



## Full length article

## Cyberbullying and self-esteem: An Italian study

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## ABSTRACT

In this study, the cyberbullying risk related to self-esteem, social, and personal variables was investigated. Cyberbullying describes a pervasive form of aggressive behaviour aimed at offending victims who are unable to protect themselves. A considerable sample of Italian young people were interviewed using standardized questionnaires. The results of the current study showed that, although few subjects were affected by cyberbullying (perpetrators and victims), a relationship exists between lower levels of self-esteem and cyberbullying risks. The role of parental control represents a good opportunity for the subjects in preventing aggressive behaviour. In general, this study underlines the importance to design and realize specific didactical programs to prevent aggressive behaviour, and to increase parental awareness about cyberbullying risks.

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## 1. Introduction

Bullying describes a pervasive form of aggressive and intentional behaviour within a situation of an imbalance of power against a victim unable to defend himself (Li, 2007; Slonje & Smith, 2008; Smith et al., 2008). Usually, bullying manifests itself repeatedly over time in two ways: direct (physical behaviours such as hitting, pushing, kicking, and stealing) or indirect (verbal behaviours such as calling names, provoking, threatening, insults, spreading rumours, excluding, or isolating socially), (Olweus, 1993). This form of aggressive behaviour is mainly problematic for the school setting and in particular for the students' well-being, leading it to be studied in many countries (Menesini et al., 2012). In schools, victims of bullying show low educational achievements and emotional problems, and are at a higher risk of depression and low self-esteem (Kim & Leventhal, 2008). Over the past few years, a new form of bullying has emerged, gathering the attention of researchers and teachers. At the same time, the huge progresses in digital technology are becoming more and more widespread. Mobile devices and other Internet applications given to adolescents not only new communication opportunities, but also have brought

some negative social interactions known as cyberbullying. Many large-scale, cross-sectional studies demonstrate that cyberbullying is a significant problem for adolescents (Berson, Berson, & Ferron, 2002; El Asam & Samara, 2016; Ybarra & Mitchell, 2004).

Cyberbullying is generally defined as using electronic media (e.g., social networking site, e-mail, chat rooms, SMS, MMS, etc.) to harm another person who cannot defend themselves. In contrast to traditional bullying, cyberbullying reaches a far wider audience at a rapid speed, transcending boundaries of time as well as both physical and personal space (Kowalski, Limber, & Agatston, 2008; Smith et al., 2008). Students who were cyberbullied reported feelings of sadness, anxiety, and fear as well as an inability to concentrate at school (Beran & Li, 2005). Some studies even underline that victims of cyberbullying have low social status within their peer group, problematic relationships with their parents, and low self-esteem (Katzner, Fetchenhauer, & Belschak, 2009). Research has also shown that depression, substance abuse, and delinquency are significantly higher among the youth who report experiencing cyberbullying or online sexual solicitation (Mitchell, Ybarra, & Finkelhor, 2007).

The present research explores the gap between cyberbullying and self-esteem, which has not been completely explored and discussed in previous studies (Brighi, Guarini, Melotti, Galli, & Genta, 2012; Patchin & Hinduja, 2010). Previous Italian studies have focused on cyberbullying and on the use of the different technological instruments such as the mobile telephone, personal computer, and emotional profile (Ortega et al., 2012) or on victimization predictors (Brighi et al., 2012). Therefore, this study

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attempts to increase the knowledge in the current research field by examining the association between cyberbullying risks in young students and the role of the self-esteem considered as a protective factor. In addition, based on this relationship, the current study explores the function of other variables such as gender, age, and parental control on Internet usage, specifically, in order to prevent interpersonal maltreatment in the cyberspace.

### 1.1. Cyberbullying and self-esteem

Rosenberg (1965) defined self-esteem as “a favourable or unfavourable attitude toward the self” (p. 15). Self-esteem is a personal belief or perception of how an individual is appreciated in the social world. A person with high self-esteem is usually assertive, pleased, and self-respecting, whereas those who have low self-esteem are anxious, lacking confidence, and self-critical. Whereas, people with low self-esteem show social problems and their self-concepts are inconsistent. In general, self-esteem tends to rise when a subject experiences positive life events such as success and favourable opinions among peers.

Previous studies have demonstrated an association between victimization experience and low self-esteem. Initially, O'Moore and Kirkham (2001) found that, among school students aged 8–18 years, high self-esteem protects children and adolescents from involvement in bullying. Furthermore, Seals and Young (2003) found no significant differences between self-esteem and groups of bullies and non-bullies. In a recent study, Patchin and Hinduja (2010) explored the relationship between an adolescent's experience with cyberbullying and their level of self-esteem. They found that victims of cyberbullying, when compared to normal subjects, showed lower levels of self-esteem. Among a number of risk factors in cyberbullying, a previous study indicated that positive feedback given on an adolescents' friend in Social Network Sites (SNSs) enhanced their self-esteem and well-being, whereas negative feedback decreased their self-esteem and well-being (Valkenburg, Peter, & Schouten, 2006).

A recent study on the effect of information technology usage and self-esteem showed that children who played video games more had lower self-esteem than children who played them less (Jackson, Fitzgerald, von Eye, Zhao, & Witt, 2010). Additionally, Williams and Guerra (2007) examined the relations among self-esteem, normative belief, and school climate. The results of their study underlined that, in schools with a negative climate, high self-esteem is a predictor of a higher level of bullying perpetration. In contrast, when the school climate was positive, a high level of self-esteem indicated a reduced problem of aggressive behaviour. Other studies have found that cyberbullying victimization among youths is a prediction of psychological distress and low self-esteem (Cénat et al., 2014). Others studies, for example, consider the self-esteem as an important predictor of personal and social well-being (Orth, Robins, & Widaman, 2012; Orth, Robins, Widaman, & Conger, 2014).

However, the current literature review underlines that the association between cyberbullying and self-esteem is not fully explained. In order to cover this gap, the current study aims at investigating in an Italian adolescent sample the protective role of self-esteem to reduce the risk of cyberbullying. More specifically, we considered that lower levels of self-esteem, and a reduced parental control over the subjects could increase risk of deviant behaviours such as cyberbullying in their use of Internet services.

### 1.2. Cyberbullying: gender and school level variables

Cyberbullying often occurs within the social-relational context (Hoff & Mitchell, 2008) by using short messaging service (e.g. SMS)

between known people, or using social networking websites between “friends” in contrast with the commonly held assumption that it is anonymous (Hinduja & Patchin, 2008, 2009; Kowalski & Limber, 2007; Patchin & Hinduja, 2006; Shariff, 2009).

Some previous studies have identified the risk factors of cyberbullying in demographic variable. Respect to the gender, in the traditional bullying, boys have more likely to be involved compared to girls (Jolliffe & Farrington, 2006) while in the cyberbullying behaviour, the studies are conflicting. Some studies, for instance, does not show gender differences for cyberbullies but found that boys are more involved as cyberbully (Li, 2006) and girls as cybervictim (Calvete, Orue, Estévez, Villardón, & Padilla, 2010; Dehue, Bolman, & Völlink, 2008; Li, 2007; Smith et al., 2008). However, an evidence from a study showed that girls are more interested in cyberbullying than traditional bullying probably for their greater involvement in indirect aggression rather than direct one (Whittaker & Kowalski, 2015).

Recent studies (Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2011; Whittaker & Kowalski, 2015) suggest that cyberbullying tends to increase with the age and older boys are more likely to call someone names or threaten someone online. Instead, younger boys were more likely than younger girls to send unwelcome sexual words or photos to other subjects by online services.

Other findings show that children growing up in families with low or middle socioeconomic status (Kim, Boyce, Koh, & Leventhal, 2009; Wolke, Woods, Stanford, & Schulz, 2001), and those that live in families with few social activities, have a high risk of victimization (Stevens, De Bourdeaudhuij, & VanOost, 2002).

### 1.3. Cyberbullying and parental control

In the past few years, studies have investigated the relationship between cyberbullying and family suggesting as young people have created an interactive virtual world away from adult supervision (Floros, Siomos, Fisoun, Dafouli, & Geroukalis, 2013; Mishna et al., 2011). Internet services are easily accessible to the majority of young people at home and in educational settings worldwide. Often, young people are alone while surfing on the Internet, which may increase the risk to experience the role of bully or victim. Different studies underlined that cyberbullying (perpetration and victimization) is related to a subject's high computer competences and frequent use of the Internet or communication technologies in general (Huang & Chou, 2010; Katzer et al., 2009; Mesch, 2009; Vandebosch & Van Cleemput, 2009). Patchin and Hinduja (2006) found that adolescents used their computers in the privacy of their own bedrooms, thereby reducing, or even eliminating, the presence and supervision of their parents. This explains why cyberbullying can be highly correlated with a lack of parental control (Ybarra & Mitchell, 2004).

According to Livingstone and Bober (2004), parents exert less control because they believe that the virtual world is less dangerous than the real one. For parents, the Internet is a real challenge, which is why it is one of the few contexts in which they have less competence than their children. Some studies evidenced a relationship between parental knowledge about their children's whereabouts and discussions about online behaviour, and a lower frequency of cyberbullying victimization (Taiaoli, 2010; Wade & Beran, 2011). Despite some parents' efforts to monitor their children's online behaviours, some studies found that many adolescents are hesitant to disclose being cyberbullied to a trusted adult (Ybarra & Mitchell, 2004). Therefore, it is assumed that a minor parental control on Internet use increase the risk of experiencing cyberbullying effects in young people.

## 2. Method

### 2.1. Participants

The current study involved 438 students, of which 250 were females (57.1%) and 184 were males (42%) aged 10–20 years old ( $M = 15.17$ ;  $SD = 2.22$  years). The mean age was 15.08 years for males ( $SD = 2.25$ ) and 15.23 years for females ( $SD = 2.18$ ). Only four students did not specify their gender (0.9%), but they were included for the final statistical analyses because all their answers fulfilled the parameters correctly. The participants were recruited from four public schools (one middle school and three high schools), located in the city of Cosenza (South Italy) and hinterland, which were interested to be involved in this study. No statistically significant differences between males ( $M = 15.08$ ,  $DS = 2.25$ ) and females ( $M = 15.23$ ,  $DS = 2.18$ ) with regard to age were found ( $t(431) = -0.696$ ,  $p > 0.05$ ).

### 2.2. Materials

The instruments used in this study are as follows:

- The Daphne III self-report questionnaire on cyberbullying (Genta, Brighi, & Guarini, 2009). The validated Italian version was used, and included three main sections: (1) A socio-demographic profile (e.g., gender, age, school level, and parental information); (2) Seven items on cyberbullying behaviours (e.g., “I threatened someone with messages on the Internet”, “I threatened someone by using SMS”); the statements have shown to have acceptable internal consistency, as evaluated by the Cronbach alpha ( $\alpha = 0.76$ ). The seven items on victimization behaviours (e.g., “Someone has posted online my embarrassing photos or videos”, “Someone threatened me by using SMS”) showed to have a good internal consistency, where the Cronbach alpha was  $\alpha = 0.76$ . The rate of cyberbullying victimization items was scored on a five-point scale (No, One or two times, Two or three times per month, One time a week, More time a week), and the responses “it has only happened once or twice” was defined as being “occasional” while “two or three times a month” or more frequently was defined as being “severe” (Brighi, Guarini, Palermi, Bartolo, & Genta, 2011; Genta et al., 2012).
- Seven items about the relationships with parents about Internet use (e.g., “Do your parents give you a time limit that you can spend on Internet?”, “Do your parents really know what you do on Internet and which sites you visit?”). The internal reliability of the seven items about the relationships with parents was sufficient and the Cronbach's alpha for the current study was  $\alpha = 0.61$ . According to Kline (1999), values below 0.70 can, realistically, be accepted because of the diversity of the psychological construct measured.
- The Rosenberg Self-Esteem Scale (RSES, 1965). Global explicit self-esteem was measured by using the validated Italian version of the RSES (Prezza, Trombaccia, & Armento, 1997). The RSES consists of 10 closed questions measured on Likert-like scale, where each item's response ranges from 1 (strongly disagree) to 4 (strongly agree), and items are summed to produce a single index of self-esteem. The scale ranges from 10 to 40: five items positively and five negatively valence, these last reversely computed. Whereas higher scores reflect a higher level of explicit self-esteem, we identified 30 as the threshold for high self-esteem (Brito & Oliveira, 2013). Sample items included (“I feel that I have a number of good qualities”, “I am able to do things as well as most other people”). Average self-esteem was

measured as 30.36 ( $SD = 5.21$ ), and the Cronbach alpha for this sample was  $\alpha = 0.80$ .

### 2.3. Procedure

For each school, the head of the school approved the research and student's family gave consent to participate in this study. After that, the instruments were collectively administered in the classroom by using a paper and pencil version of the test. Firstly, the researcher presented the aims of the study to the students, explained the definitions of cyberbullying, and clarified that participation was anonymous. Although the students agreed to participate in this research, they were informed on the voluntary nature of their participation, and any doubts that arose were clarified. The students, under the supervision of the researchers, individually completed the questionnaires in approximately 25 min. The investigation was conducted in accordance with the Code of Ethics of the World Medical Association (Declaration of Helsinki, 2013).

### 2.4. Statistical analysis

The statistical analyses were performed by using the SPSS 22 software package. In the first step, descriptive statistics were computed to comprehend the diffusion of the cyberbullying risks among the current sample of subjects. Then, an independent  $t$ -test was carried out to respectively assess the difference between demographic information, familiar setting, cyberbullying, and self-esteem. However, for each  $t$ -test, the Cohen's effect-size value was calculated. Finally, a linear regression analysis was ran to estimate the relationship between cyberbullying risks (victim and perpetrator) and self-esteem, while controlling for socio-demographic profile and familiar setting. According to Patchin and Hinduja (2010), regression models are suitable methods given the properties of the explored variables.

## 3. Results

### 3.1. General aspects

Regarding the total sample, 11% of students were involved in cyberbullying as a perpetrator (occasional, 9%; severe, 2%), and 15.4% of the students as a victim (occasional, 13.1%; severe, 2.3%). Considering gender, males were involved as perpetrators 14% (occasional, 10.8%; severe, 3.2%), and as victims 14.9% (occasional, 12.8%; severe, 2.1%). Females were involved as perpetrators 8.9% (7.8% occasional and the 1.1% as severe), and as victims 15.6% (occasional, 13.3%; severe, 2.3%).

Concerning the relationship with parents, students reported that their parents are interested in and control what they do on line. More specifically, subjects were available to tell parents what they do on the Internet (fairly, 36.8%; all, 25.1%) and who their friends are on the Internet (enough, 37.2%; all, 28.6%). Most of the subjects claim that parents give them limited time to spend on the Internet (often, 15.2%; all the time, 8.3%), and a limit on the web sites to visit (often, 15.3%; all the time, 16.2%).

For the current study, the results of the independent  $t$ -test showed that parents' behaviour, in relation to the school grade, varied significantly according to knowing the student's behaviour when surfing Internet ( $t(430) = 3.39$ ,  $p < 0.05$ ). Students tell their parents about what they do when surfing the Internet ( $t(432) = 2.34$ ,  $p < 0.05$ ). Parental supervision during Internet sessions is more focused on students that attend the secondary school than high school ( $t(432) = 4.81$ ,  $p < 0.001$ ) (Table 1).

**Table 1**  
School grade differences.

Item	School level	n	Mean	SD	t	p	Cohen's d
What parents know about sons	Secondary school	102	7.96	2.27	3.39	0.001	0.33
	High school	330	7.20	1.89			
What do you tell parents	Secondary school	103	8.12	2.31	2.34	0.020	0.23
	High school	331	7.60	1.84			
Parental control	Secondary school	103	5.90	2.66	4.81	0.000	0.46
	High school	331	4.60	2.33			

An independent *t*-test was run to assess the difference between females and males about both parental control and cyberbullying risks (Table 2). The outcomes highlighted that males ( $t(427) = 3.37$ ,  $p < 0.01$ ) exhibit more difficulty to discuss Internet usage with their parents than females ( $t(429) = 2.90$ ,  $p < 0.05$ ). The *t*-test results revealed that males, compared to females, were more predisposed to act as predator in cyberbullying behaviour ( $t(428) = -3.08$ ,  $p < 0.05$ ). However, for the current sample no statistical significant difference was found between gender and parental control during Internet surfing or between gender and victims of cyberbullying.

Finally, examining the relationship between gender and self-esteem, we found that more males ( $M = 29.06$ ;  $SD = 5.54$ ) than females ( $M = 32.06$ ;  $SD = 4.19$ ) showed lower values of self-esteem ( $t(432) = -6.15$ ,  $p < 0.001$ ).

### 3.2. Cyberbullying and self-esteem

Demographic data, familiar setting (*parents know about subjects' online activities, parents know what really happens during the subject's online use, etc.; tell your parents what to do online, hide or omit details about your online activities, etc.; parental control, parents supervision about Internet sessions, etc.*), and cyberbullying risks were used in a hierarchic linear regression analysis to estimate self-esteem. Previous studies (Patchin & Hinduja, 2010; Pujazon-Zazik & Park, 2010) have underlined that gender and age can influence the self-esteem. We then included both in the model to control for possible effects on the dependent variable. The general results of the hierarchic linear regression are displayed in Table 3. No multiple-collinearity problem existed, since VIF values ranged from 1.03 to 1.17.

Estimating Step 1 showed that gender was significantly and positively associated with self-esteem ( $\beta = 0.28$ ,  $t = 5.87$ ,  $p < 0.001$ ). Step 1 accounted for approximately 8% of the additional explained variance to the prediction of self-esteem ( $F(2,406) = 17.29$ ,  $p < 0.001$ ;  $\Delta R^2 = 0.08$ ,  $p < 0.001$ ). Results in Step 2 indicated that a familiar setting added to the prediction of self-esteem ( $F(3,403) = 3.01$ ,  $p < 0.05$ ;  $\Delta R^2 = 0.02$ ,  $p < 0.05$ ). More specifically, parents who know about their children's online activities ( $\beta = 0.15$ ,  $t = 2.92$ ,  $p < 0.05$ ) were significantly and positively associated with higher levels of self-esteem. Finally, the results in

**Table 3**  
Hierarchical multiple regression results for self-esteem (N = 410).

Predictor	Self-esteem		
	$\beta$	$R^2$	$\Delta R^2$
Step 1 – Demographic			
Gender	0.28**	0.08	0.08**
Age	0.04		
Step 2 – Familiar setting			
Gender	0.31**	0.10	0.02*
Age	0.05		
Parents know about your online activities	0.15*		
Tell your parents what you do online	0.00		
Parental control	−0.04		
Step 3 – Cyberbullying risks			
Gender	0.30**	0.11	0.02*
Age	0.04		
Parents know about your online activities	0.12*		
Tell your parents what you do online	0.01		
Parental control	−0.05		
Victim	−0.13*		
Perpetrator	0.03		
	Adj. $R^2 = 0.10$		

**Note:** Change in  $R^2$  is denoted as  $\Delta R^2$ . Adj.  $R^2$  = Adjusted  $R^2$ .

\*Significant at  $p < 0.05$ .

\*\*Significant at  $p < 0.001$ .

Step 3 showed that subjects of cyberbullying victimization reported lower levels of self-esteem ( $\beta = -0.13$ ,  $t = -2.59$ ,  $p < 0.05$ ). However, for these data the variables “age”, “tell your parents what you do online”, “parental control”, and “victim” were not important predictors of self-esteem.

## 4. Discussion

This study analysed the role of self-esteem in relation to the risk of cyberbullying in a sample of Italian adolescents. Moreover, other variables were considered such as gender, parental control, and school level. Regarding the gender variable, the analyses show that there are no significant differences in adolescents involved in cyberbullying, but male subjects appear more involved as perpetrators. This result is consistent with previous investigations, which

**Table 2**  
Differences for gender.

Item	School gender	n	Mean	SD	t	p	Cohen's d
What parents know about sons	Female	247	7.65	1.89	3.37	0.001	0.33
	Male	182	6.99	2.10			
What do you tell parents	Female	250	7.94	1.85	2.90	0.004	0.28
	Male	181	7.39	2.08			
Parental control	Female	249	4.98	2.43	0.87	0.383	0.09
	Male	182	4.77	2.53			
Perpetrator	Female	249	7.74	1.61	-3.09	0.002	0.32
	Male	181	8.52	3.53			
Victim	Female	245	8.34	2.50	0.05	0.962	0.00
	Male	178	8.33	2.31			



found that boys are more implicated as perpetrators (Li, 2006; Slonje & Smith, 2008; Calvete et al., 2010). Further, different studies report that girls are more involved in cyberbullying compared with traditional bullying (Whittaker & Kowalski, 2015; Smith, 2015).

We also found that subjects who attended the secondary school had a high parental control with regard to time spent on the Internet, the websites visited, and their Internet related activities. However, there was no significant gender difference linked to parental control, although females tended to give more confidence to parents in relation to activities carried out on the Internet. According to the previous study (Rosen, Cheever, & Carrier, 2008), our results showed high parental attention for what early teens do on the Internet, although adolescents have more technological knowledge (Spears, Kofoed, Bartolo, Palermi, & Costabile, 2012).

We found that parental supervision is a positive and valid predictor to protect the subject's optimal level of self-esteem, which is probably linked with the way in which students build individual self-esteem not only in the school context, but also in relation to the quality of familiar relationship. The positive function of parental monitoring and freedom in relation to technologies (Spears et al., 2012) probably helps students during daily tasks.

The findings of the current study confirm those of Patchin and Hinduja (2010) and Williams and Guerra (2007), which detects that subjects who experienced lower levels of self-esteem are more involved in cyberbullying risk.

Our findings reveals that cyberbullying victims have low levels of self-esteem. This result is consistent with previous investigations, which pointed out the different implications of the self-esteem in cyberbullying as it confirms that lower levels of self-esteem can represent a risk for young people (Brighi et al., 2012; Hinduja & Patchin, 2010; Seals & Young, 2003).

From an international point of view, previous studies have investigated the relationship between cyberbullying and self-esteem and the results are often inconsistent (Patchin & Hinduja, 2010, for a review). In the Italian context, however, the literature regarding cyberbullying and self-esteem is much less consistent. A significant Italian study was aimed at describing how social and educational context may affect the subject's behaviour to become the victim of both bullying and cyberbullying (Brighi et al., 2012). The researchers have shown that among other relevant variables, a lower level of self-esteem was a good predictor of being cybervictimised. In relation to this study, the current results confirm the importance of considering self-esteem as a predictor to prevent and respond to all the different kinds of aggressive behaviour, especially in the educational environment.

So far, the different risk factors related to cyberbullying have seldom been investigated in several cases from a general point of view. Thus, our results are important for empirical research aimed at evaluating the role of self-esteem in relation to the risk of cyberbullying. In particular, cyberbullying victims have shown lower levels of self-esteem, thus increasing in the subjects the risk of severe consequences on young people's well-being.

## 5. Conclusions, limitation and further research

The main objectives of the current study were to investigate two aspects of the cyberbullying risks: self-esteem level and the role of parental control. The results obtained in this study are consistent with previous investigations (Perren & Gutzwiller-Helfenfinger, 2012; Sticca, Ruggieri, Alsaker, & Perren, 2013). In particular, we found that subjects with a low level of self-esteem are more likely to be involved in cyberbullying risks. Other significant results are related to parental control. In fact, subjects that declared a high parental control to use information technologies showed lower

cyberbullying risks.

These results suggest some ideas to incorporate into educational guidelines that can be followed by teachers, parents, and researchers who operate in the field of education to prevent aggressive behaviour. For people that operate in such fields, it is important to analyse the different aspects of the student's behaviour (e.g., ability to build interpersonal relationship with peers and adults, depression symptoms, substance abuse and other related deviant behaviour) to identify problematic relationships between school performance and psychological well-being.

However, this study also has some limitations. First, we analysed some aspects of cyberbullying, but they were applied on an international standardized questionnaire. The age of the subjects was limited to a particular range as well. This limitation could probably influence the current study; hence, it does not facilitate the generalization of the outcomes. Finally, the risk of this research is related to a methodological approach to collect the data. In several cases, it is known that subjects have some difficulty reporting their own experiences. However, we have tried to control this parameter by working within the scientific social research field.

Future research might include evidence-based intervention on cyberbullying within schools by involving students, parents, and teachers. Often, teachers are not experienced to discuss aggressive behaviour, personal well-being, and other relevant forms of problematic behaviour with their students within the school. We believe that future research in the field of cyberbullying should also include variables aimed at investigating their relationship with Internet addiction and other relevant social risks connected with a misuse of the ICT (Information and Communications Technology). In general, the results of this study underline the importance of investigating the prevalence of cyberbullying in order to design and test a new approach aimed at preventing this important risk, which has strong implications in the life of young people.

## Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.chb.2016.12.026>.

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