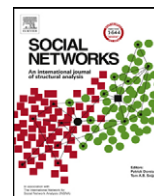




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“It must be me” or “It could be them?": The impact of the social network position of bullies and victims on victims' adjustment

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ABSTRACT

It was examined in this study whether the association between victimization and psychological adjustment (depression and self-esteem) is moderated by the classroom network position of bullies and victims. Multivariate multilevel regression analysis was used on a large sample representative of grades three to five in Finland ($N = 7192$ children from 376 classrooms). Consistent with the person-group (dis)similarity model and attributional mechanisms, it was found that victims were better adjusted in classrooms when others shared their plight and when they could attribute the blame to bullies. The results indicate that victimization consequences might be partly generated by person–environment interactions.

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Bullying in classrooms takes place in a social context where group processes have an important role. For example, group norms can affect the evaluation of bullying behavior (Henry et al., 2000; Salmivalli and Voeten, 2004). Furthermore, it has been indicated that children's (sub)group membership plays an important role in their involvement in bullying (DeRosier et al., 1994; Espelage et al., 2003; O'Connel et al., 1999). To date, few studies have addressed how bullies and victims are involved in bullying and victimization in classrooms. For example, do bullies harass many or few classmates, and does this have consequences for victims? In this study, we derived hypotheses from the theories on social misfits (Wright et al., 1986) and attributional mechanisms (Graham and Juvonen, 2001; Weiner, 1986), examining the consequences of the classroom's social context on victims' psychological adjustment. More specifically, we examined whether the position and involvement of bullies and victims in bullying networks moderate the association of victimization with depression and self-esteem.

1. Background

The person-group (dis)similarity model postulated by Wright et al. (1986) implies that the evaluation of children's behavior depends on the group in which they are embedded. In their study on disruptive boys in a summer camp Wright and colleagues showed that aggressive children were rejected in groups with anti-

aggressive norms whereas this negative evaluation was not found in groups with pro-aggressive norms. In line with the sociological concept of norms, these group norms can be regarded as guidelines that prescribe which behaviors are appropriate.

When children's behavior does not fit with what is normative in the group, they can be labeled as “social misfits”. The proposition that social misfits are evaluated negatively has been tested for aggression among boys in experimental play groups (Boivin et al., 1995; DeRosier et al., 1994) and among students in classrooms (Chang, 2004; Stormshak et al., 1999; Jonkmann et al., 2009), and for social incongruity in race and socioeconomic status (Jackson et al., 2006; Rhodes et al., 2004). More important for the present study, it has been shown that the social misfit model can be applied to bullying and victimization (Bellmore et al., 2004; Dijkstra et al., 2008; Sentse et al., 2007).

Sentse et al. (2007) showed that bullying among early adolescents was less negatively evaluated in classrooms where bullying was normative, i.e., occurring at high levels. In such classrooms, it was even positively related to peer preference. Moreover, victims were generally low on peer preference, but this association decreased with the level of victimization in the classroom. Bullies and victims were thus regarded as social misfits in classrooms with few bullies or few victims, respectively.

Being a social misfit may lead to internalizing problems when children feel that they deviate from the group (Juvonen and Gross, 2005). This can be explained by attributional processes (Graham and Juvonen, 1998, 2001). Victims make causal attributions, asking themselves: “Why am I victimized?” In the numerous potential answers to this question (Graham and Juvonen, 2001; Weiner, 1986), at least three dimensions might play a role: sta-

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bility (whether the cause of victimization is stable or varying over time), controllability (whether the cause of victimization can be changed by the victim), and locus (whether the cause of victimization is internal or external to the victim). These dimensions are thought to be related to victims' psychological adjustment (Weiner, 1986). The locus is of special interest for the present study: the more victims believe the cause of victimization to be internal (blaming themselves for victimization), the more they are expected to be psychologically maladjusted (Bellmore et al., 2004; Graham et al., 2009). On the contrary, perceiving the causes of victimization as external might temper its negative influences on victims' psychological adjustment.

2. The present study

In this study we examined the social misfit model for victimization combined with the theory of attributional processes. We tested the moderating effects of the social structure of bullying and victimization networks on the association of victimization with two psychological adjustment variables related to peer victimization: depression and self-esteem (Arseneault et al., 2009; Hawker and Boulton, 2000; Salmivalli et al., 1999). We expected that victimized children whose situation deviated from the classroom norm (social misfits) would react to their deviating position through psychological maladjustment in the form of depressive symptoms and lower self-esteem. The social misfit position was construed from a social network perspective, by investigating the network position of bullies and victims in the classroom. We considered the classroom an important social context because our data were collected in Finnish elementary classrooms, where children normally have the same classmates for at least the first 6 years of their basic education. This peer group is essential and salient for children, and probably highly significant for their adjustment.

To assess the structure of bullying and victimization networks, we used classroom measures of centralization. The concept of centralization is long-standing and well known in social network analysis (e.g., Freeman, 1979; Wasserman and Faust, 1994). In this study, we used it to refer to *degree* centralization, which is regarded as the prominence or importance of actors in the network. On the individual level, actors who are (degree) central have many ties, and are thus visible/salient to the other actors in the network. On the group level, classroom centralization is considered to indicate how differentiated actors are in their network positions. The higher the centralization of the classroom, the more likely it is that only a few actors are central. Such central social network structures of classrooms have been found to be typical of bullying and victimization networks (Vermande et al., 2000). When classrooms have a high centralization of victimization, it means that some students are victimized but the majority are not. Such victims are prominent and visible; therefore, we label them at the individual level as *specific* victims. A high classroom centralization of bullying, in turn, indicates that some students bully (many) classmates whereas the majority of the students do not bully. In such heterogeneous classrooms with high centralization of bullying, students who bully can be typified at the individual level as *specific* bullies.

We expected victimization to be related to psychological maladjustment (*Hypothesis 1*), as has been found in previous studies. Furthermore, consistent with the person-group (dis)similarity model, we expected that victims would be better adjusted in classrooms with high levels of victimization and bullying (*Hypotheses 2a and 2b*, respectively). When local norms favor disruptive and abusive behaviors, victims deviate less from what is normative in the classroom. In addition, we expected that the network position of victims and their bullies would further influence victims' adjustment. More specifically, we investigated the dispersal of bullying

and victimization in classrooms by examining the centralization of victimization and bullying in the classroom.

We first examined the effect of the presence of other victims in the classroom (Nishina and Juvonen, 2005). With few other victims, it is difficult to perceive victimization as a common event ("happens also to others"). When victimization is a unique plight, victims are more likely to attribute the blame for victimization to the self: "It must be me". We addressed this by investigating whether the classroom centralization of victimization moderated the association between victimization and psychological adjustment. We expected that victims in classrooms with high centralization of victimization would be more psychologically maladjusted (*Hypothesis 3*).

Next, we examined whether the negative consequence of victimization on psychological adjustment was tempered in classrooms with highly specific bullies, as this might lead to more external attributions by victims. We addressed this by investigating whether the classroom centralization of bullying moderated the association between victimization and psychological adjustment. In classrooms with high centralization of bullying, bullies are specific and nominated as tormentors by many classmates. Victims can make (and share with other victims) the external attribution: "It could be them". Thus, we hypothesized that being victimized in classrooms with high centralization of bullying would lead to less psychological maladjustment (*Hypothesis 4*).

3. Method

3.1. Participants

This study was part of a larger project aimed at evaluating the effectiveness of the *KiVa bullying intervention program* developed at the University of Turku, Finland. The data used in the present study are the pre-test data from the first phase of evaluation, collected in May 2007. Schools participating in this first phase ($N = 78$) represent all five provinces in mainland Finland, involving 429 classrooms and a total of 8248 students in grades 3–5 (in May, at the end of the school year, mean ages are 10–12). To recruit children from this target sample, guardians were sent information letters including a consent form. A total of 7564 students (91.7% of the target sample) received active consent to participate, and 7312 students (88.7% of the target sample) from 408 classrooms in 77 schools responded to the questionnaire. Of the respondents, 50.3% were girls and most students were native Finns (i.e., Caucasian), the proportion of immigrants being 2.4%. Sociometric peer nominations were presented only in classrooms with at least seven students; therefore, all classes below this limit were excluded from this study. Missing data at the individual scale level for children who actively participated in the study were handled using imputation with the MICE method of multivariate imputation (Royston, 2004). The portion of missing data was less than 11% for all variables. Missing sociometric nominations were not imputed but regarded as absent, and classroom network scores were calculated using the information obtained from children who participated in the study. As a result of the imputations, we were able to use the data of 7192 primary school children from 376 classrooms in 77 schools.

3.2. Procedure

Students filled out Internet-based questionnaires in the schools' computer labs during regular school hours. The process was administered by the teachers, who were supplied with detailed instructions concerning the procedure about 2 weeks prior to the data collection. In addition, the teachers had the possibility of getting support through phone or e-mail prior to and during the data collection. The teachers received individual passwords for all the

students who had obtained parental permission to participate in the study. They distributed the passwords to the students, who used them to log in to the questionnaire. The order of questions, individual items, and scales used in this study were randomized so that the order of presentation of the questions would not have any systematic effect on the results. The students were assured that their answers would remain strictly confidential and not be revealed to teachers or parents.

The term *bullying* was defined to the students in the way formulated in Olweus' Bully/Victim questionnaire (Olweus, 1996). Several examples covering different forms of bullying were given, followed by an explanation emphasizing the intentional and repetitive nature of bullying and the power imbalance: "We call it bullying when it happens repeatedly, and it is difficult for victimized students to defend themselves. We also call it bullying when students are teased in a mean and hurtful way. But we do not call it bullying when the teasing is done in a friendly and playful way. It is also not bullying when two students of about equal strength or power argue or fight". Teachers read the definition out loud while the students could read the same definition from their computer screens. Additionally, to remind the students of the meaning of the term bullying, a shortened version of the definition appeared on the upper part of the computer screen when they responded to any bullying-related question.

3.3. Dependent variables: self-reported psychological adjustment

3.3.1. Depression

We used a 7-item scale, derived from the Beck Depression Inventory (Beck et al., 1961), to measure children's depression. Participants responded on a 5-point Likert-type scale to items such as "how do you feel your life has been going?" (0 = *happily*, 4 = *unhappily*) and "how do you see your future?" (0 = *optimistically*, 4 = *desperately*). The scores for the 7 items formed a reliable scale and were averaged (Cronbach's $\alpha = 0.86$).

3.3.2. Self-esteem

We used a 10-item scale to measure children's self-esteem. Items were derived from the Rosenberg self-esteem scale (Rosenberg, 1965), slightly adapted in that children were instructed to "report the way you feel about yourself when around peers", following Harter et al. (1998; see also Salmivalli and Isaacs, 2005; Salmivalli et al., 2005). Participants responded on a 5-point Likert-type (0 = *not true at all*, 4 = *exactly true*) scale to items such as "I feel that I have a number of good qualities" and "I feel that I am a person of worth, at least on an equal plane with others". The scores for the 10 items formed a reliable scale and were averaged (Cronbach's $\alpha = 0.81$).

3.4. Independent variables describing individuals

3.4.1. Victimization

Self-reported victimization was measured using the Olweus (1996) Bully/Victim questionnaire. Children were presented with one global item ("How often have you been bullied at school during the past couple of months?") and 10 specific items concerning several forms of bullying. For the present study, we used the global item and 6 specific items concerning physical, verbal (2 items), relational (2 items), and material (i.e., taking or breaking others' property) victimization. We did not use items on racist, sexual, and cyber bullying, because these might not be applicable to all children. Children answered on a five-point scale (0 = *not at all*, 2 = *two or three times a month*, 4 = *several times a week*). Altogether, the scores on these 7 items formed a reliable scale and were averaged (Cronbach's $\alpha = 0.82$).

3.4.2. Sex and age

Sex was dummy coded, with boys coded as 1 and girls coded as 0. For age, students provided their date of birth. This was recoded with respect to the time of the data collection to obtain students' ages in years and months. The average age of the participants was 10.99 ($SD = 1.10$).

3.5. Independent variables describing classroom characteristics

3.5.1. Classroom average of victimization and bullying

For the classroom average of victimization we used peer nominations to identify which classmates children perceived as victims. We did not use dyadic nominations where bullies nominate their victims (e.g., "Who do you bully?"), because we could not rely on bullies' openness. Children are more reluctant to self-report bullying than victimization (e.g., Solberg and Olweus, 2003). Only self-reported bullies were asked to provide dyadic bullying nominations, and the few children who admitted to bullying classmates were reluctant to nominate their targets. For the peer nominations, children were presented with a roster containing the names of all their classmates and asked to nominate (unlimited) the classmates who were physically ("is pushed and hit"), verbally ("is called nasty names or made fun of"), and/or relationally ("other kids spread nasty rumors about") victimized (same-sex as well as cross-sex nominations were allowed). The 3 items formed a reliable scale (Cronbach's $\alpha = 0.84$). We used the 3 items for peer-reported victimization and transformed them to proportion scores (dividing the number of received nominations by the number of nominating classmates) to account for differences in classroom sizes. These 3 items were averaged per child and then averaged for each classroom to have an indication of the classroom level of victimization.

The classroom average of bullying was calculated as the mean number of nominations by victims (the outdegree) for the question "By which classmates are you victimized?". If children indicated on any of the eleven Olweus bully/victim items that they were victimized at least two or three times a month (the cutoff point of 2, Solberg and Olweus, 2003), they were first asked whether they were bullied by classmates or pupils from other classrooms. If they confirmed that they were bullied by classmates, they were presented with a roster with the names of all their classmates, and asked "By which classmates are you victimized?" (see also Veenstra et al., 2007). Unlimited same-sex as well as cross-sex nominations were allowed. The higher the average score for given nominations, the higher the level of bullying in a classroom.

Although classroom average of victimization and bullying are overlapping constructs, we computed two separate classroom average scores (one for victimization and one for bullying) in order to relate them to classroom variances of victimization and bullying nominations (i.e., centralization measures, see below). We aimed to examine the effects of classroom centralization of victimization and bullying while controlling for the classroom average of the same construct. These averages and variances should be constructed from the same peer/dyadic nominations.

3.5.2. Classroom centralization of victimization and bullying

To calculate the classroom centralization of victimization and bullying, we used the normalized degree variance (Snijders, 1981; applied by, e.g., Van den Oord and Van Rossem, 2002). The degree variance is a measure for the heterogeneity of actors and was used in the present study to reflect one aspect of the classroom social networks of victimization and bullying that contributes to the visibility of students. We used the indegree variances of the peer nominations for victimization and the aggregated dyadic victimization nominations to measure the classroom centralization of victimization and bullying, respectively. This variance was normalized to give a zero mean and unit variance under a stochastic null model of

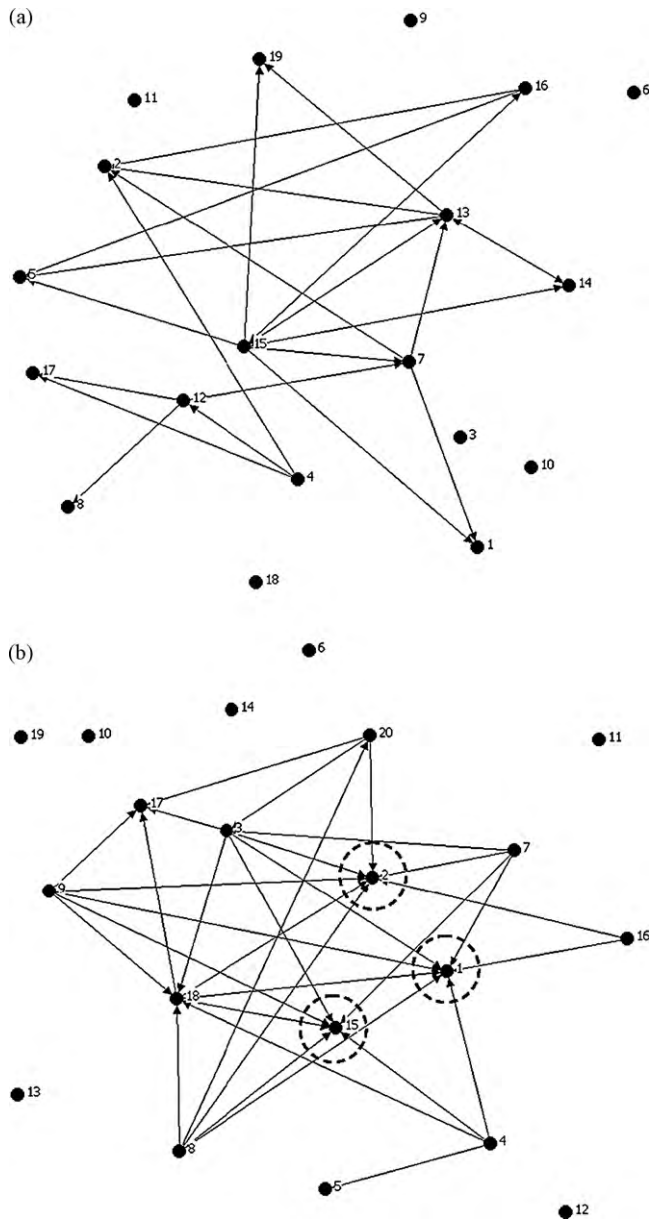


Fig. 1. (a and b) “By which classmates are you victimized?”: graphical presentation of bullying networks of two classrooms with (a) a low classroom centralization of bullying with many children nominated for bullying (density: 7.6%) and (b) a high classroom centralization of bullying where three children were nominated by many classmates for bullying and thus identified as specific bullies (density: 8.4%).

a random network with the observed number of children and nominations (Snijders, 1981). The larger the value obtained, the larger the differences in degrees and, thus, the more central the classroom for victimization and bullying.

To illustrate the meaning of central victimization and bullying classrooms, we provide sample networks of bullying nominations in two classrooms. Fig. 1a and b shows the bullying nominations for two classrooms. The density of the bullying nominations in both classrooms is quite high—their densities are in the upper 10% of the distribution of classroom densities (7.6% and 8.4%, respectively). Given the number of students and nominations, the first classroom has a low classroom centralization of bullying (*normalized centralization* = 1.04), whereas in the second classroom the classroom centralization of bullying is high (*normalized centralization* = 10.65). Although there is bullying in the classroom represented in Fig. 1a, few children in this classroom are identified as specific bullies, that

is, nominated by many classmates for bullying. In the classroom depicted in Fig. 1b, there are three specific bullies (two children are nominated by seven classmates; one child is nominated by six classmates). Therefore, this classroom scores high on classroom centralization of bullying.

4. Results

4.1. Analytical strategy

To answer the research questions, we performed multivariate multilevel regression analysis using MLwiN 2.02 (Rasbash et al., 2000). The data used in this study were nested: individuals in classrooms (cf. Snijders and Bosker, 1999), violating the assumption of independent observations. Multilevel analysis takes into account the nested structure of the data, enabling us to test the specific questions about the individual in the classroom context. We purposely ignored the third possible level of observation, the school, as there was little variation at the school level in psychological adjustment (0.9% for depression and 0.8% for self-esteem).

In the analyses, depression and self-esteem were the dependent variables at the individual level. For depression and self-esteem the variation at the classroom level was 4.6% and 4.9%, respectively. Because these adjustment variables are strongly correlated, $r(7192) = -0.55$, $p < 0.01$, we adopted a multivariate approach where both outcome variables (level 1) are nested within students (level 2) within classrooms (level 3). Some advantages of a multivariate approach (Snijders and Bosker, 1999) are that it can be examined to what extent correlations between the dependent variables depend on the individual or the group level, that tests of specific effects for outcome variables are more powerful (as seen in smaller standard errors), and that it can be tested whether the effect of a predictor on depression is larger than it is on self-esteem.

We tested a model in which the effects of individual victimization on depression and self-esteem were estimated while sex and age were controlled for. We included also the effects of classroom average and centralization of victimization and bullying, respectively, and their interactions with individual victimization. These cross-level interactions were specified by multiplying individual victimization by classroom effects. In all models, we used random intercepts and a random slope for individual victimization, with the other effects fixed. Deviance differences of the models can be used for testing model components. They have approximately a chi-square distribution with the number of degrees of freedom equal to the added parameters of the model. To facilitate the interpretation of the results of the multilevel regression analyses and to obtain standard errors of the same magnitude, all variables (except sex) were centered using z-standardization ($M = 0$, $SD = 1$) across the whole sample before they were entered into the multilevel model (cf. Aiken and West, 1991).

4.2. Descriptive statistics and correlations

Descriptive analyses (Table 1) showed that boys reported somewhat more victimization than girls, $t(7002) = 3.94$, $p < 0.01$, whereas girls were somewhat more depressed than boys, $t(7182) = 5.10$, $p < 0.01$. No sex differences were found for self-esteem or age. Furthermore, victimization correlated with both depression ($r = 0.36$) and self-esteem ($r = -0.32$) at the individual level. Depression and self-esteem were strongly correlated ($r = -0.55$). In the multivariate empty model the random classroom and student effects of depression and self-esteem were correlated (-0.72 and -0.53 , respectively). At the classroom level, the classroom average of victimization was correlated with the classroom average of bullying ($r = 0.53$). Furthermore, the classroom average of victimization was

Table 1
Descriptive statistics and correlations for the study variables^a.

Variables	Girls (N = 3638)		Boys (N = 3554)		Total		Correlations			
	M	SD	M	SD	M	SD	1.	2.	3.	4.
Individual level variables (N = 7192)										
1. Depression	0.63	0.63	0.56	0.60	0.59	0.61	–			
2. Self-esteem	2.72	0.72	2.75	0.70	2.74	0.71	–0.55*	–		
3. Victimization	0.33	0.49	0.38	0.57	0.35	0.53	0.36*	–0.32*	–	
4. Age	11.01	1.09	10.97	1.11	10.99	1.10	0.07*	0.03	–0.07*	–
Classroom level variables (N = 376)										
5. Average of victimization					0.07	0.04	–			
6. Average of bullying					0.62	0.49	0.53*	–		
7. Centralization of victimization					3.78	5.91	–0.05	0.07	–	
8. Centralization of bullying					1.27	2.46	0.30*	0.47*	0.09	–

^a These are the means and standard deviations before standardizing.
* $p < .01$.

uncorrelated with the classroom centralization of victimization, whereas the classroom average of bullying correlated with the classroom centralization of bullying ($r = 0.47$). The latter correlation is an indication that an increased level of classroom bullying reflects increased bullying by a few specific bullies.

4.3. Depression and self-esteem regressed on victimization

The results of the regression of depression and self-esteem on victimization are given in Table 2. It was found that boys and younger children were less depressed than girls and older children. Victimization was on average (across all classrooms) strongly

related to depression ($b = 0.378$). Moreover, this association varied across classrooms, given its significant random slope. The 95% prediction interval for the random slope (before the classroom variables and their interactions were entered) ranged from -0.05 to 0.81 , indicating that victimization was mostly related positively to depression, but this effect was absent or even slightly reversed in some classrooms. Results for self-esteem were comparable. Boys had higher self-esteem than girls, and victimization was related to lower self-esteem across all classrooms ($b = -0.338$). As for depression, the association between victimization and self-esteem varied across classrooms, but never lost its negative association (95% prediction interval: -0.63 to -0.04). Victimization was more strongly

Table 2
Results of multivariate multilevel regression analysis of classroom-level effects of victimization and bullying, and their interaction with individual victimization on depression and self-esteem (N = 7192).

	Depression		Self-esteem		Covariance	
	Parameter estimate	Self-esteem	Parameter estimate	Self-esteem		
Fixed effects						
Intercept	0.086	0.017	–0.052	0.018		
Boy	–0.146**	0.022	0.068**	0.022		
Age	0.069**	0.012	0.018	0.013		
Victimization	0.378**	0.017	–0.338**	0.015		
Classroom average victimization	0.041**	0.016	–0.033*	0.017		
Classroom average bullying	0.052**	0.017	–0.062**	0.018		
Classroom Centralization victimization	0.040**	0.013	–0.030*	0.014		
Classroom Centralization bullying	–0.038*	0.015	0.038*	0.016		
Interaction with victimization						
Classroom average victimization	–0.014	0.016	0.026*	0.013		
Classroom average bullying	–0.015	0.020	0.016	0.017		
Classroom Centralization victimization	0.034*	0.017	–0.016	0.014		
Classroom Centralization bullying	–0.015	0.017	0.010	0.014		
Random effects						
	Variance component	Self-esteem	Variance component	Self-esteem	Variance component	Self-esteem
Classroom variances						
Intercept	0.019**	0.005	0.023**	0.005		
Slope victimization	0.045**	0.007	0.021**	0.005		
Covariance (intercept, slope)	0.020**	0.004	–0.002	0.004		
Classroom covariances						
Intercept depression, Intercept self-esteem					–0.014**	0.004
Slope victimization–depression, slope victimization–self-esteem					–0.025**	0.005
Intercept depression, slope victimization–self-esteem					–0.008**	0.004
Intercept self-esteem, slope victimization–depression					–0.002	0.004
Individual variances						
	0.803**	0.014	0.846**	0.015		
Covariance intercept depression–self-esteem					–0.382**	0.012
Deviance						
Deviance difference						
					36823	
					$\chi^2 (df = 29) = 1444^{**}$	

Note: Decrease in deviance is based on a comparison with the empty model, which had classroom variances of 0.046 and 0.049 (SE = 0.007) for depression and self-esteem, individual variances of 0.963 (SE = 0.016) for depression and 0.950 (SE = 0.016) for self-esteem, and covariances of -0.034 (SE = 0.006) and -0.505 (SE = 0.013) at the classroom and individual level, respectively. All variables (except sex) were standardized.

* $p < 0.05$.
** $p < 0.01$.

related to depression than to self-esteem, $\chi^2(1, N=7192)=7.43$, $p<0.01$. To test the association between victimization and depression as well as self-esteem in different contexts, we included classroom-level effects of victimization and bullying and their interaction with individual victimization.

4.4. Classroom context of victimization and bullying

The classroom average of victimization was positively related to depression, and negatively related to self-esteem ($bs=0.041$ and -0.033 , respectively). The classroom average of victimization also moderated the relation between victimization and self-esteem, such that victims had higher self-esteem in classrooms with high levels of victimization ($b=0.026$). Moreover, the main effect of the classroom centralization of victimization was positively related to depression and negatively related to self-esteem ($bs=0.040$ and -0.030 , respectively): children were on average more depressed and had lower self-esteem in classrooms with specific victims. In addition, for depression, individual victimization interacted significantly with the classroom centralization of victimization ($b=0.034$). This means that victims were on average more depressed in classrooms with high centralization of victimization; they were specific victims. Although this effect was in the same direction for self-esteem (victims tended to have lower self-esteem when they were specific victims), it did not reach significance.

The classroom average of bullying was positively related to depression and negatively related to self-esteem ($bs=0.052$ and -0.062 , respectively). The classroom average of bullying further tended to moderate the relation between victimization and depression and self-esteem, such that victims were less depressed and had higher self-esteem in classrooms with high levels of bullying. Although these interaction effects were in the expected direction, they failed to reach significance. The classroom centralization of bullying was significantly related to depression ($b=-0.038$) and self-esteem ($b=0.038$): children were overall less depressed and had higher self-esteem in classrooms with specific bullies. Moreover, the cross-level interactions suggested that the association between victimization and depression was weaker in classrooms with high centralization of bullying, and, in a similar way, that victimization was related less strongly to negative self-esteem in classrooms with a high centralization of bullying. However, neither of the two effects reached significance.

An indication of the explained variance of the full model as compared with the empty model can be calculated by taking the proportional reduction of the prediction error. The explained variance at the individual level was 18.5% for depression and 13.2% for self-esteem (effect sizes 0.23 and 0.15, respectively). With an average classroom size of 20.9 students, the models accounted for 37.6% and 32.9% of the classroom variances in depression and self-esteem, respectively. Addition of the classroom variables and their interactions with individual victimization resulted in a 95% prediction interval of the random slope of victimization on depression of -0.04 to 0.79 , and a 95% prediction interval of the slope of victimization on self-esteem of -0.62 to -0.05 . These quite large intervals suggest the existence of other factors that account for the remaining classroom variability of the complex relation of victimization with depression and self-esteem.

5. Discussion

The starting point for this study was the finding that bullying occurs in a social context and that individual outcomes might depend on the interaction between the individual and the social context. We argued that the position of bullies and victims in the classroom would be related to victims' adjustment. We tested this

by examining the moderating effects of the classroom social network position of bullies and victims on the association between victimization and psychological adjustment. The results suggest that victims' adjustment is indeed formed in interaction with the classroom context.

In line with previous studies (see Hawker and Boulton, 2000), we found that victims were more depressed and had lower self-esteem than non-victimized children. However, we also found that these associations varied across classrooms and were stronger in classrooms that were high in centralization of victimization. Victims were significantly more depressed in classrooms with specific victims. Classrooms with high centralization of victimization are characterized by few victims who are perceived as victims by many classmates. These victims have a social misfit status in the classroom and may be more likely to perceive the reason for their victimization as internal, which is related to maladjustment (Graham and Juvonen, 1998, 2001; Weiner, 1986).

For victimization, we also found support for the person-group (dis)similarity model (e.g., Sentse et al., 2007; Wright et al., 1986). Victims were better adjusted in classrooms with high levels of victimization. In those circumstances, victims perceive that there are peers with whom they can share their plight. It has also been found in daily report studies that students who are treated negatively by peers show fewer negative self-perceptions when they witness on the same day that others are also victimized (Nishina and Juvonen, 2005). In those cases peer maltreatment is perceived as common, which lessens its personal nature. The interaction of individual victimization with classroom centralization of victimization adds to our understanding of victims' adjustment, over and above previous findings that individual victimization in interaction with the classroom average level of victimization influences victims' adjustment.

Although we had made no a priori predictions about the consequences of the classroom centralization of victimization for the adjustment of non-victims, we found that classroom centralization of victimization was associated with individual depression and self-esteem regardless of victimization experiences. This main effect suggests that all children were on average more depressed and had lower self-esteem in classrooms where some classmates were perceived as victims by many peers. Children can feel stressed, anxious, and uncomfortable when they are in classrooms with clearly visible victims. It is possible that peers feel guilty because, despite their anti-bullying attitudes (e.g., Boulton et al., 2002; Rigby, 2005), children rarely intervene or defend their victimized peers (Salmivalli et al., 1996, 1998; Salmivalli and Voeten, 2004). Observing victimization might elicit the need to intervene on behalf of the victim but, as a consequence of lacking strategies to intervene or concern about becoming the next victim, children often do nothing to protect classmates. This might influence their self-esteem as well as their level of depression.

When investigating the effects of being victimized in a classroom with specific bullies, we found that victims were relatively better adjusted when the bullies in the classroom were clearly visible, and harassing many classmates. In such a context, victimized children can attribute the blame partly to their bullies, who seem to have a disruptive nature as they are tormenting many classmates. Blaming an external cause alleviates the distress related to victimization. However, these moderating effects of the classroom centralization of bullying were in the same direction as the moderating effects of the classroom average of bullying. This suggests that a high level of bullying in a classroom often coincides with a high centralization of bullying. It is likely that increased levels of bullying in classrooms can be related to increased levels of bullying by a few individuals, rather than moderate levels of bullying by many children.

We also found a main effect of the classroom centralization of bullying on depression and self-esteem, which indicates that all

children are somewhat less depressed and have somewhat higher self-esteem when bullying is carried out by few individuals. The main effect of the classroom centralization of bullying, however, for both depression and self-esteem, was somewhat smaller than the main effect of the classroom average of bullying. This suggests that increased classroom levels of bullying increase children's maladjustment, but witnessing or experiencing bullying has less severe consequences when it comes from few bullies, making it possible for children to put the blame on those individuals.

The overall main effects of the classroom average and centralization of victimization and bullying were small in comparison with the relatively large individual effect of victimization on depression and self-esteem, as were the moderating effects of the classroom context on the association of victimization with the two adjustment variables. The effect sizes were small and the effects did not have an influence larger than 6.2% of a standard deviation of depression or self-esteem. This can also be seen in the unexplained part of the random slope of victimization that suggests that other factors (on the individual as well as classroom level) account for the differences in the consequences of victimization across classrooms. This suggests that the presence of other victims in the classroom or being able to make an external attribution takes the sharp edges off the negative consequences of victimization, though being victimized in those relatively favorable contexts still damages children's adjustment significantly.

6. Limitations and strengths

This study had some limitations. First, the data used were cross-sectional, so it was not possible to make causal conclusions. While it seems plausible that victimization leads to psychological maladjustment, it may be possible to argue for a reverse pattern: poor adjustment leads to victimization. Even the moderating effect of the classroom position of victims could be applied to this reverse pattern, such that children who are psychologically vulnerable and do not fit in the peer group are more at risk of becoming specific victims (cf. Juvonen and Gross, 2005). This could be seen as a reinforcing process, where poor adjustment, lack of fit with the group, rejection, and victimization all enhance each other, such that it is hard for victimized students to return to the larger peer group once they have deviated from what is considered to be appropriate.

Second, the effect of the network position of bullies and victims on the association between victimization and adjustment can be partly explained by attributional mechanisms. Whereas the results were in the expected direction, suggesting that internal self-blaming was more deleterious for victim's adjustment than making an external attribution, we did not test these attributional mechanisms directly by asking victims about their thoughts and feelings about victimization. Therefore, we can only state that we indirectly tested attributional theory as an explanation for the different associations between victimization and adjustment across diverse social contexts. In future studies it could be examined whether victims really are more likely to attribute the blame for victimization to internal or external factors when they are in classrooms with high centralization of victimization or bullying, respectively.

Third, although we aimed to capture the social network position of bullies and victims, we decided not to use the social network ties from the bullies' perspective (as done by Veenstra et al., 2007). It appeared that few self-reported bullies in our sample were willing to provide information about who they victimized, and as a result, we had a low incidence of social network ties for the question: "Who do you bully?" The reason for this might be that bullies were only allowed to nominate classmates as their victims if they indicated in the Olweus Bully/Victim Questionnaire that they bullied classmates two or three times a month or more often. Few bullies indicated that they harassed their classmates with that frequency.

Therefore, we used general peer nominations for the classroom measures of victimization instead of preferred social network nominations for victimization. This might lead to some underestimation of perceived victimization, because we might have captured only forms of bullying that are visible in the classroom (cf. Crick and Grotpeter, 1996). Another problem that arises with general peer nominations is that it is possible that a victim is only harassed by one bully, and yet observed by all classmates. For the classroom centralization of bullying, however, we were able to use the social network information and identified thereby precisely who the victims perceived as their bullies.

The findings of this study have some implications for anti-bullying interventions. It might be important to know whether a child is the only victim in the classroom, possibly targeted by many classmates, or among several victims. The results of the study also imply that the evaluation of anti-bullying interventions should take into account how interventions influence the position of bullies and victims in the classroom. Although it sounds counterintuitive, it is possible that a reduction of victimization in the classroom would not be beneficial for all victims. For example, if an anti-bullying intervention reduces the number of victims in a classroom from four to one, the remaining victim might be worse off because there are fewer or perhaps no others with whom to share his or her plight. Therefore, anti-bullying interventions should take into consideration the classroom dispersal of victimization. While classroom average scores for victimization may be comparable, victims in certain classrooms might be in a poorer position when involved in many victimization relations. In addition, our findings imply that structural characteristics of bullying and victimization in the classroom can be important contextual factors when examining the consequences of victimization. The present findings reveal that, despite the strong association between victimization and maladjustment, the consequences of victimization differ across classroom contexts.

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