Cyber-Aggression among Portuguese Adolescents: A Study on Perpetration, Victim Offender Overlap and Parental Supervision

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Abstract

The increasing diffusion of information and communication technology (ICT) leads to a greater social visibility of phenomena related to aggression in cyberspace. This research aims to study the dark side of online interpersonal communication among adolescents, in particular, the frequency of perpetration of aggression in cyberspace (e.g., cyber-stalking), the overlap between victimisation and offending and the dynamics of parental supervision and/or involvement. The study was conducted on 627 Portuguese adolescents (12-16 years old) and 586 parents. The results reflect a worrisome frequency of attacks in cyberspace that reinforces the trend found in previous international studies. The findings also show a high overlap between victims and offenders and the influence that parents can have on the aggressive behaviour of their adolescent learners in the virtual environment.

Keywords: Cyber-aggression; cyber-stalking, adolescents, overlap, parental involvement.

Introduction

The increasing use of information and communication technologies (ICT) has transformed the process of human socialisation. ICT has brought a change in the risk and exposure of users by facilitating the discovery of information in a more invasive way (Nobles, Reyns, Fox, & Fisher, 2012). The Internet has caused many changes in the field of socialisation, access and exchange of information and has become an asset to all users. However, this tool can also be used as a means of surveillance and intrusion and offers anonymity to users who so desire (Carvalho, 2011).

In 2012, the Eurostat report of ICT usage found that 60% of individuals use the Internet daily and about a third used it on mobile devices (e.g., cell phones) away from home or work (Seybert, 2012). Other studies show that the juvenile population presents the most digital dexterity. For example, the study Health Behaviour in School-Aged Children, sponsored by WHO in Portugal and led by the Social Adventure Project team,

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revealed that 98.6% of Portuguese adolescents aged 11, 13 and 15 years have at least one computer at home and 92.9% have Internet access (Matos et al., 2010). More recently, a European study with young Portuguese people between 9 and 16 years of age ($n= 25142$) revealed that 53% used the Internet daily (compared to the EU average of 60%) and 67% (third highest rate in the EU) access the Internet through their own laptops (Haddon, Livingstone, & EU Kids Online Network, 2012). According to the study, Portugal presented one of the lowest averages of the age of first-time Internet use at 10 years of age.

This growing diffusion of ICT in daily lives leads to greater visibility of and increasing concern about the possible negative experiences in the virtual environment, especially in young people, given their greater vulnerability to victimisation and perpetration of cyber-aggression (Bilic, 2013; Pereira & Matos, 2015), including cyber-stalking.

The definition of cyber-stalking is still somewhat controversial, but researchers have reached a consensus on some of its core elements. They agree that it is characterised by an intentional, repeated and unwanted behaviour pattern and is a set of behaviours in which an individual, group or organisation uses ICT to harass another individual, group or organisation (Bocij, 2004). Although some authors view cyber-stalking as a variation of traditional stalking that incorporates special circumstances (e.g., Nobles et al., 2012), others assume that cyber-stalking covers a range of behaviours that are not associated with stalking in the real-world context (e.g., Bocij, 2003).

Operationalising cyber-stalking, in terms of the amount of required behaviours and duration of the conduct, is no easy task. As proposed by Bocij (2004), any context, in terms of time and specific behaviours, can involve serious criminal and social constraints; thus, it is not legitimate to impose a mandatory time limit for the experience of cyber-stalking or a specific number of behaviours (Pereira & Matos, 2015). Its operationalisation must pass a definition broad enough to include all possible experiences.

For the purposes of this study, *cyber-stalking is defined as a set of behaviours of persecution or virtual harassment, with singular or multiple occurrences, intentional and unintended by the victims; it involves the victimisation/aggression of at least one behaviour that occurs two or more times and/or two or more behaviours that occur at least once.* This definition allows for approaching the study of the legal operationalisation in other countries (e.g., USA, Australia), which requires two or more episodes for victimisation/aggression to be considered a "pattern" of unwanted harassment.

There are few published studies about cyber-stalking in the age of adolescence. However, it is a growing phenomenon (Alexy, Burgess, Baker, & Smoyak, 2005), and some recent studies show the relevance of the phenomenon. Ferreira, Martins, and Abrunhosa (2011) found that, among young Portuguese people aged 10 to 18 years, cyber-stalking is the third most prominent online risk reported. The focus of research on cyber-stalking has been oriented to the adult and university population (Carvalho, 2011). This might be explained by the difficulty for researchers to demarcate the different forms of online harassment perpetrated by adolescents and therefore they assume different experiences simply as cases of cyber-bullying, sexual abuse and/or sexting. Another explanation may be the methodological difficulties related to lengthy requests for authorisation among parents (Pereira & Matos, 2015).

However, it is possible to find some studies in the literature about online harassment behaviours among adolescents. In the study by Ybarra and collaborators (2007; $n= 1500$, 10-17 years of age), two criteria of online aggression were considered: one was based on the frequency with which adolescents used the Internet to harass or embarrass someone,

and the other was based on the number of times the adolescents posted nasty comments about someone online. The results showed that 29% of adolescents self-reported having displayed one of these behaviours at least once in the previous year. Additionally, according to this same study, boys are more likely to be aggressors than girls. Nevertheless, the literature is not unanimous about the influence of sex on this phenomenon; some studies claim that the aggression does not depend on the sex variable (Ybarra & Mitchell, 2004). Moreover, literature has shown that in youth increasing age is associated with increased likelihood of being a cyber-aggressor (Ybarra & Mitchell, 2004, 2007).

Furthermore, research tends to focus on the standardisation of the roles of victims or aggressors and does not recognise or analyse the co-occurrence of the two positions (Jennings, Reingle, & Piquero, 2012). However, as stated by Lauritsen, Sampson, and Laub (1991, cited in Posick, 2013), it is difficult to understand victimisation or aggression without understanding both. The notion that aggressors and victims may be more alike is not new. In the 1970s and 1980s studies that used self-reports concluded that generally the aggressors and victims shared several characteristics, including demographics and certain lifestyles (Posick, 2013). A recent literature review conducted by Jennings and collaborators (2012) identified 37 studies (between 1958 and 2011) that evaluated the overlap of the roles of victim and aggressor. This review reinforced the empirical support for the occurrence of overlapping roles regardless of the context of interpersonal violence (31 studies supported the theory). Nonetheless, it is evident that the adhesion to this combined typology depends on the type of crime and it is higher in violent crimes (Jennings et al., 2012).

Taking into account the extent of adolescent ICT use and the fact that some adolescents face victimisation reactively, due to their incipient developmental stage, research on the importance of parental involvement in the access and usage of ICTs has begun to emerge. Several reports have documented the importance of parents in promoting online safety for the critical use of ICT and the prevention of crime (e.g., Helweg-Larsen, Schutt, & Larsen, 2012; Livingstone & Haddon, 2009; Sengupta & Chaudhuri, 2011). Research has sought to promote a fair and moderate parental mediation (parents as a source of information and support before, during and after browsing) (Helsper et al., 2013). The main approach on parenting context was developed by Baumrind (1971) and Maccoby and Martin (1983). This work establishes two dimensions that help define parenting styles: parental control and parental warmth. The first reflects the level of guidance, the cessation of certain behaviours related to the Internet and/or the reinforcement of rules; the second is characterised by investment in communication with their children and the levels of support provided. Based on these dimensions, Valcke et al. (2010) define four parenting styles related to the use of the Internet: a) *permissive* reflects the style of the parents who do not impose explicit limits on their children; they avoid confrontation with their children, opting to give them everything they ask for and let them follow their ideas and desires; they invest in care but have difficulty with guiding their children; b) *laissez-faire* is characterised by low levels of control and parental involvement. These parents do not support or restrict their children's Internet use; c) *authoritative* is related to having a clear definition of rules. Parents do not explicitly restrict behaviours but expect their children to be responsible and behave in a self-regulated way. They prefer to provide practical rules (e.g., time they are allowed to spend on the Internet) and d) *authoritarian* relates to parents who demand unquestioning

obedience. In this parenting style, there is hardly room for the discussion of issues related to the Internet or access to the Internet.

Since, 1989-90's, Farrington studies on parenting style has been studied as a contributor to juvenile delinquency in the criminological literature. In 2009, the meta-analysis (with 161 published and unpublished manuscripts) completed by Hoeve, Dubas, Eichelsheim, van der Lann, Smeenk and Gerris on the relationship, in the real world, between parenting and different forms of overt (e.g., harm, rape, murder) and covert (e.g., vandalism, selling drugs) delinquency, corroborate an association between these both variables. More specifically, the studies demonstrate that higher levels of parental involvement are associated with lower levels of delinquent behaviour.

Given the above, this research aims to study the dark side of online interpersonal communication among adolescents, in particular, the frequency of aggression in cyberspace, viz., cyber-stalking, the dynamics of supervision and/or parental involvement and the existence of a possible overlap (e.g., being a victim and an aggressor). Accordingly, this research is intended primarily to study those who might be considered cyber-aggressors, focusing then on the cyber-stalkers and their parents.

Method

Sample and procedure

This research brings together a representative[4] sample of adolescents aged 12 through 16 years from the northern region of Portugal's mainland and the autonomous region of the Azores. Upon authorisation from the National Commission for Data Protection, the General Directorate of Education and the director of each group/school proceeded to collect the express and informed consent of the students and their parents because the participants were underage. The selection of adolescents and their respective parents was random.

Data were collected between February and June 2013 through an online survey completed by the adolescents in a classroom and in the presence of the investigator responsible for the wider research project. Adolescents who seemed to have a cognitive impairment/mental retardation and/or were not active users of ICT for at least 6 months were excluded from the sample. Regarding parents, data were collected through a paper and pencil version of the online survey questionnaire, with a completion time of between 10-15 minutes. Illiteracy was the only exclusion criterion for this sub sample. Statistical analysis was performed using the computer software Statistical Package for Social Sciences (SPSS Version 22.0 for Mac OS X).

The sample consisted of 627 adolescents (45.1% males and 54.9% females) between 12 and 16 years of age (M = 13.98, SD = 1.35). Regarding nationality, 97% of the participants were Portuguese. Most participants attended public schools (73%). With regard to education, the majority were in the third cycle of basic education: 30.6% were

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[4] The present study on the frequency of cyber-stalking is part of a wider research project based on a representative sample of the number of adolescents between 12 and 16 years of age in the Northern Region of Portugal and Azores. Based on data released by the National Statistics Institute and the reference value of the sample size for the northern region of Portugal (n = 383) and the Azores (n = 33; cf. Krejcie and Morgan, 1970), the total number of surveys to be conducted on adolescents and their respective parents was defined for each Nomenclature of Territorial Units for Statistics.

in seventh grade, 27.6% were in eighth grade, 21.1% were in ninth grade. The least frequent categories were secondary education (12.6%) and vocational education (8.1%).

Regarding parents (N = 586 participants), 78.5% were female and were 21.5% male. The age range was 16 to 68 years (M = 42.86, SD = 6.27). Most were of Portuguese nationality (97.6%). The majority was married or unmarried (78.5%) and 13.8% was divorced/separated. Most were employed (72%) and 22.5% were unemployed. Most participants were assumed to be the mother of the adolescent (76.5%), 20% were the father, and 3.2% were another relative, foster parent or another foster family member.

Measurements

For the collection of data from adolescents, we used the Inventory of Behaviours and Attitudes towards Information and Communication Technologies (ICT; Pereira & Matos, 2012, version for research). It is a tool built as a part of this research that allows us to characterise adolescents in terms of their socio-demographics, their ICT usage habits, their behaviours and knowledge about cyber-security and their perceptions about the practices of parental supervision (i.e., involvement, prohibition, effectiveness). Additionally, we applied a rating scale adapted mostly from a previous measure developed by Spitzberg and Hoobler's (2002) cyber-stalking study, deleting a number of items written specifically for adult samples and adding another three items more relevant to an adolescent sample. The instrument allowed us to measure the frequency of adolescent behaviours of victimisation and perpetration of cyber-stalking by using a list of 18 behaviours of online harassment and persecution. It is consisted of 128 items organised into five sections: demographic data; prevalence of lifelong cyber-victimisation/aggression; profiles, dynamics and scenarios of experienced cyber-stalking; the effects on the cyber-victim; and responses to victimisation. For the purposes of this research, only the data concerning the cyber-aggression will be addressed.

For parents, we used a questionnaire entitled Information and Communication Technologies: Knowledge and Practices of Parental Supervision (Pereira & Matos, 2012, version for research). This instrument characterises the digital user profile of the parents of the adolescents involved in the study to learn their perception of their adolescents' online practices, characterise their parental supervision practices (i.e., involvement, prohibition, effectiveness) and exploit their knowledge about cyber-victimisation experienced by adolescents. The answers ranged from yes/no options, frequency scales, and Likert-type agreement scales.

Results

Global frequency of cyber-aggression

The frequency of online aggression depends on the cyber-aggression definition criteria adopted. Thus, if we adopt a more conservative criterion, i.e., the perpetration of at least one behaviour repeatedly (e.g., *call several times without apparent justification*), 70.3% (n = 441) of the sample never perpetrated any behaviour repeatedly. Based on that criterion, 16.1% (n = 101) reported perpetrating only one behaviour in isolation, and 13.6% (n = 85) reported perpetrating at least one behaviour repeatedly. However, if we adopt a broader criterion, i.e., the perpetration of a set of behaviours with singular or multiple occurrences, 66.7% (n = 418) of the sample reported not having perpetrated any cyber-aggression, but 33.3% (n = 209) of participants did report having done so.

Table 1 shows the characteristics of the aggressors and the frequency of behaviours perpetrated.

Table 1. Aggressor characteristics and cyber-tactics perpetrated by adolescents

	Singular aggression (conservative criterion)	Single or multiple aggression (broad criterion)
	n (%)	*n* (%)
Sex		
Male	98 (52.7)	110 (52.6)
Female	88 (47.3)	99 (47.4)
Nationality		
Portuguese	177 (95.2)	199 (95.2)
Other	9 (4.8)	10 (4.8)
Education		
Third Cycle	140 (75.3)	160 (76.6)
Secondary/Vocational	46 (24.7)	49 (23.4)
School		
State	133 (71.5)	151 (72.2)
Private	53 (28.5)	58 (27.8)
Cyber-aggression behaviours		
Sending exaggerated messages of affection	62 (33.3)	68 (32.5)
Sending excessively 'needy', disclosive or demanding messages	33 (17.7)	36 (17.2)
Phoning without any apparent justification	130 (69.9)	151 (72.2)
Monitoring or sending gifts via mobile phone or social network	78 (41.9)	89 (42.6)
Sending pornographic or obscene pictures or messages	23 (12.4)	25 (12.0)
Sending threatening written messages, photos or images	19 (10.2)	20 (9.6)
Sending sexually harassing messages	17 (9.1)	18 (8.6)
Sending insulting messages	60 (32.3)	69 (33.0)
Exposing private information about one person to others	16 (8.6)	17 (8.1)
Pretending to be someone else	40 (21.5)	44 (21.1)
Sabotaging someone's private reputation ('good name') in school/group/society	21 (11.3)	21 (10.0)
Attempting to disable someone's mobile phone, computer or other electronic device	16 (8.6)	17 (8.1)
Obtaining someone's private information without permission	40 (21.5)	46 (22.0)
Using another person's computer to get information on others	19 (10.2)	20 (9.6)
Altering and/or taking over the electronic identity of a person	9 (4.8)	10 (4.8)
Assuming risky behaviour on someone's behalf	9 (4.8)	9 (4.3)
Meeting someone first online and then pursuing, threatening or hurting that person personally	5 (2.7)	5 (2.4)
Meeting someone first personally and then harassing that person through the Internet or a mobile phone	5 (2.7)	5 (2.4)

In this study, the group that corresponds to cyber-aggressors is defined by the second criterion, i.e., by participants who have reported perpetrating at least one behaviour two or more times and/or two or more behaviours at least once (33.3% of the total sample). According to this criterion, these adolescents perpetrated on average 1.22 cyber-aggression behaviours (SD = 2.30, Min = 0, Max = 18).

Among cyber-aggressors, 52.6% were male, and the average age was 14.23 years (SD = 1.29, Min = 12, Max = 16). The majority (95%) was of Portuguese nationality; 76.6% were in the third cycle of education and 23.4% were in secondary/vocational education. Of these, 72.2% attended state schools and 27.8% attended private schools.

Association between cyber-aggressor characteristics and cyber-aggression behaviours

With regard to socio-demographic characteristics, a significant association was found between sex and aggressive cyber-behaviour, $\chi2$ (1) = 7.11, $p \leq$ .01, where males (17.5%) were more associated with cyber-aggression. A significant association was also found between the qualifications of the adolescents and the cyber-aggressive behaviour, $\chi2$ (5) = 26.25, $p \leq$ .001. In this case, the adolescents in the third cycle (25.5%) were the group most associated with cyber-aggression. Finally, age was correlated with the perpetration of cyber-aggressive behaviours, r_{pb} = .14, $p \leq$ .001. Thus, a greater number of behaviours were associated with older age in adolescence.

Once the most frequent behaviours were known, we tried to find an association between them and the sex of the cyber-aggressor. The results indicated there was a significant association between four of the seven behaviours perpetrated most frequently and the sex of the cyber-aggressor (see Table 2). A significant association was found between the male sex and the behaviours '*sending insulting messages*', $\chi2$ (1) = 3.88, $p \leq$ .05 (20.6% of the total participants); '*sending exaggerated messages of affection*', $\chi2$ (1) = 9.11, $p \leq$ .001 (22% of the total); '*pretending to be someone else*', $\chi2$ (1) = 3.94, $p \leq$ .05 (13.9% of the total) and the behaviour '*sending excessively 'needy', disclosive or demanding messages*', $\chi2$ (1) = 8.73, $p \leq$ .001 (12.9% of the total).

Table 2. Association between the most frequent behaviours and the sex of the cyber-aggressor

	$\chi^2(1)$
Phoning without any apparent justification	0.22
Monitoring or sending gifts via mobile phone or social network	0.00
Sending insulting messages	3.88★
Sending exaggerated messages of affection	9.11★★
Obtaining someone's private information without permission	0.01
Pretending to be someone else	3.94★
Sending excessively 'needy', disclosive or demanding messages	8.73★★

★$p \leq$ .05; ★★$p \leq$ .01.

Cyber-stalking perpetration

To know the frequency of the cyber-stalking in specific, the criterion of perpetration was adjusted to include only typical behaviours of cyber-stalking, with singular or multiple occurrences. The set of behaviours included six behaviours: *'sending exaggerated messages of affection'; 'sending excessively 'needy', disclosive or demanding messages'; 'sending pornographic or obscene pictures or messages'; 'sending sexually harassing messages'; 'obtaining someone's private information without permission';* and *'using another person's the computer to get information on others'*. Following that criterion, the group of cyber-stalkers was composed of 114 participants, representing 18.2% of the total sample and 54.5% of the group of cyber-aggressors. With an average age of 14.38 years (*SD* = 1.31, *Min* = 12, *Max* = 16), this group was mainly comprised of male participants (63.2%); 69.3% of participants were in the third cycle, and 30.7% were in secondary/vocational education. The majority (72.2%) attended state schools.

As table 3 shows, almost all of the cyber-stalking behaviours were statistically or marginally associated with the sex of the cyber-stalker. More specifically, male cyber-stalkers were more prone to perpetrate such behaviours. Exceptions were for *'sending exaggerated messages of affection'* and for '*using another person's computer to get information on others'*, which were not associated with sex of cyber-stalker (*p* > .1).

We also tested the association between the most commonly reported behaviours and the sex of the cyber-stalker, i.e., those that were carried out four or more times. A significant association was found for behaviours *'sending insulting messages'*, $\chi2$ (1) = 4.34, $p \leq .05$, *'sending pornographic or obscene pictures or messages'*, $\chi2$ (1) = 4.69, $p \leq .05$, where males represented, respectively, 14% and 9.6% of the total sample.

Table 3. Association between cyber-stalking behaviours and the sex of cyber-stalker

	$\chi^2(1)$
Sending exaggerated messages of affection	1.46
Sending excessively 'needy', disclosive or demanding messages	3.17[+]
Sending pornographic or obscene pictures or messages	8.49★★
Sending sexually harassing messages	3.74[+]
Obtaining someone's private information without permission	3.99★
Using another person's computer to get information on others	0.49

★$p \leq .05$; ★★$p \leq .01$; [+]$p \leq .1$.

Predicting adolescent cyber-stalking

A correlation matrix was created. Only those variables that demonstrated statistically significant associations (*p* < .05) on the cyber-stalking perpetration variable are reported.

Analysis indicated that there was a significant association between cyber-stalking perpetration and male adolescent (χ^2 (1) = 11.45, $p \leq .001$), older (r_{pb} = .22, $p \leq .001$) and higher education (r_{pb} = .141, $p \leq .05$). In addition, cyber-stalking perpetration was associated with the higher use of PDA (χ^2 (1) = 4.83, $p \leq .05$) and with the higher Internet

access at home (χ^2 (1) = 4.34, $p \leq$ .05).Among the cyber-practices of adolescents, the dichotomous items '*sharing files*' (χ^2 (1) = 5.44, $p \leq$ .05), '*shopping online*' (χ^2 (1) = 5.66, $p \leq$ .05), and '*looking erotic or pornographic pages*' (χ^2 (1) = 17.04, $p \leq$ .001) were also associated with an increasing of cyber-stalking perpetration. Adolescents who '*not control their online privacy when publish*' (χ^2 (1) = 4.06, $p \leq$ .05), '*give some personal information when someone unknown ask*' (χ^2 (1) = 8.33, $p \leq$ .01), and '*schedule through the Internet and/or phone a face-to-face meeting with someone personally unknown*' (χ^2 (1) = 4.48, $p \leq$ .05) were also more likely to perpetrate cyber-stalking behaviours. Despite the number of variables examined between parents' variables (i.e., parental involvement, prohibitions perceived by adolescents), no variable showed statistical significance with cyber-stalking behaviours. Only the adolescents' perception of the effectiveness of parental supervision strategies was associated with a decreased of cyber-stalking perpetration (χ^2 (1) = 7.06, $p \leq$ .01).

Logistic regression analyses

Based on a logistic regression analysis, we proceeded to estimate the perpetration of cyber-stalking from the variables that, in the previous association tests, proved to be significantly associated with it. The model was statistically significant, explaining 82.92% of the total variance. Table 4 shows the overall results for each variable.

**Table 4. Logistic regression analysis of cyber-stalking
perpetrated by adolescents**

	β	Exp(B)
Sex	–.57★★	1.78
Age	–.16	1.17
Education	–.05	1.05
Use of PDA	.16	.84
Access to the Internet at home	–.52	1.69
Sharing files online	–.04	1.04
I shop online	.64★★	.53
I look erotic or pornographic pages	.97★★★	.38
I do not control my online privacy when I publish	.04	.96
I give personal information when I am approached by someone who I do not know	.29★	.75
I have scheduled through the Internet and/or phone a face-to-face meeting with someone I do not know personally	.70★	.50
Adolescents' perception of the effectiveness of parental supervision strategies	–1.11★	3.03
Chi-Square: 87.09★★★		
–2 log Likelihood: 530		
Cox & Snell: 0.13		
Nagelkerke: 0.21		

★p <.05; ★★p <.005; ★★★p <.001.

In general, male sex adolescents (OR = 1.77, CI = 1.12 − 2.82, $p \leq .05$) increased the probability of being a cyber-stalker. With regard to the cyber-practices of adolescents, the analysis showed that the behaviours' shopping online' (OR = .53, CI = .33 − .84, $p \leq .01$), 'looking erotic or pornographic pages' (OR = .38, CI = .23 − .64, $p \leq .001$), and 'schedule through the Internet and/or phone a face-to-face meeting with someone personally unknown(OR = .50, CI = .27 − .92, $p \leq .05$) were also significant predictors of perpetration. More specifically, these behaviours increased the likelihood of being cyber-stalker. At last, adolescents whose perceived low effectiveness of parental supervision (OR = 3.03, CI = 1.05 − 8.75, $p \leq .05$) were more likely to perpetrated cyber-stalking.

Adolescent ICT uses, security and effectiveness: Frequency and perceptions

The cyber-stalkers reported more frequent use of ICT than the other groups (the cyber-aggressors and the non-cyber-aggressors). For the behaviour '*i download music, movies, games or other programs from the internet*', 63.3% of cyber-stalkers admitted to doing so often or always (56.9% of cyber-aggressors and 41.3% of non-cyber-aggressors sample also admit to doing so). For the behaviour '*i publish texts, images, photos, music or videos on a blog, personal page or social network*', 51.8% of cyber-stalkers reported doing so repeatedly (48.8% of cyber-aggressors; 36.3% of non-cyber-aggressors). Finally, for the behaviour '*participating in social networks, forums and chat rooms*', 47.4% of cyber-stalkers reported doing so often or always (38.3% of cyber-aggressors; 31.8% of the non–cyber-aggressors sample). Cyber-stalkers (81.6%) were one of the groups who perceived greater levels of online competence (comparing with 82.3% of cyber-aggressors and 70.8% of non–cyber-aggressors).

On the contrary, less frequently than other groups, cyber-stalkers adopted security measures and were subject to prohibitions issued by parents (e.g., 50% of cyber-stalkers '*control privacy when publishing*' often or always, which is lower than the 57.4% reported by cyber-aggressors; 58.9% by the non-cyber-aggressors; only 47.3% of cyber-stalkers are often advised to '*not talk to people you don't know*' versus 56% of cyber-aggressors and 72.8% of the non-cyber-aggressors). However, results showed that more cyber-stalkers (66.8%) reported lower levels of online risk perceived (comparing to 61.7% of cyber-aggressors and 59.1% of non-cyber-aggressors who perceived none or low levels of online risk).

Regarding the effectiveness of the control and parental supervision, 43.8% of cyber-stalkers, 47.4% of cyber-aggressors and 54.1% of the non-cyber-aggressors considered it very or completely effective. On the other hand, 25.9% of the cyber-stalkers, 17.9% of the cyber-aggressors and 8.9% of the not cyber-aggressors reported receiving no or little effective control or supervision from their parents. Focusing in adolescents non-cyber-aggressors, correlation tests indicated that greater levels of parental involvement ($r = .319$, $p \leq .001$), and greater levels of parental prohibition practices ($r = .162$, $p \leq .001$) generated higher levels perceived of parental effectiveness.

Parents of cyber-aggressors versus non-cyber-aggressors: Profile, strategies for supervision and perceptions

Regarding socio-demographic characteristics, the parents of adolescent cyber-aggressors ($n = 196$) and non-cyber-aggressors ($n = 389$) were very similar. They were, in majority, females (78.6% and 78.4%, respectively) and had in average 43.16 years (*Min* = 25; *Max* = 66, *SD* = 5.79) and 42.72 years (*Min* = 16; *Max* = 68, *SD* = 6.51), respectively. Most had Portuguese nationality (97.4% and 97.7%, respectively), was married/unmarried (79.6%

and 79.2%, respectively) and completed education until the third cycle (81% and 74.8%, respectively).

In terms of digital use, parents were also quite similar. About 58.3%% of parents of cyber-aggressors had used the Internet often or always, while 51.2% of parents of non-cyber-aggressors used it often or always. Further, 34.4% and 32.3% of parents, respectively, used the Internet for less than five years, 32.3% and 30.5% had a digital experience between five and ten years, and the remaining 23.1% and 21.2% of parents were Internet users for more than ten years. Of the total, 55.5% of parents of cyber-aggressors and 50.8% of parents of non–cyber-aggressors perceived themselves as intermediate Internet users, followed by 26.6% and 32%, respectively, who self-perceived themselves as beginners. Also, 17.9% of parents of cyber-aggressors and 17.3% of non-cyber-aggressors classified themselves as advanced or expert users (see Table 5). Concerning the perception on online risk on internet, the majority of parents of cyber-aggressors (61.6%) and non–cyber-aggressors (58.2%) perceived a moderate or higher risk.

With reference to supervision strategies and parental control due to the use of ICT, the parents of cyber-aggressors and of non-cyber-aggressors favoured psycho-educational strategies or strategies of a more informal character, such as '*I ask my child about what they are seeing and doing while they are on the Internet'*(with 73.1% and 64.2% of parents, respectively, reporting these behaviours often/always) or '*I speak with my child about the benefits of using ICT*' (with 53.1% and 46.7%of parents, respectively, reporting these behaviours often/always). On the other hand, surveillance practices like '*I create with my child his/her e-mail account, social network pages and/or blog*' or '*I check the computer history to see the web pages visited*' were infrequent behaviours. Only 23.1% and 25.6% of parents of cyber-aggressors and of non-cyber-aggressors, respectively, adopted these strategies often or always; and 25% and 24%, respectively, adopted the second behaviour. However, when asked about the importance of the practices of supervision, 44.4% of parents of cyber-aggressor and 46% of parents of non-cyber-aggressor attributed very or greater importance. At last, 40.5% of parents of cyber-aggressors perceived a greater level of support given to adolescent and 38.8% of the non-cyber-aggressors perceived it.

In relation to perception of parental effectiveness, 47.6% of parents of cyber-aggressors and 42.6% of the non-cyber-aggressors perceived themselves as very effectives. Chi-Square tests shown that there was no significant association between parental perception of effectiveness and adolescent' perception about parental effectiveness for cyber-aggressors ($r = .019$, $p > .05$) or non-cyber-aggressors ($r = .055$, $p > .05$).

Overlap between cyber-aggression and cyber-victimisation

The study of overlap in the context of violence in the virtual environment is necessary to understand negative involvement in virtual experiences. The dual involvement manifests in this research as the self-reported involvement in situations as the aggressor and as a victim of a set of behaviours of persecution or cyber-aggression, with singular or multiple occurrences.

According to this criterion, and by taking account the group of cyber-aggressors ($n = 209$), 195 adolescents (93.3%) self-reported dual involvement in the virtual environment. Of these, 51.3% were males, mostly of Portuguese nationality (95.4%) in the third education cycle (75.4%). This group was age 14.28 years on average ($SD = 1.29$, $Min = 12$, $Max = 16$).

Table 5. Parents of cyber–aggressors *versus* non–cyber–aggressors:
Socio–demographic characteristics and digital experience

		Parents of cyber–aggressors	Parents of non cyber–aggressors
		n (%)	*n* (%)
Sex	Female	155 (78.7)	305 (78.4)
	Male	42 (21.3)	84 (21.6)
Nationality	Portuguese	191 (97.4)	378 (97.7)
	Other	5 (2.6)	9 (2.3)
Marital status	Married/Unmarried	156 (79.2)	304 (79.2)
	Divorced/Separated	28 (14.2)	53 (13.8)
	Widowed	6 (3)	14 (3.6)
	Single	7 (3.6)	13 (3.4)
Education level	First cycle	22 (11.5)	62 (16.1)
	Second cycle	49 (25.5)	85 (22.1)
	Third cycle	42 (21.9)	96 (25)
	Secondary Education/Vocational	42 (21.8)	73 (19)
	Bachelor's degree	4 (2.1)	9 (2.3)
	Degree	31 (16.1)	44 (11.5)
	Master's degree	1 (.5)	11 (2.9)
	PhD	1 (.5)	4 (1)
Professional situation	Employed	137 (69.9)	285 (75)
	Unemployed	54 (27.6)	78 (20.5)
	Reformed	3 (1.5)	11 (2.9)
	Student	2 (1)	5 (1.3)
Kinship	Mother	149 (77.6)	285 (76)
	Father	38 (19.8)	77 (20.5)
	Other family	5 (2.6)	13 (3.5)
Frequency of Internet use	Never	18 (9.2)	60 (15.6)
	Rarely	20 (10.3)	52 (13.5)
	Sometimes	43 (22.1)	76 (19.7)
	Often	46 (23.6)	99 (25.7)
	Always	68 (34.9)	98 (25.5)
Years of Internet experience	Never used the Internet	20 (10.2)	62 (16)
	Less than 5 years	68 (34.7)	125 (32.3)
	Between 5 and 10 years	63 (32.1)	118 (30.5)
	More than 10 years	45 (23)	82 (21.2)
Digital profile user	Beginner	46 (22)	104 (32)
	Intermediate	97 (46.4)	165 (50.8)
	Advanced	30 (14.4)	48 (14.8)
	Expert	1 (.5)	8 (2.5)

Discussion and Conclusion

This study fills a gap in research on adolescents' ICT use and potentially negative behaviours, more specifically with regard to aggression in cyberspace and in particular the perpetration of cyber-stalking. In addition, it gives scientific attention to the digital profile of parents and the effect that parental involvement can have on adolescent behaviour.

Firstly, it should be noted that the frequency of cyber-aggression in the sample was 33.3%, revealing that adolescents can become cyber-aggressors, including the perpetration of cyber-stalking (18.2% of total sample). Cyberspace aggression is a widespread phenomenon and therefore something of concern. The frequency in this study is slightly higher than that found by Ybarra and Mitchell (2007), in which 29% of adolescents reported having displayed cyber-aggressive behaviours at least once in the previous year, and in the study of Sontag, Clemans, Graber and Lyndon (2011), which found that 26% of participants reported cyber-aggressive behaviour. Thus, although the criteria for the deployment of aggression vary across studies, the frequency found in this study may support the perspective of Sontag and collaborators (2011), who reported that the rates of aggression found in recent years reflect a progressive increase in the rate of aggression in cyberspace as a result of advances in technology and the attention given to these phenomena.

The results also show that cyber-aggression is a transverse behaviour at a young age, and a greater number of behaviours perpetrated are self-reported by males, similar to other studies (Pedersen, 2013; Ybarra & Mitchell, 2004, 2007). Nonetheless, it is worth noting the considerable number of female offenders in the present study (47.4% and 36.8% of cyber-aggressors and cyber-stalkers, respectively). This value may be in agreement with other studies that report that in the virtual world, the likelihood of the offender's being female is higher than in the real world (including the behaviours of stalking and cyber-stalking; Curtis, 2012).

Currently, the social relationships of adolescents are increasingly influenced by computers and technology (Keipi & Oksanen, 2014; Schoffstall & Cohen, 2011) and therefore it is not a surprise that adolescents present a profile of repeated use of certain ICTs. The group of cyber-stalkers, in particular, self-reports a frequent use of the Internet, mobile phones or smart phones and laptops. This repeated use, along with a personal perception of high competence and low risk and the fewer restrictions and security measures to which they are exposed, can be interpreted as greater behavioural disinhibition, increased exposure and feelings of impunity, which consequently lead adolescents to perpetrate more aggressive behaviours online (Whittle, Hamilton-Giachritsis, Beech, & Collings, 2013).

Beyond the influence of socio-demographic characteristics (i.e., sex), it is important to consider and discuss other predictors of aggressive cyber-behaviour in adolescence. Research on the predictors of virtual aggression has focused on variables such as beliefs about violence or other types of aggression/victimisation (Werner, Bumpus, & Rock, 2010). This research advances the analysis in relation to the cyber-practices and risks of adolescents, where the behaviours' *'shopping online'*; *'looking erotic or pornographic pages'* and *'schedule through the internet and/or phone a face-to-face meeting with someone personally unknown'* were significant predictors of perpetration. The general theory of crime by Gottfredson and Hirschi (1990) focuses on the individual characteristic of self-control and may help in understanding these results. Low self-control is typically associated with individuals with unstable interpersonal relationships. Inadequate socialisation is seen as the

source of development of low self-control and the subsequent involvement in delinquent/criminal activity throughout life (Jennings et al., 2012). In fact, individuals with low self-control may not be able to control their impulses for certain behaviours or predict possible consequences (Marcum, Higgins, & Ricketts, 2014).

Another factor identified as relevant for the promotion of online safety and the prevention of aggressive behaviour is parental involvement. Research in this area concerns the quality of the relationship between adolescents and parents as a protective (e.g., Law, Shapka, & Olson, 2010; Ybarra & Mitchell, 2004) or a risk factor (e.g., Hoeve et al., 2009) for involvement in attacks in cyberspace, and the present study was no exception. In fact, greater levels of parental involvement generated higher levels perceived of parental effectiveness among adolescents, which was, in sequence, a protective factor in the prediction of cyber-stalking perpetration. Accordingly to research, parents actively involve dare more likely to raise the awareness of adolescents about the online risks and consequences of cyber-aggression, reducing their probability of involvement as cyber-aggressors. However, it is important to note that certain behaviours of control and surveillance (e.g., checking Internet search history) are not necessarily effective in reducing aggressive behaviours in the virtual environment (e.g., Law et al., 2010).

The analysis of the characteristics of parents of cyber-aggressors showed that, despite these group was quite similar to the non-cyber-aggressors, they were more likely to focus in control and supervision of an informal or educational nature, to the detriment of more proactive and direct involvement strategies (e.g., *'I create with my child his/her e-mail and social network pages and/or blog'*).These results can reflect the difference in the user profile among adolescents and parents (the "generation gap" in terms of knowledge and skills, as seen in Çankaya & Odabas, 2009) and the influence of the parents' level of education. The lowest active monitoring by parents of cyber-aggressors may also be linked to the fact that these parents had perceived a lower level of online risk and a greater degree of support given to the child (comparing with parents of non-cyber-aggressors). It seems that this group of parents may not be fully aware about online risks and believe those adolescents are able to recognize them as a competent source of support, activating it whenever necessary (Mitchell, Finkelhor, & Wolak, 2005). Consequently, this particular sample of parents seems to display the *permissive* parenting style, characterised by low levels of monitoring. They expect their children can be responsible, behave in a self-regulated manner and take a more educational approach to their parenting. However, this lack of parental-based approach can increase behavioural problems in online environments, as have been also documented by delinquency research in the real context. Parents are, therefore, strongly encouraged to take active part of adolescent ICT activities and invest in psycho-educational practices of supervision.

Finally, the results regarding the overlap between victim and offender are consistent with other studies (Livingstone & Haddon, 2009; Pedersen, 2013; Sontag et al., 2011; Werner et al., 2010), showing that virtual victimisation is also often experienced by the cyber-aggressors. The theory of routine activities (Cohen & Felson, 1979) is one of the most recognised explanations for the phenomenon. According to this theory, crime and victimisation arise from the convergence of three factors: the presence of vulnerable targets, the absence of effective protective elements (e.g., absence of filters, low parental involvement) and the presence of motivated offenders (Pereira, Matos, & Sampaio, 2014). The performance of certain routine activities and the frequency of certain virtual environments are factors that may explain exposure and thus greater virtual vulnerability

(Eck & Clarke, 2003). The theory about the deviant peers tells us that prolonged interaction with deviant peers leads to a constant exposure to criminal practices. Certain practices are legitimised by a type of social reinforcement among peers, promoting deviant behaviour. In the virtual environment, cyber-criminogenic practices are often assumed to be legitimate and necessary (Bossler & Holt, 2010), thereby promoting the proximity to motivated cyber-aggressors and the reduction of individual protection. Thus, in the same context, the perpetration of cyber-aggression may increase the risk of the aggressor becoming a victim. Meanwhile, previous experiences of online victimisation may promote reactive aggression (Pereira et al., 2014). The dual involvement may arise due to the ease of immediate retaliation ICTs offer (Werner et al., 2010), reinforced by standardising practices and the reactive context. Greater digital skills and a higher number of social interactions may explain the higher average found in this study for the group of cyber-aggressors compared to the total sample.

Limitations and Implications

Some limitations of this research must be taken into account. The condition of being a cyber-aggressor was defined by the criteria of research from self-reports and adolescent offenders might not self-recognise as such. Finally, it was not possible to assess the consistency of responses from parents and students about parenting practices. Such a condition would allow for a more precise analysis on the effect of parental involvement on students' behaviour.

Cyber-aggression in adolescence is still a new and complex problem. This study offered some contributions to the understanding of the phenomenon and its practical implications. First, we highlight the consistency of the results. Because cyberspace is an environment with harmful potential, and ICTs are essential tools in modern society, future research should seek to understand the interactions between victims and aggressors. Despite the consistent results that show an overlap, additional studies on the directionality of this dual involvement, including other types of victimisation, are needed to understand the real implications for cyber-aggressive behaviour. In addition, there is consensus in the literature regarding the influence of parenting styles on the behaviour of adolescents on the Internet, and this effect is found to be mediated by the level of training of parents. The role of parents seems to be related to the experience, attitude and Internet use. Evaluating these gaps leads to the practical implications of a more focused vision. This view is especially relevant considering the possibility of creating intervention programs aimed at parents (Livingstone & Haddon, 2009; Valckeet al., 2010).

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