Arminda Maria Mendes Vale

Youth, cyber-aggression and parenting styles: Non-violence, victims, perpetrators and victims-perpetrators

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Trabalho realizado sob a orientação da
Professora Doutora Marlene Alexandra Veloso de Matos

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Adolescência, ciberagressão e estilos parentais: Não-violência, vítimas, perpetradores e vítimas-perpetradores

Resumo

A ciberagressão é a nova forma de violência interpessoal entre os adolescentes. O presente estudo apresentou como objetivos determinar a prevalência de ciberagressão, comparar grupos com diferentes tipos de envolvimento: não-violência, vítimas, perpetradores e vítimas-perpetradores, explorar os preditores e padrões de comportamento do grupo vítimas-perpetradores e analisar o efeito dos estilos parentais no envolvimento na ciberagressão. Um total de 627 adolescentes (12-16 anos) completou dois questionários *online*. Os resultados evidenciaram que 63.1% admitiram estar envolvidos em ciberagressão repetida. A maioria como vítima-perpetrador (31.1%). Raparigas e adolescentes mais novos caracterizaram os grupos não-violência e vítimas. Perpetradores e vítimas-perpetradores foram constituídos por rapazes e adolescentes mais velhos. Níveis superiores de práticas digitais foram associados ao grupo vítimas-perpetradores (*versus*. não-violência). A vitimação-perpetração aumentou quando os adolescentes divulgaram informações pessoais, consultaram páginas eróticas e marcaram encontros presenciais com contactos *online*. Telefonar sem justificação, monitorizar e enviar mensagens exageradas de afeto, insultuosas e pornográficas revelaram-se comportamentos ciber-agressivos prevalentes pelo grupo vítimas-perpetradores. Os estilos parentais foram identificados: autoritativo e autoritário (não-violência), permissivo e *laissez-faire* (vítimas-perpetradores). Os dados indicam que o efeito do estilo parental *laissez-faire* no envolvimento da ciberagressão não é direto, sendo mediado por práticas digitais. Implicações teóricas e práticas foram discutidas.

Palavras-chave: adolescentes, ciberagressão, vítimas-perpetradores, estilos parentais.

Youth, cyber-aggression and parenting styles: Non-violence, victims, perpetrators and victims-perpetrators

Abstract

Cyber-aggression is the new form of interpersonal violence among adolescents. This study aimed to determine the prevalence of cyber-aggression, compare groups with different types of involvement: *n*on-violence, victims, perpetrators and victims-perpetrators, explore the predictors and behavioral patterns of victims-perpetrators group and analyse the effect of parenting styles on the involvement in cyber-aggression. A total of 627 adolescents (12-16 years old), completed two questionnaires online. The results evidenced 63.1% admitted to being involved in repeated cyber-aggression. Most of them as victim-perpetrator (31.1%). Females and younger adolescents characterized non-violence and victim's groups. Perpetrators and victims-perpetrators consisted of boys and older adolescents. Higher levels of digital practices were associated with victims-perpetrators group (*versus*. non-violence). Victimization-perpetration increased when adolescents published personal information, consulted erotic websites and arranged offline meeting with someone who they only met online. Unjustified phone calls, monitor, send exaggerated, insulting and pornographic messages proved to be cyber-aggressive behaviors prevalent by the victims-perpetrators group. The parenting styles were identified: authoritative and authoritarian (non-violence), permissive and *laissez-faire* (victim-perpetrators). The data indicated that the effect of *laissez-faire* parenting style in the involvement of cyber-aggression is not direct, being mediated by digital practices. Theoretical and practical implications are discussed.

Keywords: youth, cyber-aggression, victims-perpetrators, parenting styles.

Introduction

Adolescents today's are being educated in a cyber-culture, taking the place of top users of Information and Communication Technologies (ICT's) at inter (national) level (Bicen & Arnavut, 2015; Bilic, 2013; Carvalho, Francisco, & Relvas, 2015; Pereira & Matos, 2015; Pereira, Matos, & Sampaio, 2015; Simões, Ponte, Ferreira, Doretto, & Azevedo, 2014). According to the Pew Research Internet & American Life (Lenhart et al., 2015; $n =$ 1060, 13-17), the majority of adolescents, reported using daily (92%) multiple digital devices, as a smarthphone (88%) and computer (87%). In Europe, the cross-cultural study of EU Kids Go Online network (Livingstone, Haddon, Görzig, & Ólafsson, 2011; $n = 25000$), showed similar patterns. Adolescents, aged 9-16, go online everyday (60%), mostly in home (87%; 49% it in their bedroom), for homework's (85%), play games (83%), and social networking (59%). Almost all Portuguese children up to age 15, have mentioned access Internet at home (92%) and surfed via mobile-broadband (90%; Statistical National Institute, 2015). They used a laptop (60%), smarthphone (35%) and tablet (21%), and their use is more common in girls and older adolescents ($n = 3500$, 9-16 years; Simões et al., & Net Children Go Mobile, 2014) to communicate each other, navigate on internet and send e-mails ($n = 6026$, 11-15 years; Matos et al., Social Adventure Project & Health Behavior in School-Aged Children, 2014). Compared to the European average, Portugal has still one of the highest averages in the age of first internet access: 10 years (Livingstone et al., 2011).

It is undeniable that diffusion of the ICT's enhance multiple benefits and meet different needs in youth development: explore their interests, develop critical thinking, test social roles and experience different emotional relationships (Bilic, 2013; Borca, Bina, Keller, Gilbert, & Begotti, 2015; Lenhart, Anderson, & Smith, 2015; Zweig, Dank, Yahner, & Lachman, 2013). Despite these benefits, this increased online exposure maximizes vulnerability for commit crimes (APAV, 2015; Hazelwood, & Koon-Magnin, 2013), as well as be a victim-perpetrator of different forms of cyber-aggression (Bilic, 2013; Lenhart et al., 2015; Livinsgtone et al., 2011; Jones, Mitchell, & Finkelhor, 2013; Matos et al., 2014; Pereira & Matos, 2015; Pereira et al., 2015; Simões et al., 2014; Ybarra & Mitchell, 2004).

The cyber-aggression involve any kind intentional, repeated and unwanted behavior, sent or posted online, via digital devices (e.g., computer, mobile phone), in different communication channels (e.g., SMS, email, blogs, social networks), that

threat, torment and/or offend the target (Aricak et al., 2008; Bilic, 2013; Jones et al., 2013; Pereira & Matos, 2015; Pereira et al., 2015). These cyber-tactics can be perpetrated directly (e.g., insult, invade the privacy, control, harass sexually) or indirectly (e.g., gossip, spread rumours, encourage to the isolation; Bilic, 2013; Jones et al., 2013; Zweig et al., 2013). Operationalize the spectrum of cyber-aggression in terms of this heterogeneity of behaviors, it is not always available. Many of behaviors overlap or are used distinctly as epiphenomena. For instance, cyber-harassment, cyberbullying, cyber dating abuse, cyberstalking and sexting (Bilic, 2013; Livingstone et al., 2011; Jones et al., 2013; Pereira & Matos, 2015; Zweig et al., 2013).

Data support an exponential increase of adolescents involved in cyber-aggression (weather as victims, perpetrators or victims-perpetrators) *versus*. adolescents uninvolved in cyber-aggression (non-violence) (Aricak et al., 2008; Matos et al., 2014; Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2012; Ybarra & Mitchell, 2004). The Youth Internet Safety Surveys (YISS), a nationally representative of American aged 10-17, corroborated that online victimization almost doubled between 2000 (6%) and 2010 (11%; $n = 4561$; Jones et al., 2013). The proportion of European adolescents, among the period of 2010 and 2014, that were bothered or upset with something online (from 13% to 17%), experienced some type of cyberbullying (from 7% to 12%) and seen or received sexual messages (from 15% to 17%) has slightly increased (Livingstone et al., 2011). Portuguese research revealed 61.9% were cyber-stalked (Pereira & Matos, 2015; $n = 627$; 12-16) and 60.8% were repeated victims of cyber-harassment (Pereira, Sptizberg, & Matos, 2016; $n = 627$; 12-16). Regarding to online perpetration, Rice and collaborators (2015, $n = 1285$), showed that 5% American adolescents, aged 12-16, had perpetrated cyberbullying behaviors. Although is often in 10.4% European trend (Lonigro et al., $n = 716$, 12-16, 2015). Novo, Pereira, & Matos (2014), on a representative sample of Portuguese adolescents ($n = 627$), aged 12-16 years old, founded 33.1% cyber-harassers and specifically 18.2% cyber-stalkers.

Prior of attention emphasis only two categories of involvement (i.e., victims *versus*. perpetrators), considering them as mutually exclusive (Walrave & Heirman, 2011; Ybarra & Mitchell, 2004).). Consistent with this, evidence has showed a third group of involvement: the double involvement (i.e., overlap, victims-perpetrators relationship), recognizing that these roles co-occur and are not static (Jennings, Piquero, & Reingle, 2012; Lauritsen, Sampson, & Laub, 1991; Posick, 2013). The meta-analytic work performed by Jennings and collaborators (2012), has identified 31 studies

(between 1958 and 2011), that assessed the victim–perpetrator overlap in various contexts of interpersonal violence. In this point, data from YISS, founded 3% American adolescents as experienced and perpetrated cyber-harassment through threat, harass, embarrass by posting or sending messages (Ybarra & Mitchell (*n* =1501, 10-17; 2004). In the European research, 29.1%, 11-19 years old, identified themselves as cyber-bully/cyber-bullied (Lonigro et al., 2015), like 3.4% Portuguese adolescents were victim and perpetrator of cyberbullying behaviors (Matos et al., 2014).

Evidence is not unanimous on the socio-demographic and digital characterization of those involved an uninvolved in cyber-aggression While some point out the girls and older adolescents as the group of victims, potentially more vulnerable (Jones et al., 2013; Livingstone et al., 2011; Mishna et al., 2012; Rice et al., 2015; Simões et al., 2014; Walrave & Heirman, 2011; Ybarra & Mitchell 2004); others research's focus the boys and younger adolescents like particular risk group (Aricak et al., 2008; Livingstone et al., 2011; Simões et al., 2014; Walrave & Heirman, 2011). This profile's ambiguity are also evident in the profiles of the individuals involved as perpetrators and as victims-perpetrators. However, the literature has been noted that these groups are more likely to consist of older and acquaintances adolescents and/or schoolmates (Aricak et al., 2008; Jones et al., 2013; Mishna et al., 2012; Walrave & Heirman, 2011; Ybarra & Mitchell, 2004). High levels of internet use (e.g., more than two hours, 5-7 days a week), cyber-practices (e.g., chats, instant messages, blogs, social networks) and cyber-risks (e.g., shopping online, talking to strangers, sharing passwords, disclosing personal information) have both more likely to be perpetrators (Aricak et al., 2008; Jones et al., 2013; Rice, 2015; Walrave & Heirman, 2011; Ybarra & Mitchell, 2014), followed by victims-perpetrators (Mishna et al., 2012; Rice et al., 2015; Ybarra & Mitchell, 2004). In contrast, male adolescents who reported fewer cyber-practices and cyber-risks characterize the non-violence group (Mishna et al., 2012; Walrave & Heirman, 2011; Ybarra & Mitchell, 2004).

In addition this differentiation profiles, researchers had examined the nature, predictors and behavior patterns of this phenomenon in the perspective of victims or perpetrators, as separate groups (Bossler, Holt, & May, 2012; Marcum, Higgins, & Ricketts, 2014). Lauritsen and colleagues (1991) referred that it is not possible understand the victimization or perpetration without also understand both of them. Victims and perpetrators share more common characteristics and experiences with deviance than differences (Posick, 2013). Despite the high inter (national) frequency of

victims-perpetrators group in cyber-aggression (Lonigro et al., 2015; Matos et al., 2014; Ybarra & Mitchell, 2004), there are a few studies that explore the factors that contribute to adolescent's play this role. For instance, the American study, conducted by Mishna and collaborators (2012; $n = 2186$; 10-17) reported that females, and older adolescents had greater odds of being victim-perpetrator of cyber-aggression. Others significant variables were founded, such as highest levels of ICT's use, disclose passwords with friends and perpetrate violence toward peers. Adolescents with parents that used filtering/blocking software were more likely victims-perpetrators. Regarding to patterns cyber-aggressive behaviour, Aricak et al. (2008; $n = 269$) concluded that all European adolescents, aged 12-19, engaged in cyber-aggression (weather as victims, perpetrators and victims-perpetrators) reported were say things online that could not be said face to face (23.8%), pretend to be someone else (16.4%), spread rumours (10.1%), sending infected emails (8.2%) and disclose other's pictures without their authorization (4.8%).

The cyber-aggression could cause emotional and behavioral problems in youth population (e.g., sadness, shame, guilty, depression, anxiety and isolation). Therefore, has stimulated scientific and social debate on the role of the parenting, as a protective factor for promoting online security (Bicen & Arnavut, 2015; Carvalho et al., 2015; Dehue, Bolman, Vollink, & Pouwelse, 2012; Eastin, Greenberg, & Hofschire, 2006; Livingstone et al., 2011; Rosen, Cheever, & Carrier, 2008).

The main theory on parenting domain was developed by Baurmind (1991) and Maccoby and Martin (1983). They comprised two dimensions that contribute to the definition of parenting styles: parental warmth and parental control. The first is characterized by affection, investment in dialogue and levels of available support; the second stipulates the control, monitor and reinforcement of rules related to the internet (Baumrind, 1991). Comprised these two dimensions, Valcke, Wever, Van Keer, & Schellens (2010) established four parenting styles concerning to safe Internet usage: i) *authoritative*: parents do not explicitly limit behavior, but guide the activities and perspective their adolescent to be responsible and act in a self-regulated manner; ii) *authoritarian:* is characterized by parents who demand unquestioning rules of conduct; these parents hardly discuss issues related with the internet; iii) *permissive*: reflects the high investment in warmth and absence of explicit limits; they refrain from confrontation and choose to follow the ideas and wishes of the adolescents, giving them everything they ask for; iv) *laissez-faire*: translates the low level of parental control and

parental warmth; these parents do not demonstrate an attitude of support or restrictions on the use of internet.

A few studies have begun to analyse how parenting styles influence the cyber-practices, cyber-risks, as well as different types of involvement in cyber-aggression (Dehue et al., 2012; Eastin et al., 2006; Rosen et al., 2008). A study conducted by Rosen and collaborators ($n = 341$;12-18 years) reported that adolescents with authoritative and authoritarian parents were less likely have webpages and sharing personal information. By contrast, adolescents with permissive parents were claimed to be more likely to meet someone offline whom they had met online, followed by authoritarian and *laissez-faire* parents. In this direction, evidence also indicated that the strategies established by authoritative and authoritarian parents (such as being conscious about online websites accessed, the adolescent's online personal information, using blocking software) are more associated with the non-involvement of adolescents in cyber-aggression (non-violence). In turn, adolescents who cohabit with permissive or *laissez- faire* parents (e.g., parents who not have knowledge about cyber-practices, not visit the webpages of adolescents, don't have sure about the adolescent's online strangers contacts) are potentially more vulnerable to be victim and/or perpetrator of cyber-aggressive behaviors (Dehue et al., 2012; Eastin et al., 2006; Rosen et al., 2008).

The current study aimed: i) determine the prevalence of cyber-aggression; ii) to compare sociodemographic characteristics and digital profiles of groups with different types of involvement: non-violence, victims, perpetrators and victims-perpetrators; iii) explore predictors and behavioral patterns of victims-perpetrators group; and iv) and analyse how parenting styles influence and predict the involvement in cyber-aggression. Based upon conceptual and empirical support, we hypothesized that: i) cyber-aggression is a common experience among Portuguese adolescents; ii) victims-perpetrators group is the role more reported by adolescents; iii) there are significant differences at the level sociodemographic and digital between the groups; iv) variables such as sex, age, highs levels of use ICT´s, of cyber-practices and cyber-risks are associated with greater likelihood of involvement in cyber-aggression as victim-perpetrator; v) cyber-aggressive behaviors most reported by victims-perpetrators group are things that they cannot directly tell (e.g., by phone calls, sending insults, threats); vi) authoritative and authoritarian parents characterize the group non-violence, while permissive or *laissez-faire* parenting styles might characterize the victims, perpetrators and victims-

perpetrators groups; and vii) parenting style are a predictor of involvement in cyber-aggression.

Method

Procedures and Participants

This study was subject to the approval of the National Commission for Data Protection (CNPD), the General Directorate of Education (DGE) and Directors of each school. The schools were selected (by stratified random sampling) thought a list available by the DGE ($n= 487$). It was considered the representativeness[1] of the Northern Region of Portugal and Azores.

Expressed and informed consent of adolescents and parents and/or legal representative was random collected, since they were underage ($n =1340$). Inclusion criteria were demarcated by: adolescents, between 12 and 16 years of age, who were active user of ICTs, for at least 6 months. Adolescents that seemed cognitive impairment/mental retardation were excluded. A total of 645 students, accomplished the online survey (by ESurvey Creator Software), in a classroom between February and June 2013. All data were collected in the attendance of the researcher responsible for the project. There were no incentives monetary. However, all participants were invited to attend an awareness action about the cyber-risks and cyber-agression in the virtual space. They were also given informative flyer after their participation in order to elucidate some doubts and/or to support in case of victimization and/or perpetration. All data were selected and eighteen students were excluded for missing-information. The final sample were 627 adolescents (54.9% female and 45.1% male), aged 12-16 ($M=13.98$; $SD=1.35$). The majority of the participants were Portuguese (97%). Concerning to education, 30.6% were 7th year, 27.6% were 8th year, 21.1% were 9th year, and 20.7% were secondary/professional. Most of them were in public school (73%).

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[1]The present paper 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 was defined for each Nomenclature of Territorial Units for Statistics.

Measures

To data collection, we used two self-report online questionnaires. The first titled Inventory of Behaviors and Attitudes towards Information and Communication Technologies (ICT) (Pereira & Matos, 2012) and aims to characterize adolescents at the levels: sociodemographic, habits of use of ICT's, cyber-practices (scale with 12-itens, α=.75), cyber-risks (scale with 12-itens, α=.64) and their perceptions about their parental mediation (parental involvement scale, with 10-itens, α=.89; and parental prohibitions scale, with 9-itens, α=.83). Parenting styles were scoring by the total scores of each scale and respectively averages of the dimensions parental involvement and parental prohibitions, corresponding to: authoritative (high involvement/prohibitions); authoritarian (low involvement/high prohibitions); permissive (high involvement/low prohibitions); *laissez-faire* (low involvement/prohibitions; cf. Baumrind, 1991). All these behaviors were measured via 5-point Likert-type. The second instrument applied was the Cyber-Harassment Assessment Scale (Spitzberg & Hoobler, 2002, translated and adapted by Pereira & Matos, 2012), an 18-itens that intend to evaluate the prevalence of victimization (see. Pereira et al., 2016) and perpetration (see Novo et al., 2014). Thus, for each item (cyber-aggressive behavior), adolescents should respond both if '*Someone already did it against me*' and if '*I already did it against someone*' and classified how many times this happened in 5-point Likert-type scale (from 0=never to 5=five or many times). Cronbach's alfa was .90 for both victimization and perpetration scales.

Statistical Analysis

Data were analysed using SPSS for Windows version 22.0. We resort to descriptive statistics (frequency distributions, behaviors average) to characterize the prevalence and the profiles of each group involved and not involved in cyber-aggression (see Tables 1, 2 and 4). The sociodemographic and digital differences among those groups were accomplished by associations and differences tests, with an alpha level of 0.05 (e.g., Chi-Square test, One-way Analysis of Variance (ANOVA; see Table 2 and 5). We concretized a Binary Logistic Regression model (see Table 3) with socio-demographic characteristics, digital practices and parenting styles as independent variables and victims-perpetrators group as dichotomous dependent variable. For the last, we performed the mediation models (see Figure 1 and Figure 2) to analyse how parenting style are a predictor of involvement in cyber-aggression.

Results

Prevalence of cyber-aggression

As displayed in table 1, descriptive analysis revealed that 27.8% ($n = 174$) of adolescents reported not to be involved in cyber-aggression (i.e., never have been victim and/or perpetrator of any cyber-aggressive behavior). By contrast, 9.2% ($n = 58$) was victim and/or perpetrator only of one behavior (episodic violence). Based on that criterion, 6.2% ($n = 39$) reported have been victim, 1.6% ($n = 10$) victim-perpetrator and 1.4% ($n = 9$) perpetrator. When we adopt a broader definition criterion, namely to have been victim and/or perpetrator of two or more behaviors, at least once, or at least one behavior more than once (be involved in repeated violence) 63.1% ($n = 395$) of adolescents admits to have been victims and/or perpetrators. According to this criterion, adolescents experienced on average 4.04 behaviors ($SD = 3.32$; $Min = 0$, $Max = 18$) and perpetrated on average 1.87 cyber-aggressive behaviors ($SD = 2.68$; $Min = 0$, $Max = 19$).

In this study, all the analyses related to violence (i.e., adolescents who were victims and/or perpetrators) were focused to criterion of repeated violence. Of that sample, 20.9% ($n = 131$) reported having been only victim ($M = 2.76$; $SD = 2.03$; $Min = 1$, $Max = 14$), while 1% ($n = 6$) reported being only perpetrator ($M = 2.83$; $SD = 2.14$; $Min = 1$, $Max = 7$). The remaining 31.1% ($n = 195$) of adolescents involved in repeated violence admitted to be doubly involved as victims ($M = 05.10$; $SD = 3.72$; $Min = 1$, $Max = 18$) and as perpetrators ($M = 3.32$; $SD = 3.11$; $Min = 1$, $Max = 18$). This repeated double involvement may consist in episodic victim and repeated perpetrator (8%, $n = 1.3$) and repeated victim and episodic perpetrator (8.8%, $n = 55$). But these variations are not part of our analysis (victim or perpetrator episodic).

This result confirms our first and second hypothesis: cyber-aggression is common among adolescents and victim-perpetrator was the role more assumed over by adolescents.

Table 1

Frequency of cyber-aggression and categorization of the total sample in non-violence and types of violence

	Victimization	Perpetration
		Mean of behaviors
	N (%)	*M (SD)*	
Non-violence	174 (27.8)	-------------	---------------
Episodic violence	58 (9.2)	.84 (0.37)	.33 (0.47)
Repeated violence	395 (63.1)	4.04 (3.32)	1.87 (2.68)
Victims	131 (20.9)	2.76 (2.03)	---------------
Perpetrators	6 (1.0)	-------------	2.83 (2.14)
Victims-Perpetrators	195 (31.1)	5.10 (3.72)	3.32 (3.11)
Episodic victim and repeated perpetrator	8 (1.3)	1 (---------)	2.63 (1.41)
Repeated victim and episodic perpetrator	55 (8.8)	4.24 (3.07)	1 (----------)

Non-violence, Victims, Perpetrators and Victims-Perpetrators

As explained previously, the adolescents were featured in four groups: (1) Non-violence; (2) pure Victims; (3) pure Perpetrators; and, (4) Victims-Perpetrators. Descriptive statistics about sociodemographic and digital profiles for each of them, as well as respective associations and differences between groups are display in Table 2.

The results of Chi-square Tests reported significant associations between groups in the variables sex $\chi^2 (3) = 18.72$, $p \leq. 000$ and academic qualifications $\chi^2 (9) = 36.97$, $p \leq. 001$. In other words, girls were more likely to never have been victim and/or perpetrator (32.2%, $n = 89$) or only victims (33.0%, $n = 91$), whereas boys were more often victims-perpetrators (43.5%, $n=100$) or perpetrators (2.2%, $n = 5$). For its turn students of the 7th year (50.6%, $n = 78$) were associated with non-violence group, while students of 8th year (45.8%, $n = 66$), 9th year (43.9%, $n = 47$) and secondary/professional (47.5%, $n = 48$) were more likely to be victims-perpetrators. Significant differences were also observed (non-violence *versus.* victims-perpetrators), with regard to adolescent's age $F (3,50) = 6.85$, $p \leq .001$: younger adolescents characterized the non-violence group, while older adolescents were often victims-perpetrators.

Concerning to digital practices, the ICT's number accessed showed significant differences between the groups, F (3,50) = 3.11, p = .003, with the victims-perpetrators mentioning greater use of ICT's compared to the non-violence group. Furthermore, the mobile phone use, χ^2 (3) = 35.76, $p \leq$. 001 (Mann-Whitney Tests with Bonferroni Correction showed differences among victims-perpetrators U = 11948,500, $p \leq$. 001 and victims U = 7996.500, $p \leq$. 001, *versus*. non-violence group) and internet use (Mann-Whitney Tests with Bonferroni Correction showed differences among victims-perpetrators U = 14795.500, p = .002 and victims U = 9508.00, p =.007, *versus*. non-violence group) is more associated to adolescents who reported have been victims-perpetrators, followed by victims group *versus*. non-violence. The data informed differences between the groups, regarding to cyber-practices, F (3,50) = 7.36, $p \leq$. 001, and cyber-risks, F (3,50) = 11.50, $p \leq$. 001. Gabriel Post-hoc Tests revealed that the victims-perpetrators group had highest cyber-practices compared to the non-violence group; while the victims and victims-perpetrators groups have taken more cyber-risks than the non-violence group. As we expected in hypothesis 3, these groups of adolescents have sociodemographic and digital differences.

Table 2

Descriptive analysis of the profiles of adolescents and differences and associations between groups

	Non-violence ($n = 174$)		Victims ($n = 131$)		Perpetrators ($n = 6$)		Victims-Perpetrators ($n = 195$)		
	N (%)	*M* (*SD*)	*N* (%)	*M* (*SD*)	*N* (%)	*M* (*SD*)	*N* (%)	*M* (*SD*)	
Sex									18.72[b]***
Male	85 (37)		40 (17.4)		5 (2.2)		100 (43.5)		
Female	89 (32.2)		91 (33)		1 (.4)		95 (34.4)		
Age		13.66 (1.37)		13.93 (1.30)		13.67 (1.21)		14.28 (1.29)	6.85[a]***
Type of school									1.59[b]
Public	128 (33.9)		103 (27.2)		4 (1.1)		143 (37.8)		
Private	46 (35.9)		28 (21.9)		2 (1.6)		52 (40.6)		
Education									36.97[b]***
7th year	78 (50.6)		40 (26)		2 (1.3)		34 (22.1)		
8th year	39 (27.1)		37 (25.7)		2 (1.4)		66 (45.8)		
9°th year	26 (24.3)		32 (29.9)		2 (1.9)		47 (43.9)		
Secondary /Professional	31 (30.7)		22 (21.8)		--------		48 (47.5)		
Age of first access		9.00 (2.15)		9.01 (2.63)		8.83 (2.71)		8.93 (2.35)	0.04[a]
ICT´s		4.17 (1.31)		4.49 (1.24)		4.50 (1.38)		4.58 (1.38)	3.11[a]*

Use of mobile phone	2.75 (1.15)	3.34 (0.97)	3.50 (0.55)	3.32 (1.01)	35.76[b]***
Use of computer	2.80 (1.11)	3.08 (1.02)	3.17 (0.75)	3.03 (1.05)	7.44[b]*
Use of internet	3.16 (0.97)	3.46 (0.72)	3.33 (0.82)	3.40 (0.93)	12.00[b]**
Cyber-practices	8.17 (2.28)	8.56 (1.80)	8.33 (1.75)	9.14 (1.88)	7.36[a]***
Cyber-risks	4.68 (2.47)	5.61 (2.13)	5.83 (2.79)	6.18 (2.65)	11.50[a]***

Note. a) One-way Analysis of Variance (ANOVA); b) Chi-square Tests; ***** $p \leq .05$; ******$p \leq .01$; *******$p \leq .001$.

Victims-Perpetrators

The predictors and behavioural patterns of victims-perpetrators are detailed in Tables 3 and 4.

Through a set of variables associated significantly (from Chi-Square Tests and ANOVA), we predicted the victimization-perpetration, with a Binary Logistic Regression. Multicollinearity was not a problem in these regression model. The first block included sociodemographic characteristics, the second block comprised digital practices (i.e., cyber-practices and cyber-risks), and the third block included the perception of adolescents about parental mediation (i.e., parenting styles created). The model was statistically significant, explaining 71.1% of the total variance. The results informed that: '*Publishing texts, images, photos, music and videos on a blog, personal page or social network*', $OR = 2.721$ CIs [1.137 − 6.154], $p \leq .05$; '*Looking erotic and pornographic pages', OR = 1.870* CIs [1.140 − 3.067], $p \leq .05$; '*Arranging offline meeting with someone who they only met online', OR = 2.433* CIs [1.341 − 4.414], $p \leq .01$, increased the likelihood of adolescent being victim-perpetrator. This result partially corroborated the hypothesis 4 (the variables sex, age and highest levels of use ICT´s were not predictors).

From a descriptive analysis we founded that the cyber-aggressive behaviors that the victims-perpetrators group engaged in most were: '*Phoning without any apparent justification*' (16.6%, $n = 104$); '*Monitoring or sending gifts via mobile phone or social network*' (10.4%, $n = 65$), '*Sending exaggerated messages of affection*' (5.9%, $n = 37$), '*send insulting messages*' (4.9%, $n = 31$), '*Obtaining someone's private information without permission*' (2.9%, $n = 18$) and '*Sending pornographic or obscene pictures or messages*' (2.9%, $n = 18$).

As expected by hypothesis 5 phone calls and sending insulting messages also integrate the most experienced and perpetrate cyber-aggressive behaviors.

Table 3

Predicting adolescent victimization-perpetration: Binary Logistic Regression

		B	S.E	Wald	OR[IC .95]
Block 1	Sex	-.119	.209	.324	.888[.590 - .1.337]
	Age	.132	.075	3.052	1.141[.984 - 1.323]
Block 2	Use of tablet	.381	.214	3.174	1.464 [.963 – 2.225]
	Use of the PDA	-.269	.339	.629	.764 [.393 - .1.485]
	Use of the IPOD	.397	.258	2.374	1.488 [.898 - .2.466]
	Publishing texts, photos, videos on a blog, personal page or social network	1.001*	.445	5.052	2.721 [1.137 – 6.154]
	Playing online with friends	.129	.246	.275	1.137 [.703 – 1.842]
	Buying things online	.207	.211	.964	1.230 [.814 – 1.859]
	Signing petitions, answer questionnaires or vote in polls	.251	.202	1.551	1.286 [.866 – 1.909]
	Looking erotic and pornographic pages	.626*	.253	6.141	1.870 [1.140 – 3.067]
	Sending recent personal photos to people who do not know personally	.273	.359	.580	1.314 [.650 – 2.656]
	Giving personal information when I am approached by someone who does not know	.198	.364	.297	1.220 [.598 – 2.489]
	Adding to shortlist virtual friends who do not know personally	.334	.207	2.616	1.397 [.932 – 2.095]
	Arranging offline meeting with someone who they only met online	.889**	.304	8.564	2.433[1.341 – 4.414]
	Founding negative and uncomfortable things on the internet	.196	.206	.908	1.217[.813 – 1.820]
	Talking with parents about uncomfortable or threatened experiences	-.082	.219	.139	.922[.600 – 1.415]

	Providing information about my daily routines with strangers	-.283	.227	1.544	.754[.483 – 1.177]
Block 3	Parenting Style: Authoritative	-.228	.223	1.043	.796[.514 – 1.233]
	Parenting Style: *Laissez-Faire*	.460	.260	3.141	1.585[.952 – 2.636]
Chi-Square: 90.547***					
-2 log Likelihood: 686.811					
Cox & Snell: .134					
Nagelkerke: .189					

Note. *p ≤ .05; **p ≤ .01; ***p≤.001.

Table 4

Cyber-tactics experienced and perpetrated by involved groups

	Victims (*n* = 131) *N* (%)	Perpetrators (*n* = 6) *N* (%)	Victims-Perpetrators (*n* = 195) *N* (%)	Total (*n* = 395) *N* (%)
Phoning without any apparent justification	109 (17.4)	8 (1.3)	104 (16.6)	221 (35.2)
Monitoring or sending gifts via mobile phone or social network	27 (4.3)	----------------	65 (10.4)	92 (14.7)
Sending exaggerated messages of affection	47 (7.5)	4 (.6)	37 (5.9)	88 (14)
Sending insulting messages	34 (5.4)	4 (.6)	31 (4.9)	69 (11)
Obtaining someone's private information without permission	20 (3.2)	5 (.8)	18 (2.9)	43 (6.9)
Sending pornographic or obscene pictures or messages	28 (4.5)	2 (.3)	18 (2.9)	48 (7.7)
Pretending to be someone else	29 (4.6)	7 (1.1)	14 (2.2)	50 (8)
Sending excessively "needy", disclosive or demand messages	34 (5.4)	1 (.2)	13 (2.1)	48 (7.7)
Sending threatening written messages, photos or images	30 (4.8)	4 (.6)	12 (1.9)	46 (7.3)
Sabotage my private reputation ('good name') in school/group/society	34 (5.4)	3 (.5)	7 (1.1)	44 (7)
Sending sexually harassing messages	17 (2.7)	2 (.3)	7 (1.1)	26 (4.1)
Exposing private information to the others	10 (1.6)	1 (.2)	7 (1.1)	18 (2.9)
Attempt to disable mobile phone, computer or other electronic device	11 (1.8)	2 (.3)	7 (1.1)	20 (3.2)
Using another person's computer to get information on others	5 (.8)	4 (.6)	4 (.6)	13 (2.1)
Altering and/or taking over the electronic identity of a person	2 (.3)	1 (.2)	3 (.5)	6 (1)

Adopting risk behaviors on behalf of another person	4 (.6)	----------------	5 (.8)	9 (1.4)
Meeting first online and then pursuing, threatening or hurting in personally	4 (.6)	----------------	3 (.5)	7 (1.1)
Meeting first personally and then harassing through the internet or phone	2 (.3)	----------------	5 (.8)	7 (1.1)

Parenting Styles

There was a significant association between parenting styles and the involvement on cyber-aggression, $\chi2$ (9) = 21.22, p = 0.01. Adolescents uninvolved on cyber-aggression were more likely to self-perceived an authoritative style (40.3%, n = 100) and an authoritarian style (36.7%, n = 18), when compared to adolescents involved on cyber-aggression. In contrast, the permissive (44.4%, n = 44) and the *laissez-faire* styles (52.7%, n = 58) were more likely to be perceived by the victims-perpetrators group. The results corroborated our hypothesis 6. Authoritative and authoritarian parents characterize the group non-violence, while permissive or *laissez-faire* parenting styles characterize the victims-perpetrators group.

Table 5

Self-perceived parenting styles and associations between groups

	Non-violence (n = 174) N (%)	Victims (n = 131) N (%)	Perpetrators (n = 6) N (%)	Victims-Perpetrators (n = 195) N (%)	
Parental Styles					21.24**
Authoritative	100 (40.3)	68 (27.4)	4 (1.6)	76 (30.6)	
Authoritarian	18 (36.7)	14 (28.6)	-----------------	17 (34.7)	
Permissive	30 (30.3)	25 (25.3)	-----------------	44 (44.4)	
Laissez-faire	26 (23.6)	24 (21.8)	2 (1.8)	58 (52.7)	

Note. **$p \leq .01$.

As a complement, we ran a simple mediation models. We aimed verify the effect of the perception of adolescents on their parenting mediation (i.e., parenting styles created) in involvement in cyber-aggression (weather as victims, perpetrators and victims-perpetrators). This model was performed with all parenting styles. Nonetheless, only parenting style *laissez-faire* proved a significant predictor, partially confirming the hypothesis 7 (*versus.* all parenting styles were predictors of involvement in cyber-aggression).

As indicated by Baron and Kenny (1986), mediation occurs when (1) the IV (independent variable) significantly predicts the MV (mediator variable), (2) the IV

significantly predicts the DV (dependent variable) in the absence of the mediator, (3) the mediator significantly predicts the DV, and the IV's prediction of the DV shrinks following the addition of the mediator to the model.

We analysed the effect *laissez-faire* parenting style (VI), according to the adolescent's involvement in cyber-aggression (as victims, perpetrators, victims-perpetrators, VD). Results revealed that relationship was mediated by cyber-practices (MV):

1. The simple linear regression model allowed us to test whether the *laissez-faire* parenting style was a predictor of cyber-practices, F (1,625) = 9.36, p = .002, and explained 15% of the variance. Adolescents who perceived a *laissez-faire* parenting style accessed more cyber-practices, b = -.5815, t = -3.06, p = .002.

2. The logistic regression model allowed us to whether the *laissez-faire* parenting style predicted the involvement in cyber aggression. This model was significant, χ^2 (1) = 6.83, p=.009; thus, a greater number of cyber-practices was a significant predictor of involvement in cyber aggression, b = .60, Wald = 2.988, p = .012.

3. The mediation model (Figure 1) was significant, χ^2 (2) = 23.90, $p \leq 001$, and showed that the cyber-practices were a significant predictor of involvement in cyber-aggression, b=.1886, Wald=4.089, $p\leq.001$. However, when the cyber-practices were added, the involvement in cyber aggression lost significance predictor, b = .7331, Wald = 2.988, p = .003. According to these results, there was a partial mediation effect, in that when the mediator (cyber-practices) was included, the direct effect of the *laissez-faire* parenting style on involvement in cyber aggression lost significance. As demonstrated by Sobel test results, z = 2.40, p = .016, the effect of *laissez-faire* parenting style in involvement in cyber-aggression was mediated by cyber-practices.

.60, *p* = .012

Laissez-faire parenting style	Cyber-aggression

Cyber-practices

-.5815, *p* = .002

.1886, *p* < .001

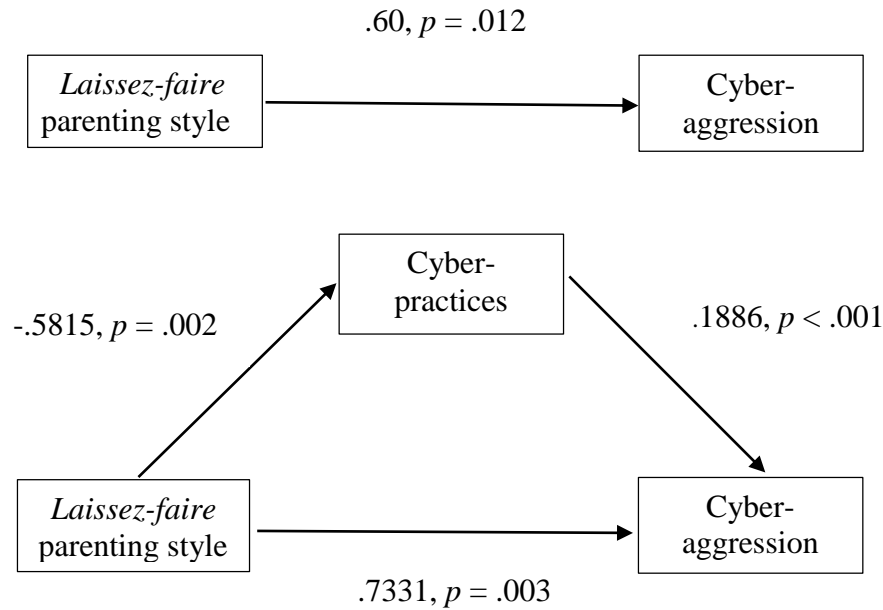|	
Laissez-faire parenting style	Cyber-aggression

.7331, *p* = .003

Figure 1. Mediation model, testing indirect effect of the perception of adolescents on parenting style (*laissez-faire*) in involvement cyber-aggression, mediated by cyber-practices.

Furthermore, we analysed the effect *laissez-faire* parenting style (VI), according to the adolescent's involvement in cyber-aggression (as victims, perpetrators, victims-perpetrators, VD). Results revealed that relationship was mediated by cyber-risks (MV):

1. The simple linear regression model allowed us to test whether the *laissez-faire* parenting style was a predictor of cyber-risks, $F (1,625) = 5.51$, $p = .019$, and explained 0.8% of the variance. Adolescents who perceived a *laissez-faire* parenting style reported more cyber-risks, $b = -.5694$, $t = -2.35$, $p = .019$.

2. The logistic regression model allowed us to whether the *laissez-faire* parenting style predicted the involvement in cyber aggression. This model was significant, $\chi^2 (1) = 6.83$, $p =.009$; thus, a greater number of cyber-risks was a significant predictor of involvement in cyber-aggression, $b =.60$, Wald = 2.041, $p =.012$.

3. The mediation model (Figure 2) were significant, $\chi^2 (2) = 32.48$, $p \leq .001$, and showed that the cyber-risks was a significant predictor of involvement in cyber-aggression $b =.1891$, Wald = 4.878, $p \leq .001$. However, when the cyber-risks were added, the involvement in cyber-aggression lost significance predictor, $b = .4969$, Wald = 2.041, $p = .004$. According to these

results, there was a partial mediation effect, in that when the mediator (cyber-risks) was included, the direct effect of the *laissez-faire* parenting style on involvement in cyber-aggression lost significance. As demonstrated by Sobel test results, $z = 2.08$, $p = .037$, the effect of *laissez-faire* parenting style in involvement in cyber-aggression was mediated by cyber-risks.
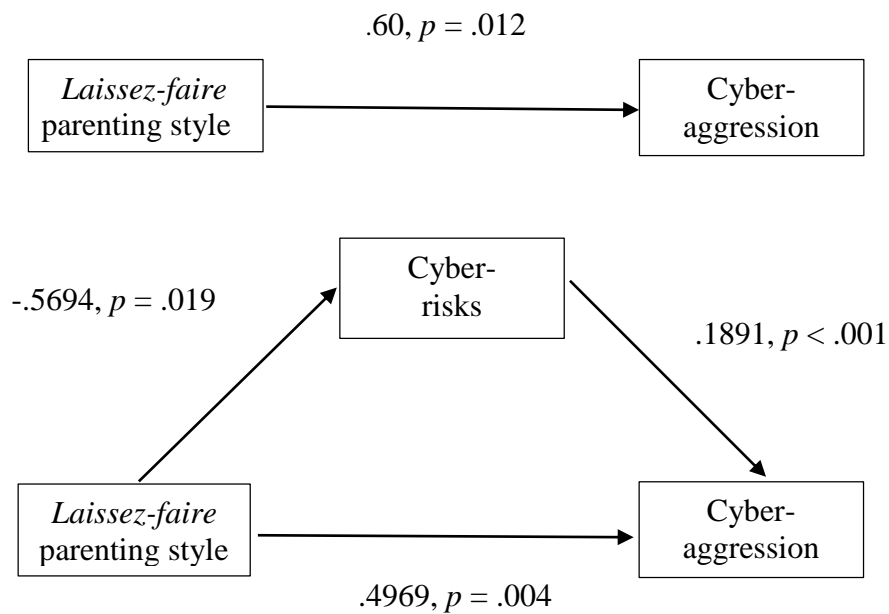

Figure 2. Mediation model, testing indirect effect of the perception of adolescents on parenting style (*laissez-faire*) in involvement cyber-aggression, mediated by cyber-risks.

Discussion

The current study provides an up-to-date analysis of cyber-aggression. It fills overcome some inconsistencies on empirical research about prevalence and demographic and digital profile of groups with different types of involvement: non-violence, victims, perpetrators and victims-perpetrators. To our knowledge is pioneer in the exploitation of predictors and behavioral patterns of victimization-perpetration, and as well in the analysis of the parenting styles effect on involvement in cyber-aggression among Portuguese adolescents.

A significant proportion of adolescents were implicated on repeated cyber-aggression (*versus.* 27.8% non-violence). This new form of interpersonal violence is a widespread phenomenon and therefore recognized as a serious concern. The prevalence in the present study was slight higher than corroborated in prior findings (victimization: e.g., Livingstone et al., 2011; Jones et al., 2013; perpetration: e.g., Marcum et al., 2014; Rice et al., 2015; victimization-perpetration: e.g., Matos et al., 2014; Ybarra & Mitchell 2004). Some methodological discrepancies (e.g., heterogeneous samples, terminological ambiguity, temporal reference, amount of behaviors, research instruments) contributed to the diversity of results (Bilic, 2013; Pereira & Matos, 2015; Ybarra & Mitchell, 2004). In turn, if on the Portuguese legal and politic domain, on the data collection, some cyber-aggressive behaviors were not legally discriminated (e.g., cyberstalking; Pereira, & Matos, 2015), allowing social discourses of trivialization; on the other hand, some Portuguese initiatives (e.g., Social Adventure Project, SeguraNet Project, MiúdosSegurosNa.Net Project) have been developed providing greater recognition and self-identification.

Developmental, criminological and sociological approaches shall be taken into account in the explanation of the link between victims, perpetrators and victims-perpetrators (Aboujoude et al., 2015; Bossler et al., 2012; Carrier et al., 2015; Holt, Bossler, & May, 2010; Leukfeldt & Yar, 2015; Marcum, Higgins, & Ricketts, 2010; Marcum et 2014). More specifically, it is possible that adolescent's immaturity in social relationships, lack of problem solving and of negotiation skills (Carrier et al., 2015), as their potential low self-control, looking for immediate rewards *versus.* underestimating the consequences, identifies them as potential online risks-takers (see General Theory of Crime; Gottfredson, & Hirschi's, 1990; Holt et al., 2010; Marcum et al., 2014). Further, the online situational characteristics, namely the technical features of ICT's (e.g.,

anonymity, lack of physical contact), communications channels (e.g., social networks, chat-rooms) and the type of cyber-risks (e.g., disclose personal information, talk with strangers) could likewise makes the victims attractive for perpetrators. By contrast parents can be the protective (or not) guardians (see Routine Activities Theory; Cohen & Felson, 1979; Leukfeldt, & Yar, 2015; Marcum, et al., 2010). Currently, for immediate social interaction adolescents prefer to experiencing and committing cyber-aggressive behaviors than being disconnected (Aboujaoude et al., 2015). In most cases, being socially (normalization of attitudes) and vicarious reinforced (apparently unpunished through to the deflection of responsibility that ICT's provide) (see Social Learning Theory; Bossler et al., 2012; Holt et al., 2010; Marcum et al., 2014; Skinner & Fream, 1997).

Adolescents were involved in cyber-aggression regardless of sex, age and academic qualifications. As found by previous studies (Aricak et al., 2008; Livingstone et al., 2011; Marcum et al., 2014; Matos et al., 2014; Ybarra & Mitchell, 2004) females and younger adolescents (7th) characterized non-violence and victim's groups. Perpetrators and victims-perpetrators groups (8th, 9th and secondary grade) were often males and older adolescents. The higher victimization among girls may attributed to the situational characteristics provided by the ICT's. They spending more time on social media platforms (e.g., Facebook, Instagram, Tumblr), to sharing personal information (e.g., comments, selfies, passwords) they are also more legibility to be labelled as more vulnerable to cyber-harassment, cyberbullying and sexting (Lenhart, et al., 2015; Livingstone et al., 2011; Marcum et al., 2010; Simões et al., 2014). The adolescent's culture norms and masculinity, the idea that male is a synonym of   dominance and independence (i.e., not being supervised by parents) make that boys   could be more tolerant to commit cyber-aggressive behaviors (Akabba, Peker, Eroglu, & Yaman, 2015; Aricak, 2008). Consistent with literature (e.g., Aricak et al, 2008; Mishna et al., 2012; Rice et al., 2015; Ybarra, & Mitchell, 2004), the tendency of older adolescents with high levels of education, self-perceiving a higher level of digital skills (by the sense of false security) places them at increased risk (*versus.* younger adolescents in the non-violence group) (Aricak et al., 2008; Livingstone et al., 2011; Jones et al., 2013; Ybarra & Mitchell, 2004).

ICT´s plays a vital role in youth development (e.g., learning, socializing, exploring interests) and it´s use is transverse to the adolescents who were uninvolved and involved in cyber-aggression. Nonetheless, our results as point out the highest

levels of digital practices (e.g., various technological devices, cyber-practices and cyber-risks) by victims-perpetrators followed by victims and perpetrators groups (*versus*. non-violence). Howsoever, as well corroborated (e.g., Bilic, 2013; Lenhart et al., 2015; Livinsgtone et al., 2011; Jones et al., 2013; Matos et al., 2014; Pereira & Matos, 2015; Pereira et al., 2015; Simões et al., 2014; Ybarra & Mitchell, 2004) greater online exposure leads to greater vulnerability to experience and commit cyber-aggressive behaviors.

Nearly half of the total adolescents involved in cyber-aggression admitted being a victim-perpetrator. For those, ITC's potentiated the violence as defence or compensatory mechanism (i.e., reactive and proactive aggression) (Law et al., 2012; Mishna et al., 2012; Rice et al., 2015). Some adolescents, in order to previous experiences of victimization face-to-face or online, could engage in cyber-aggression looking for revenge or 'payback'. By contrast, others adolescents can make the ICT's as tool to achieve a goal, acquire power/dominance or be more hostile than capable to be really in persona (Aricak et al., 2008; Law et al., 2012; Pereira et al., 2015; Ybarra & Mitchell, 2004).

Beyond the characterization of the socio-demographic and digital profile of the victims-perpetrator group, several factors evidenced that this type of involvement increased when adolescents engage in some cyber-practices and cyber-risks, namely: *'publishing texts, images, photos, music and videos on a blog, personal page or social network'; 'looking erotic and pornographic pages'; 'arranging offline meeting with someone who they only met online.* As documented, adolescents who admitted to having been victims or perpetrators are more similar (in terms of interpersonal, behavioral and social characteristics) than different (Jennings et al., 2012), and so the same adolescent can become a victim suitable, as well as quickly a perpetrator; or one day commit a cyber-aggressive behavior and the another day put themselves at risk of experiencing them (Leukfeldt & Yar, 2015; Marcum, et al., 2010; Moore et al., 2012; Posick, 2013).

This study also addressed the behavioral patterns of victims-perpetrators group. Although the majority reported typical routines acts (phone calls), some of those adolescents evidenced higher levels of monitoring (control or seizure of personal information), intrusion (exaggerated messages of affection or pornographic pictures) and offense (insulting messages). These misbehaviors can be contextualized in different epiphenomenon, like cyber-harassment (cf. Ybarra & Micthell, 2004) cyber dating abuse (cf. Zweig et al., 2013), cyberstalking (cf. Marcum et al., 2014) cyberbullying (cf.

Matos et al., 2014) and sexting (cf. Livingstone et al., 2011). This may suggest different explanations: boys (victims-perpetrators group) use ICT´s as tool for emotional connection, and we can interpret the cyber-tactics by the numerous attempts to 'mistakenly' flirting and stay close to girls (victims group) (Lenhart et al., 2015). On the other hand, perhaps these patterns of cyber-aggressive behavior are integrated in TIC's adolescents culture (as a complementary for use), and it's can justify the similarity of behaviors between the groups involved in cyber-aggression.

Adolescents and parents understand the parental mediation as very helpful in promotion safety on cyber-context (Livingstone et al., 2011). However, many of the strategies applied by the parents become a risk factor for the adolescent to become a victim, perpetrator or victim-perpetrator in cyber-aggression (Dehue et al., 2012). In accordance to previous studies (e.g., Dehue et al., 2012; Rosen et al., 2008), the present research found that uninvolved adolescents (non-violence) self-perceived to cohabite with authoritative and authoritarian parents. This may suggest that their strategies, indicated on literature (Eastin et al., 2006; e.g., co-viewing, raising awareness, talking about the contents; monitor time spend on the computer, use blocking/filtering software programs) play an indispensable function for responsible socialization of adolescents. Permissive and *laissez-faire* parents were highest for the subgroup victims-perpetrators. Lower parental warmth and parental control can may corroborate an deficient parenting style (Dehue et al., 2012; Roosen et al., 2008). As established for Dehue et al. (2012) these parents lead to inadequate socialization. These might be a potential source for the adolescents' development of low control, impulsive behaviour, overestimation of consequences and involvement in cyber-aggression (Dehue et al., 2012; Jennings et al., 2012).

Contrasting with other parenting styles, the relationship between *laissez-faire* parental style and involvement in cyber-aggression (as victims, perpetrators, victims-perpetrators) can be explained by cyber-practices and cyber-risks. It is possible, that parents do not show an attitude of support or restrictions may to increase the cyber-practices (e.g., spend more time online, use highest digital ITC's) and cyber-risks (e.g., navigate in communicate platforms, disclose personal information, talk with strangers) of their adolescents, and in turn the involvement in cyber-aggression (Dehue et al., 2012; Leukfeldt, & Yar, 2015; Marcum, et al., 2010).

Conclusion

The cyber world plays a important role in youth development, but also promote new form of interpersonal violence, such as cyber-aggression. Extensive investigations has been scrutinized about this global phenomenon, but little is known about what makes adolescents vulnerable to be involved in cyber-agression. This paper represents the first step in this direction, with Portuguese adolescents.

On a micro-level and macro-level perspective, vulnerability to involvement in cyber-aggression (whether as victim, perpetrator or victim-perpetrator) can be explained on reciprocal interaction of multipronged: i) developmental (individual's characteristics of adolescents), ii) criminological (features of cyberspace, cyber-practices and cyber-risks), iii) and sociological (parental mediation; Pereira et al., 2016).

Findings suggest theoretical, methodological and practical implications.

Further research should take into account precise terminology of cyber-aggression, representative samples, validated instruments, consistency in temporal reference and amount of behaviors, mixed-method approaches, qualitative (i.e., focus group, meta- analysis) and longitudinal (for impact, consequences) designs for deeper comprehension of each role involved (particularly as victims-perpetrators group).

Professionals practices (e.g. psychologists, educators, legislators, criminologists, digital designers) should: i) reinforce initiatives that already exist (e.g., Norton Cyber-crime Index, New Project Genesis, Social Adventure Project, SeguraNet Project, MiúdosSegurosNa.Net Project); ii) promote psycho-educational programs directed to the peers and romantic partners (e.g., socio-cognitive competences, emotional-regulation; prosocial skills, assertive communication, dating violence), and parents (e.g., improve active mediation strategies, reduce the digital generation gap); iii) develop efforts to identify vulnerable groups and equally give answers to those involved (e.g., telephonic helplines, websites for clarification); iv) Portuguese laws as nº 83/2015 of 5th August, should continue to be discriminated against this new form of interpersonal violence, in the near future.

Finally, the present study have some limitations. To data collect, we used two self-report questionnaires. Social desirability might influence the results about Internet use habits and victims-perpetrators' reports of victimisation-perpetration. Furthermore, it was questioned to adolescents: if they had experienced and/or perpetrated cyber-aggressive behaviors. So, they were not asked if they recognize themselves as victims

and/or aggressors. This may suggest an over-estimation of victimization and aggression. Besides that, we analyse the patterns of victims-perpetrators group without requesting chronological order of these behaviors, not allowing us to recognize the directionality of involvement (reactive *versus.* proactive cyber-aggression). Parenting styles were measured through perceptions of adolescents. Given the differences among parents and adolescents we may be facing an underestimation of parental mediation strategies.

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