforth, V) or abuse (A), and in cyberbullying, either cyber-victimization (CV) or cyber-abuse (CA), helps to predict involvement in the same and/or in different roles over time. Our working hypotheses were: a) a certain degree of overlap exists between bullying and cyberbullying; b) involvement in either of these phenomena may represent a risk factor for continued involvement in the same role; c) involvement in traditional bullying will help to predict involvement in cyberbullying.

Methods

Participants

The participants were 274 adolescents from two secondary schools in the city of Córdoba (Spain). Both schools were currently implementing projects aimed at improving *convivencia* (harmonious social interaction). One was a subsidies state school, and the other was a state assisted private school both in a working/lower middle class neighborhood. The students involved in the study were in the 1st, 2nd and 4th years of Secondary Education and in the 1st year of Bachillerato (High School). A 47.6% of the sample were girls. The ages were between 11 and 18 years old ($M=14.12, DT=1.74$). The choice of schools was incidental, being based on accessibility.

Instruments

The variables analyzed in our study were victimization (traditional and cyber-victimization) and abuse (both traditional and cyber-abuse). Both were measured at two time points using the ECIPQ (Brighi et al., 2012a) and EBIPQ (Brighi et al., 2012b) self-report questionnaires on cyberbullying and traditional bullying, developed as part of an European project. Each questionnaire includes two subscales — victimization/cyber-victimization and abuse/cyber-abuse — each comprising identical items related to violent behaviors: in one case from the point of view of the victim/cyber-victim and in the other from that of the aggressor/cyber-aggressor. The time frame was the two month period prior to the survey. The answer options were presented on a Likert-type scale from 0 to 4 (*Never, once or twice, once or twice a month, once a week, more than once a week*).

The **ECIPQ** comprises 22 items, 11 for cyber-abuse and 11 for cyber-victimization, covering specific behavior such as identity theft (i.e., someone has hacked into my account and pretended to be me), the uploading and/or altering of embarrassing images or videos (i.e., someone has posted embarrassing photographs or videos of me on the Internet) and indirect abuse (for example, someone has spread rumors about me on the Internet). Internal consistency levels and Cronbach’s alpha showed acceptable reliability: $\alpha_{T1cybervictimization} = 0.83$, $\alpha_{T2cybervictimization} = 0.90$, $\alpha_{T1cyberabuse} = 0.90$ and $\alpha_{T2cyberabuse} = 0.90$.

The **EBIPQ** comprises 14 items, 7 for victimization and 7 for abuse, covering specific behavior such as direct physical abuse (for example, someone has hit me), indirect abuse (someone has spread rumors about me), verbal abuse (for example, someone has insulted me), psychological abuse (for example, someone has threatened me) and social exclusion (for example, I have been excluded or ignored by other people). Again, internal consistency levels were acceptable and revealed a high degree of test-retest reliability: $\alpha_{T1victimization} = 0.84$, $\alpha_{T2victimization} = 0.88$, $\alpha_{T1abuse} = 0.73$ and $\alpha_{T2abuse} = 0.69$.

The original instrument was translated from English into Spanish in stages. A bilingual translator first translated the text from English into Spanish; another bilingual researcher then translated it back into English and finally both texts were revised by a panel of experts.

Procedure

The study was carried out using a short term longitudinal design with 3 months between T1 (January 2011) to T2 (April 2011). Data was gathered after having obtained authorization from the families of the students involved and after having liaised with the headmasters and staff in charge of the *convivencia* programs in the schools. Before the questionnaires were handed out, students were informed of the research objectives and assured of the confidentiality, anonymity and voluntary nature of the survey.

Data analysis

The stated hypotheses were tested using different data analysis models. Co-involvement in bullying and cyberbullying and role stability over time were analyzed using Pearson zero order correlation coefficients. Transitions between the different roles were established by means of simultaneous linear regression analysis. Four analyses were carried out using T2 victimization, abuse, cyber-victimization and cyber-abuse as the variables to be predicted, and the T1 values for the same factors, plus the age and sex variables, as predictor variables. Once the scores on the scales had been transformed to z scores, the co-linearity statistics were analyzed. In all cases these statistics were higher than 0.3, indicating the absence of multi-collinearity problems. Finally, to more thoroughly examine the specific influence of each variable on the regression models we obtained, we also analyzed partial and semi-partial correlations.

Prior to all this data analysis, a lost data analysis was carried out with T1 and T2 victimization, abuse, cyber-victimization and cyber-abuse variables and with the age and sex variables. The results fluctuated between 0.4 and 6.9, with the figure for most variables being below 5%. The exception was victimization (5.8 and 6.9% in T1 and T2, respectively). Since this did not exceed the 10% cut-off point suggested by Bennett (2001) as the minimum

for considering the possibility of biased results, we chose not to replace this data but merely to leave it out when performing the analyses. In each analysis, therefore, the specific N on which the work was based was clearly indicated.

Results

Involvement in bullying and cyberbullying

A 9.5% (26) of all the students said they had not been involved at all in these phenonema, either in T1 or in T2. The following analyses therefore concern the other 248 students.

Most of the zero order correlations obtained between T1 and T2 bullying and cyberbullying (see Table 1) were significant and moderate to high. Correlations between involvement in the same role were always significant, at both time points, but their magnitude was approximately twice as large in the case of traditional bullying as in cyberbullying. Regarding co-involvement in the two phenomena, the highest correlations were found between T1 abuse and cyber-abuse (0.65) and between T1 and T2 victimization and cyber-victimization (0.48 and 0.66, respectively). In the case of co-involvement in both roles —which would represent a role of “bully-victim”— correlations were almost twice as great in cyberbullying as they were in traditional bullying: 0.64 and 0.51, in T1 and T2, respectively for cyberbullying as opposed to 0.34 and 0.27 in traditional bullying.

Predictive value of roles in bullying and cyberbullying

With regard to the predictive value of each role, Table 2 illustrates how, although all the regression models obtained were

Table 1
Zero-order Pearson correlations coefficients between bullying and cyberbullying roles in T1 and T2

	V _{T1}	A _{T1}	CV _{T1}	CA _{T1}	V _{T2}	A _{T2}	CV _{T2}	CA _{T2}
V _{T1}	1							
N	232							
A _{T1}	.340**	1						
N	223	238						
CV _{T1}	.477**	.489**	1					
N	225	230	239					
CA _{T1}	.206**	.644**	.642**	1				
N	222	229	230	237				
V _{T2}	.525**	.042	.234**	.033	1			
N	215	219	220	218	229			
A _{T2}	.187**	.423**	.151*	.160*	.271**	1		
N	224	230	230	229	221	239		
CV _{T2}	.224**	.021	.239**	.110	.659**	.214**	1	
N	225	230	231	229	223	232	240	
CA _{T2}	.085	.065	.197**	.258**	.316**	.328**	.509**	1
N	229	234	234	232	224	236	236	243

* p<.05; ** p<.001
V: Victimization; CV: Cyber-victimization; A: Aggression; CA: Cyber-aggression

significant, the one which explained the most variance was that of victimization (just over 34%) and the one which explained the least variance was cyber-victimization (9.6%).

The variables that were useful in predicting involvement and continuation in each role, and the importance of those variables, varied depending on the role (see Tables 3 and 4).

In traditional bullying the variables which proved significant in predicting T2 victimization were the following (listed in order of importance): victimization, abuse —which correlated inversely— and sex, with boys being more likely either to become or to continue to be victims in T2. In abuse, the significant variables were: abuse, cyber-victimization — which correlated inversely — and victimization.

In cyber-bullying, the variables which most significantly predicted cyber-victimization were: cyber-victimization, victimization, abuse —which correlated inversely— and age. For cyber-abuse they were: cyber-abuse, abuse —which correlated inversely— and victimization.

Regarding the specific contribution of each variable to the models we obtained, both the regression parameters and the partial

and semi-partial correlations (see Table 5) showed that the strongest contributions are always rooted in involvement in the same role in T1. The only exception to this was in cyber-victimization, where, once the effects of the other variables were controlled, we found that the strongest correlations were with victimization, followed by abuse. Here the contribution of same-role involvement was relatively small. It should also be pointed out that, although no negative correlations appeared in the zero order correlations, some

Table 2
Summary of the regression models obtained

	Adjusted R square	Std. error of the estimate	F	Durbin-Watson
Victimization _{T2} (N= 188)	.346	0.86	17.47**	2.16
Aggression _{T2} (N= 199)	.177	0.83	8.09**	1.64
Cyber-victimization _{T2} (N= 198)	.096	1.03	4.49**	2.14
Cyber-aggression _{T2} (N= 202)	.135	0.98	6.212**	2.10

** *p*<.001

Table 3
Parameters of the regression models in traditional bullying

	Standardized coefficients beta	t	Sig.	C.I.(95%)	
				Lower bound	Upper bound
(Constant)		-1.45	0.15	-1.91	0.29
Age	0.074	1.23	0.22	-0.03	0.13
Sex	0.138	2.33	0.02	0.04	0.54
V _{T2}	V _{T1}	0.642	8.75	0.00	0.55
	A _{T1}	-0.172	-2.10	0.04	-0.38
	CV _{T1}	0.007	0.07	0.95	-0.21
	CA _{T1}	-0.039	-0.38	0.70	-0.27
(Constant)		0.21	0.83	-0.91	1.13
Age	-0.036	-0.54	0.59	-0.09	0.05
Sex	0.124	1.91	0.06	-0.01	0.46
A _{T2}	V _{T1}	0.171	2.18	0.03	0.02
	A _{T1}	0.431	4.95	0.00	0.25
	CV _{T1}	-0.232	-2.13	0.03	-0.40
	CA _{T1}	0.026	0.24	0.81	-0.19

V: Victimization; CV: Cyber-victimization; A: Aggression; CA: Cyber-aggression

Table 4
Parameters of the regression models in cyberbullying

	Standardized coefficients beta	t	Sig.	C.I.(95%)	
				Lower bound	Upper bound
(Constant)		-2.12	0.04	-2.64	-0.10
Age	0.139	1.10	0.05	0.00	0.18
Sex	0.077	1.13	0.26	-0.12	0.46
CV _{T2}	V _{T1}	0.220	2.67	0.01	0.07
	A _{T1}	-0.205	-2.25	0.03	-0.43
	CV _{T1}	0.249	2.22	0.03	0.03
	CA _{T1}	-0.021	-0.18	0.86	-0.28
(Constant)		-1.00	0.32	-1.80	0.59
Age	0.059	0.88	0.38	-0.05	0.12
Sex	0.080	1.21	0.23	-0.11	0.44
CA _{T2}	V _{T1}	0.168	2.08	0.04	0.01
	A _{T1}	-0.375	-3.10	0.00	-0.61
	CV _{T1}	-0.131	-1.17	0.24	-0.37
	CA _{T1}	0.589	4.87	0.00	0.41

V: Victimization; CV: Cyber-victimization; A: Aggression; CA: Cyber-aggression

Table 5
Partial and semipartial correlations coefficients of the significant variables in the regression models obtained

		Partial	Semipartial
Victimization	V _{T1}	.545	.518
	A _{T1}	-.154	-.124
	Sex	.170	.138
Aggression	A _{T1}	.337	.319
	CV _{T1}	-.152	-.137
	V _{T1}	.156	.141
Cyber-victimization	CV _{T1}	.159	.150
	V _{T1}	.189	.181
	A _{T1}	-.161	-.152
Cyber-aggression	Age	.143	.135
	CA _{T1}	.329	.319
	A _{T1}	-.275	-.262
	V _{T1}	.147	.136

V: Victimization; CV: Cyber-victimization; A: Aggression; CA: Cyber-aggression

of these correlations became negative when the effect of the other variables in the model on total correlation (partial correlation) or on specific variables (semi-partial correlation) was controlled. This occurred with the contribution of T1 abuse to victimization, cyber-victimization and cyber-abuse models, and with cyber-victimization in the abuse model.

Discussion

In the light of earlier scientific literature and in accordance with previous hypotheses, there does exist some degree of overlap between bullying and cyberbullying. This would appear to corroborate the proposal put forward by Subrahmanyam, Smahel and Greenfield (2006) regarding the behavioral coherence of adolescents in their online and offline lives. Our study also confirmed the predictive value of involvement in bullying and cyberbullying with respect to short term continuation in the same roles and the stability of future involvement in bullying (Burk et al., 2011).

Our results supported as well the third hypothesis: involvement in traditional bullying predicts later involvement in other roles. Being a victim of traditional bullying predicts not only future victimization but also involvement in the other roles, both traditional and cyber, while being an aggressor predicts later victimization, cyber-victimization and cyber-abuse, although with a lower degree of likelihood. In the case of cyberbullying, it is less likely that a student who has been cyber-victimized will later turn into a traditional aggressor/bully. This pattern of results indicates that whereas traditional bullying seems to carry over into cyberbullying, cyberbullying does not appear to turn into bullying. This concurs with the results of earlier research into bullies (Li, 2007; Riebel et al., 2009; Schneider et al., 2012; Smith et al., 2008) and victims (Wang and team, 2010). In contrast with the findings of other authors, in this study we found that victimization can, in fact help, to predict cyber-abuse (Gradinger et al., 2009; Hemphill et al., 2012; Werner et al., 2010). The fact that victimization predicts later abuse and cyber-abuse, but that abuse correlates inversely to victimization, cyber-victimization and cyber-abuse, seems to suggest that a victim is more likely to turn into an aggressor/bully than vice versa. This is coherent with the studies carried out by Bernstein and Watson (1997) and by Olweus himself (1978), and allows us to conclude that victims are just as likely to turn into aggressors as into cyber-aggressors. The inverse relationship we found between abuse and later cyber-abuse contradicts Tokunaga's idea (2010) about bullies using social networks to maximize the damage they cause.

Sex and age variables proved to have low predictive value, and were almost irrelevant in most of our models. Sex, however, was significant in predicting traditional victimization, with boys

showing a greater likelihood of T2 victimization. This concurred with the absence of sex-related differences in cyberbullying previously reported in different studies (Hinduja & Patchin, 2008; Juvonen & Gross, 2008; Slonje & Smith, 2008; Smith et al., 2008), but is difficult to explain in the light of earlier research into traditional bullying in which it is usually girls who display a higher risk of victimization. The results of Smith and colleagues (1999), however, point in this same direction. To a certain extent, these discrepancies may be accounted for by the different evaluation instruments employed. Be that as it may, the contribution of this variable was nevertheless marginal. Age proved to be significant only with regard to cyber-victimization, as previously shown by Mark and Ratliffe (2011).

The conclusions drawn from this study have interesting implications for educational practice. Firstly, if being an aggressor or a victim in traditional bullying helps to predict later involvement in bullying or cyberbullying, then the projects already being implemented in schools to improve *convivencia* and prevent traditional bullying already, in themselves, constitute a source of cyberbullying prevention, although their scope needs to be extended to encompass virtual environments (Del Rey, Casas, & Ortega, 2012). If, as our results suggest, traditional victimization is one of the main risk factors, then there is reason for optimism in the fight against bullying and cyberbullying because it has been shown that existing psycho-educational measures are effective in preventing and decreasing such victimization (Ttofi & Farrington, 2011).

Finally, it should be mentioned that this study highlighted a number of methodological limitations which restricted the extrapolation of its results. These included the small size of the sample group, the criteria used for selecting the schools and the short period of time between measurements. It would be desirable to corroborate these results in representative sample groups with longer periods of time between measurements, although longitudinal design we employed, which is rarely used in this type of research due to the difficulties involved in gaining access to students at the same school twice in the same school year, still represents one of this study's strong points.

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