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Possible common correlates between bullying and cyber-bullying among adolescents



Nafsika Antoniadou, Constantinos M. Kokkinos*, Angelos Markos

Democritus University of Thrace, Greece

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ABSTRACT

The present study investigates possible individual characteristics associated with traditional and cyber-bullying/victimization among 146 Greek junior high school students and their contribution in the prediction of the phenomena. Participants completed a self-report questionnaire, measuring online disinhibition, personality traits, social skills, and relations, as well as Internet use. Results indicated that although some students participated with the same role in traditional and cyber-bullying/victimization and shared common characteristics, most of them participated in either one or both phenomena with opposite roles. In terms of predictive factors, cyber-bullying was predicted by being a male, online disinhibition, online activity and psychopathic traits, while traditional bullying was predicted by being a male, online disinhibition and sensation seeking. Cyber-victimization was predicted by online disinhibition, assertion, and few peer relations, while traditional victimization by Internet skills and impulsive-irresponsible traits. Findings are discussed in terms of common and differentiated prevention and intervention practices.

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Posibles correlatos comunes entre el acoso y el ciberacoso en adolescentes

RESUMEN

Este estudio investiga las posibles características individuales asociadas a la victimización tradicional y por ciberacoso en 146 estudiantes de secundaria griegos y su contribución a la predicción del fenómeno. Los participantes cumplimentaron un cuestionario de autoinforme que medía la desinhibición en la red, rasgos de personalidad, habilidades y relaciones sociales y la utilización de internet. Los resultados indican que a pesar de que algunos estudiantes participaron con el mismo rol en la victimización tradicional y en la de ciberacoso y compartían características, la mayoría participaron en uno de los fenómenos o en ambos con roles opuestos. En relación a los factores predictores, el ciberacoso se predijo por el género masculino, la desinhibición online, la actividad online y rasgos psicopáticos, mientras que el acoso tradicional por el género masculino, la desinhibición online y la búsqueda de sensaciones. La victimización cibernética la predecía la desinhibición online, asertividad y escasas relaciones con compañeros, mientras que la victimización tradicional la predecían las aptitudes cibernéticas y los rasgos de impulsividad y falta de responsabilidad. Se comentan los resultados en cuanto a la prevención común y diferenciada y a la praxis en intervención.

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Palabras clave:

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Desinhibición online

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Habilidades sociales

Búsqueda de sensaciones

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* Corresponding author. Department of Primary Education. School of Education Sciences. Democritus University of Thrace. N. Hili, GR 68100. Alexandroupolis, Greece.

E-mail address: kkokkino@eled.duth.gr (C.M. Kokkinos).

¹ The term traditional bullying refers to conventional bullying and is introduced henceforth as a synonym of school bullying, in order to make the distinction with cyber-bullying.

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Cyber-bullying has recently emerged as an aggressive, intentional act that is carried out by a group or an individual, using electronic forms of contact, repeatedly and over time, against a victim who cannot easily defend him/herself (Smith, Mahdavi, Carvalho, & Tippett, 2006). Although several researchers consider cyber-bullying a sub-category of traditional bullying¹ that occurs through Information and Communication Technologies (ICTs) (e.g., Wong-Lo & Bullock, 2011), others regard it

as a completely different type of aggression with distinctive participant profiles, motives, personal characteristics, and roles (see Antoniadou & Kokkinos, 2015a, for an extended review). According to the first position, cyber-bullying/victimization and traditional bullying/victimization have significant high correlations (e.g., Hinduja & Patchin, 2008), and factor analyses indicate that the items for their assessment load into common factors (Bauman & Newman, 2013; Olweus, 2012), while it has been suggested that only a small number of students is involved exclusively in cyber-bullying/victimization incidents (Olweus, 2012). Furthermore, in most cases, students who simultaneously participate in both phenomena adopt the same role (e.g., Dempsey, Haden, Goldma, Sivinsk, & Wiens, 2011). Nevertheless, not all studies support these arguments, since other findings indicate that cyber-bullying/victimization also involves a number of students who have no participation in traditional bullying/victimization (e.g., McLoughlin, Meyricke, & Burgess, 2009), as well as students who participate with different or multiple roles (e.g., Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2012). The aforementioned differences have been frequently attributed to the distinct characteristics of ICTs and the perceived safety that they provide to users (Antoniadou & Kokkinos, 2015a). Similarly to traditional² bullying, cyber-bullying may cause discomfort, depression, and anxiety to the victim, while it may involve other participants as well, who support and/or observe those involved, or even adopt a dual role (i.e., bully-victims; Antoniadou & Kokkinos, 2013; Kowalski, Limber, & Agatston, 2008).

Despite the emerging body of research examining cyber and traditional bullying/victimization jointly in order to allow for meaningful comparisons, still little is known about the possible common participants' individual characteristics, while the existing studies differ considerably in terms of sampling, assessment methods, and statistical analysis (e.g., Antoniadou & Kokkinos, 2015b; Kowalski & Limber, 2007). Thus, the present study examines possible common individual characteristics among cyber and traditional bullying/victimization participants that emerge as the most prevailing in the study of both phenomena (i.e., gender, personality, social skills, and social relations) (e.g., Fanti & Kimonis, 2013; Wolak, Mitchell, & Finkelhor, 2003), as well as those that may distinguish students' participation in cyber-bullying/victimization (i.e., Internet use and online disinhibition).

Individual Characteristics Related to Traditional and Cyber-bullying/ Victimization

The literature on traditional bullying is often taken as a framework to understand cyber-bullying, while due to their complexity, they both require an interdisciplinary approach, so that their forms, causes, and correlates can be sufficiently investigated. Within the field of psychology, the individual differences perspective of bullying remains of particular interest for three reasons: firstly, several individual factors can be more easily influenced, and contrary to contextual factors, allow school communities more possibilities for prevention and intervention (Farrington & Baldry, 2010). Secondly, although individual factors prevail in the power imbalance between bullies and victims, they may differently influence the power imbalance in terms of cyber-bullying, since it takes place within an anonymous context that provides less information regarding power (Currie et al., 2012). Finally, research indicates that individual factors account for a greater amount of variance in cyber-bullying and victimization (Schumann, 2012).

² The term traditional bullying refers to conventional bullying and is introduced henceforth as a synonym of school bullying, in order to make the distinction with cyber-bullying.

The existing studies on adolescents' concurrent involvement in both traditional and cyber-bullying/victimization explore participants' psychosocial profile as examined in traditional bullying/victimization research (e.g., Katzer, Fetchenhauer, & Belschak, 2009). Even though researchers are currently investigating associations between psychological factors and cyber-bullying/victimization, the literature has focused on the examination of the effects of one or two psychological variables on these behaviors, and not the simultaneous effects of multiple variables. Since behaviors do not have simple causes but multiple causes that are determined by a large number of interacting individual and contextual variables, the present study aims at examining the possible common traditional and cyber-bullying/victimization participants'³ individual characteristics that emerge as the most prevailing in the study of both phenomena (i.e., personality, social skills, and social relations), as well as those that may distinguish participation in cyber-bullying/victimization (i.e., Internet use and online disinhibition).

Internet Use and Online Disinhibition

The excessive and dangerous use of ICTs is related to students' cyber-bullying/victimization participation, as well as their ability to use ICTs effectively (i.e., advanced use of computers, networks, and digital information) (Walrave & Heirman, 2012). As proposed by Livingstone, Haddon, Görzig, and Ólafsson (2011) a wide range of online activities indicates better ICTs skills, while those who make excessive and dangerous Internet use are more likely to be involved in antisocial and delinquent behavior offline (e.g., Ko, Yen, Liu, Huang, & Yen, 2009).

An antecedent factor involved in cyber-bullying/victimization is online disinhibition (Suler, 2004), which is defined as "any behavior characterized by an apparent reduction in concerns for self-presentation and judgment of others" (Joinson, 1998, p. 44) and can lead to aggressive behavior. Although the Internet may allow individuals to express aspects of themselves which they would not manifest in real life, this does not mean that all individuals will employ it for aggressive purposes. Previous studies have indicated that personal characteristics, such as personality, social skills, and emotional control, affect the way that people use the Internet (e.g., Amichai-Hamburger, Wainapel, & Fox, 2002), and whether they will use it for negative purposes. Online disinhibition has been implicated in cyber-victimization as well (Kokkinos, Antoniadou, Asdre, & Voulgaridou, in press), since students who exhibit uninhibited behavior (e.g., post personal information and material online, interact with strangers) are at risk of being victimized.

Psychopathic Traits

Psychopathic traits are among the personality characteristics that adolescent cyber-bullies share with traditional bullies (e.g., Antoniadou & Kokkinos, 2013). In general, individuals with psychopathic traits are attracted to the Internet since it provides them with constant display to an infinite audience and immediate feedback, crucial for their narcissism (Baldasare, Bauman, Goldman, & Robie, 2012), while at the same time it furnishes them with ample opportunities for indirect aggression in which they are especially apt due to their manipulative tendencies. Finally, as the Internet provides reduced verbal signals, it is likely to accentuate their aggressive behavior, given that they are already characterized by low emotional empathy (Ang & Goh, 2010). It has been suggested that

³ The term "participants" is inclusive and refers to all victims and perpetrators (i.e., bullies, bully-victims).

callous-unemotional traits have the power to influence the development of cyber-bullying, and that narcissism and impulsivity can influence both cyber-bullying and cyber-victimization (e.g., Fanti, Demetriou, & Hawa, 2012).

Sensation Seeking

Students who are attracted to dangerous, aggressive and challenging online behaviors are high sensation seekers⁴ (Antoniadou & Kokkinos, 2013), similarly to traditional bullies (Leenaars, 2012; Woods & White, 2005). When offline, sensation seekers tend to search for thrill and adventure through risky activities and delinquent behavior (including traditional bullying), while when connected to the Internet they are more likely to socialize with strangers and post provocative material in an effort to entertain themselves (Livingstone & Helsper, 2007). Students' susceptibility to boredom, tendency for thrill and adventure seeking (Keith & Martin, 2005), as well as their inability to perceive their counterparts' feelings through the Internet (especially if they already have low empathy) (Ang & Goh, 2010), may convert playful and teasing actions into cyber-bullying which are less likely to be resolved compared to real life. Sensation seeking has been also linked to cyber-victimization since, according to some studies, students who have sensation seeking tendencies are more likely to experience cyber-victimization (e.g., Görzig & Frumkin, 2013).

Social Skills and Peer Relations

Inefficient social skills and poor social relations have been related to both offline and online victimization (Antoniadou & Kokkinos, 2013; Ybarra, Mitchell, Wolak, & Finkelhor, 2006). Students with poor social skills may cyber-bully either by masking their social deficiencies through ICTs (i.e., the asynchronous nature of the Internet allows users time to process their replies and reactions) or by employing direct cyber-bullying. Low popularity is also predictive of cyber-victimization (Katzer, Fetchenhauer, & Belschak, 2009), since cyber-victims usually report having fewer friends compared to non-participants. ICTs may trouble students who have problematic social skills due to the limited non verbal social cues (e.g., Kraut et al., 1998), while victims of traditional bullying who are not able to implement effective coping strategies offline may as well experience cyber-victimization or find the Internet as a fertile ground to counterattack (Kokkinos, Antoniadou, Dalara, Koufoglazou, & Papatziki, 2013).

Empathy

Cognitive and affective empathy⁵ differently affect traditional bullies, with those who use indirect forms of aggression reporting high cognitive empathy, whereas those using direct, physical aggression that does not require advanced cognitive and social skills reporting low cognitive empathy (e.g., Kaukiainen et al., 1999). Adolescent cyber-bullies are likely to show reduced affective empathy (Ang & Goh, 2010), but as the Internet causes a decrease in the perception of the emotional state of the other (due to

reduced nonverbal signals) students who have adequate emotional empathy may also be involved in cyber-bullying/victimization. The relationship of cognitive empathy with cyber-bullying has been scarcely investigated, but the limited existing evidence suggests a negative relationship (Ang & Goh, 2010). In terms of cyber-victimization, findings indicate that victims of cyber-bullying may have low empathy as well (Almeida et al., 2009; Schultze-Krumbholz & Scheithauer, 2009).

The Present Study

The purpose of this cross-sectional correlational study is to investigate possible individual characteristics associated with cyber-bullying and victimization, as well as traditional bullying and victimization in a sample of Greek adolescents. In addition, it examined the relative contribution of a number of individual characteristics in the prediction of traditional and cyber-bullying/victimization. An advantage of this study is that students were classified into roles based on their cyber and traditional bullying/victimization scores, in order to allow for better comparisons, while regression analyses were used to identify possible common and/or distinct predictors. Based on the literature review specific hypotheses were tested:

1. Most students will be uninvolved in traditional and cyber-bullying/victimization, while the most common participant role in traditional bullying/victimization will be that of the victim, followed by the bully and the bully-victim (H1a), similarly to cyber-bullying/victimization participants (H1b). A significant percentage of students are expected to participate with the same role in both phenomena (H1c), while fewer students will only participate in cyber-bullying/victimization incidents (H1d).
2. In terms of individual characteristics, specific hypotheses will be tested:
 - H2a: Bullies will score higher on *online disinhibition* which will be positively correlated with cyber-bullying/victimization.
 - H2b: Students participating in traditional, cyber-bullying/victimization, or both (especially bully-victims), will report higher *psychopathic traits*.
 - H2c: Cyber and traditional bullying/victimization participants (especially bully-victims) will report poorer *social skills* than the uninvolved.
 - H2d: Participants in cyber-bullying/victimization (especially bully-victims) will report lower *empathy* than the uninvolved and traditional bullying/victimization participants. Students participating with a dual role in both phenomena will report lower *cognitive* and *affective* empathy, whereas cyber-bullies less *affective* empathy.
 - H2e: Cyber-bullying participants and traditional bullies will report higher *sensation seeking*.
3. Students participating in cyber (especially bullies and bully-victims) and traditional bullying/victimization will use the Internet more frequently and dangerously than those uninvolved (H3).
4. Finally, cyber-bullying/victimization will be predicted by dangerous and frequent Internet use, sensation seeking, online disinhibition, psychopathic traits, low emotional empathy and traditional bullying/victimization (H4a), while traditional bullying/victimization, will be positively predicted by psychopathic traits, sensation seeking and negatively by social skills, peer relations, and empathy (H4b).

⁴ Sensation seeking refers to "the tendency to seek novel, varied, complex, and intense sensations and experiences and the willingness to take risks for the sake of such experience" (Zuckerman, 1994, p. 27).

⁵ Cognitive empathy: an individual's ability to identify and cognitively process another person's emotional states. Affective empathy: the affective component of empathy that facilitates emotional understanding and communication (Shamay-Tsoory, Aharon-Peretz, & Perry, 2009).

Method

Participants

A convenience sample of 146 junior high school students (aged between 12–16 years old) from the educational districts of Eastern Macedonia-Thrace and Southern Aegean participated in the study; 79 were boys (54%), 63 girls (43%), while 4 (3%) had missing gender data. Twenty students were 1st graders (13.7%), 48 (32.9%) 2nd and 78 (53.4%) 3rd graders⁶.

Procedure and Data Analysis

Students were provided with parental consent forms, while the voluntary basis of participation, as well as issues regarding anonymity and confidentiality were stressed to them.

Because of the highly skewed distributions on several of the scales, Kruskal-Wallis tests followed up by Bonferroni-corrected Mann-Whitney *U* tests (p -value < .005) were used to examine differences among participants. Pearson correlations were calculated and multiple regression analysis was used to explain participation in traditional and cyber-bullying/victimization incidents. A hierarchical approach to regression was used for evaluating the unique contributions of independent variables above and beyond previously entered variables, as a means of statistical control. Bootstrapping was performed to obtain robust estimates and help offset the small sample size; 95% confidence intervals (CIs) for unstandardized coefficients were computed using 1,000 resamples and were obtained as the 2.5th and the 97.5th percentiles of the resulting bootstrap sampling distribution. SPSS 19 for Windows was used to carry out statistical analyses.

Measuring Instruments

Overview. The Greek translations of the scales used in the study were developed using the front and back translation method by employing two bilingual psychologists. The original scoring system was maintained. Pilot tests checked item comprehensibility and completion time.

Scales' construct validity was examined with Confirmatory Factor Analysis (CFA) with Mplus version 6.1 (Muthén & Muthén, 2010) using the Maximum Likelihood estimation method and the Satorra-Bentler scaled chi-square test for non-normal data. The model fit was evaluated by means of the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) (values > .90 or .95) (Hu & Bentler, 1999). The χ^2/df was also considered (value < 3). In addition, the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Square Residual (SRMR) were reported, with values of .05 or less indicating good model fit (Jackson, Gillaspay, & Pure-Stephenson, 2009). Factor loadings were assessed for statistical significance at the $p < .01$ level. Cronbach's alpha coefficient assessed the measures' internal consistency. In all cases, composite scale scores were computed by averaging the number of the corresponding items for each scale, except for type of Internet use score which was computed by summing the respective items.

Internet use. Frequency of Internet use was assessed with two items ("How frequently do you use the Internet?" and "How long do you stay connected to the Internet each time?"), answered on a 4-point scale (0 = *never* to 3 = *every day* and 0 = *half an hour or less* to 3 = *over three hours* respectively). Answers to both questions were combined and further collapsed into low, medium and high use.

Online activities and Internet skills. A 17-item scale derived from the questionnaire constructed by the "EU Kids Online" European network (Livingstone et al., 2011) assessed four categories of participants' online activities during the last month on the Internet: information seeking (2 items), multimedia downloading (2 items), producing-sharing multimedia (6 items), communication (4 items), and gaming-entertainment (3 items).

Three items from the same questionnaire assessed students' ability to protect themselves from online risks (e.g., being able to "block" spam e-mail and its senders) (Livingstone et al., 2011). Answers to all items were given on a dichotomous basis (0 = *no*, 1 = *yes*) with the scales' subscores derived from the sum of scores for the corresponding statements.

Type of Internet use. To assess the type (safe vs. dangerous) of Internet use during the last month, two questions were used ("Did you reveal the password of your online account to anyone – e.g., e-mail, social networking site, etc.?" and "Did you give out personal information to people you only know through online communication?"). Responses were provided on a dichotomous scale (0 = *no*, 1 = *yes*), with the highest score being indicative of more dangerous Internet use.

Cyber-bullying/victimization. Cyber-bullying/victimization during the last 90 days was assessed using the Cyber-bullying/Victimization Experiences Questionnaire (CBVEQ) (Antoniadou & Kokkinos, 2013; Kokkinos et al., 2013), a 24-item instrument equally divided into two subscales, for cyber-bullying and cyber-victimization respectively, on a 5-point scale (1 = *never* to 5 = *every day*). The scale assesses direct (5 items) and indirect (7 items) cyber-bullying/victimization behaviors, conducted with the use of cell-phones or the Internet, and has adequate validity and reliability with Greek children and youth (Kokkinos, Antoniadou, & Markos, 2014; Kokkinos et al., 2013). A correlated 2-factor model (CFA) properly fit the data, $\chi^2(244) = 346.92$, CFI = .95, TLI = .93, SRMR = .050, RMSEA = .060 90% CI [.045 - .074]. Internal consistency was .91 for both scales.

Online disinhibition. Online disinhibition was assessed with 15 items from the Social Confidence and Socially Liberating scales of the Internet Behaviors and Attitudes Questionnaire (Morahan-Martin & Schumacher, 2000), which assesses students' tendency to display disinhibited behavior while connected to the Internet. Participants were asked to indicate on a 4-point Likert scale (1 = *strongly disagree* to 4 = *strongly agree*) the extent to which they endorsed the behaviors described. CFA supported the unidimensionality of the 15-item scale, $\chi^2(90) = 184.83$, CFI = .93, TLI = .91, SRMR = .055, RMSEA = .049, 90% CI [.039 - .061]. The overall Cronbach's alpha was .90.

Psychopathic traits. The 18-item Youth Psychopathic Traits Inventory-Short Version (YPI-short) (Van Baardewijk et al., 2010) assessed students' three dimensions of antisocial personality (callous-unemotional, grandiose-manipulative, impulsive-irresponsible), rated on a 4-point scale (1 = *not true at all* to 4 = *applies very much*). The scale was used with Greek speaking samples (Antoniadou & Kokkinos, 2013; Fanti, Frick, & Georgiou, 2009). A CFA model with three correlated factors demonstrated acceptable fit, $\chi^2(132) = 190.56$, CFI = .96, TLI = .95, SRMR = .040, RMSEA = .055, 90% CI [.045 - .065]. Alpha reliability coefficients were: .86 (grandiose-manipulative), .81 (callous-unemotional), and .76 (impulsive-irresponsible).

Traditional bullying/victimization. Twenty-four items from the Student Survey of Bullying Behavior-Revised 2 (SSBB-R2) were used to assess traditional (school) bullying/victimization experiences-rated on a 5-point Likert scale (0 = *never* to 4 = *almost daily*) (Varjas, Meyers, & Hunt, 2006). The SSBB-R2 has adequate psychometric properties and has been successfully used with Greek-speaking samples (e.g., Fanti et al., 2009; Varjas et al., 2006). A CFA revealed that a correlated 2-factor model fitted the data, namely traditional

⁶ The Greek junior high school (Gymnasio) has three grades. Students attending the junior high school are between 12 and 15 years of age (Eurydice, 2014).

bullying and traditional victimization, $\chi^2(242)=415.39$, CFI=.99, TLI=.99, SRMR=.035, RMSEA=.050, 90% CI [.040 - .060]. Internal consistencies were very high, .96 and .93, respectively.

Social skills. The “Social Skills” scale from the Social Skills Rating System (SSRS) (Gresham & Elliot, 1990) was used to assess student cooperation (9 items), assertion (11 items) and self-control (10 items) on a 3-point scale (0=never to 2=always). A CFA indicated that a correlated 3-factor model was most consistent with the data, where each latent factor represented the original three subscales, $\chi^2(372)=543.84$, CFI=.91, TLI=.91, SRMR=.059, RMSEA=.047, 90% CI [.035 - .057]. Cronbach’s alpha for the total scale was .91, whereas for each subscale they were: student cooperation (.85), assertion (.80), and self-control (.84).

Sensation seeking. The 20-item Sensation Seeking Scale for Adolescents (SSS-A) (Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002) measured students’ sensation seeking in terms of four 5-item dimensions: (a) thrill and adventure seeking, (b) experience seeking, (c) disinhibition and (d) boredom susceptibility. Responses were provided on a 5-point scale (1=strongly disagree to 5=strongly agree). The scales have been successfully used with Greek samples (Antoniadou & Kokkinos, 2013). CFA confirmed the scale’s structure, $\chi^2(164)=406.51$, CFI=.97, TLI=.96, SRMR=.045, RMSEA=.065, 90% CI [.043 - .079]. Alphas for the thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility scales were .74, .83, .71, and .63 respectively.

Peer relations. The Peer Relations 5-item scale of the Greek standardized Self Perception Profile for Children (SPPC) (Harter, 1985; Makri-Botsari, 2001) for high school students was used. Each item is scored on a four-point scale (1=lowest perceived competence to 4=highest level of competence or adequacy). CFA supported the scale’s unidimensionality, $\chi^2(5)=11.71$, CFI=.99, TLI=.98, SRMR=.032, RMSEA=.031, 90% CI [.021 - .041], with a Cronbach’s alpha of .83.

Empathy. The 20-item Basic Empathy Scale (BES) (Jolliffe & Farrington, 2006), assessing cognitive (9 items) and affective (11 items) empathy on a five-point scale (1=strongly disagree to 5=strongly agree) was used. CFA confirmed a correlated two-factor structure, $\chi^2(51)=158.81$, CFI=.95, TLI=.94, SRMR=.042, RMSEA=.062, 90% CI [.040 - .083]. Cronbach’s alphas were .82 and .81 for cognitive and affective empathy respectively.

Students also reported their gender and grade level.

Results

Participant Role Classification

Students were classified into groups⁷ according to their participant role in a cyber or traditional bullying/victimization incident on the basis of their cyber and traditional bullying/victimization total scores respectively. Scores falling in the upper and lower quartiles of the distribution of both cyber and traditional bullying/victimization were indicative of high and low cyber and traditional bullying/victimization respectively. Eight groups were formed. In terms of cyber-bullying/victimization: *cyber-bullies* (15, 10.3%; high on cyber-bullying and low on cyber-victimization), *cyber-victims* (13, 8.9%; high on cyber-victimization and low on cyber-bullying), *cyber-bully/victims* (22, 15.1%; high on both cyber-bullying and cyber-victimization), and *uninvolved* (96, 65.8%; low on both cyber-bullying and cyber-victimization); in terms of traditional bullying/victimization: *traditional bullies* (22, 15.1%; high on traditional bullying and low on traditional victimization), *traditional victims* (20, 13.7%; high on traditional victimization and low

on traditional bullying), *traditional bully/victims* (15, 10.3%; high on both traditional bullying and traditional victimization), and *uninvolved* (89, 61.0%; low on both traditional bullying and traditional victimization).

A second classification grouped students into traditional/cyber-bullying/victimization roles, in order to determine those who participated with the same role (victim or perpetrator) in both phenomena, with the opposite role (victim in cyber-bullying/victimization and/or perpetrator in traditional bullying/victimization and vice versa), in only one of the two phenomena and finally, those who did not participate in any phenomenon (uninvolved). Findings indicated that 36 students (24.7%) participated only in one of the two phenomena, 13 (8.9%) in both phenomena with the same role (2 as victims, 4 as bullies and 7 as bully/victims), 22 (15.1%) in both phenomena but with the opposite role, while 75 (51.4%) were uninvolved.

Group Differences

Participants were then examined in terms of their personal characteristics. For the sake of brevity, only statistically significant differences are reported in Tables 1–3. Cyber and traditional bullying/victimization perpetrators (bullies or bully-victims) had higher scores than the uninvolved in all psychopathic traits and in online disinhibition (Tables 1 and 2). Traditional bullies and victims had higher scores in experience seeking and online disinhibition than the uninvolved. In terms of social skills, bully/victims scored higher than the uninvolved in assertion, only in the case of traditional bullying/victimization. Finally, cyber-bullies reported more variant online activities than the uninvolved.

Participants who concurrently participated in both phenomena with the same role (victim or bully) used the Internet more frequently and scored higher in assertion. On the contrary, the uninvolved students reported less online disinhibition, online activities and psychopathic traits.

Correlation Analysis

A significant positive correlation was observed between cyber-bullying and cyber-victimization and between cyber-bullying and traditional bullying (Table 4). Participation in all phenomena was positively correlated with online disinhibition, and psychopathic traits. Cyber and traditional bullying were positively correlated with online activities, boredom susceptibility, and assertion. Traditional bullying was positively correlated with experience seeking and online disinhibition, while in terms of social skills all phenomena had positive correlations with assertion.

Regression Analysis

Two sets of bootstrapped hierarchical regression analyses tested four models for the outcome variables (cyber-bullying, cyber-victimization, traditional bullying, traditional victimization). In the first set, for each model, the independent variables were added in five subsequent blocks (see Table 5). Gender was entered in the first block as a possible confounder, the scores in the other three phenomena were added in the second block, the main effects of personality-related variables in the third block (psychopathic traits, online disinhibition, sensation seeking, empathy), social skills and peer relations were entered in the fourth block, and finally, Internet-related variables (online activities, Internet skills, type of Internet use and frequency of Internet use) in the fifth block. A significant R^2 change indicated that a specific block accounted for additional variability in the outcome relative to the preceding block. The order in which blocks were entered into regression, from demographic to Internet-related variables, was

⁷ Groups were mutually exclusive.

Table 1
Differences in CB, CV and Individual Characteristics.

	Role in CB/V											Sig. pairwise differences
	1. Bully (n = 15)		2. Victim (n = 13)		3. Bully/Victim (n = 22)		4. Neutral (n = 96)		Kruskal-Wallis			
	M	SD	M	SD	M	SD	M	SD	χ^2	df	p	
1. GM	2.19	1.08	1.51	0.56	2.28	0.73	1.54	0.54	21.68	3	<.001	2 vs. 3, 3 vs. 4
2. CU	2.71	0.72	1.88	0.71	2.51	0.72	1.74	0.70	28.04	3	<.001	1 vs. 4, 3 vs. 4
3. II	2.49	0.82	1.89	0.61	2.32	0.78	1.76	0.59	14.95	3	.009	1 vs. 4, 3 vs. 4
4. OD	1.05	0.61	0.66	0.52	1.36	0.80	0.52	0.45	29.15	3	<.001	1 vs. 4, 3 vs. 4
5. OA	11.92	3.98	8.81	5.13	9.76	4.57	7.98	3.36	11.54	3	.007	1 vs. 4

Note. CB = Cyber-bullying, CV = Cyber-Victimization, GM = Grandiose-Manipulative, CU = Callous-Unemotional, II = Impulsive-Irresponsible, OD = Online Disinhibition, OA = Online Activities.

Table 2
Differences in TB, TV and Individual Characteristics.

	Role in TB/V											Sig. pairwise differences
	1. Bully (<i>n</i> = 22)		2. Victim (<i>n</i> = 20)		3. Bully/Victim (<i>n</i> = 15)		4. Neutral (<i>n</i> = 89)		Kruskal-Wallis			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	χ^2	<i>df</i>	<i>p</i>	
1. GM	1.85	0.63	1.85	0.68	2.14	0.85	1.58	0.69	11.28	3	.008	3 vs. 4
2. CU	2.29	0.66	2.18	0.76	2.32	0.78	1.79	0.79	13.86	3	.002	1 vs. 4
3. II	2.21	0.59	2.24	0.63	2.24	0.79	1.72	0.64	18.63	3	<.001	1 vs. 4, 2 vs. 4
4. ES	4.20	0.77	3.07	0.92	3.94	0.86	3.02	1.17	21.87	3	<.001	1 vs. 2, 1 vs. 4, 3 vs. 4
5. DI	4.21	0.68	3.28	0.93	3.73	0.74	3.38	0.98	14.25	3	.002	1 vs. 2, 1 vs. 4, 3 vs. 4
6. SE	1.13	0.41	0.97	0.40	1.36	0.33	0.85	0.45	15.44	3	.007	3 vs. 4
7. OD	0.92	0.57	0.70	0.51	1.42	0.80	0.54	0.52	22.47	3	<.001	1 vs. 4, 3 vs. 4

Note. TB = Traditional Bullying, TV = Traditional Victimization, GM = Grandiose-Manipulative, CU = Callous-Unemotional, II = Impulsive-Irresponsible, ES = Experience Seeking, DI = Disinhibition, SE = Assertion, OD = Online Disinhibition.

selected using a combination of theory-based and statistically recommended procedures. Gender was entered first, since demographics are assumed to have a significant role in student involvement in the phenomena (e.g., [Rappaport & Thomas, 2004](#)), while participation in the other phenomena was entered second, since it has repeatedly been implicated as a highly significant predictor (e.g., [Katzner, Fetschenhauer, & Belschak, 2009](#)). Personality characteristics were entered third, since more biologically based individual characteristics are assumed to contribute significantly to the prediction of the phenomena, over and above variables with greater environmental influence (i.e., social skills and internet related variables), which were entered in later steps ([Antoniadou & Kokkinos, 2013](#); [Fanti et al., 2012](#)). Significant effects were assumed if the 95% confidence interval associated with the bootstrapped regression coefficient did not contain the value of zero. A second set of hierarchical regression analyses was also obtained, without including the student scores in the other three phenomena as independent variables, in order to investigate possible predictors besides students' concurrent participation in other aggressive incidents (see [Table 6](#)).

Table 3
Differences in CB, CV, TB, TV and Individual Characteristics.

	Role both in CB/V and TB/V											Sig. pairwise differences
	1. CB/V or TB/V (n = 36)		2. CB/V and TB/V (same role) (n = 13)		3. CB/V and TB/V (opposite role) (n = 22)		4. Not CB/V or TB/V (n = 75)		Kruskal-Wallis			
	M	SD	M	SD	M	SD	M	SD	χ^2	df	p	
1. GM	1.85	0.84	2.01	0.90	2.10	0.67	1.48	0.52	16.66	3	0.005	3 vs. 4
2. CU	2.20	0.96	2.72	0.68	2.20	0.46	1.65	0.64	26.22	3	<0.001	1 vs. 4, 2 vs. 4, 3 vs. 4
3. II	2.11	0.78	2.50	0.70	2.23	0.60	1.64	0.53	21.76	3	0.001	1 vs. 4, 2 vs. 4, 3 vs. 4
4. SE	0.88	0.50	1.40	0.39	1.13	0.36	0.88	0.41	13.24	3	0.003	1 vs. 2, 2 vs. 4
5. OD	0.83	0.66	1.44	0.83	0.95	0.56	0.46	0.40	28.02	3	<0.001	1 vs. 4, 2 vs. 4, 3 vs. 4
6. IF	3.07	0.66	3.61	0.68	3.36	0.59	3.00	0.85	10.94	3	0.009	1 vs. 2, 2 vs. 4
7. OA	9.35	4.18	12.46	4.19	8.25	3.77	7.81	3.38	13.62	3	0.008	1 vs 4, 2 vs 4, 3 vs 4

Note. CB = Cyber-bullying, CV = Cyber-Victimization, TB = Traditional Bullying, TV = Traditional Victimization, CB/V = Cyber-bullying/victimization, TB/V = Traditional bullying/victimization, GM = Grandiose-Manipulative, CU = Callous-Unemotional, II = Impulsive-Irresponsible, SE = Assertion, OD = Online Disinhibition, IF = Internet Frequency, OA = Online Activities.

The results of the first set of regression analyses, including cyber and traditional bullying/victimization as outcome variables, are presented in [Table 5](#).

Cyber-bullying

Gender, added in block 1, explained 7% of the variance in cyber-bullying, that was not significant. Participation in the other three phenomena explained a significant amount (73%) of the variance, over and above the effect of gender; cyber-victimization and traditional bullying were the two significant predictors, positively associated with the outcome variable. The addition of personality-related variables in block 3 produced a significant increase in the amount of variance explained (8%). The main effects of thrill and adventure seeking and online disinhibition on cyber-bullying were significant negative and significant positive, respectively. The addition of social skills and peer relations in block 4 and Internet-related variables in block 5 did not produce any additional increase in the amount of variance explained.

Table 4
Descriptive Statistics and Correlations between the Variables.

	Mean	SD	Range	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. CB	1.50	0.83	1-5	-																					
2. CV	1.41	0.71	1-5	.61**	-																				
3. TB	0.57	0.99	0-4	.62**	.31**	-																			
4. TV	0.59	0.83	0-4	.49**	.45**	.33**	-																		
5. GM	1.72	0.72	1-4	.48**	.35**	.28**	.30**	-																	
6. CU	1.97	0.79	1-4	.46**	.24**	.27**	.31**	.56**	-																
7. II	1.91	0.68	1-4	.45**	.27**	.28**	.34**	.58**	.63**	-															
8. PR	2.72	0.85	1-4	.07	-.10	.13	-.01	.19*	.21*	.26**	-														
9. TAS	3.63	0.93	1-5	-.06	-.15	.03	-.01	.17	.24*	.24*	.47**	-													
10. ES	3.29	1.15	1-5	.12	.03	.34**	.12	.29**	.22*	.33**	.30**	.59**	-												
11. DI	3.52	0.95	1-5	.13	-.05	.31**	-.03	.36**	.38**	.36**	.51**	.69**	.73**	-											
12. BS	2.95	0.87	1-5	.23**	.07	.28**	.07	.36**	.34**	.28**	.34**	.53**	.48**	.64**	-										
13. SC	1.10	0.51	0-2	-.02	-.13	.01	-.03	.02	.14	-.01	.50**	.41**	.23*	.38**	.20*	-									
14. SE	0.94	0.45	0-2	.29**	.20*	.42**	.20*	.37**	.24*	.32**	.47**	.39**	.47**	.59**	.42**	.64**	-								
15. SO	0.99	0.51	0-2	.14	.04	.17	.10	.19*	.27**	.09	.48**	.46**	.32**	.47**	.29**	.82**	.66**	-							
16. OD	0.71	0.62	0-3	.63**	.54**	.48**	.34**	.41**	.39**	.40**	.15	.09	.24**	.24**	.27**	-.01	.24**	.13	-						
17. IF	3.13	0.78	1-4	.19*	.14	.19*	.13	.15	.21*	.16	.12	.15	.26**	.26**	.19*	-.06	.12	.01	.34	-					
18. OA	8.69	3.93	1-17	.31**	.18*	.27**	.13	.27**	.26**	.33**	.09	.17	.37**	.28**	.19*	-.01	.22*	-.04	.36**	.51	-				
19. IS	1.96	1.03	0-3	-.14	-.16	.01	-.07	.06	.05	.01	.19	.25**	.21*	.23*	.21*	.12	.15	.09	-.01	.15	.25**	-			
20. IU	0.31	0.66	0-2	.21*	.15	.09	.24**	.23*	.25**	.36**	-.08	.01	.07	-.03	.13	-.27**	.02	-.27**	.30**	.15	.40**	.11	-		
21. CE	3.36	1.14	1-5	-.03	-.01	.07	-.01	.25**	.22*	.31**	.60**	.66**	.48**	.65**	.44**	.47**	.52**	.51**	.17	.06	.08	.18	.02	-	
22. AE	2.88	0.96	1-5	.14	.07	.20*	.06	.23*	.29**	.38**	.55**	.56**	.36**	.59**	.46**	.42**	.50**	.47**	.27**	.03	.04	.05	.06	.76**	-

Note. CB = Cyber-Bullying, CV = Cyber-Victimization, TB = Traditional bullying, TV = Traditional victimization, GM = Grandiose-Manipulative, CU = Callous-Unemotional, II = Impulsive-Irresponsible, PR = Peer relations, TAS = Thrill and Adventure Seeking, ES = Experience Seeking, DI = Disinhibition, BS = Boredom Susceptibility, SC = Student Cooperation, SE = Assertion, Self-control, OD = Online Disinhibition, IF = Frequency of Internet Use, OA = Online Activities, IS = Internet Skills, IU = Type of Internet Use, CE = Cognitive Empathy, AE = Affective Empathy.

* $p < .05$, ** $p < .01$.

Table 5

Summary of Hierarchical Regression Analysis for variables predicting Cyber-bullying/victimization and Traditional Bullying/Victimization.

	CB			CV			TB			TV		
	B (95% CI)	R ²	ΔR ²	B (95% CI)	R ²	ΔR ²	B (95% CI)	R ²	ΔR ²	B (95% CI)	R ²	ΔR ²
Step 1												
Gender	-.28 (-.04, .61)	.07	.07	-.14 (-.48, .20)	.01	.01	-.53 (-.93, -.12)*	.13	.13*	.00 (-.34, .34)	.00	.00
Step 2		.80	.73***		.77	.76***		.44	.31***		.16	.16*
CB				1.00 (.84, 1.20)**			1.37 (.60, 1.81)**			-.34 (-.21, .49)		
CV	.65 (.52, .78)**						-1.09 (-1.39, -.31)**			.39 (-.17, .96)		
TB	.19 (.07, .30)*			-.21 (-.36, -.08)**						.23 (.10, .52)*		
TV	-.07 (-.21, .07)			.11 (-.05, .27)			.29 (.08, .67)*					
Step 3		.88*	.08*		.87	.10*		.61	.16*		.28	.12
GM	.09 (-.06, .25)			-.06 (-.24, .13)			-.04 (-.44, .36)			.15 (-.27, .56)		
CU	-.04 (-.16, .08)			.09 (-.04, .23)			.02 (-.29, .33)			.05 (-.28, .37)		
II	-.06 (-.18, .07)			.08 (-.07, .23)			-.03 (-.36, .30)			.04 (-.21, .48)		
OD	.16 (.08, .28)*			-.06 (-.26, .15)			.30 (-.14, .73)			-.24 (-.71, .22)		
TAS	-.16 (-.20, -.06)*			.09 (-.08, .26)			-.06 (-.43, .32)			.21 (-.17, .60)		
ES	-.07 (-.18, .04)			.13 (.00, .25)			.19 (.04, .40)*			-.02 (-.32, .27)		
DI	.14 (-.03, .31)			-.24 (-.43, -.05)			.10 (-.34, .55)			-.06 (-.53, .41)		
BS	-.04 (-.16, .08)			.03 (-.10, .17)			-.19 (-.49, .09)			.01 (-.31, .33)		
CE	-.06 (-.16, .05)			.12 (.03, .22)*			.13 (-.14, .39)			.00 (-.28, .29)		
AE	-.02 (-.16, .11)			.05 (-.07, .18)			-.04 (-.39, .31)			-.12 (-.49, .24)		
Step 4		.89	.01		.89	.02		.64	.03		.35	.07
SC	-.04 (-.35, .27)			-.09 (-.44, .26)			-.30 (-1.10, .49)			-.36 (-1.15, .44)		
SE	.29 (-.04, .61)			-.11 (-.49, .27)			-.31 (-1.19, .57)			.52 (-.35, 1.39)		
SO	-.09 (-.35, .17)			.23 (-.05, .51)			.16 (-.52, .83)			-.14 (-.82, .53)		
PR	.01 (-.12, .15)			-.09 (-.24, .05)			.12 (-.23, .47)			.34 (-.10, .66)		
Step 5		.93	.04		.91	.02		.75	.11		.49	.14*
OA	.02 (-.06, .05)			-.01 (-.04, .02)			-.05 (-.12, .02)			.03 (-.05, .11)		
IS	.06 (-.02, .14)			-.05 (-.15, .04)			-.06 (-.29, .16)			.16 (.05, .30)*		
IU	.13 (-.02, .27)			-.11 (-.27, .05)			-.19 (-.48, .15)			.15 (-.32, .63)		
IF	-.12 (-.20, .05)			.12 (-.04, .28)			.33 (-.02, .68)			-.20 (-.62, .21)		

Note. CB = Cyber-Bullying, CV = Cyber-Victimization, TB = Traditional bullying, TV = Traditional victimization, GM = Grandiose-Manipulative, CU = Callous-Unemotional, II = Impulsive-Irresponsible, PR = Peer relations, TAS = Thrill and Adventure Seeking, ES = Experience Seeking, DI = Disinhibition, BS = Boredom Susceptibility, SC = Student Cooperation, SE = Assertion, Self-control, OD = Online Disinhibition, IF = Frequency of Internet Use, OA = Online Activities, IS = Internet Skills, IU = Type of Internet Use, CE = Cognitive Empathy, AE = Affective Empathy.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6

Summary of Hierarchical Regression Analysis for Variables predicting Cyber-bullying/Victimization and Traditional Bullying/Victimization.

	CB			CV			TB			TV		
	B (95% CI)	R ²	ΔR ²	B (95% CI)	R ²	ΔR ²	B (95% CI)	R ²	ΔR ²	B (95% CI)	R ²	ΔR ²
Step 1												
Gender	-.32 (-.62, -.05)	.08	.08*	-.12 (-.34, .20)	.01	.01	-.49 (-.88, -.14)**	.13	.13**	-.01 (-.32, .30)	.00	.00
Step 2		.60	.52***		.39	.38***		.42	.29*		.17	.17*
GM	.28 (.12, .57)**			.09 (-.21, .40)			-.02 (-.38, .35)			.11 (-.22, .44)		
CU	.07 (-.12, .26)			.09 (-.16, .34)			-.01 (-.31, .29)			.12 (-.17, .47)		
II	-.05 (-.27, .16)			-.06 (-.32, .20)			-.14 (-.47, .19)			.17 (.05, .49)		
OD	.44 (.17, .67)**			.47 (.14, .66)**			.43 (.17, .83)**			-.02 (-.38, .34)		
TAS	-.19 (-.32, -.07)*			-.02 (-.29, .26)			-.16 (-.52, .20)			.13 (-.20, .46)		
ES	.05 (-.12, .22)			.13 (-.09, .35)			.13 (-.13, .39)			.09 (-.16, .33)		
DI	-.07 (-.34, .19)			-.20 (-.66, .20)			.41 (.14, .77)*			-.06 (-.44, .32)		
BS	-.00 (-.18, .17)			-.05 (-.18, .28)			-.30 (-.60, -.08)*			-.12 (-.37, .13)		
CE	-.10 (-.27, .07)			.05 (-.17, .27)			.12 (-.14, .39)			.05 (-.21, .31)		
AE	.10 (-.09, .29)			.17 (-.09, .43)			-.17 (-.47, .13)			-.05 (-.34, .24)		
Step 3		.68	.08		.64	.25***		.52	.10		.25	.09
SC	-.49 (-.70, .20)			-.56 (-1.03, .09)			-.55 (-1.29, .19)			-.32 (-.99, .35)		
SE	.68 (-.28, .43)			.57 (.34, 1.08)**			.24 (-.49, .97)			.30 (-.39, .99)		
SO	.08 (-.27, .43)			.48 (-.05, .81)			.03 (-.56, .63)			-.07 (-.51, .64)		
PR	-.14 (-.29, .03)			-.21 (-.39, -.05)*			.30 (-.13, .46)			.22 (-.05, .49)		
Step 4		.79	.11*		.73	.09		.56	.04		.40	.15*
OA	.04 (.01, .08)*			.05 (-.03, .09)			-.01 (-.08, .05)			.01 (-.05, .08)		
IS	.07 (-.05, .19)			-.02 (-.16, .12)			.09 (-.15, .32)			.26 (.05, .38)*		
IU	-.15 (-.37, .07)			-.32 (-.57, .10)			-.29 (-.69, .12)			-.01 (-.39, .38)		
IF	-.03 (-.20, .14)			.03 (-.19, .24)			.06 (-.27, .39)			-.03 (-.35, .29)		

Note. CB = Cyber-Bullying, CV = Cyber-Victimization, TB = Traditional Bullying, TV = Traditional Victimization, GM = Grandiose-Manipulative, CU = Callous-Unemotional, II = Impulsive-Irresponsible, PR = Peer relations, TAS = Thrill and Adventure Seeking, ES = Experience Seeking, DI = Disinhibition, BS = Boredom Susceptibility, SC = Student Cooperation, SE = Assertion, Self-control, OD = Online Disinhibition, IF = Frequency of Internet Use, OA = Online Activities, IS = Internet Skills, IU = Type of Internet Use, CE = Cognitive Empathy, AE = Affective Empathy.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Cyber-victimization

Gender explained 1% of the variance in cyber-victimization, an effect that was not significant. Participation in the other

three phenomena explained an additional 76% of the variance in cyber-victimization. Cyber and traditional bullying had a significant positive and a significant negative main effect on cyber-victimization, respectively. Personality-related variables explained

10% of incremental variance in cyber-victimization, with cognitive empathy having a positive and significant main effect. The addition of social skills and peer relations in block 4 and Internet-related variables in block 5 did not produce any additional increase in the amount of variance explained.

Traditional bullying

Gender was significantly associated with traditional bullying (males), explaining 13% of its variance. Cyber-bullying, cyber-victimization and traditional victimization explained an additional 31% of the variance in traditional bullying. All three main effects were significant; the effects of cyber-bullying and traditional victimization were positive, whereas the effect of cyber-victimization was negative. Among the variables in the third block, experience seeking emerged as a positive and significant predictor (16% of incremental variance). The addition of blocks 4 and 5 did not produce any additional increase in the amount of variance explained.

Traditional victimization

Variables in the second and fifth blocks only, contributed significantly to the variance in traditional victimization (16% and 14% of incremental variance, respectively). In particular, traditional bullying and Internet skills had positive and significant main effects on traditional victimization.

The second set of analyses (Table 6) showed that cyber-bullying was negatively associated with gender in the first step (males, 8% of incremental variance). In the second step (52% of incremental variance), grandiose-manipulative traits and online disinhibition contributed positively to cyber-bullying, whereas thrill and adventure seeking had a significant negative effect. Online activities emerged as a significant positive predictor in the final step (11%).

When considering cyber-victimization as the outcome, online disinhibition had a significantly positive main effect (38%), among personality-related variables. In the third step, the effect of assertion was significantly positive, whereas the effect of peer relations was significantly negative (25%).

Traditional bullying was negatively associated with gender (males, 13%) and the addition of personality-related variables in block 2 produced a significant increase in the amount of variance explained (29%). Online disinhibition and disinhibition emerged as positive predictors, whereas boredom susceptibility had a significantly negative main effect.

Finally, the variance in traditional victimization was positively explained by impulsive-irresponsible (17%) in the second step and Internet skills (15%) in the fifth step.

Discussion

The purpose of the present study was to investigate possible individual characteristics associated with cyber-bullying, cyber-victimization, traditional bullying and traditional victimization among Greek adolescents and to examine their relative contribution in predicting these behaviors.

Most students did not participate in any phenomena but, contrary to the hypothesis (*H1*), the most common role in traditional bullying/victimization was that of the bully, followed by the victim and the bully-victim. In terms of cyber bullying/victimization, most participants were classified as cyber-bully/victims (Gradinger, Strohmeyer, & Spiel, 2009), possibly due to the online disinhibition effect (Erdur-Baker, 2010). Contrary to the hypothesis, few students participated with the same role in both phenomena, since most of them participated either in one or in both phenomena but with the opposite roles. Previous studies have postulated that students may participate with different roles in these phenomena due to the ICTs

characteristics, and suggest that cyber-bullying/victimization may in fact involve students who do not usually participate in traditional bullying/victimization (e.g., Englander & Muldowney, 2007; McLoughlin et al., 2009).

Online disinhibition was positively correlated with cyber and traditional bullying/victimization (*H2a*), possibly due to the fact that those who are already involved in problematic behaviors are more likely to manifest uninhibited online conduct (Schouten, Valkenburg, & Peter, 2007). Cyber-bullying/victimization perpetrators' (bullies and bully-victims) high score in online disinhibition confirms that this behavior is linked to cyber-bullying/victimization, while the fact that traditional bullying/victimization perpetrators also scored higher, verifies that students who are involved in antisocial and delinquent behavior offline are more likely to make dangerous Internet use (e.g., Ko et al., 2009).

Significant similarities were found among cyber and traditional bullying/victimization participants in terms of psychopathic traits, sensation seeking and frequency of Internet use. As hypothesized (*H2b*), cyber and traditional bullying/victimization perpetrators reported more grandiose-manipulative, callous-unemotional and impulsive-irresponsible traits than non-involved students (e.g., Fanti et al., 2012), while participation in both phenomena was positively and significantly correlated with higher scores in psychopathic traits. These findings confirm that cyber and traditional bullying/victimization participants share several personality characteristics (e.g., Antoniadou & Kokkinos, 2013) and that psychopathic traits are associated with involvement in aggressive behaviors, regardless of the context (traditional or cyber). Bullies' high psychopathic traits confirm that callous-unemotional adolescents emphasize the positive and instrumental value of antisocial and aggressive behaviors (e.g., to obtain dominance; Pardini, Lochman, & Frick, 2003), while the higher impulsive-irresponsible score of traditional victims (compared to uninvolved) confirms that they are at greater risk for displaying impulsive behavior (O'Brennan, Bradshaw, & Sawyer, 2009).

Contrary to the hypothesis (*H2c*) traditional bully-victims scored higher than those uninvolved in assertion, similarly to students who participated in both phenomena with the same role. All phenomena had positive but low correlations with assertion, which supports previous studies indicating that assertion may be a part of aggressive students' repertoire to resolve problematic situations, (Hawkins, Pepler, & Craig, 2001). Cyber-bullies' low scores in social skills, confirm that computer mediated communication may allow students without sufficient social skills the opportunity to bully as well. No statistically significant differences were observed between cyber and traditional bullying/victimization participants in terms of peer relations.

The lack of significant differences between cyber and traditional bullying/victimization participants on empathy disconfirms the hypothesis (*H2d*), a finding which previously has been attributed to the use of self-report questionnaires (Gini, Albiero, Benelli, & Altoè, 2006). Traditional bullies and traditional bully-victims had higher scores in several dimensions of sensation seeking, thus partially confirming hypothesis (*H2e*), while traditional bullying was positively correlated with experience seeking and disinhibition. While cyber-bullying/victimization participants did not differ in any of the sensation seeking dimensions, cyber and traditional bullying were positively correlated with boredom susceptibility, a finding which partially replicates previous evidence where challenging online behavior was related to sensation seeking (Antoniadou & Kokkinos, 2013).

Although no significant differences were observed between cyber and traditional bullying/victimization participants in

Internet use frequency and skills, thus rejecting hypothesis (*H3*), students who participated in both phenomena with the same role used the Internet more frequently. Cyber and traditional bullying were positively correlated with online activities, whereas the uninvolved students reported fewer online activities. Overall, the findings substantiated existing evidence that frequent Internet use is related to problematic behavior (e.g., [Ko et al., 2009](#)). Participation in cyber-bullying/victimization was not correlated with Internet skills, as expected, and confirmed that cyber-bullying doesn't require considerable ICTs skills ([Dooley, Pyzalski, & Cross, 2009](#)).

Pearson correlation coefficients indicated a significant overlap between cyber-bullying and cyber-victimization, and between cyber-bullying and traditional bullying, suggesting that cyber-bullying can be more retaliatory than face-to-face bullying ([Erdur-Baker, 2010](#)), or that for the same reasons, students may participate in mutual "attacks" that stem from recklessness.

Findings of the second set of regression analyses provide partial confirmation of *H4*, since, contrary to what was expected, dangerous Internet use did not predict any phenomenon; thrill and adventure seeking negatively predicted cyber-bullying and finally assertion positively predicted cyber-victimization. Traditional bullying may be partially attributed to sensation seeking and impulsive tendencies ([Woods & White, 2005](#)), contrariwise to cyber-bullying/victimization experiences which may be due to other personality factors, such as grandiose-manipulative traits and poor peer relations.

The results of the first set of regressions reveal the effect that the involvement in one phenomenon has on the others. The significant prediction of cyber-bullying by cyber-victimization and viceversa indicates that they may involve reciprocal attacks ([Suler, 2004](#)). The negative prediction of cyber-victimization by traditional bullying implies that, contrary to previous findings ([Katzner et al., 2009](#)), these students may not be involved in traditional bullying in real life. The results of this regression were also illuminating, as they revealed the predictors of cyber and traditional bullying/victimization, over and above students' concurrent participation in other aggressive incidents.

Overall, these results signify that cyber-bullying mainly emerged from cyber-victimization engagement, online disinhibition and to a lesser extent from traditional bullying and psychopathic traits, and contradict previous findings with preadolescents where cyber-bullies found to be sensation seekers ([Antoniadou & Kokkinos, 2013](#)). Therefore, students may participate in cyber-bullying not due to low social skills or sensation seeking, but rather because ICTs allow for desired counterattacks and proactive aggression with greater ease. The fact that cyber-bullies endorsed more psychopathic traits and less sensation seeking contrasts [Englander and Muldowney's \(2007\)](#) suggestion that cyber-bullying is related to a lack of awareness regarding the bullies' actions.

In terms of cyber-victimization, and in line with previous studies, cyber-victims had problematic peer relations ([Katzner et al., 2009](#)), despite their adequate social skills. Since online disinhibition significantly predicted cyber-victimization, this may suggest that the lack of non-verbal signs further hinders cyber-victims' ability for healthy online social interactions. As results have shown, cyber-victims had high cognitive, but not affective, empathy score which is crucial for social relations. The high predictability of cyber-victimization by cyber-bullying also suggests that several cyber-victims may use the Internet in order to counterattack. However, although cyber-bullying was predicted by traditional bullying, suggesting that these students may adopt the same role both offline and online (e.g., [Katzner et al., 2009](#)), cyber-victimization was not predicted by traditional victimization and was negatively predicted by traditional bullying, which may imply that cyber-victimization involves students who would not be engaged

in traditional bullying/victimization experiences (e.g., [McLoughlin et al., 2009](#)).

In terms of common predictors, both cyber and traditional bullying were predicted by cyber-victimization (1st analysis), online disinhibition, and gender (male) (2nd analysis), but contrary to cyber-bullying, which was negatively predicted by thrill and adventure seeking (both analyses), traditional bullying was positively predicted by experience seeking (1st analysis). Furthermore, psychopathic traits were among the common characteristics of traditional and cyber-aggressors, but regression analyses indicated that psychopathic traits, and more specifically grandiose-manipulative traits, were predictive only of cyber-bullying but not traditional bullying, which was significantly predicted by sensation seeking.

Conclusions and Implications

The present study examined possible common individual characteristics among cyber and traditional bullying/victimization participants. Findings suggest that the two phenomena bear both common and different correlates. In line with previous findings, results of this study confirmed that traditional bullying has significant high correlations with cyber-bullying (e.g., [Hinduja & Patchin, 2008](#)), while involvement in traditional bullying significantly predicts cyber-bullying ([Casas, Del Rey, & Ortega-Ruiz, 2013](#)). Since involvement in traditional bullying is a significant risk factor, it should be taken into consideration during prevention and intervention (e.g., [Li, 2007](#)). Nevertheless, results of the present study also demonstrate the possible need for differentiated prevention efforts for each phenomenon, since participation may in some cases be related to different factors (e.g., [Vandebosch & Van Cleemput, 2009](#)).

When students participated in both phenomena, they adopted opposite roles, suggesting that different antecedents are associated with each phenomenon (e.g., [McLoughlin et al., 2009](#)). More specifically, traditional bullying was predicted by sensation seeking, which in terms of prevention indicates that youth should be provided with frequent opportunities for new, age appropriate experiences that stimulate exploration and thrill, increase arousal levels and provide proper channels for their energy within a non-aggressive environment ([Woods & White, 2005](#)). Otherwise, it is possible that the Internet may be inappropriately used for abusive purposes ([Livingstone & Helsper, 2007](#)).

Nevertheless, contrary to traditional, cyber-bullying/victimization, experiences were not related to sensation seeking. Therefore, participation in this case may be a result of other student characteristics, such as poor peer relations. In the case of cyber-victims, intervention efforts could aim towards building meaningful peer relations, and developing appropriate conflict resolution skills, so that students with poor social relations can avoid Internet victimization and retaliatory behaviors. A significant number of students participated in both phenomena with a dual role (bully-victim) (e.g., [Mishna et al., 2012](#)), which should be taken into consideration during prevention and intervention, since this group has been identified as the most dysfunctional compared to the rest ([Kokkinos et al., 2013](#)). Students should be provided with Internet use regulations, as well as alternative and socially acceptable methods of resolving their offline social problems (i.e., emotional support, development of social skills) ([Li, 2007](#); [Wang, Nansel, & Iannotti, 2011](#)). Acquiring appropriate coping strategies (especially problem focused) may significantly improve their ability to deal with cyber attacks ([Kokkinos et al., 2013](#)).

In terms of common characteristics, both cyber and traditional bullies reported high psychopathic traits, a finding which replicates the robustness of this trait in terms of aggressive behavior.

Cyber-bullies who have high psychopathic traits and are also involved in traditional bullying, may be more resistant to intervention (Stellwagen & Kerig, 2013) and may require more novel and innovative approaches that promote behavior change via a direct appeal to adolescents' own best interests (Stellwagen & Kerig, 2013). Since parents' co-participation in online activities and Internet parental control programs installation are not suitable for adolescents, parenting practices such as communication may be more appropriate for this age group (Young, 2009). Adults could also encourage those adolescents who employ the Internet to gain a sense of power, to an offline activity in which they can excel (i.e., sports, music, etc.) (Young, 2009). The suggested interventions could also target traditional bullies who share the same psychopathic traits with cyber-bullies.

Limitations and Future Research

The study is not without limitations. The small sample size may have accounted for chance findings in terms of participant role prevalence, or participant characteristics, since they were divided into a large number of categories.

The combined use of qualitative and quantitative methodology, instead of self-report measures, could provide answers to questions as to whether students perceive the Internet as a place that allows them to act unethically. Although classifying students as (cyber)bullies on the basis of low frequent behavior (e.g., about once a month) may be considered a liberal interpretation of the repetition criterion, studies indicate that a single act of cyber aggression may be sufficient to cause great distress. The fact that only few variables were related to traditional victimization may imply that other individual or contextual characteristics could be implicated in the phenomenon.

Although this paper focuses on the individual factors associated with traditional and cyber-bullying/victimization, both phenomena may be associated with a combination of individual and environmental factors, with the latter being beyond the scope of the current investigation.

Conflict of Interest

The authors of this article declare no conflict of interest.

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