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Academic, Socio-emotional and Demographic Characteristics of Adolescents Involved in Traditional Bullying, Cyberbullying, or Both: Looking at Variables and Persons

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Abstract

The present paper (1) examined variables which could predict traditional bullying, cyberbullying, traditional victimization and cyber-victimization and (2) looked at persons to examine whether academic, socio-emotional and demographic characteristics differed between traditional, cyber and mixed bullies, victims and bully-victims. A sample of 2,329 gymnasium students (50% girls, M_{age} = 13.08, SD = .86) from 120 classes, grade 7 to 9, from six Cypriot schools, completed self-report questionnaires. Traditional bullying was predicted by cyberbullying and socio-emotional, academic and demographic variables. Cyberbullying was predicted by traditional bullying and academic variables. Traditional victimization was predicted by cyber-victimization, socio-emotional variables and being male. Cyber-victimization was predicted by traditional victimization and academic variables. Compared with uninvolved adolescents, traditional, cyber and mixed bullies had lower levels of academic variables; traditional and mixed victims had higher levels of emotional problems and affective empathy; and mixed bully-victims had lower levels of both academic and socio-emotional variables. Implications for intervention and prevention are discussed.

Keywords: bullying, victimization, cyberbullying, cyber-victimization, variable-oriented approach, person-oriented approach, adolescence

Academic, Socio-emotional and Demographic Characteristics of Adolescents Involved in Traditional Bullying, Cyberbullying, or Both: Looking at Variables and Persons

Bullying in schools has been identified as one of the major public health problems (Srabstein & Leventhal, 2010) and a threat to educational systems and economies worldwide (Cowie & Jennifer, 2008). Traditional bullying is a specific form of aggressive behaviour that is intentional, repetitive, and involves an imbalance of power between the protagonists (Olweus, 1993); cyberbullying is a similar behaviour that is characterized by the use of electronic means (Slonje & Smith, 2008; Smith et al., 2008). Importantly, research demonstrated that traditional bullying and cyberbullying often co-occur (Kowalski, Giumetti, Schroeder, & Lattanner, 2014) and that several students are involved in both types of negative behaviours simultaneously (Gradinger, Strohmeier, & Spiel, 2009).

In addition, a large body of literature demonstrates that adolescents who are involved in traditional bullying are heterogeneous (Yang & Salmivalli, 2013). Besides uninvolved adolescents, there are bullies, the perpetrators of the aggressive acts, victims, the targets of the aggressive acts, and bully-victims, who bully others but are also targets of bullying themselves. There is ample evidence that all these adolescents face particular challenges in several domains (Kljakovic & Hunt, 2016). However, studies that simultaneously compare various risk factors for traditional and cyber forms of bullying are rather sparse. Moreover, no study to date investigates whether traditional, cyber, and mixed bullies, victims and bully-victims differ regarding their academic, socio-emotional and demographic characteristics. Thus, the main goal of the present study is to advance the literature conceptually by looking at both variables and persons. Besides, the present findings can be useful for designing prevention and intervention programs to tackle both cyber and traditional forms of bullying and victimization.

Socio-emotional, Academic and Demographic Characteristics Associated with Bullying

Variable-oriented studies showed that both traditional bullying and victimization were associated with depression and psychosomatic problems (Kaltiala-Heino, Rimpelae, Rantanen, & Rimpelae, 2000; Nansel, Craig, Overpeck, Saluja, & Ruan, 2004). Stavrinides, Georgiou, Nikiforou and Kiteri (2011) found that traditional victimization was related to an increase in emotional problems over time; while Dooley, Gradinger, Strohmeier, Cross, and Spiel (2010) found that both traditional and cyber-victimization were concurrently related to emotional symptoms.

Person-oriented studies demonstrated that traditional bully-victims have the most serious adjustment problems. Gradinger et al. (2009) found that the mixed bully-victims (traditional and cyber) had the most psycho-social problems, including emotional and somatic symptoms. These findings are in line with the cumulative risk model, because (mixed) bully-victims are involved in multiple forms of bullying and victimization. Georgiou and Stavrinides (2012) found that traditional bully-victims and bullies had lower levels of cognitive and affective empathy compared to victims and uninvolved adolescents. It is important to investigate both cognitive and affective components of empathy simultaneously, because they are interrelated and both of them reduce aggressive behaviour (Albiero & Lo Coco, 2001).

A recent meta-analysis (Kljakovic & Hunt, 2016) identified academic failure and low commitment to school as important risk factors for bullying (Hemphill et al., 2012). Cook, Williams, Guerra, Kim, and Sadek (2010) found a stronger link between academic performance and bullying than between academic performance and victimization. Stavrinides et al. (2011) showed that both bullying and victimization decreased academic performance over time. Another meta-analysis showed negative relations between cyberbullying and academic achievement, whereas no association between cyber-victimization and academic

achievement was reported (Kowalski et al., 2014). Wright (2015) reported that adolescents who were both bullies and victims of cyber aggression had poorer academic performance over time. Although bullying phenomena seem to affect the academic environment in school, factors like school interest, self-efficacy, or learning goal orientation have received only little attention in the literature.

Demographic characteristics like gender and age were extensively researched. Boys are more involved in traditional bullying (Card, Stucky, Sawalani, & Little, 2008) and they are more likely to be classified as bully, victim, and bully-victim compared to girls (Cook et al., 2010). Gender differences regarding cyberbullying are mixed (Kowalski et al., 2014). Bullying, especially amongst boys, increases during the transition to high school and then decreases as adolescents get older (Craig et al., 2009; Pepler, Jiang, Craig, & Connolly, 2008). This pattern has been interpreted as a need for domination amongst boys during mid-adolescence and the establishment of social hierarchies after school transitions (Pellegrini, 2004).

On the contrary, results regarding other demographic variables are rather inconclusive, or not existing. Being an immigrant is a risk factor for bullying and victimization in some countries (like in Finland or Norway), while in other countries, the immigrant status is not associated with bullying (like in Austria, for more details see Walsh et al., 2016). In some studies, low income status was identified as a risk factor for aggression (Harachi et al., 2006). There are no findings regarding the association of parents' education or parents' marital status with bullying and victimization. In line with the social-ecological perspective (Bronfenbrenner, 1979), it is important to include these factors in empirical studies as they are indicators of the quality of the interactive environments surrounding the development of children and adolescents (Swearer & Espelage, 2004).

Thus, our aim is to compare factors that have been already explored, together with unexplored factors and to provide predictive models for bullying and victimization (traditional and cyber) and offering evidence for the prevention approaches.

The Present Study

The present study utilizes both a variable-oriented and a person-oriented approach for data analyses. These two approaches were combined in the present study, because they offer complementary information. When applying a variable-oriented approach, it is possible to investigate whether traditional bullying, traditional victimization, cyberbullying and cyber-victimization are predicted by the same or different academic, socio-emotional and demographic characteristics. When applying a person-oriented approach, it is possible to investigate the size of the traditional, cyber and mixed bully, victim and bully-victim groups and to check whether adolescents who were classified in one of these groups differ regarding their academic, socio-emotional and demographic characteristics from uninvolved adolescents.

The first aim of the present study is to investigate the importance of socio-emotional (i.e., emotional problems, affective empathy and cognitive empathy), academic (i.e., learning interest, self-efficacy, learning, goal) and demographic characteristics (i.e., gender, grade, immigrant status, SES, parents' marital status, father's education and mother's education), by providing predictive models for traditional bullying, traditional victimization, cyberbullying and cyber-victimization.

The second aim is: (a) to identify the groups of bullies, victims, bully-victims, cyber bullies, cyber-victims, cyber bully-victims, mixed bullies, mixed victims, mixed bully-victims, and uninvolved; (b) to provide profiles of each group regarding their academic, socio-emotional and demographic characteristics and (c) to determine the higher-risk groups by comparing each group with the uninvolved adolescents.

Method

Study Design

The present data presents the pre-test of a three-wave longitudinal intervention study (Solomontos-Kountouri, Gradinger, Yanagida, & Strohmeier, 2016). Thus, for the present study we utilized the wave 1 cross-sectional data collected before the implementation of the intervention.

Participants

The sample consists of 2,329 grade 7 to 9 gymnasium students (50% girls) with a mean age of 13.08 years (SD = 0.86). Grade 7 comprises 762 students (46% girls) with a mean age of 12.09 years (SD = 0.34); grade 8 comprises 821 students (51% girls) with a mean age of 13.09 years (SD = 0.32) and grade 9 comprises 739 students (51% girls) with the mean age of 14.08 years (SD = 0.34). The majority of students are Greek-Cypriots (87%) and 13% are first generation immigrants who migrated to Cyprus from 38 different countries. The biggest immigrant groups are from Greece (4%, *n* = 93), Russia (2%, *n* = 49), Romania (1.5%, *n* = 34), and Great Britain (1.4%, *n* = 33). The majority of students (81.1 %, *n* = 1,888) had married parents, for 16.3 % of students (*n* = 379) the parents were separated and for 2 % of students (*n* = 46) one parent was deceased.

Measures

*Demographic Information***.** Gender, year and country of birth, parents' marital status, father's education, mother's education and socioeconomic status (SES) were measured. Year and country of birth were open-ended and the other items were multiple-choice. Parents' marital status were originally measured with five options and later combined into three categories (married, separated/divorced, one parent deceased). Father's and mother's education was originally measured with eight options and later combined into four options (no education / primary school / gymnasium, lyceum or technical school, college / university

or postgraduate degree). SES was originally assessed with five options regarding the perceived household economy that were later combined into three categories: low SES (household economy being "bad" or "very bad"), medium SES (household economy being "neither good nor bad" or "good") and high SES (household economy being "very good").

Traditional bullying and victimization. Each construct was measured with fifteen items. The term "bullying" was not used and no definition of bullying was provided. Both scales contain one global and fourteen specific items related to physical, relational and verbal harassments. The items ask how often specific behaviors took place during the last two months; to give an example the global victimization item reads as follows: *How often have other students insulted or hurt you during the last two months?* (All items can be found in Solomontos-Kountouri, Gradinger, Yanagida, & Strohmeier, 2016). Answers to all questions were given on a five-point Likert scale ranging from (0) *never*, over (1) *once or twice*, and (2) *two or three times a month*, and (3) *once a week*, to (4) *nearly every day*. Cronbach's α was .89 for the traditional bullying scale and .89 for the traditional victimization scale.

Cyberbullying and cyber-victimization. Each construct was measured with eight items. Both scales contain one global and seven specific items related to different electronic means (text messages, emails, chat contributions, discussion board, instant messages, and videos or photos). The items asked how often specific behaviors took place during the last two months; to give an example the global cyberbullying item reads as follows: *How often have you insulted or hurt someone with mean text messages, emails, videos, or photos in the last two months?* (All items can be found in Yanagida, Gradinger, Strohmeier, Solomontos-Kountouri, Bora, & Trip, 2016). Answers to all questions were given on a five-point Likert scale ranging from (0) *never*, over (1) *once or twice*, and (2) *two or three times a month*, and (3) *once a week*, to (4) *nearly every day*. Cronbach's α for the cyberbullying scale was .85 and .87 for the cyber-victimization scale.

Learning Interest. This construct was assessed with three items such as: "*For me it's fun to occupy myself with learning matters from school.*" The items include value and emotional valence (Krapp, 2002). Answers to all questions were given on a four-point Likert scale ranging from (0) strongly disagree, (1) disagree, (2) agree, and (3) strongly agree. The three items showed a good internal consistency, Cronbach's α was .70.

Self-Efficacy. This construct was measured with three items in accordance with Jerusalem and Satow (1999), such as "*I am convinced that I can be good at tests*." The items focus on efficacy expectations in learning situations. Answers to all questions were given on a four-point Likert scale ranging from (0) strongly disagree, (1) disagree, (2) agree, and (3) strongly agree. The three items showed a good internal consistency, Cronbach's α was .81.

Learning Goal. Learning goal orientation was assessed with four items, focusing on growth in abilities and competencies, and also on pupils' comprehension of subject content (e.g., "*I want to learn many new things*"). Answers to all questions were given on a four-point Likert scale ranging from (0) strongly disagree, (1) disagree, (2) agree, and (3) strongly agree. The four items showed a good internal consistency, Cronbach's α was .79.

Emotional Problems. Five items of the emotional symptoms subscale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001) were used, such as "*I have many fears, I am easily scared.*" Answers to all questions were given on a four-point Likert scale ranging from (0) strongly disagree, (1) disagree, (2) agree, and (3) strongly agree. The four items showed a good internal consistency, Cronbach's α was .81.

Affective Empathy. The seven items developed by Caravita, Di Blasio, and Salmivalli (2009) were used, e.g., "*Seeing a friend crying makes me feel as if I am crying too.*" Answers to all questions were given on a four-point Likert scale ranging from (0) strongly disagree, (1) disagree, (2) agree, and (3) strongly agree. The seven items showed a good internal consistency, Cronbach's α was .83.

Cognitive Empathy. The five items developed by Caravita et al. (2009) were used, e.g., "*I am able to understand how other people react to things that I do.*" Answers to all questions were given on a four-point Likert scale ranging from (0) strongly disagree, (1) disagree, (2) agree, and (3) strongly agree. The five items showed a good internal consistency, Cronbach's α was .83.

Procedure

Data were collected from six gymnasiums and 120 classrooms. In Cyprus, gymnasium is the middle school between primary school and lyceum and consists of three years of compulsory education. The Centre of Educational Research and Evaluation in Cyprus gave its consent for the data collection, and active consent was granted by 88.6% of parents. Students were assured that their participation was voluntary and that their answers would be kept confidential. Few students (1.3%, n = 38) refused to participate, 2.3% (n = 65) were absent at the day of data collection and 1.5% (n = 42) of the questionnaires were invalid. Therefore, 83.5% of the eligible students (n = 2,329) participated in the study. Data were collected with paper and pencil, during regular school hours (45 min) by the first author and a group of research assistants with the help of the class teachers.

Data Analysis

In the variable oriented analysis, four independent hierarchical linear regression models were run, in order to find correlates of traditional bullying, traditional victimization, cyberbullying and cyber-victimization using the demographic, academic and socio-emotional variables of interest as predictors. In the person-oriented analysis, we identified traditional, cyber and mixed bullies, victims and bully-victims in the first step. Secondly, we compared these groups regarding the same demographic, academic and socio-emotional characteristics. Thus, the person-oriented analyses supplement the variable oriented analyses by further testing whether the variables, which seemingly have a differential predictive value for

different types of bullying and victimization, are also significantly different among the identified bully/victim groups.

Results

Means, standard deviations, and bivariate correlations between the study variables were calculated. As shown in Table 1, bullying correlated moderately with cyberbullying (r = .61) and victimization correlated moderately with cyber-victimization (r = .55). Cyberbullying also correlated moderately with cyber-victimization (r = .54). Furthermore, the three academic variables moderately correlated with each other (r = .49, .61, .68). Affective and cognitive empathy also moderately correlated with each other (r = .67).

[Insert Table 1 about here]

Variable Oriented Analyses: Prediction of Traditional Bullying, Cyberbullying, Traditional Victimization and Cyber-victimization

Five blocks of predictors were entered sequentially in each regression model. Block 1 contained the control variables (cyberbullying/victimization for traditional bullying/victimization, traditional bullying/victimization for cyberbullying/victimization). Block 2 contained the academic variables (learning interest, self-efficacy, learning goal). Block 3 contained the socio-emotional variables (emotional problems, affective empathy, cognitive empathy). Block 4 contained seven dummy coded variables related with students' demographic characteristics (gender, country of birth, SES, grade). Block 5 contained three dummy coded variables related with parents' demographic characteristics (parents' marital status, father's education, mother's education). The significant results of the four independent hierarchical linear regression analyses are presented in Table 2. The four full models are reported in the supplementary material Tables S1-S4.

Traditional Bullying. As shown in the supplementary material Table S1, each of the five blocks significantly improved the model. The 5-block model, which contained all the predictors, predicted a significant amount of the variance of traditional bullying [(R^2 Model 5 = 0.43, F (8, 2172) = 2.76, p = .005; f^2 = .75]. As shown in Table 2, higher levels of cyberbullying, lower learning interest, higher levels of emotional problems, lower levels of affective empathy, being a boy, being older (grade 8 and 9) and coming from separated parents predicted traditional bullying.

Traditional Victimization. As shown in the supplementary material Table S2, the 4-block model predicted a significant amount of the variance of traditional victimization [R^2 Model 4 = 0.38, F (7, 2171) = 7.32, p < .001; f^2 = .61]. As shown in Table 2, higher levels of cyber-victimization, higher levels of emotional problems, higher levels of cognitive empathy and being a boy predicted traditional victimization.

Cyberbullying. As shown in the supplementary material Table S3, the 2-block model predicted a significant amount of the variance of cyberbullying [(R^2Model 2 = 0.39, F (3, 2190) = 24.8, p < .001; f^2 = .64]. As shown in Table 2, high levels of traditional bullying, high levels of learning interest, low levels of self-efficacy and low levels of learning goals predicted cyberbullying.

Cyber-victimization. As shown in the supplementary material Table S4, the 2-block model predicted a significant amount of the variance of cyber-victimization [R^2Model 2 = 0.32, F (3, 2181) = 10.37, p < .001; f^2 = 0.47]. As shown in Table 2, high levels of traditional victimization and low levels of learning goal orientation predicted cyber-victimization.

[Insert Table 2 about here]

Person Oriented Analyses: Academic and Socio-emotional Characteristics of Traditional, Cyber and Mixed Bullies, Victims and Bully-Victims

The nine groups of interest were identified following a 3-step procedure. In *Step 1*, students were grouped into traditional bullies, traditional victims and traditional bully-victims based on the procedure described in Georgiou and Stavrinides (2008). Students whose traditional bullying mean score was 1 *SD* above the sample mean but their traditional victimization mean score 1 *SD* below the sample mean were labeled "traditional bullies." Students whose traditional bullying mean score was 1 *SD* below the sample mean but their traditional victimization mean score 1 *SD* above the sample mean were labeled "traditional victims." Students whose traditional bullying and victimization mean scores were 1 *SD* above the sample mean were labeled "traditional bully-victims." Students whose traditional bullying and victimization mean scores were 1 *SD* below the sample mean were labeled "traditional uninvolved." In *Step 2*, the same procedure as in step 1 was executed on cyberbullying and cyber victimization scores, in order to label students as "cyber-bullies," "cyber-victims," "cyber bully-victims," and "cyber uninvolved". Finally, in *Step 3*, the groups from steps 1 and 2 were orthogonally crossed to find mixed bullies, mixed victims, mixed bully-victims and uninvolved adolescents.

The orthogonal crossing resulted in 16 cells. To identify the three mixed groups and the uninvolved group, the main diagonal was used. To identify the three "pure" cyber groups, students needed to be uninvolved according to the "traditional" bully grouping. To identify the "pure" traditional groups, students needed to be uninvolved according to the "cyber" bully grouping. Students who were located in the remaining six other cells were excluded from further analyses (n = 46). Ninety-four more students were excluded because of missing values in the bullying scales, thus allowing us to categorize 2,189 out of 2,329 students (1,731 uninvolved students, 124 traditional victims, 105 traditional bullies, 38 traditional

bully-victims, 28 cyber-victims, 23 cyber bully-victims, 31 cyber bullies, 36 mixed victims, 33 mixed bully-victims, and 40 mixed bullies).

A MANCOVA was performed with bully/victim group as the independent variable, the dummy coded demographic information (gender, grade, country of birth, SES, parents' marital status, father's and mother's education) as covariates, the three academic scales (learning interest, self-efficacy, learning goal) and the three socio-emotional scales (emotional problems, affective empathy, cognitive empathy) as the dependent variables. Due to list-wise deletion of cases with missing values in one of the variables, the sample decreased from 2,189 students to 2,021 students (see also Table 3). Pillai's trace was used to achieve an accurate estimation given the unequal sizes of the groups (Park, Cho, & Ki, 2009).

The MANCOVA revealed a significant effect of bully/victim group for all dependent variables [F (54, 12510) = 6.98, $p < .001$)], therefore further univariate analyses were assessed. These analyses revealed significant main effects of bully/victim group on each of the six dependent variables: *learning interest* [F (9, 2085) = 8.33, $p < .001$], *self-efficacy* [F (9, 2085) = 11.25, $p < .001$], *learning goal* [F (9, 2085) = 11.18, $p < .001$], *emotional problems* [F (9, 2085) = 22.56, $p < .001$], *affective empathy* [F (9, 2085) = 7.19, $p < .001$] and *cognitive empathy* [F (9, 2085) = 3.68, $p < .001$]. To avoid inflation of type I errors, we did not compare each group with every other group, but we used Bonferroni corrected t-tests to compare each bully group to the uninvolved group, which was used as the reference group for our comparisons. Thus, for each dependent variable, nine comparisons were conducted (see Table 3). Corrected degrees of freedom were used when Levene's test indicated violation of the homogeneity of variance assumption.

[Insert Table 3 about here]

Traditional groups. As shown in Table 3, traditional victims had higher levels of *emotional problems* [δ = -.51, $t(1836) = -8.52$, $p < .001$] and *affective empathy* [δ = -.18, $t(1845) = -3.18$, $p = .014$] compared with uninvolved adolescents. Traditional bully-victims had higher levels of *emotional problems* [δ = -.62, $t(1750) = -5.85$, $p < .001$] compared with uninvolved adolescents. Traditional bullies had lower levels of *learning interest* [δ = .38, $t(112.89) = 4.78$, $p < .001$], lower levels of *self-efficacy* [δ = .25, $t(111.03) = 3.23$, $p = .015$], lower levels of *learning goal orientation* [δ = .19, $t(112.05) = 2.82$, $p = .05$], and lower levels of *affective empathy* [δ = .33, $t(112.5) = 4.38$, $p < .001$] compared with uninvolved adolescents.

Cyber groups. As shown in Table 3, cyber-victims did not differ from uninvolved adolescents. Cyber bully-victims had lower levels of *self-efficacy* [δ = .42, $t(1748) = 3.48$, $p = .005$], lower levels of *learning goal* orientation [δ = .45, $t(1748) = 3.91$, $p = .001$] and lower levels of *cognitive empathy* [δ = .38, $t(1743) = 2.88$, $p = .036$] compared with uninvolved adolescents. Cyber bullies had lower levels of *learning interest* [δ = .46, $t(1755) = 3.83$, $p < .001$] and lower levels of *learning goal* orientation [δ = .27, $t(1756) = 2.78$, $p = .049$] compared with uninvolved adolescents.

Mixed groups. As shown in Table 3, mixed victims had higher levels of *emotional problems* [δ = -.94, $t(36) = -7.18$, $p < .001$] and higher levels of *affective empathy* [δ = -.41, $t(1757) = -3.94$, $p = .001$] compared with uninvolved adolescents. Mixed bully-victims had lower levels of *learning interest* [δ = .39, $t(1757) = 3.34$, $p = .008$], lower levels of *self-efficacy* [δ = .85, $t(3261) = 5.97$, $p < .001$], and lower levels of *learning goal* orientation [δ = .6. $t(32.72) = 4.8$. $p < .001$], but higher levels of *emotional problems* [δ = -.59, $t(1745) = -5.19$, $p < .001$] compared with uninvolved adolescents. Mixed bullies had lower levels of *learning interest* [δ = .62, $t(1764) = 5.84$, $p < .001$], lower levels of *self-efficacy* [δ = .45,

$t(39.69) = 3.08$, $p = .033$], and lower levels of *learning goal* orientation [$\delta = .55$, $t(39.81) = 4.28$, $p = 001$] compared with uninvolved adolescents.

Control variables. There were also statistically significant effects for the following covariates: male gender [$F(6, 2080) = 48.33$, $p < .001$)], grade 8 [$F(6, 2080) = 11.84$, $p < .001$)] grade 9 [$F(6, 2080) = 27.71$, $p < .001$)], low SES [$F(6, 2080) = 3.81$, $p = .001$)], high SES [$F(6, 2080) = 4.12$, $p < .001$)], separated parents [$F(6, 2080) = 2.46$, $p = .022$)], and highest educational level of the father [$F(6, 2080) = 2.31$, $p = .032$)]. The other covariates, having one deceased parent, country of birth, the educational level of the mother, as well as a father with basic or medium educational level (as opposed to no education at all) were not significant. The means and standard deviations of the covariates with a significant effect on the academic (Table S5) and socio-emotional (Table S6) characteristics can be found in the supplementary material.

Discussion

The present study combines both variable and person-oriented approaches to offer knowledge on how academic, socio-emotional and demographic characteristics of adolescents vary across traditional bullying, traditional victimization, cyberbullying and cyber-victimization and across traditional, cyber and mixed bully, victim and bully-victim groups. This knowledge advances the bullying literature and is valuable for designing prevention and intervention programs to tackle cyber and traditional forms of bullying in schools.

In line with previous research, emotional problems were positively associated with traditional bullying (Kaltiala-Heino et al., 2000), but were more strongly associated with traditional victimization (Stavrinides et al., 2011; Dooley et al., 2010). Affective empathy was negatively associated with traditional bullying (Georgiou & Stavrinides, 2012) and

cognitive empathy was positively associated with traditional victimization. These results confirm that adolescents who are involved in bullying and victimization at school suffer from socio-emotional problems leading to adjustment problems in the future (Stavrinides et al., 2011). Hence, it is important that prevention and intervention programs focus on the development of socio-emotional competences (Solomontos-Kountouri et al., 2016).

New insights are provided on an under-investigated area: the relation of academic factors and bullying phenomena. Learning interest had a negative association with traditional bullying, while none of the academic factors were related to traditional victimization. In a similar line, Cook et al.'s (2010) showed that poor academic performance relates to traditional bullying, but not to traditional victimization. Academic factors seem to relate more to cyberbullying and cyber-victimization: all three academic factors were related to cyberbullying (self-efficacy and learning goals were negatively associated to cyberbullying, but learning interest had a positive association), and learning goal had a negative association with cyber-victimization. Improving academic performance is considered as an indirect achievement of an anti-bullying program, thus enhancing academic competences is not a direct aim of anti-bullying programs. Along with social-competences, therefore, prevention and intervention programs could include units to develop academic competences such as learning interest, self-efficacy, and learning goal orientation.

Concerning demographic variables, being a boy was a predictive factor for traditional bullying and victimization, which is in agreement with most findings (Card et al., 2008). Grade was also predictive for traditional bullying, which confirmed previous findings that bullying peaks in mid-adolescence (Pepler et al., 2008). Coming from a separate parents' family was a risk factor for traditional bullying. This new finding highlights that traditional bullying and victimization are social ecological phenomena (Swearer & Espelage, 2004) that

are associated to adolescents' demographic characteristics. On the contrary, demographic factors do not matter for cyberbullying and cyber-victimization (Kowalski et al., 2014).

Individual profiles of the nine bully groups were different, indicating the complexity of bullying phenomena (Gradinger et al., 2009) and the multiple risk factors for students who are involved in bully-victim phenomena (Kljakovic & Hunt, 2016). Mixed bully-victims faced the most academic and emotional problems. Gradinger et al. (2009) also found that adolescents who were involved in multiple forms of bullying and victimization had the most problems. Cyber-victims had the same profile as uninvolved adolescents and showed no emotional problems. Traditional victims (in line with Stavrinides et al., 2011), traditional bully-victims (in line with Schwartz, 2000), mixed victims and mixed bully-victims (in line with Gradinger et al. 2009) had significantly more emotional problems than uninvolved adolescents.

Finally, our study confirmed that traditional and cyber bullying and victimization are interrelated phenomena that co-occur. Results showed that traditional bullying was highly related to cyberbullying and vice versa; while traditional victimization was highly related to cyber-victimization and vice versa. Also, person-oriented analysis showed the existence of mixed bullies (1.8%), mixed victims (1.7%) and mixed bully-victims (1.5%). In line with previous evidences (Gradinger et al., 2009; Kowalski, et al., 2014) adolescents who bully at school also bully in cyber-space and adolescents who are victims at school are victims in cyber-space. These findings might explain why the ViSC anti-bullying school program was also effective in preventing cyberbullying and cyber-victimization (Gradinger, Yanagida, Strohmeier, & Spiel, 2016) and why anti-cyberbullying prevention programs (e.g., Media Heroes), also reduced traditional bullying (Chaux, Velásquez, Schultze-Krumbholz, & Scheithauer, 2016). Thus, we recommend taking into account this dynamic interrelation of

bullying and victimization when evaluating prevention programs (e.g., Yanagida, Strohmeier, & Spiel, 2016).

Limitations of the study concern the use of self-report and the lack of longitudinal data, which could be used in future studies to test the temporal association of the constructs implied in the regression models. Future studies could collect such data at various time-points within the academic year, to better understand the dynamic change of different forms of bullying and victimization over the school year. Despite these limitations, our study demonstrates, that different groups of bullies, victims and bully-victims differ regarding their academic, socio-emotional and demographic characteristics, it also demonstrates the dynamic interrelation of bullying and victimization (traditional and cyber). Therefore, we suggest that prevention and intervention programs along with socio-emotional competences, should also improve academic competences.

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Supplementary Material

Supplementary material for this article is available online: [….LINK.....]

Bio Sketches

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Table 1

Means, Standard Deviations, and Bivariate Correlations among the Study Variables

	Variables	*N*	*M*	*SD*	1	2	3	4	5	6	7	8	9
1	Bullying	2321	0.50	0.59	1								
2	Victimization	2319	0.47	0.60	.33**	1							
3	Cyberbullying	2328	0.12	0.32	.56**	.23**	1						
4	Cyber-Victimization	2327	0.14	0.38	.32**	.48**	.54**	1					
5	Learning Interest	2321	1.74	0.70	-.25**	-.05*	-.18**	-.05*	1				
6	Self-Efficacy	2321	2.35	0.63	-.22**	-.08*	-.26**	-.13**	.49**	1			
7	Learning Goal	2322	2.36	0.58	-.24**	-.05*	-.26**	-.11**	.61**	.68**	1		
8	Emotional Problems	2304	0.95	0.70	.14**	.33**	.12**	.23**	-.03	-.07**	-.01	1	
9	Affective Empathy	2319	1.81	0.65	-.13**	.06**	-.13**	.02	.26**	.31**	.35**	.31**	1
10	Cognitive Empathy	2318	2.04	0.65	-.10**	.06*	-.12**	.002	.20**	.38**	38**	.17**	.67**

Note * p < .05, ** p < .001

Table 2

Prediction of Traditional Bullying, Cyberbullying, Traditional Victimization and Cyber-victimization

Model	R^2	Variable	*β*	*t*	*p*
Traditional Bullying (Summary of Model 5)	43%	Cyberbullying	.54	30.23	.000
		Learning Interest	-.10	-4.84	.000
		Emotional Problems	.09	4.99	.000
		Affective Empathy	-.07	-2.94	.003
		Gender boy (ref = girls)	.14	-8.09	.000
		Grade 8 (ref = grade 7)	.08	4.00	.000
		Grade 9 (ref = grade 7)	.09	4.32	.000
		Separated Parents (ref = married parents)	.06	3.65	.030
Traditional Victimization (Summary of Model 4)	38%	Cyber-Victimization	.49	27.96	.000
		Emotional Problems	.24	12.47	.000
		Cognitive Empathy	.05	2.15	.032
		Gender boy (ref = girls)	.12	6.70	.000
Cyberbullying (Summary of Model 2)	39%	Traditional Bullying	.58	33.21	.000
		Learning Interest	.06	2.98	.003
		Self-Efficacy	-.08	-3.31	.001
		Learning Goal	-.12	-4.72	.000
Cyber-Victimization (Summary of Model 2)	32%	Traditional Victimization	.55	31.17	.000
		Learning Goal	-.08	-3.08	.002

Note: Only significant standardized *β* coefficients are displayed. The full hierarchical models are provided in the supplementary material (Tables S1 to S4). Gender is represented by a dummy variable and being a girl serves as the reference group. Age is represented by two dummy variables (grade 8 and 9) and grade 7 serves as the reference group. Marital status is represented by two dummy variables (separated, deceased) and married parents' status serves as the reference group.

Table 3

Academic and Socio-emotional Characteristics of Traditional, Cyber and Mixed Bullies, Victims and Bully-Victims

Variables	Groups	Traditional			Cyber			Mixed		
	Uninvolved M (SD)	Victim M (SD)	Bully-Victim M (SD)	Bully M (SD)	Victim M (SD)	Bully-Victim M (SD)	Bully M (SD)	Victim M (SD)	Bully-Victim M (SD)	Bully M (SD)
N	1597	117	37	95	23	22	31	33	30	36
Prevalence	79%	5.8%	1.8%	4.7%	1%	1%	1.6%	1.7%	1.5%	1.8%
Learning Interest	1.80 (0.66)	1.84 (0.64)	1.73 (0.69)	1.42** (0.80)	1.58 (0.69)	1.60 (0.72)	1.34** (0.67)	1.99 (0.67)	1.41* (0.70)	1.18** (0.76)
Self-Efficacy	2.42 (0.57)	2.35 (0.58)	2.29 (0.53)	2.17* (0.77)	2.13 (0.68)	2.00* (0.74)	2.15 (0.69)	2.48 (0.60)	1.57** (0.81)	1.97* (0.92)
Learning Goal	2.41 (0.54)	2.48 (0.46)	2.51 (0.41)	2.22* (0.69)	2.23 (0.56)	1.96** (0.68)	2.14* (0.58)	2.53 (0.42)	1.82** (0.71)	1.86** (0.81)
Emotional Problems	0.86 (0.64)	1.37** (0.70)	1.48** (0.85)	0.86 (0.67)	1.19 (0.86)	1.13 (0.53)	1.14 (0.79)	1.80** (0.78)	1.45** (0.81)	1.13 (0.92)
Affective Empathy	1.83 (0.62)	2.02* (0.56)	1.95 (0.59)	1.50** (0.77)	1.88 (0.66)	1.49 (0.65)	1.58 (0.77)	2.25** (0.48)	1.75 (0.62)	1.46 (0.85)
Cognitive Empathy	2.06 (0.62)	2.18 (0.58)	2.17 (0.55)	1.87 (0.74)	2.05 (0.75)	1.68* (0.72)	1.81 (0.79)	2.34 (0.66)	1.94 (0.49)	1.76 (0.86)

Note: * $p < .05$, ** $p < .001$; asterisks denote a significant difference of the particular group compared with uninvolved adolescents

Supplementary Material

Related to the Article

Solomontos-Kountouri, O., Tsagkaridis, K., Gradinger, P., & Strohmeier, D. (2017). Academic, socio-emotional and demographic characteristics of adolescents involved in traditional bullying, cyberbullying, or both: Looking at variables and persons. *International Journal of Developmental Science,* ??-??-??. doi: ?????

Table S1

Hierarchical Regression Predicting Traditional Bullying (N = 2195)

	Model 1			Model 2			Model 3			Model 4			Model 5		
Variable	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
(Constant)	.27	.01		.48	.04		.47	.04		.30	.05		.24	.08	
Cyberbullying	.96	.03	.61**	.91	.03	.58**	.89	.03	.57**	.85	.03	.54**	.85	.03	.54**
Learning Interest				-.08	.02	-.11**	-.08	.02	-.11**	-.07	.02	-.10**	-.07	.02	-.10**
Self-Efficacy				-.04	.02	-.05*	-.03	.02	-.03	-.02	.02	-.03	-.02	.02	-.02
Learning Goal				.01	.02	.02	.03	.02	.03	.02	.02	.03	.03	.02	.03
Emotional Problems							.06	.01	.09**	.06	.01	.09**	.06	.01	.09**
Affective Empathy							-.08	.02	-.10**	-.05	.02	-.07*	-.05	.02	-.07*
Cognitive Empathy							.01	.02	.01	.01	.02	.01	.00	.02	.00
Gender male										.14	.02	.14**	.14	.02	.14**
Greek immigrants										-.02	.04	-.01	-.02	.04	-.01
Other immigrants										.01	.03	.01	.01	.03	.01
Low SES										.02	.03	.01	.00	.03	.00
High SES										.01	.02	.01	.02	.02	.01
Grade 8										.08	.02	.08**	.08	.02	.08**
Grade 9										.09	.02	.08**	.09	.02	.09**
Separated parents													.08	.02	.06**
One parent deceased													.03	.06	.01
Father - Low education													.07	.06	.03
Father - Medium education													-.01	.04	-.01
Father - High education													-.04	.04	-.04
Mother - Low education													.07	.09	.02
Mother - Medium education													.04	.07	.04
Mother - High education													.05	.07	.05
R^2	.37			.39			.40			.42			.43		
F change for R^2	1298.95**			20.43**			11.57**			12.52**			2.76*		

Note: Gender is represented by a dummy variable, where girl serves as the reference group. Immigrant status is represented by two dummy variables, where Cypriot serves as the reference group. SES is represented by two dummy variables, where medium SES serves as the reference group. Age is represented by two dummy variables, where grade 7 serves as the reference group. Marital status is represented by two dummy variables, where married parents' status serves as the reference group. Father's and mother's education are represented by three dummy variables each, where no education serves as the reference group. * $p < .05$, ** $p < .001$

Table S2

Hierarchical Regression Predicting Traditional Victimization (N = 2186)

	Model 1			Model 2			Model 3			Model 4			Model 5		
Variable	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
(Constant)	.28	.01		.24	.04		.06	.05		-.06	.05		-.09	.09	
Cyber-Victimization	.78	.02	.56**	.78	.03	.56**	.71	.03	.51**	.69	.03	.49**	.69	.03	.49**
Learning Interest				-.01	.02	-.01	.00	.02	.00	-.01	.02	-.01	-.01	.02	-.01
Self-Efficacy				-.04	.02	-.05*	-.03	.02	-.04	-.03	.02	-.03	-.02	.02	-.03
Learning Goal				.06	.03	.07*	.04	.02	.04	.04	.02	.04	.04	.02	.04
Emotional Problems							.17	.01	.22**	.18	.01	.24**	.18	.01	.24**
Affective Empathy							-.02	.02	-.02	.01	.02	.01	.01	.02	.01
Cognitive Empathy							.04	.02	.05*	.04	.02	.05*	.04	.02	.05*
Gender male										.13	.02	.12**	.13	.02	.12*
Greek immigrants										-.03	.05	-.01	-.03	.05	-.01
Other immigrants										.03	.03	.02	.03	.03	.02
Low SES										.04	.03	.02	.03	.03	.02
High SES										.00	.03	.00	.00	.03	.00
Grade 8										.00	.02	.00	.00	.02	.00
Grade 9										-.03	.02	-.03	-.03	.02	-.02
Separated parents													.03	.03	.02
One parent deceased													-.06	.07	-.02
Father - Low education													.05	.07	.02
Father - Medium education													.00	.05	.00
Father - High education													-.02	.05	-.02
Mother - Low education													.05	.10	.01
Mother - Medium education													.02	.07	.02
Mother - High education													.02	.07	.02
R^2		.31			.31			.36			.38			.38	
F change for R^2		983.85**			2.39			54.63**			7.32**			0.64	

Note: Gender is represented by a dummy variable, where girl serves as the reference group. Immigrant status is represented by two dummy variables, where Cypriot serves as the reference group. SES is represented by two dummy variables, where medium SES serves as the reference group. Age is represented by two dummy variables, where grade 7 serves as the reference group. Marital status is represented by two dummy variables, where married parents' status serves as the reference group. Father's and mother's education are represented by three dummy variables each, where no education serves as the reference group. * $p < .05$, ** $p < .001$

Table S3

Hierarchical Regression Predicting Cyber Bullying (N = 2195)

	Model 1			Model 2			Model 3			Model 4			Model 5		
Variable	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
(Constant)	-.03	.01		.17	.03		.14	.03		.14	.03		.15	.05	
Traditional Bullying	.39	.01	.61**	.37	.01	.58**	.37	.01	.57**	.36	.01	.57**	.37	.01	.57*
Learning Interest				.03	.01	.06*	.03	.01	.07*	.03	.01	.06*	.03	.01	.06**
Self-Efficacy				-.04	.01	-.08*	-.04	.01	-.08*	-.04	.01	-.08*	-.04	.01	-.08*
Learning Goal				-.07	.01	-.12**	-.07	.01	-.12**	-.07	.01	-.12**	-.07	.01	-.13*
Emotional Problems							.02	.01	.04*	.02	.01	.05*	.02	.01	.05**
Affective Empathy							-.01	.01	-.01	-.01	.01	-.01	-.01	.01	-.01*
Cognitive Empathy							.01	.01	.02	.01	.01	.03	.01	.01	.03
Gender male										.00	.01	.01	.00	.01	.01
Greek immigrants										-.02	.03	-.01	-.02	.03	-.01
Other immigrants										.00	.02	.00	.01	.02	.01
Low SES										-.01	.02	-.01	-.01	.02	-.01
High SES										.03	.02	.03	.02	.02	.03
Grade 8										.01	.01	.01	.01	.01	.01
Grade 9										.00	.01	.00	-.01	.01	-.01
Separated parents													-.03	.02	-.04*
One parent deceased													.01	.04	.01
Father - Low education													.04	.04	.02
Father - Medium education													.04	.03	.06
Father - High education													.04	.03	.07
Mother - Low education													-.05	.06	-.02
Mother - Medium education													-.04	.04	-.06
Mother - High education													-.05	.04	-.08
R^2	.37			.39			.39			.39			.39		
F change for R^2	1298.95**			24.80**			2.50			0.75			1.00		

Note: Gender is represented by a dummy variable, where girl serves as the reference group. Immigrant status is represented by two dummy variables, where Cypriot serves as the reference group. SES is represented by two dummy variables, where medium SES serves as the reference group. Age is represented by two dummy variables, where grade 7 serves as the reference group. Marital status is represented by two dummy variables, where married parents' status serves as the reference group. Father's and mother's education are represented by three dummy variables each, where no education serves as the reference group. * $p < .05$, ** $p < .001$

Table S4

Hierarchical Regression Predicting Cyber Victimization (N = 2186)

	Model 1			Model 2			Model 3			Model 4			Model 5		
Variable	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
(Constant)	-.01	.01		.15	.03		.13	.03		.12	.04		.22	.07	
Traditional Victimization	.40	.01	.56**	.40	.01	.55**	.39	.01	.54**	.38	.01	.54**	.38	.01	.54**
Learning Interest				.02	.01	.03	.02	.01	.03	.01	.01	.02	.01	.01	.02
Self-Efficacy				-.02	.02	-.04	-.02	.02	-.04	-.02	.02	-.04	-.02	.02	-.04
Learning Goal				-.05	.02	-.08*	-.06	.02	-.08*	-.06	.02	-.08*	-.05	.02	-.08*
Emotional Problems							.02	.01	.04*	.02	.01	.04*	.02	.01	.04
Affective Empathy							-.01	.02	-.02	-.01	.02	-.02	-.01	.02	-.02
Cognitive Empathy							.01	.02	.02	.01	.02	.02	.01	.02	.02
Gender male										.00	.02	.00**	.00	.02	.00
Greek immigrants										.03	.03	.02	.02	.03	.01
Other immigrants										.00	.02	.00	-.01	.02	.00
Low SES										.03	.02	.02	.02	.02	.02
High SES										.01	.02	.01	.01	.02	.01
Grade 8										.02	.02	.02	.02	.02	.02
Grade 9										-.01	.02	-.01	-.01	.02	-.01
Separated parents													.01	.02	.01
One parent deceased													.10	.05	.04*
Father - Low education													-.03	.05	-.01
Father - Medium education													.00	.04	.00
Father - High education													.01	.04	.01
Mother - Low education													-.06	.07	-.02
Mother - Medium education													-.10	.05	-.13
Mother - High education													-.11	.06	-.14*
R^2	.31			.32			.32			.32			.33		
F change for R^2	983.85**			10.37**			1.48			0.77			1.21		

Note: Gender is represented by a dummy variable, where girl serves as the reference group. Immigrant status is represented by two dummy variables, where Cypriot serves as the reference group. SES is represented by two dummy variables, where medium SES serves as the reference group. Age is represented by two dummy variables, where grade 7 serves as the reference group. Marital status is represented by two dummy variables, where married parents' status serves as the reference group. Father's and mother's education are represented by three dummy variables each, where no education serves as the reference group. * $p < .05$, ** $p < .001$

Table S5

Covariates with a Significant Effect on Academic Characteristics

	Learning Interest		**Self-Efficacy**		**Learning Goal**	
Covariate/Level	M (SD)	$M_{reference}$ (SD)	M (SD)	$M_{reference}$ (SD)	M (SD)	$M_{reference}$ (SD)
Gender						
Boy (n = 1079) vs. Girl (n = 1103)	n.s.	n.s.	2.31** (0.66)	2.43 (0.55)	2.33** (0.62)	2.44 (0.49)
Age						
Grade 8 (n = 761) vs. 7 & 9 (n = 1428)	1.80* (0.69)	1.75 (0.67)	n.s.		n.s.	
Grade 9 (n = 693) vs. 7 & 8 (n = 1496)	1.59** (0.65)	1.85 (0.67)	2.29** (0.65)	2.41 (0.59)	2.31** (.057)	2.42 (0.55)
SES						
Low (n = 232) vs. Medium/High (n = 1929)	n.s.		2.23* (0.74)	2.39 (0.59)		
High (n = 343) vs. Medium/Low (n = 1818)	1.93** (0.68)	1.74 (0.67)	n.s.		2.47* (0.55)	2.37 (0.56)
Father's Education						
Low (n = 72) vs. No/Medium/High (n = 2171)	n.s.		n.s.		n.s.	
Medium (n = 1142) vs. No/Low/High (n = 1047)	n.s.		n.s.		n.s.	
High (n = 873) vs. No/Low/Medium (n = 1316)	n.s.		2.44* (0.57)	2.30 (0.64)	n.s.	
Parents' Marital Status						
Separated (n = 353) vs. Married/Deceased (n = 1821)	n.s.		2.26* (0.65)	2.30 (0.60)	n.s.	
Deceased (n = 45) vs. Married/Separated (n = 2129)	n.s.		n.s.		n.s.	

Note: Significant differences are marked - * $p < .05$, ** $p < .001$. The covariates country of birth and educational level of the mother were not significant.

Table S6

Covariates with a Significant Effect on Socio-emotional Characteristics

	Emotional Problems		**Affective Empathy**		**Cognitive Empathy**	
Covariate/Level	M (SD)	$M_{reference}$ (SD)	M (SD)	$M_{reference}$ (SD)	M (SD)	$M_{reference}$ (SD)
Gender						
Boy (n = 1079) vs. Girl (n = 1103)	0.81** (0.67)	1.07 (0.69)	1.60** (0.66)	2.04 (0.53)	1.90** (0.69)	2.20 (0.54)
Age						
Grade 8 (n = 761) vs. 7 & 9 (n = 1428)	1.00** (0.70)	0.91 (0.69)	1.90** (0.64)	1.79 (0.64)	n.s.	
Grade 9 (n = 693) vs. 7 & 8 (n = 1496)	1.08** (0.68)	0.88 (0.69)	1.89** (0.58)	1.80 (0.66)	2.12** (0.59)	2.02 (0.65)
SES						
Low (n = 232) vs. Medium/High (n = 1929)	1.11* (0.77)	0.92 (0.68)	n.s.		n.s.	
High (n = 343) vs. Medium/Low (n = 1818)	0.82* (0.69)	0.97 (0.69)	n.s.		n.s.	

Note: Significant differences are marked - * $p < .05$, ** $p < .001$. The covariates country of birth, parents' marital status and educational level of the mother and father were not significant.