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(Mal)adjustment of Bully-victims: Validation with Three Identification Methods

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Abstract

Although knowledge on the psychosocial (mal)adjustment of bully-victims, children who bully others and are victimized by others, has been increasing, the findings have been principally gained utilizing a single method to identify bully-victims. The present study examined the psychosocial adjustment of bully-victims (as compared with pure bullies and pure victims) identified by Olweus' global measures, peer-nominations, and a profile method based on Olweus' multiple measures of bullying/victimization forms. The sample included 17,586 students from grades 3 to 8 (9 to 15 years old) in Finland. Bully-victims formed the smallest group, whose subjective experience of maladjustment differed from that of bullies, rather than that of victims. Both the prevalence and the relative maladjustment of bully-victims varied across identification methods, gender, and school level.

Keywords: psychosocial adjustment, bullying, victimization, bully-victims

(Mal)adjustment of Bully-victims: Validation with Three Identification Methods

Bullying and victimization are both considered as risk factors for children's psychosocial maladjustment (e.g., Özdemir & Stattin, 2011; Veenstra et al., 2005). Bullying is defined as repeated aggression, in which one or more persons intentionally harm or disturb a relatively powerless individual physically, verbally, or psychologically (Olweus, 1996). In many studies, "bullies" and "victims" are considered as distinct groups of children, with different and often opposing characteristics. However, research has identified a third group, "bully-victims", children who bully others and are also victimized themselves (e.g., Solberg, Olweus, & Endresen, 2007; Yang & Salmivalli, 2013) The psychosocial adjustment of bully-victims, which has been suggested to be even worse than that of either bullies or victims (e.g., Nansel, Craig, Overpeck, Saluja, & Ruan, 2004) has drawn increasing research attention during the past few decades.

Studies often utilize a single method, most often either self-reports (e.g., Solberg & Olweus, 2003) or peer-nominations (e.g., Veenstra et al., 2005), to identify bully-victims. Given the disadvantages of each identification method, such as individual bias and subjectivity of self-reports, and the lack of subjective experience in peer-reports (e.g., Cornell & Brockenbrough, 2004), the identification results may be biased (Bouman et al., 2012), which in turn may lead to inconsistency in the findings concerning the prevalence and psychosocial adjustment of bully-victims. In addition, previous results have often been based on relatively small numbers of bully-victims of different gender and grade level subgroups, while the multilevel data structure (students nested in classrooms nested in schools) has not been taken into account (e.g., Unnever, 2005; Veenstra et al., 2005). Thus, as a research gap, the psychosocial adjustment of bully-victims identified by multiple methods while taking into account gender, grade level (primary/secondary), and the multilevel data structure, has not been investigated within a single study.

To fill in the above gap in the literature, the present study focused on the psychosocial adjustment of bullies, victims, bully-victims, and non-involved students identified by 1) Olweus' global measures on bullying and victimization, 2) peer-reports on bullying and victimization, and 3) a profile method based on Olweus' multiple measures of specific bullying/victimization forms. The findings concerning the prevalence and (mal)adjustment of bully-victims were validated across identification methods, utilizing a multilevel perspective. Besides examining the main effects of bullying/victimization status on psychosocial adjustment, we also tested its interactions with both gender and grade level.

Adjustment of bullies, victims, and bully-victims

The picture of the psychosocial adjustment of bullies and victims is generally clear. Bullies are not only likely to be hyperactive, aggressive, and low in empathy (e.g., Haynie et al., 2001), but they are also integrated members of peer networks (Salmivalli, Huttunen, & Lagerspetz, 1997; Veenstra et al., 2005), whereas victims usually feel depressed and lonely, and suffer from a low self-esteem (e.g., Haynie et al., 2001; Juvonen, Graham, & Schuster, 2003). Previous studies indicate that bully-victims tend to have characteristics that are partly similar to those of victims, partly to those of bullies.

For example, in a cross-national study from 25 countries (Nansel et al., 2004), bully-victims and victims had poorer relationships with classmates, bully-victims and bullies were more involved in alcohol use and weapon carrying, and bully-victims reported more health and school adjustment problems than students in the other groups. Haynie and colleagues (2001) found that self-reported bully-victims in middle school grades 6 to 8 (around 11 to 14 years of age) exhibited the most problem behavior and depressive symptoms, while they scored the lowest on social competence, self-control and peer acceptance, as compared with bullies, victims, and non-involved children. Veenstra and colleagues (2005) found that peer-

nominated bully-victims in primary schools (average age 11 years) were more disliked by peers than both bullies and victims. Overall, compared to bullies and victims, bully-victims show higher levels of anxiety and depression (Kaltiala-Heino, Rimpelä, Rantanen, & Rimpelä, 2000) accompanied with psychosomatic complaints (Kaltiala-Heino et al., 2000) and low levels of self-esteem (O'Moore & Kirkham, 2001). They tend to provoke negative interactions (Andreou, 2001), to be disliked by their peers, and to have difficulty in making friends (Olweus, 2003). Furthermore, they perceive the school social climate in a more negative way than their peers do (Bayar & Uçanok, 2012), lack a sense of bonding to the school (Haynie et al., 2001; Juvonen et al., 2003), experience less teacher support, feel more insecure, and have more absenteeism from school because of fear in comparison to both bullies and victims (Berkowitz & Benbenishty, 2012).

Regarding gender difference, boys are much more likely to be bully-victims than girls (e.g., Veenstra et al., 2005; Yang & Salmivalli, 2013). Previous research suggests that male bully-victims in primary school level are less liked by peers and more likely to feel lonely than female bully-victims (Kochenderfer-Ladd & Skinner, 2002); they also engage in more bullying behavior than female bully-victims do (Camodeca, Goossens, Terwogt, & Schuengel, 2002). It is not clear whether these findings reflect gender differences more generally (e.g., boys feel more lonely and are more aggressive than girls in general, regardless of their bullying involvement), rather than differential effects of bullying/victimization status on the adjustment of males versus females. As female bully-victims are an especially small group, it is difficult to make a clear conclusion about their adjustment.

Whether the grade level of bully-victims is relevant to their adjustment remains unclear. It has been suggested that bully-victims in secondary school are better adjusted than

bully-victims in primary school (Solberg, Olweus, & Endresen, 2010). For instance, bully-victims in primary school tend to break more rules, have more attention problems, social disintegration, and antisocial behavior than bully-victims in secondary school. Although the scores of bully-victims are overall higher than non-involved children on rule-breaking, antisocial, and oppositional behavior, these differences are larger in primary than in secondary school. However, with respect to internalizing problems, the difference between bully-victims and non-involved children is equal in primary and secondary grades (Solberg et al., 2010). As most studies have included either primary *or* secondary school children, more research is needed in order to compare the adjustment of bully-victims (in comparison to bullies, victims, and non-involved) across grade levels within the same study sample.

Methods to Identify Bullies, Victims, and Bully-victims

The identification of bullies, victims and bully-victims depends on the method used. There have been mainly two identification methods in the previous literature: self-reports and peer-reports (Solberg et al., 2007). Teacher reports have sometimes been used, especially in samples of very young children (e.g., Perren & Alsaker, 2006). Previous studies showed that, by using self-reports, the prevalence of bully-victims varied from 0.4% to 29% across studies (Solberg et al., 2007), whereas by using peer-reports, the prevalence of bully-victims ranged from approximately 6% to 10% (e.g., Graham, Bellmore, & Mize, 2006; Schwartz, 2000; Toblin, Schwartz, Hopmeyer Gorman, & Abou-Ezzeddine, 2005). This inconsistency is likely to result from varied definitions of bullying and victimization, as well as different cut-off points and/or scoring systems. What seems to be consistent across studies, however, is the finding that bully-victims form a smaller group of children than either pure bullies or pure victims (e.g., Solberg et al., 2007; Veenstra et al., 2005)– with the exception that among

kindergarteners, bully-victims and bullies have more or less equal prevalence (e.g., Perren & Alsaker, 2006).

It has been suggested that self-reported and peer-reported bullying and victimization are related to different adjustment problems (Bouman et al., 2012). For instance, self-reported bullying and (especially) victimization are correlated with intrapersonal problems such as depression, anxiety, and low self-esteem (e.g., Hawker & Boulton, 2000; Kaltiala-Heino et al., 2000), whereas peer-reported bullying and victimization are mainly associated with low social acceptance and high peer rejection; in other words, interpersonal problems (e.g., Caravita, Di Blasio, & Salmivalli, 2009; Juvonen et al., 2003).

Olweus' questionnaire with two global measures of bullying and victimization is one of the main self-report methods to identify bullies, victims, and bully-victims. It adopts "two or three times a month" as the cut-off point to identify a child as a bully/victim/bully-victim (Solberg & Olweus, 2003). Scoring and analyzing the data derived with this method does not require a deep understanding of statistics; therefore, it is easy to understand and implement by researchers as well as practitioners. The data produced is also easily comparable across contexts (classrooms, schools). However, there are also some limitations. First, when only two global items concerning bullying and victimization are used, the information for identification may not be inclusive enough, leading to biased results. Second, the cut-off point of "two or three times a month" can be considered arbitrary although empirical research has been done to support it (Solberg & Olweus, 2003). Third, it is a definitional rather than behavioral measurement. Previous research has suggested that the two global items (when presented together with the definition of bullying) successfully capture the characteristics of intention and repetition that are central to the definition of bullying; however, they might not be as sensitive as a behavioral measurement directly assessing intention, repetition, and the

relative power of the perpetrator and the target (Green, Felix, Sharkey, Furlong, & Kras, 2012).

In the peer nomination procedure, participants typically nominate, from a list of class- or grade-mates, the ones who best fit items describing bullying or victimization (e.g., Kärnä, Voeten, Poskiparta, & Salmivalli, 2010; Salmivalli & Voeten, 2004). The nominations received by each child are then transformed into proportion scores. Usually, a cut-off point like $0.5 SD$ (e.g., Schwartz, 2000), $0.8 SD$ (e.g., Schwartz, Dodge, Pettit, & Bates, 1997) or $1 SD$ (e.g., Yang & Salmivalli, 2013) above the sample mean is used to classify individuals into subgroups. The main criterion for selecting the cut-off point is usually the size of each subgroup. When the sample size is relatively large or small, a more stringent or lenient cut-off point is accordingly selected.

The first advantage of peer reports is that individual bias and subjectivity can be decreased due to the utilization of multiple informants (Cornell & Brockenbrough, 2004). Second, peer nominations reveal unique information about bullying and victimization from the peer's perspective (Pellegrini & Bartini, 2000). However, due to the inconsistent understanding about bullying and victimization, peers may incorrectly estimate and report bullying behavior (Card & Hodges, 2008). Research on the association between psychosocial adjustment and peer-reported bullying/victimization status suggests that victimization tends to be associated with low self-esteem (Salmivalli, Kaukiainen, Kaistaniemi, & Lagerspetz, 1999), low social acceptance (Juvonen et al., 2003), and low perceived popularity (de Bruyn, Cillessen, & Wissink, 2010). Meanwhile, peer-reported bullying is positively correlated with power and perceived popularity, as well as with being disliked (Caravita et al., 2009; Juvonen et al., 2003).

Finally, profile methods, such as latent class analysis (LCA) have drawn increasing attention at categorizing individuals into mutually exclusive groups based on their values and multiple measures. As stated by Collins and Lanza (2010, p. 8): “with LCA an investigator can use an array of observed variables representing characteristics, behaviors, symptoms, or the like as the basis for organizing people into two or more meaning homogeneous subgroups”.

LCA is a profile method increasingly used to identify the latent class structure of bullies, victims, bully-victims, and non-involved students (e.g., Giang & Graham, 2008; Lawson, Alameda-Lawson, Downer, & Anderson, 2013; Shao, Liang, Yuan, & Bian, 2014). In this approach, multiple items can be employed simultaneously. First of all, it is an informative way to categorize participants into a relatively small number of latent classes, as compared with the use of an arbitrary cut-off point with a single item or with composite scores from multiple items. Second, the fit of different competing latent class models can be statistically tested. Third, the posterior probability of each individual falling into the most likely latent class can be obtained, so that the uncertainty of the membership can be taken into account (Wang & Hanges, 2011) and researchers can gain greater knowledge about the profile of a specific latent class. However, in some circumstances, LCA could become more complicated to apply than the simple cut-off point methods. It requires relevant statistical background to understand the principle of the model and the software on which it is implemented. Meanwhile, researchers’ decision about the number and interpretation of latent classes could be arbitrary, and sometimes vague. For more details about LCA, see Collins and Lanza (2010), and Wang and Hanges (2011).

Taken together, it appears that the self-report method captures the unique individual’s subjective experience of both bullying and victimization, while the peer-reports method

reduces the subjective error along with the unique individual experience of bullying and victimization. Both methods have their advantages and shortcomings, and can be seen as complementing each other (e.g., Salmivalli & Peets, 2009). LCA can be based on either self- or peer-reports, or both.

Present Study

Previous literature suggests that bully-victims, children who bully others and are themselves bullied by others, are a small but a highly maladjusted group of school-aged children. Although their behavior and adjustment have been examined in numerous previous studies (e.g., Berkowitz & Benbenishty, 2012; Haynie et al., 2001; Özdemir & Stattin, 2011; Perren & Alsaker, 2006; Salmivalli & Nieminen, 2001; Veenstra et al., 2005), it remains ambiguous whether and how they differ from pure bullies, pure victims, or both, and whether such differences vary by gender or grade level. This ambiguity is largely due to the fact that previous studies typically utilized different identification methods, age and gender groups, and outcome variables, often in samples including relatively small numbers of children (especially girls) identified as bully-victims.

The main aim of the present study was to validate the identification of bullies, victims, bully-victims, and non-involved students using self-reported global items, peer-reported measures, and a profile method based on multiple specific self-reported measures (multilevel LCA), and to compare findings regarding the prevalence and adjustment of these children (with a special focus on bully-victims) in a multilevel framework. Especially the use of global items on bullying and victimization has been common in past studies, but sometimes criticized; contrasting this approach with the two other methods is therefore important.

Besides comparing bullies, victims, bully-victims, and non-involved students, we tested whether gender or grade level (primary vs. secondary) moderates the differences between them. This was possible due to our large sample size. Furthermore, by utilizing a wide range of adjustment constructs (internalizing problems, peer relationships, and the perception of learning climate), it is possible to gain more knowledge on the adjustment profile of bully-victims across gender and grade levels.

Previous studies with varied measures and identification methods of bullying/victimization status have generally produced consistent classification results including pure bullies, pure victims, bully-victims, and non-involved students. Based on separate studies utilizing different identification methods and age groups, the findings concerning the (low) prevalence and (high) maladjustment of bully-victims are quite robust. In the present study, we therefore hypothesized that the four groups could be identified using all three identification methods mentioned above. Due to the advantages and disadvantages of each method, the prevalence of bullies, victims, bully-victims, and non-involved students was expected to vary to some extent across different methods; however, we hypothesized that the bully-victims are the smallest group regardless of the identification method used. Moreover, given the resemblance of bully-victims with both bullies and victims (e.g., Özdemir & Stattin, 2011; Veenstra et al., 2005), we hypothesized that they are generally highly maladjusted, regardless of the identification method employed. In addition, we systematically examined whether their adjustment (relative to bullies and victims) differs across gender, grade level, or the adjustment variable in question.

Methods

Participants

Data for the present study is from the pretest of a project evaluating the effectiveness of the KiVa antibullying program (Salmivalli, Kärnä, & Poskiparta, 2010). Both primary and secondary school students were included in our sample. The youngest children in grades 1 and 2 had responded to a short version of the questionnaire and thus did not have data on psychosocial adjustment. Further, there were no data for grade 6 students as at the time of the pre-test, they were about to move to secondary schools and would not be in the school anymore during the intervention that was going to be evaluated. Similarly, grade 9 students were not included as they were about to graduate and leave the school right after the pre-test. The final sample consisted of 17,586 students (age range 9 to 15 years) from 1038 classrooms in 147 Finnish schools. Of these respondents, 41.4% were in primary school (grades 3-5) and 58.6% were in secondary school (grades 7-8); 49.0% were boys and 51.0% were girls.

Procedures

Students with an informed consent and active parental consent completed Internet-based questionnaires in the schools' computer labs during school hours, supervised by teachers who had been provided with detailed instructions before the data collection. The questionnaires and their items had been randomized across students. Students were assured that all information collected from them was kept confidential and only used for research purposes.

Measures

Demographic variables. Participants reported their age, gender, and grade level in the beginning of the questionnaire.

Bullying/Victimization status. Students in different bullying/victimization status were identified by 1) two global measures from the revised Olweus' Bully/Victim questionnaire (Olweus, 1996); 2) bullying and victimization subscales from the

Participant Role Questionnaire (Salmivalli & Voeten, 2004); and 3) 12 items concerning specific forms of bullying and victimization from the revised Olweus' Bully/Victim questionnaire (Olweus, 1996).

When using Olweus' two global measures, students were asked: "How often have you been bullied at school during the past couple of months?" and "How often have you bullied another student during the past couple of months?" Both questions were responded on a five-point scale (0 = *Not at all*, 1 = *Only once or twice*, 2 = *Two or three times a month*, 3 = *About once a week*, and 4 = *Several times a week*). The response "two or three times a month" was used as the cut-off point (Solberg & Olweus, 2003), that is, individuals who reported being bullied/bullying others 2-3 times a month or more often were considered as victims or bullies, respectively. Bully-victims had a score of two or higher on both items whereas non-involved students scored below two on both items.

In the peer nomination, participants nominated peers using three items (e.g., "Starts bullying") on bullying (Cronbach's $\alpha = 0.92$) (Salmivalli & Voeten, 2004), and another three items (e.g., "He/She is being pushed around and hit") on victimization (Cronbach's $\alpha = 0.78$) (Kärnä et al., 2010), from a list of classmates presented on the computer screen. An unlimited number of classmates who fit the description should be marked for each item. Participants were also allowed to choose "no one". Peer nominations received for each item were divided by the number of classmates responding, resulting in a proportion score ranging from 0.00 to 1.00 for each student on each item. The proportion scores were averaged across the three items for both bullying and victimization. Individuals were categorized into peer-reported bullies, victims, bully-victims, and non-involved following Schwartz (2000), and a stringent cut-off point (1 *SD* above the sample mean) was employed. Participants whose bullying and victimization scores were both greater than 1 *SD* above the sample mean were identified as bully-

victims; participants whose victimization score was greater than 1 *SD* above the mean were identified as victims; participants whose bullying score was greater than 1 *SD* above the mean were identified as bullies; and participants whose bullying and victimization scores were both less than 1 *SD* above the mean were identified as non-involved.

In the profile method, the identification was based on LCA using multiple measures. In order to cover the most common victimization forms, six self-report items (e.g. ‘I was hit, kicked or shoved’, ‘I was called mean names, was made fun of or teased in a hurtful way’, ‘Other students ignored me completely or excluded me from things or from their group of friends’, ‘Other students tried to make others dislike me by spreading lies about me’, ‘Somebody took money or other things from me or damaged my things’ and ‘I was threatened or forced to do things I would not have wanted to do’) were adopted (Cronbach’s $\alpha = 0.87$). Six corresponding items were used to indicate forms of bullying behavior (Cronbach’s $\alpha = 0.80$). Again, participants answered each item on a five-point scale ranging from 0 = Not at all to 4 = Several times a week (Olweus, 1996).

A series of exploratory multilevel LCAs was conducted, with classrooms as the second level units and schools as the third level units, to test the solutions from one latent class to five latent classes using Mplus 7 (Muthén & Muthén, 2012). Information from the substantive theory, empirical evidence, and statistical indices was used when deciding the appropriate number of latent classes. In this study, log likelihood value, Akaike’s information criterion, Bayesian Information Criteria, and the Sample-Size Adjusted Bayesian Information Criteria were employed as statistical indices, and the model with the smaller values of these four indices was considered to be the preferred model (e.g., Collins & Lanza, 2010). Model fit indices for one-, two-, three-, four-, and five-class models are presented in Table 1.

Insert Table 1 about here

Given the previous findings about bullying/victimization status (e.g., Solberg et al., 2007) as well as the purpose of comparison with Olweus' -global-measures-identification method and peer-reports method in the present study, although the 5-class model had a better model fit, the model fit and probabilities of each item in the 4-class model together claimed a clearer and more parsimonious status profile and thus was selected for further analysis. Specifically, participants with low probability on victimization items (0.02-0.18) but high probability on bullying items (0.19-0.76) were bullies, participants with high probability on victimization (0.14-0.64) but low probability on bullying (0.00-0.09) were victims, participants with high probability on both bullying (0.36-0.70) and victimization (0.52-0.85) items were bully-victims, and participants with low probability on both bullying (0.00-0.01) and victimization (0.00-0.03) items were non-involved students (Table 2). Note that it is not the case that the more the number of the latent classes, the better the model fit (e.g., Marcoulides, Gottfried, Gottfried, & Oliver, 2008).

Insert Table 2 about here

Internalizing problems. Self-esteem among peers was measured by 10 items derived from the Rosenberg Self-Esteem Scale (Rosenberg, 1965). Items (e.g., I am more or less satisfied with myself) were slightly adapted in that children were instructed to “report the way you feel about yourself when around peers” (e.g., Salmivalli, Ojanen,

Haanpää, & Peets, 2005). Participants answered on a five-point scale ranging from 0 = *Not at all* to 4 = *Exactly true* (Cronbach's $\alpha = 0.81$).

Depression was measured by seven items (e.g., "How is your mood (describe your mood)?) derived from the Beck Depression Inventory (Beck, Steer, & Garbin, 1988), which is a five-point scale (0 = *Sunny & good*, 4 = *So depressed and melancholic that I cannot stand*)(Cronbach's $\alpha = 0.86$).

Social anxiety was measured by nine items (e.g., "I am worried about what others think of me") based on a five-point scale ranging from 0 = *Not at all* to 4 = *Exactly true* (Cronbach's $\alpha = 0.88$) (Garcia-Lopez, Hidalgo, Beidel, Olivares, & Turner, 2008).

The mean score of the items in the measure of self-esteem among peers, depression, and social anxiety, respectively, were averaged to get the score of internalizing problems (Cronbach's $\alpha = 0.73$).

Peer relationship. General perception of peers was measured by 13 items (e.g., "(they) can really be relied on") that described the positive and negative qualities of children's age-mates based on a five-point scale ranging from 0 = *Not at all* to 4 = *Exactly true* (Cronbach's $\alpha = 0.89$) (Salmivalli et al., 2005).

Relationship with classmates was measured by three items (e.g., "I have good friends in my classroom" based on a five-point scale ranging from 0 = *Totally disagree* to 4 = *Totally agree* (Cronbach's $\alpha = 0.81$).

The mean score of the items in the measure of general perception of peers, and relation to classmates, respectively, were averaged to get the score of peer relationship (Cronbach's $\alpha = 0.63$).

Perception of school climate. Perception of the class climate was measured by three questions (e.g., "There is a good atmosphere in my class") (Metsamuuronen &

Svedlin, 2004) based on a five-point scale ranging from 0 = *Totally disagree* to 4 = *Totally agree* (Cronbach's $\alpha = 0.73$).

Perception of the school climate was measured by five questions (e.g., "I feel safe at school") based on a five-point scale ranging from 0 = *Totally disagree* to 4 = *Totally agree* (Cronbach's $\alpha = 0.79$) (Metsamuuronen & Svedlin, 2004).

The mean score of the items in the measure of perception of the class climate, and perception of the school climate, respectively, were averaged to get the score of the perception of school climate (Cronbach's $\alpha = 0.85$).

Treatment of missing data. The amount of missing data varied across items, but the proportion of missing values for each item was less than 23% and were handled using full information maximum likelihood algorithm in Mplus 7 (Muthén & Muthén, 2012).

Results

Prevalence of Students into Bullying/Victimization Status

The first aim was to examine the prevalence of bullies, victims, bully-victims, and non-involved students, using Olweus' global measures, peer-reports, and a profile method based on LCA with multiple measures. The distribution of students into bullying/victimization status groups is presented in Table 3. Bully-victims were clearly the smallest group, regardless of whether they were identified by Olweus' global measures (2.5%), peer-reports (2.0%), or LCA (0.5%). As indicated by Chi square tests, girls and boys ($\chi^2(3) = 176.62, p < .01$; $\chi^2(3) = 1373.30, p < .01$; and $\chi^2(3) = 160.77, p < .01$ using Olweus' global measures, peer-reports, and LCA, respectively), as well as primary and secondary school students ($\chi^2(3) = 221.41, p < .01$; $\chi^2(3) = 98.95, p < .01$; and $\chi^2(3) = 104.89, p < .01$ using Olweus' global measures, peer-reports, and LCA, respectively) were unequally

distributed among the status groups. A higher proportion of boys than girls were identified as bully-victims (3.6% vs. 1.4%, 3.5% vs. 0.6%, and 0.9% vs. 0.2%; adjusted residuals 9.31, 13.67, and 6.40; respectively) using Olweus' global measures, peer-reports, and LCA based on multiple measures. A higher proportion of students in primary than in secondary schools were identified as bully-victims by Olweus' global measures and peer-reports (3.1% vs. 2.0%, 2.6% vs. 1.5%; adjusted residuals 4.83 and 5.17; respectively), but not the profile method (LCA) based on multiple measures (0.4% vs. 0.6%; non-significant).

Insert Table 3 about here

Differences in Psychosocial Adjustment

The descriptive means of the four bullying/victimization status groups showed that self-identified (using either global items or the profile method (LCA) based on multiple specific measures) bully-victims reported most maladjustment: they scored highest on internalizing problems and lowest on peer relationships and perception of school climate. Peer-identified bully-victims, on the other hand, seemed to be worse off than bullies, but better (or equally) adjusted than victims (Table 4).

Insert Table 4 about here

To take the multilevel structure into consideration, we further conducted three sets of two-level multivariate regression with random intercepts using Mplus 7 (Muthén & Muthén, 2012), to compare the adjustment of bully-victims with bullies, victims, and non-involved students identified by the three methods. Classrooms were treated as the second level units.

The variance on the school level was controlled for in all of the analyses. For all the regression models, the outcome variables were internalizing problems, peer relationships, and perception of school climate. The level-1 predictors were grade level (0 = primary, 1 = secondary), gender (0 = girls, 1 = boys), and bullying/victimization status (now dummy-coded for each group as 1 = child belongs to the group; 0 = child does not belong to the group). Specifically, when bullies were the reference group to which children in the other groups were compared, the dummy variables included as predictors in the model represented victims, bully-victims, and non-involved students; when victims were the reference group, the dummy variables represented bullies, bully-victims, and non-involved students; when non-involved students were the reference group, the dummy variables represented bullies, victims, and bully-victims). Also the two-way and three-way interactions among the predictors were tested. All the level-1 predictors were group centered (Enders & Tofighi, 2007). No level-2 and level-3 predictors were included.

For each adjustment variable, intraclass correlations were calculated, indicating the proportion of variance at the individual and classroom levels. The intraclass correlations were .05, .09, and .17 for internalizing problems, peer relationships, and perception of school climate, respectively. This means that 5% of the total variance in internalizing problems, for instance, lies at the classroom level and the rest (95%) at the individual level. Thus, such problems mainly vary between individual children, rather than between classrooms. Perception of school climate, on the other hand, varies much more between classrooms (17% of variance). Peer relationships fall between these two adjustment variables, having 9% of variance at the classroom level.

The bullying/victimization status showed significant main effects on all outcome variables in all three identification models. However, the three-way interactions effects on all

three outcomes across all the identification models were also significant, suggesting that the effects of bullying/victimization status on psychosocial adjustment were influenced by grade level and gender effects. The findings for each grade and gender group, across identification methods, are presented in Table 5.

Insert Table 5 about here

Bully-victims differed most clearly from non-involved children, regardless of the identification method. Only in few cases, the effect of being a bully-victim (in comparison to being non-involved) was not statistically significant. Also in comparison to bullies, being a bully-victim typically was associated with more maladjustment; now the effects were weaker, however, and mostly significant when Olweus' global items were used to identify the groups. When peer reports were utilized for identification, the effects were rarely significant. When victims were the reference group, being a bully-victim typically did not contribute to a significant increase in maladjustment. When identified by LCA, in two cases, however, female bully-victims in primary school reported more negative peer relationships ($\beta = -0.67$, $S.E. = 0.20$, $p < 0.001$) and more negative perception of the school climate ($\beta = -0.82$, $S.E. = 0.24$, $p < 0.001$) than female victims in primary school.

Discussion

Prevalence of Bullies, Victims, and Bully/Victims

The first aim of this study was to establish the prevalence of bullies, victims, bully-victims and non-involved students using Olweus' global measures, peer-reports, and a profile method (multilevel LCA based on multiple measures). We expected that the four groups

could be identified by all three identification methods, and that bully-victims would be the smallest group.

In addition to Olweus' global measures ("two or three times a month" as the cut-off point) and peer-reports (1 *SD* above the mean as the cut-off point), a series of explorative LCA models also suggested a clear four-status solution, with corresponding posterior probabilities for each item, confirming the existence of four distinct groups, i.e., bullies, victims, bully-victims, and non-involved students. The use of Olweus' global measures led to the identification of more victims but less bullies than the use of peer-reports. Consistent with previous findings (Solberg et al., 2007), bully-victims were the smallest group, regardless of the identification method used (never more than 2.5% of the sample).

When identified by Olweus' global measures or by peer-reports, most bully-victims were boys (e.g., Veenstra et al., 2005) and primary school students (e.g., Solberg & Olweus, 2003). When bully-victims were identified by the profile method based on multiple measures, boys were still more prevalent than girls, but bully-victims were equally distributed among primary and secondary grade students. In general, our first hypothesis was confirmed.

Differences in Adjustment among Bullying/Victimization Status Groups

The second aim of the present study was to compare the adjustment of bully-victims with bullies, victims, and non-involved students, identified by Olweus' global measures, peer-reports, and the profile method. The hypothesis was that bully-victims are the most maladjusted.

The descriptive means of the groups suggested that when bully-victims were identified by self-reports (either Olweus' global items or the profile method), they were the most maladjusted with respect to all three adjustment areas. However, when they were identified by peer reports, their mean scores indicated slightly better or equal adjustment in

comparison to victims but more maladjustment in comparison to the other groups. When the hierarchical structure of the data, gender, and age were taken into account in the multilevel multivariate regression, the pattern was even more complicated. Due to several two- and three-way interaction effects, the regression analyses were run separately for each gender and grade level.

In general, bully-victim status was predictive of maladjustment, as compared with being a bully or a non-involved student. These differences were found across identification methods and in most gender and grade groups. The use of Olweus' global measures led to the most consistent differences across gender and grade groups, which speaks to the validity of the measure. Female bully-victims in secondary school, when identified by peer-reports or by the profile method, were never significantly more maladjusted than bullies. However, the small subsample size (20 identified by peer-reports, and 8 identified by the profile method) may explain the lack of differences, as suggested also by large standard errors. Overall, there were less effects of being a bully-victim among females, which may be due to the low prevalence of bully-victims among girls. This turned out to be a problem even in our very large data set.

Bully-victims were rarely more maladjusted than victims. That was the case only when they were identified by the profile method based on multiple items on bullying and victimization. This identification led to the smallest group of bully-victims, who experienced being victimized and bullying others frequently in multiple ways (as suggested by item probabilities); they were probably the most evident and "severe" bully-victims. This can actually be seen from the mean (mal)adjustment scores across identification methods, as bully-victims identified by the profile method were more maladjusted than bully-victims identified by any other method (this is true of bullies and victims identified by the profile

method as well; the profile method using LCA sets the criterion of being identified as a bully, victim, or bully-victim relatively high). Future studies might want to compare the adjustment of bully-victims across identification methods rather than just compare them with bullies and victims.

The interaction effects found suggest that the effect of being a bully-victim on adjustment is affected by both gender and grade level (primary vs. secondary), and furthermore, by the interaction between the two. The interpretation of the three-level interactions was challenging, as no clear pattern was detected. We can only conclude that we found no two- or three-way interaction effects that would be consistent across identification methods and/or outcome variables. Further studies with large samples should try to clarify this issue further.

Limitations

There were several limitations in the present study. First, only a cross-sectional design was employed. Future studies should utilize longitudinal designs across identification methods, so that the direction of effects between bullying/victimization status and psychosocial adjustment can be tested. Second, externalizing problems were not examined, and all adjustment variables were self-reported. Future studies should also assess externalizing problems, such as antisocial, rule-breaking and disruptive behavior, and compare them among bullies, victims, bully-victims and non-involved students of different genders and grade levels. In addition, variables such as peer relationships could be assessed from the peers' perspective.

Conclusion

The present study was certainly not the first one examining the prevalence and adjustment of bully-victims, in comparison to bullies, victims, and non-involved students.

However, it was the first study in this area including multiple methods of identification and several adjustment areas, while taking into account the hierarchical structure of the data (students nested within classes nested within schools) as well as gender and grade level differences.

In conclusion, first, bullies, victims, bully-victims, and non-involved students can be identified using Olweus' global measures, peer-reports, and the profile method based on multiple measures; bully-victims comprised the smallest status group, independent of the identification method. Second, the pattern of findings suggests that the subjective experience of maladjustment among bully-victims differs from that of bullies, rather than that of victims. However, those bully-victims who utilize multiple forms of bullying and are frequently victimized by multiple forms (those identified by the profile method, LCA in our study), may be even more maladjusted than pure victims. When identified by the profile method, the prevalence of bully-victims was much smaller than those identified by Olweus' global measures and peer-reports, indicating a more stringent criterion in the profile method using LCA. Future studies might utilize other methods for the identification of bullying/victimization status, such as the item response theory model.

Finally, the greater maladjustment of bully-victims as compared with other groups, presented in previous literature (e.g., Schwartz, 2000; Veenstra et al., 2005) might stem from the observation that they have *both* internalizing *and* externalizing problems (the latter not assessed in our study), even if they do not differ much in the *extent* of such problems from victims (internalizing) and from bullies (externalizing), respectively.

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Table 1

Fit Indices for One- to Five-Class Measurement Models Using Multilevel LCA.

	1 class	2 class	3 class	4 class	5 class
Log-likelihood	-44242.60	-36207.70	-34656.24	-34128.24	-33887.12
AIC	88509.19	72465.41	69390.47	68364.49	67910.25
BIC	88605.11	72665.25	69702.22	68796.14	68453.80
ABIC	88566.98	72585.80	69578.28	68624.53	68237.70

Note. AIC = Akaike's information criterion. BIC = Bayesian Information Criterion. ABIC = Sample-Size Adjusted Bayesian Information Criteria. The 5-class model suggested two victims classes.

Table 2

Item Response Probabilities and Its Standard Errors of Bullying and Being Victimized in Each Bullying/Victimization Status Identified by Profile Method Based on LCA.

	Bullies		Victims		Bully-victims		Non-involved	
	<i>P</i>	<i>S.E.</i>	<i>P</i>	<i>S.E.</i>	<i>P</i>	<i>S.E.</i>	<i>P</i>	<i>S.E.</i>
<i>Victimization</i>								
Called names	0.18	0.04	0.64	0.02	0.79	0.03	0.03	0.00
Excluded/ignored	0.05	0.02	0.42	0.02	0.71	0.04	0.02	0.00
Physically attacked	0.12	0.03	0.41	0.02	0.85	0.03	0.01	0.00
Spread lies	0.07	0.02	0.38	0.02	0.71	0.05	0.01	0.00
Materially bullied	0.02	0.01	0.14	0.01	0.52	0.05	0.00	0.00
Threatened/Forced	0.02	0.01	0.22	0.02	0.68	0.04	0.00	0.00
<i>Bullying</i>								
Calling names	0.76	0.04	0.09	0.01	0.65	0.05	0.01	0.00
Excluding/Ignoring	0.52	0.05	0.04	0.01	0.53	0.06	0.01	0.00
Physically attacking	0.56	0.04	0.07	0.01	0.70	0.06	0.01	0.00
Spreading lies	0.27	0.03	0.01	0.00	0.49	0.06	0.00	0.00
Materially bullying	0.16	0.03	0.00	0.00	0.36	0.06	0.00	0.00
Threatening/Forcing	0.19	0.03	0.01	0.00	0.46	0.07	0.00	0.00

Note. *P* refers to the item response probability.

Table 3

Frequency and Prevalence of Students in the Four Bullying/Victimization Status Groups, Identified by Olweus' Global Measures, Peer-Reports and Profile Method Based on LCA.

	<i>Olweus method identified</i>		<i>Peer identified</i>		<i>LCA identified</i>	
	N	%	N	%	N	%
Bullies	733	4.2	1499	8.5	332	1.9
Victims	1724	9.8	1537	8.7	1123	6.4
Bully-victims	435	2.5	350	2.0	91	0.5
Non-involved	14694	83.6	14200	80.7	16040	91.2

Table 4

Descriptive Means and Standard Errors of the Four Bullying/Victimization Status Groups Identified by Olweus' Global Measures, Peer-Reports and Profile Method on Internalizing Problems, Peer Relationships, and Perception of School Climate.

	<i>Valid N</i>	Internalizing Problems		Peer Relationship		Perception of School Climate	
		<i>M</i>	<i>S.D.</i>	<i>M</i>	<i>S.D.</i>	<i>M</i>	<i>S.D.</i>
<i>Olweus method identified</i>							
B	711	1.25	0.61	2.72	0.64	2.45	0.87
V	1644	1.53	0.68	2.55	0.75	2.24	0.93
BV	405	1.59	0.63	2.43	0.73	2.11	0.94
NI	14279	1.03	0.57	3.03	0.57	2.83	0.77
<i>Peer identified</i>							
B	1454	1.09	0.60	2.84	0.65	2.60	0.89
V	1485	1.33	0.69	2.56	0.75	2.30	0.93
BV	324	1.31	0.64	2.61	0.74	2.44	0.96
NI	13776	1.07	0.59	3.02	0.58	2.81	0.78
<i>LCA identified</i>							

B	318	1.29	0.64	2.52	0.72	2.16	0.99
V	1061	1.64	0.71	2.38	0.78	2.09	0.96
BV	81	1.83	0.75	1.95	0.80	1.59	1.25
NI	15579	1.06	0.58	3.01	0.58	2.80	0.78

Note. B = bullies, V = victims, BV = bully-victims, and NI = non-involved students.

Table 5

Fixed effects of Bullying/Victimization Status Identified by Olweus' Global Measures, Peer-Reports and Profile Method on Internalizing Problems, Peer Relationships, and Perception of School Climate, Using Bullies, Victims, and Bully-victims as the Reference Group.

	Internalizing Problems						Peer Relationship						Perception of School Climate					
	BV vs B		BV vs V		BV vs. NI		BV vs B		BV vs V		BV vs. NI		BV vs B		BV vs V		BV vs. NI	
	β	<i>S.E.</i>	β	<i>S.E.</i>	β	<i>S.E.</i>	β	<i>S.E.</i>	β	<i>S.E.</i>	β	<i>S.E.</i>	β	<i>S.E.</i>	β	<i>S.E.</i>	β	<i>S.E.</i>
	<i>Olweus method identified</i>																	
Primary Boy	0.29 *	0.08	0.07	0.06	0.57 *	0.05	-0.38 *	0.08	-0.10	0.06	-0.56 *	0.05	-0.28 *	0.09	-0.05	0.09	-0.60 *	0.07
Primary Girl	0.42 *	0.14	0.12	0.09	0.61 *	0.09	-0.37 *	0.11	-0.13	0.09	-0.57 *	0.08	-0.25	0.15	-0.14	0.11	-0.64 *	0.10
Secondary Boy	0.39 *	0.08	0.10	0.08	0.58 *	0.07	-0.36 *	0.09	-0.11	0.08	-0.60 *	0.08	-0.46 *	0.10	-0.13	0.10	-0.73 *	0.09
Secondary Girl	0.41 *	0.08	0.09	0.08	0.60 *	0.07	-0.24 *	0.08	0.14	0.08	-0.42 *	0.07	-0.35	0.13	0.12	0.11	-0.53 *	0.12
	<i>Peer identified</i>																	
Primary Boy	0.29 *	0.06	0.11	0.07	0.38 *	0.06	-0.33 *	0.06	-0.07	0.07	-0.42 *	0.05	-0.14	0.08	0.04	0.11	-0.32 *	0.08
Primary Girl	0.10	0.16	-0.13	0.13	0.21	0.12	-0.36	0.17	-0.04	0.13	-0.47 *	0.12	-0.44	0.28	-0.01	0.20	-0.43	0.20
Secondary Boy	0.12	0.06	-0.06	0.07	0.17 *	0.06	-0.17	0.07	0.04	0.07	-0.34 *	0.06	-0.15	0.11	0.01	0.12	-0.34 *	0.10
Secondary Girl	0.24	0.18	-0.20	0.17	0.21	0.17	-0.30	0.22	0.30	0.20	-0.19	0.21	0.13	0.25	0.74 *	0.21	0.29	0.21
	<i>LCA identified</i>																	
Primary Boy	0.15	0.14	-0.01	0.11	0.59 *	0.10	-0.35	0.15	-0.11	0.15	-0.69 *	0.13	0.02	0.21	0.07	0.20	-0.57 *	0.18
Primary Girl	0.60	0.32	0.36	0.31	0.96 *	0.30	-0.80 *	0.23	-0.67 *	0.20	-1.23 *	0.18	-1.04 *	0.35	-0.82 *	0.24	-1.40 *	0.23

Secondary Boy	0.67 *	0.13	0.26	0.12	0.82 *	0.11	-0.49 *	0.18	-0.27	0.16	-0.87 *	0.16	-0.76 *	0.21	-0.53	0.21	-1.20 *	0.21
Secondary Girl	-0.01	0.28	-0.19	0.29	0.36	0.27	-0.66	0.28	-0.32	0.27	-0.95 *	0.27	-0.09	0.64	0.15	0.61	-0.51	0.61

Note. BV vs. B = the effect of being a bully-victim, using bullies as the reference group, BV vs. V = the effect of being a bully-victim, using victims as the reference group, BV vs. NI = the effect of being a bully-victim, using non-involved students as the reference group. β = unstandardized coefficient; *S.E.* = standard error. * $p < 0.01$.