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Running head: BULLY-VICTIM DYADS

The dyadic matches of bullying and victimization: Testing a dual perspective theory

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Abstract

Many researchers have argued for a conceptualization of the dyad as the unit of analysis to understand relationships among classmates, but there has been little response so far. We identified the characteristics of bully-victim matches using nominations of *who bullies who* and *who is victimized by whom* and analyzing binary network data with nominator, target, and dyadic covariates, and random effects (p_2 model). We viewed bullying and victimization separately from the point of view of the bully and the victim using a goal-framing approach to predict the characteristics of the match. The two perspectives were highly complementary. The probability of a bully-victim relationship is higher if the bully is more dominant than the victim, and if the victim is more vulnerable than the bully and more rejected by the class. In a bully-victim dyad, boys were more often the bullies. We did not find a sex effect for victimization. Liking reduced and disliking increased the probability of a bully-victim relationship.

KEY WORDS: bullying, peer relations, social networks, victimization, elementary school students

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Introduction

Bullying and victimization have been important subjects in developmental studies. However, there is still a lack of dyadic studies of bullying and victimization. Despite recognition that bullying occurs disproportionately in specific dyads (Coie et al., 1999; Olweus, 1978), not much is known about the specific matches. Children are routinely classified as bullies and victims, but rarely is it known which bullies harass which victims (Rodkin & Berger, 2005). Some children have a tendency to be involved in bullying, as a bully, a victim, or a bully-victim (Schwartz, 2000), but the question is, with whom? Matches come from two sides. Do self-proclaimed bullies have typical kinds of victims? Do self-proclaimed victims have typical kinds of persons who they identify as bullies?

To answer the above questions, it is necessary to turn to network analysis, and so far use of this approach has been scarce in the study of bullying and victimization. Once bullying and victimization are considered from a dyadic match point of view, another possibility arises. It is possible that the process that leads adolescents to bully certain others differs from the process that leads victims to feel bullied. The subjective experience of bullying and of being bullied may not match. This possibility suggests use of a dual perspective approach that looks at bullying from the points of view of both the self-proclaimed bully and the self-proclaimed victim. This may have an added advantage of contributing to a better understanding of the associations of bullying with other peer adversities, such as rejection and isolation (see also: Salmivalli & Isaacs, 2005). The main goal of the current study was to formulate and test such a dual perspective theory of bullying and victimization and test it using network analyses that identify dyadic matches, i.e., the covariates of the nominator (i.e., the informer) and the target (i.e., the person nominated as bully or victim).

With our dyadic match approach, it was not our aim to deny the importance of the group as a

context of bullying (Whitney & Smith, 1993; Salmivalli, Lagerspetz, Björkqvist, Osterman, & Kaukiainen, 1996; Atlas & Pepler, 1998), but we believe that, for an understanding of bully-victim relations in a peer context, much can be learned from dyadic matches.

A Dual Perspective Theory of Bullying

In order to get a better grip on the *dyadic* nature of the bully-victim relationship, it seems plausible to consider the possibility that the subjective experiences of bullying and being bullied do not need to match. Teasers and their targets often have different intentions and perceptions of an act (Shapiro, Baumeister, & Kessler, 1991; Kowalski, 2000). When bullying is viewed in terms of dyadic matches, two kinds of dyadic information are obtained: from the self-proclaimed bully ('Who do you bully?') and from the self-proclaimed victim ('By whom are you bullied?'). In both cases, the goals pursued should be important for explaining the specific characteristics of a 'match'.

To predict who bullies who and why, we used a goal-framing approach (Lindenberg, 2006), in which it is not only the substantive content of a goal that is crucial for action, but also that an activated goal will make the person sensitive to opportunities for its realization (Klinger, 1975). Conversely, the goal may become activated merely by exposure to an opportunity to realize it (Shah & Kruglanski, 2003). In the literature on victimization, this insight has long been used (see, for example, Miethe & McDowall, 1993). The stronger the goal, the more likely that it will create this double sensitivity: a keen awareness of opportunities to realize the activated goal, and a readiness to have the goal activated by detecting opportunities to realize it. What kinds of characteristics do potential (self-proclaimed) bullies have and what characteristics are they sensitive to? What characteristics do (self-proclaimed) victims have and what do they particularly focus on? Answers to these questions yielded testable hypotheses about bully-victim matches from the points of view of both the self-proclaimed bully and the self-proclaimed victim. The hypotheses were derived from assumptions about goals of potential bullies and victims that relate to bullying and being bullied, even if these goals and their consequences for sensitivities were not *directly* assessed.

The bullying relationship has been called asymmetric by definition (Olweus, 1993). Olweus stated that the term bullying should not be used when two children of the same strength are fighting

or quarrelling. It is likely that for youth, the term 'bullying' also implies a power imbalance, referring to status goals for potential bullies and protective goals for potential victims (Salmivalli, 2001). We focused on the points of view of the self-proclaimed bully and the self-proclaimed victim. We purposely did not consider the category of children nominated as both bully and victim.

The point of view of the bully Hawley (1999) posits that children bully weaker children to gain, among other things, higher status among peers. In addition, status striving has been identified as one of the ubiquitous human goals (Huberman, Loch, & Önçüler, 2004; Lindenberg, 2001). It seems warranted, therefore, to take striving to improve one's status as the major substantive goal for the self-proclaimed bully. There are two aspects to the status goal (see also: Whiting & Edwards, 1973). On the one hand, there is a need for domination, and on the other hand, there is a need to get social approval for being special in comparison to others. Research by Vailliancourt, Hymel, and McDougall (2003) has shown that both power differences (referring to children who have power over others, who can pressure others into doing things) and status differences (referring to children who are most popular, most liked, and least disliked in a school grade) are key aspects of bullying. If the domination component is relatively strong (in comparison to the social approval component), then it is likely that children bully to experience and show their domination over other children.

A number of points follow from the goal-framing approach for the characteristics of the self-proclaimed bully and the characteristics of the victim they are typically matched with. First, children with a high score on dominant aggressiveness are more likely to have the goal to be dominant as a focal goal than children with a low score (compare Hawley, 2003; Rodkin, Farmer, Pearl, & Van Acker, 2000; LaFontana & Cillessen, 2002). Because boys are generally more aggressive than girls, self-proclaimed bullies are more likely to be boys than girls, and they are likely to be high on dominant aggressiveness. This is also supported by the finding that bully-victim relationships are dyads in which boys are usually the aggressors and boys or girls the victims (Espelage, Mebane, & Adams, 2004; Hanish & Guerra, 2004; Klicpera & Gasteiger Klicpera, 1996; Pellegrini, Bartini, & Brooks, 1999; Schwartz, 2000; Vermande, Van den Oord, Goudena, & Rispens, 2000; Salmivalli, 2001). Second, potential bullies do not belong to the rejected group and are even accepted to some

degree because social approval is part of their status striving. Third, potential bullies have a keen eye for victims that help them realize their dual status goals. This means that potential bullies are likely to spot children who are vulnerable, that is, who offer a high probability of letting themselves be dominated. Because bullies are also not likely to trade social approval for domination if both can be had simultaneously (at times, they may even get social approval from bystanders (O'Connell, Pepler, & Craig, 1999), we expected them to be keenly aware of other children's lack of social support (i.e., their being rejected by other children). In short, having the goals to be dominant and to get social approval, the potential bully spots who is vulnerable and at the same time is not supported by others. Thus, from the point of view of the bully, our *bully-victim profile hypotheses* were the following: self-proclaimed bullies are likely to be (a) boys, (b) dominantly aggressive, and (c) accepted; and they are matched with victims that are likely to be (d) vulnerable, (e) rejected, and (f) not aggressive. Notice that the power imbalance does not apply to 'being accepted' because that has to do with the bully's goal to get social approval.

The point of view of the victim The goals of the victims are likely to be different. Children who feel vulnerable (i.e., feel easily hurt by others, can't make others listen to them, feel isolated) are more likely than children who feel less vulnerable to have the goal to avoid being hurt as a focal goal (compare Juvonen & Graham, 2001; Perry, Williard, & Perry, 1990; Olweus, 1978). Such children are likely to be aware of other children who are more aggressive and less vulnerable than they are and who are, therefore, a potential threat. They may view interpersonal situations as stressful and anxiety producing. Avoidance evoked by fear or wariness may be the result (Burgess, Wojslawowicz, Rubin, Rose-Krasnor, & Booth-Laforce, 2006). This may even signal their vulnerability to those who are at least moderately interested in domination (Boldizar, Perry, & Perry, 1989; Salmivalli & Isaacs, 2005), thereby triggering dominant behavior also in classmates who would otherwise not show it. Because of the 'low power' situation of self-proclaimed victims, it is likely that status goals are more or less inhibited, which makes the goal not to get hurt even more prominent (Keltner, Gruenfeld, & Anderson, 2003). Finally, because boys are generally more dominantly aggressive than girls, self-proclaimed victims can be expected mostly to be matched to male bullies. In sum, from the point of

view of the victim, our *victim-bully profile hypotheses* were the following: self-proclaimed victims are likely to be (a) vulnerable, (b) rejected, and (c) not aggressive; and they are matched with bullies who are likely to be (d) boys, (e) dominantly aggressive, and (f) not vulnerable.

As can be seen, the hypotheses about the profiles of bully-victim matches are almost identical from both points of view. Only 'being accepted' is not part of the match but part of the predicted characteristics of the self-proclaimed bully. If 'being accepted' also showed up in the profile of the bully as identified by the self-proclaimed victim, this would provide extra evidence that the perspective of the self-proclaimed bully and that of the self-proclaimed victim match.

Relational hypotheses (from both points of view)

It has been found that bullying is more often directed toward children of the same sex than toward children of the opposite sex (Pellegrini & Long, 2002). Rodkin and Berger (2005) made clear that boys who harass boys receive even more approval or prestige than boys that harass girls. Together with the assumption that boys are more often self-proclaimed bullies than girls (see above), this led us to expect that boy-boy bully-victim relationships would be more likely than girl-girl or mixed-sex pairs of actors.

With regard to *liking and disliking*, we expected that liking a person would reduce both an existing desire to dominate this person and the likelihood of reporting that one is being bullied by the liked person (Keltner, Young, Heerey, Oemig, & Monarch, 1998). Conversely, we expected that disliking a person would increase both the existing desire to dominate this person and the likelihood of reporting that one is being bullied by the disliked person (see also Peets, Hodges, & Salmivalli, 2006).

The Present Study

Survey instruments that are responsive to relational contexts have been considered important means of understanding bully-victim processes (Coie et al., 1999; Rodkin & Berger, 2005; Salmivalli, 2001). We adopted a new technique for examining the questions of *who bullies who* and *who is victimized by whom*. Bullying and victimization were assessed using peer nominations, in

which children nominated who they bullied and by whom they were bullied. We also adopted a new statistical model: the p_2 model (Van Duijn, Snijders, & Zijlstra, 2005; Zijlstra, Van Duijn, & Snijders, 2006), a model for the analysis of binary network data with nominator, target, and dyadic covariates, and random effects.

The participants were 918 Dutch preadolescents who took part in a sociometric data collection, a part of the TRacking Adolescents' Individual Lives Survey (TRAILS). TRAILS is a prospective cohort study of Dutch preadolescents who will be measured biennially until they are at least 25 years old.

Method

Sample

The present study was part of the first assessment wave of TRAILS, which ran from March 2001 to July 2002. TRAILS is designed to chart and explain the development of mental health and social development from preadolescence into adulthood. The TRAILS target sample consisted of pre-adolescents living in five municipalities in the north of the Netherlands, including both urban and rural areas (De Winter et al., 2005; Oldehinkel, Hartman, De Winter, Veenstra, & Ormel, 2004). Of the children approached for enrollment in the study (selected by the municipalities and attending a school that was willing to participate; $N = 3145$ children from 122 schools, response of schools 90.4 percent), 6.7 percent were excluded because of incapability or language problems. Of the remaining 2935 children, 76.0 percent were enrolled in the study, yielding $N = 2230$ (consent to participate: both child and parent agreed). No non-response bias was found in our study for the estimation of the prevalence rates of psychopathology, including antisocial behavior. Boys, children from lower social strata, and children with worse school performance were somewhat more likely to belong to the non-response group (De Winter et al., 2005).

Well-trained interviewers visited one of the parents (preferably the mother, 95.6 percent) at home to administer an interview covering a wide range of topics, including the child's developmental history and somatic health, parental psychopathology, and care utilization. The parent was also asked

to fill out a questionnaire. Children filled out questionnaires at school, in class, under the supervision of one or more TRAILS assistants. In addition, intelligence and a number of biological and neurocognitive parameters were assessed individually (also at school). Teachers were asked to fill out a brief questionnaire for all TRAILS children in their class. The measures that were used are described more extensively below.

Subsample with Peer and Teacher Information

We used a subsample of the TRAILS respondents for the analyses. Peer nominations, which were essential for our study, were only assessed in classes with at least ten TRAILS respondents. This restriction made the subsample less representative. Children in special education (5.6 percent of the sample), children in small schools (6.4 percent), and children who repeated (16.9 percent) or skipped a grade (2.2 percent) were excluded from the subsample. These children did not have many TRAILS classmates, because our sample is a birth cohort. Children with missing teacher data were also excluded. The remaining subsample of 918 children (mean age: 11.00, $SD = .48$; gender: 56.0 percent girls; ethnicity: 8.3 percent children who had at least one parent born in a non-western country; parent education: 32.5 percent of children had a father and 33.5 a mother with a low educational level, at maximum a certificate for a lower track of secondary education) differed from the other TRAILS respondents in several individual and psychosocial characteristics: they were more often girls, $\chi^2(1, N=2230) = 15.7, p < .01$; came on average from higher socio-economic strata, $t(2186) = 5.0, p < .01$; had lived more often with the same parents throughout their lives, $\chi^2(1, N=2230) = 14.1, p < .01$; had a higher level of academic performance, $t(1923) = 3.2, p < .01$; and were more prosocial, $t(1926) = 4.2, p < .01$; less aggressive, $t(1927) = -3.5, p < .01$; and less isolated, $t(1927) = -4.4, p < .01$. In sum, the findings can only be generalized to a population of preadolescents who attend regular elementary schools and did not repeat grades.

Measures

Bully-victim dyads The children received a list of all classmates and were asked to nominate them in a number of dimensions. They nominated their classmates on bullying and victimization,

among other things. The number of nominations they could make was unlimited, and the questions were asked at the dyadic level. Thus, we have bi-directional information on the relations of each pair of children in a class. Children were not required to nominate anyone. Note that there was no definition of bullying provided to the children, making it more likely that differences in perspectives between bully and victim (such as teasing for the perpetrator but bullying for the victim) would come to the fore.

Our information was based on two peer nomination items: 'Who do you bully?' and 'By whom are you bullied?' Children claimed more often to be a victim than a bully, $t(917)= 5.3$, $p < .01$. In the multilevel analyses, our measures can be seen as the aggregates of all the nominations a person gave to others (as nominator) or received from others (as target), and are for that reason potentially much more reliable and valid than a self-report (Newcomb, Bukowski, & Pattee, 1993; Cornell & Brockenbrough, 2004; Salmivalli, 2001).

Nominator and target covariates In close consultation with Masten, we adapted the Revised Class Play instrument (Masten, Morison, & Pellegrini, 1985). We used the Class Play instrument as a teacher instead of a peer assessment measure, and we used a five-point answer scale (rating each child on a range from not applicable to very clearly or frequently applicable). This resulted in reliable measures. *Dominant aggressiveness* (Aggressiveness / Disruptiveness) was measured using six items and had an internal consistency of .89. Sample items were 'I see the pupil as wanting to be dominant', as 'interrupting others', or as 'fighting'. *Vulnerability* (Isolation / Sensitivity) was measured using six items and had an internal consistency of .80. Sample items were 'I see this pupil as being easily hurt', as 'unable to make others listen', or as 'having difficulty making friends'.

The number of nominations children received individually from their classmates with regard to 'best friends' and 'dislike' was used to create measures of *peer acceptance* and *peer rejection,* and these measures were used as individual covariates. The measures were the aggregates of all the dyadic nominations a person received from others. After the numbers of nominations children received had been added up, percentages were calculated to take differences in the number of respondents per class into account, yielding scores from 0 to 1. Sex was also included as a covariate. Finally, we also took into account whether a child was a bully-victim: 92 of the 918 children

belonged to that category. Being a bully-victim was defined as being in the upper quartile for nominations for bullying as well as victimization (see also Veenstra et al., 2005).

Relationship covariates We took four network characteristics into account and examined whether bully-victim relationships would be more likely when the nominator disliked the target and less likely when the nominator liked (i.e., named as a best friend) the target. Furthermore, we included covariates to measure whether nominator and target had a different sex (mixed-sex) or were both boys.

Analysis

Our data had a three-level structure: networks from 54 school classes (level 3) with 918 individuals (level 2) and 13,606 dyadic relations (level 1). Our dependent variables were dyadic, as revealed by the questions 'who bullies who' and 'who is victimized by whom'. Our independent variables were at the individual level (nominator and target covariates), with 918 observations, and at the dyadic level (relationship covariates), with 13,606 observations. For the analysis of a network containing binary relationships, we used the p_2 model (Van Duijn et al., 2005). The p_2 model incorporates both the individual and the dyadic level, where the different dyads have different parameters depending on the actors i ('nominator') and j ('target') involved in the dyad. The p_2 model was developed to explain the relationships between actors in a network, using characteristics of both nominators, targets, and dyads (see also Baerveldt, Van Duijn, Vermeij, & Van Hemert, 2004). The p_2 model is an extension of the p_1 model (Holland & Leinhardt, 1981). It regards nominator and target effects not as statistical parameters but as latent (i.e., unobserved) random variables. These latent variables can be explained by nominator- and target-dependent variables. Dyad-dependent (relationship covariates) independent variables can also be included in the p_2 model. The p_2 model can be regarded as the logistic regression model for dyads and complements the well-known Social Relations Model (Snijders & Kenny, 1999; Kenny & La Voie, 1984), which is suited to continuous dyadic outcomes.

In the p_2 model, a positive effect of a certain individual or dyadic characteristic can always be interpreted as having a positive effect on the probability of a relationship. For instance, a positive

target effect of sex (where boys are coded as 1, girls as 0) implies that boys have a higher probability of 'receiving', i.e., being reported as a bully by others (either boys or girls). The multilevel version of the p_2 model that we used allowed us to analyze multiple networks simultaneously (Zijlstra et al., 2006). These p_2 analyses are time consuming. The estimation took about 60 hours per model.

Results

Table 1 shows the zero-order correlations for boys and girls. As can be seen, there is an imperfect match between saying one is a bully and being nominated as a bully (r=.21 for girls and r=.29 for boys). A similar effect can be observed for saying one is a victim and being nominated as a victim (r=.31 for girls and r=.20 for girls). This probably indicates that bullying establishes such a clear-cut relationship that it is consensually identified in most cases. A particular intended act of bullying may not have been interpreted as such or may have been dwarfed by a more aggressive act. Conversely, an act of teasing may erroneously have been interpreted as bullying. This makes correlational analysis less useful for the study of bully-victim matches and underlines the advantages of analyzing instead bully-victim matches from both points of view and using the multivariate p_2 model, including large numbers of relationships from which the matches can be extracted.

Outcomes for 'Who Bullies Who?' (Point of view of the bully)

The results of the multilevel p_2 model analysis with the question *who bullies who* as dependent dyadic variable are given in Table 2. The bully-victim profile hypotheses were that the self-proclaimed bullies were likely to be (a) boys, (b) dominantly aggressive, and (c) accepted; and they were matched with victims that were likely to be (d) vulnerable, (e) rejected, and (f) not aggressive. The data support these hypotheses. We found that being a boy was positively related to being a self-proclaimed bully in the dyad ($b = 1.21$, $p < .01$). A self-proclaimed bully is also likely to be dominantly aggressive ($b = .72$, $p < .01$) and fairly well accepted ($b = .23$, $p = .05$). The characteristics of the victim that is tied to a self-proclaimed bully are also as predicted: vulnerable ($b = .40$, $p < .01$), rejected ($b = .30$, $p < .01$), and low in dominant aggressiveness ($b = .03$, $p = .68$).

The *relational hypotheses* stated that that the probability of two children having a bully-victim relationship was (a) larger for boy-boy pairs than for mixed-sex or girl-girl pairs of actors, (b) larger when the nominator likes the target, and (c) smaller when the nominator dislikes the target. From Table 2, we see, contrary to our expectation, that the sex composition of the dyad (boy-boy, mixed-sex, or girl-girl) was unrelated to the probability of a bully-victim relationship occurring. The relational liking and disliking expectations were supported. When the nominator liked the target, it was quite unlikely that there would be a bully-victim relationship ($b = -.72$, $p < .01$), and when the target was disliked, the probability of such a relationship was much increased ($b = 1.53$, $p < .01$). Especially dislikes contribute to the likelihood that pupils will interpret their own acts as bullying.

Being a bully-victim was related to being a target ($b = 1.75$, $p < .01$) and was not related to being a nominator in a dyad. We discuss this finding in combination with the results of Table 3. Without this control variable, we found that aggressiveness was related not only to being a bully, but also, although much more weakly, to being a victim. This is consistent with the findings of earlier research by Vermande et al. (2000), who found that a so-called 'combined central victim/aggressor model' was the prevailing pattern of aggressive relationships within school classes.

The overall mean of this model is -6.76; see Table 2. For a dyad with zero scores on all covariate and random effects, this means that the odds of there being a dyad with a single bully-victim relation versus a dyad with no ties is .0012. The odds become -6.04 for girls with an aggressiveness score of one standard deviation above the mean. For aggressive boys (+1 SD), it becomes -4.83. This results in odds of .0024 for girls and .0080 for boys. Thus, the likelihood of a dyad occurring with a single bully-victim relation in comparison with a dyad with no ties is very small, but aggressiveness and being a boy have very large effects on it.

Outcomes for 'Who Is Victimized by Whom?' (Point of view of the victim)

The results of the multilevel p_2 model analysis with the question *who is victimized by whom* as dependent dyadic variable are given in Table 3. The bully-victim profile hypotheses were that self-proclaimed victims were likely to be (a) vulnerable, (b) rejected, and (c) not aggressive; and they were matched with bullies who were likely to be (d) boys, (e) dominantly aggressive, and (f) not

vulnerable. The data support these hypotheses. As predicted, the self-proclaimed victims are vulnerable ($b = .59$, $p < .01$), rejected ($b = .34$, $p < .01$), and low in dominant aggressiveness ($b = .16$, $p = .09$). The bullies to whom the self-proclaimed victims are tied are more likely to be boys ($b = 1.09$, $p < .01$), dominantly aggressive ($b = .60$, $p < .01$), and not vulnerable ($b = -.35$, $p < .01$). The bully is fairly well accepted ($b = .23$, $p = .01$). Acceptance was predicted not to follow from the goal of the self-proclaimed victim but to follow from the goal of the self-proclaimed bully. However, the scores match. This is an extra indication that the results for the two points of view dovetail quite well.

With regard to the *relational hypotheses,* we see from Table 3 that, again contrary to our expectation, bully-victim relationships were not more likely in boy-boy relationships and were less likely in mixed-sex relationships than in girl-girl relationships ($b = -.44$, $p = .04$). The relational liking and disliking expectations were again supported. Liking the target made reporting bullying less likely ($b = -.49$, $p < .01$), and disliking the target made it more likely ($b = 2.36$, $p < .01$). Again, disliking a person seemed to contribute much to the likelihood that pupils would consider themselves bullied by this person.

As in Table 2, we found that being a bully-victim was related to being a target ($b = 1.51$, $p < .01$) and only marginally related to being a nominator ($b = .57$, $p = .07$) in the dyad. Apparently, being a bully-victim is unrelated to being a self-proclaimed bully or a self-proclaimed victim, but it contributes considerably to the likelihood that others will report that such a pupil is a bully and a victim.

Lastly, we found in both analyses considerable random actor effects. The nominator variances were larger than the target variances, indicating that children differ to a large extent in their readiness to admit or in their perceptions that they are a bully (Table 2) or a victim (Table 3).

Further Examination of the Results

The model fit improved substantially from both perspectives: $\chi^2(16, N=918) = 810.1$, $p < .01$ for *who bullies who* and $\chi^2(16, N=918) = 1110.1$, $p < .01$ for *who is victimized by whom*. We also examined how the well-sampled parameters converged to a stable distribution by inspecting the trace plots (Zijlstra et al., 2006). All the estimates of the fixed parameters were stable. All random

parameters appeared to be stable, too, with as an exception the trace plot for the difference between school classes in the analysis of 'who bullies who'. This was the result of multicollinearity between the sex covariates.

Our findings were not affected by the number of children in a class that participated in our study. In post hoc analyses with 16 instead of 10 as the minimum number of respondents per class, we found similar results in the remaining 26 school classes.

We also checked whether our control for being a bully-victim was valid and ran analyses in which we excluded the 92 bully-victims. These analyses with 826 cases showed highly similar results.

Furthermore, we examined whether the effects of aggressiveness, vulnerability, acceptance, and rejection differed for boys and girls. We found no sex interaction effects.

Finally, we also examined the results for peer acceptance and peer rejection in analyses without the relationship covariates for likes and dislikes. The fit of these models was inferior to those in Tables 2 and 3. The results for peer acceptance remained the same. The effects of peer rejection were in the same direction but much stronger when the relationship covariates were omitted.

Discussion

Many researchers have argued for a conceptualization of the dyad as the unit of analysis to understand relationships among classmates (Pellegrini, 1998; Laursen, 2005; Little & Card, 2005; Coie et al., 1999; Pierce & Cohen, 1995), but there has been little response so far. A focus on peer dyads in terms of 'matches' of characteristics requires a shift to novel methods and data analytic techniques to accommodate this new conceptualization (Dodge, Price, Coie, & Christopoulos, 1990). Once this shift is made, it will also open the possibility of investigating differences or complementarity in perspective. In the current study, we investigated the characteristics of the match between self-proclaimed bullies and their nominated victims, and vice versa. We generated expectations about these matches from a goal-framing approach. From the point of view of the potential bully, we traced the likely characteristics that children with a dual status goal (domination

and social approval) have and those that they seek in their victims. From the point of view of the potential victim, we traced the likely characteristics that children with a goal to avoid harm have and those that they fear in a bully. Even though we did not assess these goals or their cognitive consequences directly, we were able to generate hypotheses about the characteristics of bully-victim matches from both perspectives. Because of their different goals in peer interaction, bullies and victims are sensitized to and aroused by different things. The self-proclaimed bullies are sensitive to and their goal is aroused by a person they can dominate (i.e., a person who is less aggressive and feels vulnerable) and who is rejected by others, so that the risk of social disapproval is low. The self-proclaimed victims are sensitive to and their goal is aroused by a person who they fear will harm them (i.e., a person who is much more aggressive and much less vulnerable). Being more dominantly aggressive than girls, boys were also expected to be more likely bullies (from both perspectives) than girls. The matches from both perspectives were expected to show considerable complementarity. We tested these expectations using a large data set. We used nominations of *who bullies who* and *who is victimized by whom,* and we analyzed binary network data with nominator, target, and dyadic covariates, and random effects. We controlled for children who were often nominated as both bullies and victims. The results strongly supported the expectations generated using the goal-framing approach.

We found that bullies have a dominance advantage over the children they victimize by being more dominantly aggressive than their victims.[1] These results were consistent with earlier results at the individual (Vaillancourt, Hymel, & McDougall, 2003) and at the dyadic level (Dodge et al., 1990). This fits with Dodge et al.'s (1990) suggestion that bullies value aggression as a means of obtaining a goal and may rely on this tactic more often than non-aggressors because experience has proved it to be successful. It also is in line with the findings of experimental studies showing that aggressive preadolescent boys do not feel bad when causing suffering in a victim, and in fact escalate attacks on victims in order to produce the signs of pain and submission that signal successful domination and control (Perry & Bussey, 1977; Perry & Perry, 1974).

We also found bullies to be accepted, which fits the prediction that they do not pick on targets when they risk getting rejected for doing so. In fact, as we expected, their targets are rejected children

whom one can bully with impunity. This last point is also consistent with earlier findings at the individual level (Boivin, Hymel, & Bukowski, 1995; Hodges, Boivin, Vitaro, & Bukowski, 1999). It fits into this picture that, also as expected, the victims were quite vulnerable, i.e., they were fearful and isolated. Other researchers have argued that aggregated preference-based measures of social status do not reveal bullies' status advantage over victims (Boulton, 1999; Olweus, 2001; Mouttapa, Valente, Gallaher, Rohrbach, & Unger, 2004). We now have more specific knowledge about the status relations. From the bully's perspective, the major power advantage is indeed not a status advantage in the sense of social approval, but one in the ability to dominate. The theory also specifies that the status difference with the victim based on the number of nominations received for liking and disliking (i.e., acceptance and rejection) is not a power difference. Rather, the victim's rejection is likely to be part of the bully's strategy not to lose (and maybe even to gain) social approval. This makes the bully's acceptance (if any) partially the result, not the cause of bullying. From the victim's perspective, subjective factors contributing to a feeling of vulnerability (and, therefore, to the importance of the goal to avoid getting hurt) are the most important. This includes the differential in aggressiveness and in vulnerability between victim and bully. This is also borne out by the results.

In a bully-victim dyad, boys were more often the bullies. We did not find a sex effect for victimization, confirming earlier research at the individual (Espelage et al., 2004; Hanish & Guerra, 2004; Pellegrini et al., 1999; Schwartz, 2000) and the dyadic level (Vermande et al., 2000). For the question 'who is victimized by whom', we found that a bully-victim relationship occurred less in mixed-sex dyads than in girl-girl dyads. Contrary to our expectations, we found no preponderance of boy-boy dyads.

That we found a higher percentage of self-proclaimed victims than self-proclaimed bullies seems to support our expectation that victims are likely to interpret behavior as bullying even though it may only have been intended as teasing. This view is strengthened by the fact that, as we have seen, affective relational reactions (especially negative ones) contribute considerably to the likelihood that a pupil will interpret another's acts as bullying. However, because we did not measure intentions, this conclusion must be taken with a grain of salt.

Others have shown that bully-victims represent a particularly high-risk group at elementary

school age and are at greater risk of future psychiatric problems (Kumpulainen & Rasanen, 2000). We found that this group (i.e., those more than casually nominated as both victim and bully) did not report their own bullying or victimization. Only their classmates nominated them often as bully and victim. This indicates that the interpretation of bullying differs largely between bully-victims and others. The bully-victims may have clear social skills deficits (Arsenio & Lemerise, 2001).

The dual perspective approach has a number of advantages. First, it enables identification of two different bully-victim matches: one generated from the point of view of the self-proclaimed bully, and one generated from the point of view of the self-proclaimed victim. These two perspectives were found to be quite complementary, which provides a basis for a theory-driven approach to bully-victim *relationships*, not just matches, in future research. Second, this complementarity opens perspectives for dealing with bullying. It suggests that interventions might profitably focus on the dyads and the extra role played by likes and dislikes, e.g., conflict resolution or initiation of conversation in cases of dislike. Discussion of this mechanism may even profitably be addressed to the whole group, as O'Connell et al. (1999) and Salmivalli (2001) argue. Then there are some things that can be done from the point of view of the self-proclaimed bully. The two aspects of status that presumably drive self-proclaimed bullies operate quite differently. It is much more difficult to change the goal to be dominant than to influence the social approval for being so. We saw that bullies are quite accepted by others, but if that changed into rejection, bullying would in all likelihood stop, even for children who crave dominance. For this to come about, the teacher could play an important role by attaching negative status aspects to being a bully and by providing alternative status opportunities for children who are high in domination. From the point of view of the victim, the teacher could show how to make finer differences between intended and unintended bullying. The teacher could also encourage friends to stand up for the victim and attach positive status to this act. It could be shown that not having anybody to stand up for you (being rejected) is exactly what gets bullying going. A buddy system in which everyone is a 'buddy' for at least two other classmates might work. Lastly, we saw that affective relationships cut through all the other effects. Direct likes greatly reduce and direct dislikes greatly increase bullying, from both points of view. Any positive change in the affective climate in class will thus help reduce bullying. Another

approach would be to work directly at changing goals. The goal-framing approach suggests that it is useful to think in terms of matches of mutually reinforcing goals (domination and not getting hurt), so that bullying should be approached from both sides. Cooperative work among students is likely to reduce the goal to be dominant and could be promoted (Holt & Keyes, 2004), among other things, by helping bullies and those who approve of them (assistants and reinforcers, as Salmivalli et al. (1996) call them) to develop more empathy, e.g., by helping them to learn to think from the perspective of the victim, and to adopt nurturance as another goal. Conversely, victims could be helped to develop positive interaction goals that would replace the goal not to get hurt.

Advantages of our study are that it was based on a large population sample of preadolescent boys and girls (and that we examined the possibility of sex interactions), that it covered both bullying and victimization (and that we controlled for pupils who were bully-victims), and that multiple informants were employed. We are among the first who performed an explanatory analysis of bully-victim dyadic matches. With our multilevel model we took the hierarchical structure of our data set into account, i.e., dyadic relations among children within classes, and it was no longer necessary to treat classes as the unit of analysis (Coie et al., 1999) or to perform a meta-analysis on outcomes per class (Baerveldt et al., 2004).

A number of limitations of our study should also be mentioned. First, it was based on cross-sectional data. Second, we only had peer information from a subsample of TRAILS. This subsample excluded children in special education and children who repeated a grade. This probably weakened the detected associations in our analyses and it limits the generalizability of our findings. Third, distinguishing physical, psychological, and verbal forms of bullying might also reveal sex-related variations. We found in the present study that the effects of aggressiveness, vulnerability, acceptance, and rejection were the same for boys and girls. Fourth, we did not measure several forms (such as physical, psychological, and verbal) of bullying and victimization, but used general peer nomination items ('Who do you bully?' and 'By whom are you bullied?'). Our approach should be placed in the tradition of sociometric research, where one-item measures are the standard ('Name the persons you like/dislike'), but at the same time we think that it might be helpful to develop multiple-item scales or ratings to identify bullies and victims, similar to research on peer aggression (Ladd & Kochenderfer-

Ladd, 2002). It should also be realized, however, that our measures in the multilevel analyses were the aggregates of all the nominations a person gave to others (as nominator) or received from others (as target), and are for that reason potentially much more reliable and valid than a single-item self-report. Despite these limitations at present, our data offer a unique opportunity to investigate bullying and victimization in dyads, and the dual perspective theory seems promising.

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Table 1.

Correlations between Bullying, Victimization, and Individual Characteristics Excluding Bully-Victims (correlations for girls above and for boys below the diagonal).

	Aggressiveness	Vulnerability	Acceptance	Rejection	Nom. Bullying	Nom. Victimization	Self. Bullying	Self. Victimization
Aggressiveness	-	**.27**	-.01	**.24**	**.26**	.11	**.18**	**.17**
Vulnerability	**.38**	-	**-.37**	**.27**	-.02	**.23**	.11	**.22**
Acceptance	-.13	**-.32**	-	**-.32***	.05	-.12	.08	-.10
Rejection	**.36**	**.36**	**-.45***	-	**.31**	**.43****	.09	**.24**
Nom.Bullying	**.34**	.08	-.06	**.34**	-	.08	**.21**	-.04
Nom.Victimization	.02	**.23**	-.13	**.25****	-.05	-	.08	**.31**
Self Bullying	**.20**	.02	.05	.07	**.29**	-.03	-	**.41**
Self Victimization	.14	**.26**	-.05	**.15**	.08	**.20**	**.31**	-

N for all correlations = 480 girls and 346 boys; **Bold:** *p* < .01;

Significant sex difference: ** p < 0.01; * p < 0.05.

Table 2.

Who bullies who?: The bully as nominator. Parameter estimates of the multilevel p_2 model for 13,606 dyadic relations from 918 children from 54 Dutch elementary classes.

	Estimates	
Effect	Posterior mean (S.E.)	
Density		
Overall mean	-6.76 (.28)	
Nominator (bully) covariates:		
Being a boy	1.21 (.28)	**
Aggressiveness	.72 (.12)	**
Vulnerability	.18 (.12)	
Acceptance	.23 (.14)	*
Rejection	.07 (.15)	
Being a bully-victim	.28 (.34)	
Target (victim) covariates:		
Being a boy	.29 (.27)	
Aggressiveness	.03 (.08)	
Vulnerability	.40 (.09)	**
Acceptance	.10 (.10)	
Rejection	.30 (.10)	**
Being a bully-victim	1.75 (.19)	**
Relationship covariates:		
Girl-girl	ref.	
Boy-boy	-.61 (.50)	
Mixed-sex	.03 (.26)	
Like	-.72 (.19)	**
Dislike	1.53 (.16)	**

Random actor effects:

Class variance   0.56   (.28)

Nominator variance   4.49   (.58)

Target variance   .52   (.15)

Nominator-target   .13   (.26)

covariance

Note: Burn-in = 8,000; Sample size = 20,000.

** *p* < .01; * *p* < .05. Tests were one-sided.

Table 3.

Who is victimized by whom?: The victim as nominator. Parameter estimates of the multilevel p_2

model for 13,606 dyadic relations from 918 children from 54 Dutch elementary classes

	Estimates		
Effect	Posterior mean (S.E.)		
Density			
Overall mean	-5.76	(.21)	
Nominator (victim) covariates:			
Being a boy	-.09	(.26)	
Aggressiveness	.16	(.09)	
Vulnerability	.59	(.10)	**
Acceptance	.16	(.11)	
Rejection	.34	(.13)	**
Being a bully-victim	.57	(.31)	
Target (bully) covariates:			
Being a boy	1.09	(.22)	**
Aggressiveness	.60	(.06)	**
Vulnerability	-.35	(.07)	**
Acceptance	.20	(.09)	*
Rejection	.16	(.09)	
Being a bully-victim	1.51	(.16)	**
Relationship covariates:			
Girl-girl	ref.		
Boy-boy	-.59	(.43)	
Mixed-sex	-.44	(.22)	*
Like	-.49	(.16)	**

Dislike	2.36	(.13)	**

Random actor effects:

Class variance	.13	(.07)
Nominator variance	3.55	(.47)
Target variance	.39	(.12)
Nominator target	-.05	(.21)

covariance

Note: Burn-in = 8,000; Sample size = 20,000.

** $p < .01$; * $p < .05$. Tests were one-sided.

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[1] Using the p_2 model, it is also possible to test whether the differences between the nominator and the target are significant for a specific characteristic. For example, with the victim as nominator and the bully as target (Table 3), the difference score for dominant aggressiveness was -.44 (.06), which was significant at $p < .01$.