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Chapter 4

Peer and self-reported victimization: Do non-victimized students give victimization nominations to classmates who are self-reported victims?

Abstract

Using data from 2,413 Dutch secondary school students (*M* age=13.27, *SD* age=0.51, 49.0% boys), this study investigated to what extent students who according to their self-reports had not been victimized (referred to as *reporters*) gave victim nominations to classmates who according to their self-reports had been victimized (referred to as *receivers*). Using a dyadic approach, characteristics of the reporter-receiver dyad (i.e., gender similarity) and of the reporter (i.e., reporters' behavior during bullying episodes) that were possibly associated with reporter-receiver agreement were investigated. Descriptive analyses suggested that numerous students who were self-reported victims were not perceived as victimized by their non-victimized classmates. Three-level logistic regression models (reporter-receiver dyads nested in reporters within classrooms) demonstrated greater reporter-receiver agreement in same-gender dyads, especially when the reporter and the receiver were boys. Furthermore, reporters who behaved as outsiders during bullying episodes (i.e., reporters who actively shied away from the bullying) were less likely to agree on the receiver's self-reported victimization, and in contrast, reporters who behaved as defenders (i.e., reporters who helped and supported victims) were more likely to agree on the victimization. Moreover, the results demonstrated that reporters gave fewer victim nominations to receivers who reported they had been victimized sometimes than to receivers who reported they had been victimized often/very often. Finally, this study suggested that reporter-receiver agreement may not only depend on characteristics of the reporter-receiver dyad and of the reporter, but on classroom characteristics as well (e.g., the number of students in the classroom).

4.1 Introduction

Over the years, researchers have used different methods, instruments, and informants to identify victims of school bullying (Bouman et al., 2012; Graham & Juvonen, 1998; Ladd & Kochenderfer-Ladd, 2002). Students' self-reports are the most commonly used and accepted measurement of victimization (Cook, Williams, Guerra, & Kim, 2009). Advocates of self-reports argue that students themselves provide the most complete and valid reports because they directly experienced their own victimization (Ladd & Kochenderfer-Ladd, 2002). However, students' self-reports may be biased, leading to either over-reporting victimization (i.e., students reporting that they are victimized whereas they are not) or under-reporting victimization (i.e., students denying their victimization) (Graham & Juvonen, 1998).

Recently, peer reports (i.e., students reporting on each other's victimization) have gained popularity as a means of identifying victimized students as well (Cook et al., 2009). Studies using peer reports typically aggregate these reports in such a way that they reflect the proportion of classmates who nominated a certain student as a victim. An advantage of this procedure is that multiple observers are used to identify victims (Bouman et al., 2012; Ladd & Kochenderfer-Ladd, 2002). A disadvantage of using peer reports to measure victimization is that perhaps not all students are equally competent in reporting the victimization of their classmates. For example, it could be that not all students are aware of their classmates' victimization. Even though several studies suggest that most students know that their classmates are victimized and are able to provide accurate information on what happened (e.g., O'Connell, Pepler, & Craig, 1999; Salmivalli et al., 1996), this assumption has never been tested explicitly in an empirical study.

In the recent past, many studies have focused on the correspondence between peer and self-reported victimization. These studies generally found that the correlations between the two measurements were moderate at best (e.g., Bouman et al., 2012; Cornell & Brockenbrough, 2004; Graham & Juvonen, 1998; Ladd & Kochenderfer-Ladd, 2002). Ladd and Kochenderfer-Ladd (2002), for example, found that correlations between peer and self-reported victimization varied from .14 to .42 depending on the age of the respondents.

Using a dyadic approach, the present study further investigated the discrepancies between peer and self-reported victimization. More precisely, this study examined to what extent students who had not been victimized according to their self-reports (referred to as *reporters*) gave victim nominations to classmates who had been victimized according to their self-reports (referred to as *receivers*). In other words, this study examined whether non-victimized reporters agreed with the receivers' self-reported victimization. This implies that in the present study all non-victimized reporters within a certain classroom reported on every classmate (or receiver) who had been victimized according to his or her self-report. It is important to note that even though the term 'reporter-receiver agreement' was used, the reporters did not know whether the receivers had reported to be victimized or not.

In the absence of consensus on an objective measurement of victimization, the aim of this study was not to draw conclusions about 'who is right' when peer and self-reports were discrepant, but to investigate to what extent victim nominations given by individual reporters were in concordance with the receivers' self-reported victimization. We argue that

it is important to further investigate concordance between peer and self-reports because the discrepancies found in previous studies may imply that a substantial share of students who report being victimized are not perceived as victimized by their peers. When students do not perceive their classmates as victimized, they are also unlikely to help and support them. The present study focused on the perception of non-victimized students, because these students may be in a position to intervene and stop their classmates' victimization (Salmivalli, 2010). Even though research demonstrates that victims can defend each other as well (Huitsing & Veenstra, 2012), it is plausible that non-victimized students can provide a different type of help than that of victimized students.

Unlike previous studies on this topic, in the present study the correspondence between peer and self-reported victimization was not investigated by comparing self-reports to aggregated peer reports, but to peer reports given by individual reporters. This dyadic approach enabled investigation of characteristics of the reporter-receiver dyad (i.e., gender similarity) and of the reporter (i.e., reporters' behavior during bullying episodes) that were possibly associated with reporter-receiver agreement.

4.1.1 Giving victim nominations: Characteristics of the reporter-receiver dyad and of the reporter

4.1.1.1 Reporter-receiver dyad
Students prefer to associate and bond with others who are similar (Aboud & Mendelson, 1996; Rubin, Bukowski, & Parker, 2006). Sharing common features enhances communication and makes forming relationships easier. Even when reporters and receivers do not consider themselves as friends, it is plausible that they interact and share information with each other more often when they are similar than when they are dissimilar. Especially, similarity in gender might affect reporter-receiver agreement, because several studies have indicated that gender segregation is strong during childhood and early adolescence and that social interaction predominantly takes place in same-gender peer groups (Baerveldt, Van De Bunt, & Vermande, 2014; Rubin et al., 2006; Veenstra, Lindenberg, Munniksma, & Dijkstra, 2010). Therefore, it is likely that students in same-gender dyads will have more information about social interaction patterns within their own peer groups than about social interactions involving peers of the opposite gender. Accordingly, it can be expected that reporters were more likely to give victim nominations to receivers who were self-reported victims when the reporter and the receiver were of the same gender than when they were not of the same gender.

4.1.1.2 Reporters
At the reporter-level, it can be expected that reporter-receiver agreement was associated with how reporters generally behaved during bullying episodes. Scholars agree that bullying is a group phenomenon in which almost all classmates are in some way involved (Goossens, Olthof, & Dekker, 2006; Huitsing & Veenstra, 2012; O'Connell et al., 1999; Salmivalli et al., 1996). Salmivalli and colleagues (1996) described five roles (apart from victims) that students may take during bullying episodes: bullies, assistants (students who do not initiate

the bullying but join after someone else has initiated it), reinforcers (students who support the bully by laughing or cheering), outsiders (students who actively shy away from the bullying), and defenders (students who help and support victims). One of the most puzzling types of behavior during bullying episodes is that of outsiders. Outsiders avoid involvement in bullying in their classroom. Even though several studies (e.g., Olthof et al., 2011; Salmivalli et al., 1996) seem to suggest that outsiders are aware of the victimization in their classroom, this has to our knowledge never been tested in an empirical study. Even when outsiders are aware of the victimization of their classmates, there are several explanations for why they do not intervene when their classmates are bullied. First, fear might play a role in the desire to stay uninvolved. Intervening is risky behavior, and students may be afraid of becoming victimized as well if they intervene. Second, students may fear that teachers or other adults could misinterpret their intervention and think they are participating in the bullying. Third, outsiders may want to help the victim but lack the required social skills to do so. Finally, perhaps outsiders are indifferent toward their classmates' victimization (Menesini & Camodeca, 2008). However, Olthof (2012) found that outsiders anticipated feelings of guilt when they imagined that they had bullied someone. Regardless of outsiders' motives, of the five roles described by Salmivalli et al. (1996), outsiders are the least likely to have complete information on the bullying in their classroom.

In contrast, students who bully others or support bullies (i.e., bullies, assistants, and reinforcers) are in a good position to observe the bullying and have information about what happened. Despite this, we contend that these students may be likely to underreport the receivers' victimization because they have strong incentives to deny knowledge of the bullying. The idea of being at least partially responsible for a classmate's suffering potentially causes students to experience mental stress and discomfort (i.e., cognitive dissonance). A simple method for eliminating these negative feelings is by denying that certain classmates are actually bullied (Perren, Gutzwiller-Helfenfinger, Malti, & Hymel, 2012; Teräsahjo & Salmivalli, 2003). Consistent with this, students who bully others or support the bullies commonly state that it was just a joke, that the victim deserved it, or that the victim even asked for it. Teräsahjo and Salmivalli (2003) claimed that bullies are likely to see bullying as a game in which other students are participants rather than victims. By denying that certain behavior is bullying, students can transform the unacceptable harassment of their peers into something that is morally justifiable or even funny (Perren et al., 2012; Sijtsema, Rambaran, Caravita, & Gini, 2014).

Unlike outsiders, bullies, assistants, and reinforcers, students who defend victims try to improve the victim's situation (e.g., by comforting him or her afterward) (Salmivalli et al., 1996). Students who behave as defenders are actively involved in the bullying process and are likely to be in a good position to observe who is victimized, without having the incentive to deny knowledge of the bullying. In addition, scholars have found that defenders generally have high empathy levels (Nickerson, Mele, & Princiotta, 2008). Thus, it is plausible that defenders are better at noticing that someone is victimized, even when they were not present during the actual bullying episode.

4.1.2 Aims and hypotheses of the present study

The main aim of this study was to investigate to what extent non-victimized students gave victim nominations to classmates who were self-reported victims. Using a dyadic approach allowed us to investigate characteristics of the reporter-receiver dyad and of the reporter that were possibly associated with reporter-receiver agreement. Based on the reviewed literature, more reporter-receiver agreement was expected in same gender dyads. Furthermore, less reporter-receiver agreement was expected when the reporter tended to behave as an outsider and actively shied away from the bullying. In addition, it was hypothesized that bullies[1] and reinforcers were likely to underreport the receivers' victimization because these students had strong incentives to deny knowledge of the bullying. Finally, more reporter-receiver agreement was expected when reporters behaved as defenders. Defenders are actively involved in the bullying process; however, unlike bullies and reinforcers, they are not likely to experience cognitive dissonance when nominating victimized classmates.

4.2 Method

4.2.1 Participants and procedure

Data from 2,413 Dutch secondary school students (49.0% boys, *M* age=13.27, *SD* age=0.51) in 115 classrooms across 28 schools were used to test the hypotheses. School years in the Netherlands last from the end of August to the beginning of July. The data for the present study were collected during the spring of 2007, implying that the students in the sample had been in the same group of classmates for 7 months. In the Netherlands children usually enter secondary school when they are approximately 12 years old. Approximately 2.7% of the students were between 11 and 12.5 years old, 67.8% were between 12.5 and 13.5 years old, and 29.4% were between 13.5 and 15.5 years old. In the first year of Dutch secondary school, classrooms remain stable during the day, and the classroom composition (20-30 students per classroom) does not vary per subject. Students attend multiple classes with different teachers during the week, but always with the same group of classmates.

　　After obtaining approval from the schools and teachers, the parents of the students in participating schools were sent a letter with information about the study's aims and procedures. Parents who did not want their children to participate returned a preprinted form to the research team. This passive consent procedure was endorsed by an Ethical Board. Students were asked for their consent before they completed the questionnaire. Participating students could opt out at any point. Of the 2,720 students in the participating schools, 11.3% did not receive parental permission, did not want to participate, or were absent during data collection.

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[1] No distinction was made between students who behaved as ringleader bullies (i.e., students who initiated the bullying) and assistants (i.e., students who joined the bullying after someone else initiated it), because recent studies (e.g., Reijntjes et al., 2013a; Reijntjes, et al., 2013b) suggest that the association between behaving as a ringleader bully and assistant is strong.

Participating students completed web-based questionnaires in their schools' computer labs during regular school hours. The students were instructed to answer the questions with regard to what happened in their classroom within the past few weeks. Trained research assistants were present to give instructions, answer questions, and assist students whenever necessary. Students were reassured that their answers would remain confidential and were instructed not to talk about their answers to others.

4.2.2 Measures

4.2.2.1 Dependent variable

The dependent variable was a binary variable y_{ij} reflecting whether (1) or not (0) reporter i gave a victim nomination to receiver j (who was a self-reported victim). In other words, the dependent variable reflected whether reporter i agreed with j's self-reported victimization or not. The exact procedure of how reporter i's victim nomination about receiver j was compared to j's self-reported victimization is explained in the following three sections.

Self-reported victimization. Students were divided into non-victimized reporters and victimized receivers based on their self-reported victimization. Self-reported victimization was measured using an adaptation of the global victimization question of the revised Olweus bullying questionnaire (Olweus, 1996). Before students indicated how often they had been victimized, they read a description in which bullying and victimization were explained. In this description, the three core elements of bullying were emphasized: structural, intent to harm, and a power difference between bully and victim, which makes it difficult for victims to defend themselves (Olweus, 1993). Moreover, the description stressed that bullying is not the same as teasing. All students indicated how often they had been victimized within the classroom context over the past few weeks (1=(almost) never, 2=rarely, 3=sometimes, 4=often, or 5=very often). Students were instructed to think about "interactions that for instance happened today and in the past weeks, but not about interactions that happened a year ago". Approximately 60.8% of the students in the sample reported that they had (almost) never been victimized in the past few weeks, 18.1% reported that they had rarely been victimized, 15.2% sometimes, 4.9% often, and 1.0% very often.

A subsample was then created in which students who reported that they had been victimized (almost) never or rarely were classified as non-victimized reporters and students who reported that they had been victimized sometimes, often, or very often were classified as victimized receivers. The rationale for dividing students this way is that bullying is a structural phenomenon (Solberg & Olweus, 2003). Students who rarely have negative experiences with others, were not regarded as victimized as these interactions were not structural. The victimization of the group of students who according to their self-reports were victimized sometimes was more ambiguous. These students were classified as victimized and a binary variable reflecting that they were victimized sometimes was added to the model in order to assess possible differences between these students and the students who were victimized often/very often.

Table 4.1 displays the sample sizes of the complete sample (i.e., the sample with dyads between all students) and the subsample (i.e., the sample with only dyads between

non-victimized reporters and victimized receivers). As Table 4.1 illustrates, the subsample contained data from 111 classrooms, rather than from all 115 classrooms of the complete sample. One classroom was excluded from the analyses because none of the 19 students reported that they had been victimized sometimes, often, or very often. In addition, three other classrooms were deleted due to reasons described in the descriptive statistics section.

Peer-reported victimization. Reporter i's victim nomination concerning receiver j was measured using the bullying role nomination procedure (described in Olthof et al., 2011), which is an adaptation of the procedure introduced by Salmivalli et al. (1996). Before reporters nominated classmates whom they thought had been victimized, they read a description of bullying and victimization. This description started with a definition that included the three core elements of bullying (i.e., structural, intent to harm, and a power difference between bully and victim). Finally, it was explained that bullying may take several forms: physical bullying ("hitting others, kicking, pinching or pushing them"), property attacks ("taking away belongings of others, destroying their belongings, or forcing them to give certain things (such as shoes, purse, or money)"), verbal bullying ("insulting or laughing at others, making fun of them, or saying mean things on the Internet"), direct relational bullying ("excluding others from games, ignoring them, purposely not inviting them, walking away from someone who wants to talk or turning one's back on someone who wants to join") and indirect relational bullying ("giving others a bad name, gossiping about them or making sure others will think badly about them"). After reading the description, reporters nominated, for every victimization type, classmates who they thought had been victimized in the described ways. Reporters could nominate a maximum of 10 classmates per victimization type. Receiver j was considered nominated as a victim when reporter i nominated j for at least one of the five types of victimization.

Reporter-receiver agreement. Summarizing, from the set of all possible reporter-receiver dyads in the complete sample, a subsample was created consisting of only those dyads in which the receiver had reported to be victimized sometimes, often, or very often and the reporter had reported to be victimized (almost) never or rarely. The dependent variable was a binary dyadic variable taking value 1 whenever reporter i nominated receiver j for at least one of the five types of victimization.

Table 4.1 Sample sizes of the complete sample and the subsample

		Schools	Classrooms	Reporters	Receivers	Dyads
Complete sample	All students	28	115	2,413[a]	2,413[a]	57,523
Subsample	Reporters: (*almost*) *never* or *rarely* victimized	28	111	1,847	472	7,605
	Receivers: *sometimes*, *often*, or *very often* victimized					

Note. [a] In the complete sample all students were simultaneously reporters and receivers.

4.2.2.2 Independent variables

Gender similarity. Reporters' and receivers' gender similarity was measured with three binary variables reflecting whether the reporter-receiver dyad was a boy-boy, boy-girl, or girl-boy dyad (1) or not (0). Girl-girl dyads were treated as the reference group in the analyses.

Behavior during bullying episodes. Reporters' behavior during bullying episodes (i.e., behaving as an outsider, bully, reinforcer, and defender) was measured with the proportion of participating classmates in the classroom (in the complete sample) who nominated the reporter for each type of behavior. This measurement is analogous to the bullying role nomination procedure (Olthof et al., 2011). Proportion scores were used to account for differences in classroom size (Bukowski, Cillessen, & Vel Ásquez, 2012). For every reporter, all received nominations for each separate type of behavior were summed and divided by the number of participating classmates. For instance, when a certain reporter received 10 nominations as an outsider within a classroom of 21 participating students, this reporter would score 0.50 on the outsider variable. Using the proportion of participating classmates who nominated a reporter for a certain type of behavior implies that students did not have one specific role, but had scores on all five types of behavior. Moreover, students who received only a few nominations or no nominations at all still had valid scores (e.g., a score of zero).

Before students nominated classmates for the different types of behavior during bullying episodes, they were provided with descriptions of the roles as described by Olthof et al. (2011). Nominating classmates thus did not require any prior knowledge about bullying. Outsider behavior was described as actively shying away from bullying in the classroom. Bullying behavior was described as structurally and intentionally harassing others for whom it is not easy to defend themselves. Students could nominate classmates who bully others in one of the five described ways (i.e., physical bullying, property-directed bullying, verbal bullying, direct relational bullying, and indirect relational bullying). For every student, a measurement reflecting the proportion of classmates who nominated him or her for at least one of the five types of bullying was constructed. Furthermore, reinforcing was described as not behaving as a bully, but always being there when a classmate is being bullied, encouraging the bully. Finally, defending was described as comforting victims and trying to make them feel better by being friendly.

4.2.2.3 Control variables

In the analyses, variables that possibly affected reporter-receiver agreement were taken into account. At the dyadic level, we controlled for whether receivers had reported being victimized sometimes (1) or often/very often (0). Of the receivers who were self-reported victims, 70.6% had reported being victimized sometimes, 24.4% had reported being victimized often, and 5.1% had reported being victimized very often. In the analyses no distinction was made between being victimized often or very often because in many classrooms there were no receivers who reported they had been victimized very often.

Classroom characteristics may affect reporter-receiver agreement as well. In smaller classrooms, students might know each other better than in larger classrooms, and students might know better if any of the others was victimized (Cappella, Neal, & Sahu, 2012).

Accordingly, we controlled for classroom size. Moreover, we controlled for the total number of self-reported victims (i.e., the number of students who reported to be victimized sometimes, often, or very often), because it may be easier to recognize victimized classmates when many classmates had been victimized than when only a few classmates had been victimized.

4.2.3 Analyses

Three-level logistic regression models were estimated as the data consisted of reporter-receiver dyads nested in reporters within classrooms. All reporters within each classroom reported on every receiver who had been victimized according to his or her self-report. This makes the design of the present study analogous to a repeated measures design with multiple receivers per reporter. The models were estimated using the multilevel mixed-effects logistic regression package of Stata 12 (xtmelogit) (Rabe-Hesketh & Skrondal, 2012). This package uses an adaptive Gaussian quadrature procedure to estimate the models' parameters.

Results for three-level models were compared to results for four-level models (not presented here) with classrooms nested in schools in order to account for possible between-school variance. The variance in reporter-receiver agreement at the school level was negligible; no substantive differences between schools were found. Therefore, the results of the three-level models are presented.

A visual inspection of the independent variables demonstrated that the variables reflecting reporters' behavior during bullying episodes were skewed due to the relatively large proportion of reporters who did not receive nominations for these variables. Approximately 30.9% of the reporters did not receive a single outsider nomination, 35.3% did not receive bully nominations, 46.9% did not receive reinforcer nominations, and 30.5% did not receive defender nominations. To account for this large representation of zeros, a binary variable for each type of behavior during bullying episodes was included, reflecting whether reporters received at least one nomination for this variable (0) or not (1). The results of a model with binary variables were compared to a model without binary variables. No substantive differences between the two models were found.

4.3 Results

4.3.1 Descriptive statistics

4.3.1.1 Reporter-receiver agreement
Figure 4.1 displays the distribution of the number of given victim nominations (per student) in the complete sample (i.e., the sample that was not divided in non-victimized reporters and victimized receivers yet and where all students thus simultaneously were reporters and receivers). As can be seen in Figure 4.1, most students nominated five or fewer classmates as victimized.

Figure 4.1 Distribution of the number of given victim nominations
(per student) in the complete sample
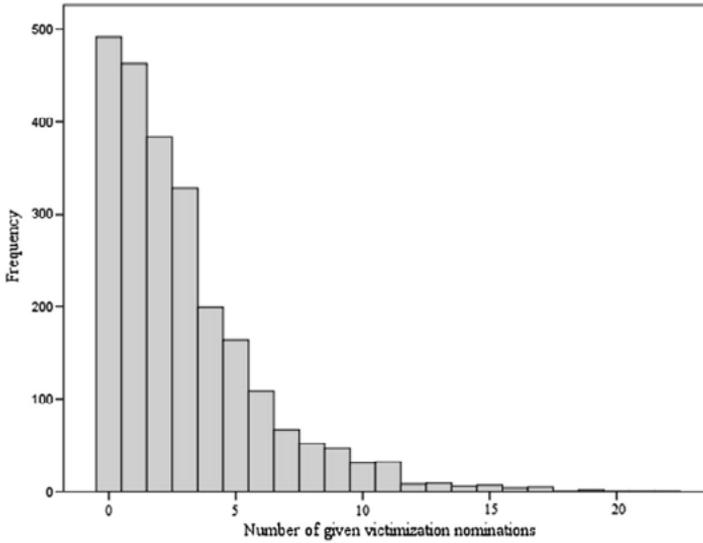
Students could nominate up to 10 classmates per victimization type, implying that they could theoretically mention 50 names. This explains why for a few students in Figure 4.1 the number of given victim nominations exceeded 10. In three classrooms there were more than 10 students who were victimized according to their self-reports. Even though students could nominate up to 10 classmates for each of the five forms of victimization it is possible that students in classrooms with more than 10 self-reported victims wanted to nominate more than 10 victims for one type of victimization and were not able to do so. Therefore, these three classrooms were excluded from the analyses.

In the subsample, all receivers were self-reported victims, which meant that there was reporter-receiver agreement each time reporters gave victim nominations to the receivers in their classroom. The mean number of given victim nominations in the subsample was 1.06 (SD=1.20) per reporter, whereas the mean number of self-reported victims per classroom was 4.25 (SD=2.09). Descriptive analyses at the dyadic-level demonstrated that reporters gave victim nominations to 26% of the receivers, suggesting that numerous students who were self-reported victims were not perceived as victimized by their classmates. Furthermore, only 3.4% of the reporters gave victim nominations to all classmates who were self-reported victims, and 41.3% of the reporters did not nominate any of the receivers. Finally, 19.3% of the receivers did not receive a single victim nomination.

4.3.1.2 Independent variables
In Table 4.2, the range, means, and standard deviations of all study variables of the subsample are summarized. Approximately 25% of the dyads were boy-boy dyads, 23% were boy-girl dyads, 27% were girl-boy dyads, and 25% were girl-girl dyads (reference group). The mean proportion of outsider nominations received per reporter was 0.12

(*SD*=0.14), and the mean proportion of received bully nominations was 0.14 (*SD*=0.19). Furthermore, the mean proportion of received reinforcer nominations was 0.06 (*SD*=0.08), and the mean proportion of received defender nominations was 0.09 (*SD*=0.11). Fourteen reporters did not receive nominations for behaving as a bully, reinforcer, outsider, or defender. According to their classmates, these students did not behave in one of the five defined ways during bullying episodes. These students did, however, have valid scores (i.e., zero) on the variables reflecting behavior during bullying episodes, and thus were not excluded from the analyses.

Table 4.2 Descriptive statistics of the study variables of the subsample

	Range	% of 1	
Reporter-receiver dyads			
Reporter-receiver agreement (agreement=1)	0-1	.26	
Boy-boy dyad	0-1	.25	
Boy-girl dyad	0-1	.23	
Girl-boy dyad	0-1	.27	
Girl-girl dyad (reference group)	0-1	.25	
Receiver victimized sometimes (sometimes=1)	0-1	.71	
	Range	Mean	SD
Reporters			
Proportion outsider nominations	0-0.80	.12	.14
Proportion bully nominations	0-1	.14	.19
Proportion reinforcer nominations	0-0.62	.06	.08
Proportion defender nominations	0-0.73	.09	.11
Classrooms			
Number of students in classroom	10-32	23.58	5.09
Number of self-reported victims in classroom	1-10	4.25	2.09

4.3.2 Bivariate correlations

Table 4.3 displays the bivariate correlations between the continuous reporter-level variables. Reporters who received many outsider nominations received fewer bully nominations (r=-0.33, p<0.001, n=1,847) and fewer reinforcer nominations (r=-0.29, p<0.001, n=1,847). Furthermore, there were positive relationships between receiving outsider nominations and defender nominations (r=0.33, p<0.001, n=1,847) and between

receiving bully nominations and reinforcer nominations (r=0.66, p<0.001, n=1,847). Finally, reporters who received more defender nominations were less often nominated as bullies (r=-0.19, p<0.001, n=1,847) or reinforcers (r=-0.19, p<0.001, n=1,847).

Table 4.3 Bivariate correlations between continuous reporter variables

	1.	2.	3.	4.
1. Proportion outsider nominations	-	-0.33***	-0.29***	0.33***
2. Proportion bully nominations		-	0.66***	-0.19***
3. Proportion reinforcer nominations			-	-0.19***
4. Proportion defender nominations				-
Note. ***p<0.001				

4.3.3 Multilevel logistic regression analyses

4.3.3.1 Intercept-only model
The first model in Table 4.4 is an intercept-only model that was estimated in order to calculate intraclass correlations (Snijders & Bosker, 1999). Intraclass correlations were estimated using the Stata intraclass correlation extension (xtmrho) for the xtmelogit package. This extension estimates intraclass correlations following the logistic multilevel procedure described by Snijders and Bosker (1999). Intraclass correlations indicated that approximately 6.5% of the total variance in reporter-receiver agreement could be attributed to differences between reporters and that 16.3% could be attributed to differences between classrooms.

4.3.3.2 Main effects models
Table 4.4 presents the estimated multilevel logistic coefficients and odds ratios (OR) for reporter-receiver agreement. Model 1 contains control variables only. In Model 2 the independent variables were added. The significant likelihood ratio test in Table 4.4 (χ^2=191.48, df=7, p<0.001) suggests that adding the independent variables significantly increased the fit of the model. Given that the interpretation of multilevel logistic coefficients and odds ratios is not straightforward, the statistically significant effects are also discussed in terms of predicted probabilities. As the effects on the probabilities are not linear, predicted probabilities were presented for specific values of the variables that were statistically significant. These values were compared with the predicted probability of a benchmark model. In this benchmark model, all binary variables were set to the reference categories (i.e., 0), and all continuous variables were centered around their means and set to zero. The variables reflecting behavior during bullying episodes were likewise set to zero, but not centered because their distribution contained meaningful zeros. For theoretical reasons, non-significant independent variables were not excluded from the models, and all probabilities were computed using the full model. The benchmark model predicts the

probability that a female reporter who had not been nominated for any of the behaviors during bullying episodes gave a victim nomination to a female classmate who according to her self-report had been victimized often/very often, in an average sized classroom (*M* number of students in classroom=23.58) with an average number of victims (*M* number of self-reported victims in classroom=4.25). The predicted probability for this benchmark model was 0.44 (*SD*=0.16).

Table 4.4 Estimated multilevel logistic coefficients and odd ratios for reporter-receiver agreement (N=111 classrooms, 1,847 reporters, 7,605 reporter-receiver dyads)

Parameters	Intercept-only model				Model 1				Model 2				Model 3			
	b	SE	OR	z	b	SE	OR	z	b	SE	OR	z	b	SE	OR	z
Intercept	-1.21***	0.09	0.30	-13.60	-0.47***	0.09	0.62	-5.15	-0.36*	0.14	0.70	-2.59	-0.24	0.14	0.79	-1.66
Reporter-receiver dyads																
Boy-boy dyad									0.46***	0.10	1.59	4.51	0.50***	0.10	1.64	4.81
Boy-girl dyad									-0.61***	0.11	0.54	-5.71	-0.61***	0.11	0.55	-5.65
Girl-boy dyad									-0.21*	0.09	0.81	-2.25	-0.18	0.09	0.84	-1.93
Receiver victimized sometimes (sometimes=1)					-1.08***	0.07	0.34	-15.95	-1.14***	0.07	0.32	-16.48	-1.34***	0.08	0.26	-16.40
Reporters																
Proportion outsider nominations									-1.40***	0.31	0.25	-4.48	-1.42***	0.31	0.24	-4.52
Proportion bully nominations									0.15	0.25	1.16	0.61	0.14	0.25	1.15	0.55
Proportion reinforcer nominations									0.27	0.55	1.32	0.50	0.28	0.55	1.32	0.50
Proportion defender nominations									1.00*	0.39	2.71	2.56	1.02*	0.39	2.77	2.58
Classrooms																
Number of students in classroom[a]					-0.08***	0.02	0.93	-4.65	-0.08***	0.02	0.92	-4.53	-0.08***	0.02	0.92	-4.47
Number of self-reported victims in classroom[a]					0.07	0.04	1.07	1.72	0.08	0.04	1.08	1.84	-0.04	0.05	0.96	-0.90
Number of self-reported victims*receiver victimized sometimes													0.18***	0.04	1.19	4.92
Classroom variance	0.70	0.13			0.55	0.11			0.59	0.11			0.63	0.12		
Reporter variance	0.28	0.06			0.36	0.07			0.36	0.07			0.37	0.07		
Likelihood ratio test χ^2					288.02***				191.48***				24.58***			
(*df*)					(3)				(7)				(1)			

Notes. [a] Variable centered around the mean over classrooms; [b] Decrease in deviance compared to empty model; *p<0.05; **p<0.01; ***p<0.001

Characteristics of the reporter-receiver dyad. It was expected that there would be greater reporter-receiver agreement in same-gender dyads. Table 4.4 (Model 2) displays that when the reporter and the receiver were boys, it was more likely that they agreed on the receiver's victimization than when they both were girls (*OR*=1.59, *p*<0.001). The predicted probability of reporter-receiver agreement in a boy-boy dyad (and all other values set as in the benchmark model) was 0.54 (*SD*=0.16), 10 percentage points higher than the predicted probability of the benchmark. When the reporter was a boy and the receiver was a girl, it was less likely that there would be reporter-receiver agreement than when they both were girls (*OR*=0.54, *p*<0.001). The predicted probability in this case dropped to 0.31 (*SD*=0.14). Finally, there was less reporter-receiver agreement when the reporter was a girl and the receiver was a boy than when they were both girls (*OR*=0.81, *p*=0.02). The predicted probability of a girl nominating a boy was 0.39 (*SD*=0.16; again, with all other values set as in the benchmark model).

Reporter characteristics. At the reporter-level, it was expected that outsiders, students who actively shy away from the bullying in their classroom, would be less likely to agree on the receivers' self-reported victimization. Table 4.4 provides support for this hypothesis (*OR*=0.25, *p*<0.001). When reporters received more outsider nominations, they were less likely to give victim nominations to receivers who were self-reported victims. The predicted probability for reporters who received a mean proportion of outsider nominations (i.e., 0.12) was 0.40 (*SD*=0.16). Compared to the benchmark probability, the difference in percentage points (4) is small due to the large proportion of reporters who did not receive any nominations for this variable (i.e., 0.31). When the maximum value of the outsider variable (i.e., 0.80) is used to compute the predicted probabilities, the predicted probability decreased to 0.22 (*SD*=0.11), 22 percentage points lower than the benchmark probability.

Although it was hypothesized that reporters who had received many bully and reinforcer nominations were likely to underreport the receivers' victimization, because these students actively participated in the bullying and therefore had strong incentives to deny knowledge of the bullying, no support for such a relationship was found. The bivariate correlation between the received proportion of bully nominations and the received proportion of reinforcer nominations was high (*r*=0.66, *p*<0.001, *n*=1,847) (see Table 4.3). It was investigated whether including both the bully variable and the reinforcer variable led to collinearity problems by adding these variables separately to the model. The results of these models were largely similar to the results of the model presented here.

As expected, the data demonstrated a higher probability that reporters agreed with the receivers' self-reported victimization when the reporters received more defender nominations (*OR*=2.71, *p*=0.01). Similarly to the predicted probabilities for the outsider variable, predicted probabilities were computed for the mean and maximum values on the defender variable. The predicted probability for a reporter who had received a mean proportion of defender nominations (i.e., 0.09) was 0.46 (*SD*=0.16), which was only a 2 percentage point difference from the benchmark probability. The predicted probability for a reporter who had been nominated by 73% of the participating classmates (the maximum value of the defender variable) was 0.60 (*SD*=0.16), 16 percentage points higher than the benchmark model.

Control variables. In the analysis, variables that possibly influenced reporter-receiver agreement were taken into account. At the dyadic-level, lower reporter-receiver agreement was found when the receiver had reported to be victimized sometimes (OR=0.32, p<0.001) than when the receiver had reported to be victimized often/very often. A closer inspection revealed that reporters agreed with the receivers' victimization in 20.3% of the cases when the receivers reported they had been victimized sometimes, in 36.1% of the cases when the receiver had been victimized often, and in 54.5% when the receiver had been victimized very often. The predicted probability for reporter-receiver agreement when the receiver had reported to be victimized sometimes was 0.22 (SD=0.11). Ceteris paribus, the probability that reporters agreed with the receivers' self-reported victimization was 22 percentage points lower for receivers who reported they had been victimized sometimes than for those who reported they had been victimized often/very often.

Interaction terms between the binary variable reflecting that the receiver had reported being victimized sometimes and the independent variables were included to investigate whether the relationship between these independent variables and the dependent variable differed for the group of receivers who had reported to be victimized sometimes compared to those who had reported to be victimized often/very often. Only the interaction term with the number of self-reported victims per classroom was significant, showing that the slope of the relationship between the number of self-reported victims per classroom and the logit of reporter-receiver agreement was positive and significant for the sometimes group and negative and not significant for the often/very often group. In other words, reporters were more likely to give victim nominations to receivers who had reported being victimized sometimes when there were more self-reported victims in the classroom. This interaction term is presented in Model 3 in Table 4.4.

At the classroom-level, lower probability for reporter-receiver agreement was found in larger classrooms (OR=0.92, p<0.001) (Model 2). To interpret this effect, two predicted probabilities were computed, corresponding to the minimum and maximum values of this variable. The benchmark predicted probability refers to the mean values of all continuous variables; in this case, the mean number of students per classroom was 23.58. Keeping all other variables constant, the predicted probability for a dyad within the smallest classroom (minimum number of students=10) was 0.67 (SD=0.15) whereas the predicted probability for a dyad within the largest classroom (maximum number of students in classroom=32) was 0.30 (SD=0.14).

4.4 Discussion

Using data from 2,413 Dutch secondary school students in 115 classrooms across 28 schools, this study investigated to what extent students who had not been victimized according to their self-reports (referred to as *reporters*) gave victim nominations to classmates who had been victimized according to their self-reports (referred to as *receivers*). Instead of comparing self-reported victimization to aggregated peer reports, as frequently done in previous studies on this topic, a dyadic approach was used and self-reports were compared to victim nominations given by individual reporters. This approach allowed us to investigate

characteristics of both the reporter-receiver dyad and the reporter that were possibly associated with reporter-receiver agreement.

4.4.1 Discrepancies between peer reports and self-reports

Consistent with earlier studies in which aggregated peer reports and self-reports were compared (e.g., Bouman et al., 2012; Cornell & Brockenbrough, 2004; Graham & Juvonen, 1998; Ladd & Kochenderfer-Ladd, 2002), the results of the current study highlighted discrepancies between peer and self-reported victimization. That is, self-reports identified substantially more victims per classroom than peer reports. Moreover, only a few reporters gave victim nominations to all victimized receivers, and almost half of the reporters did not nominate a single self-reported victim. Furthermore, it was found that a substantial number of students who were self-reported victims were not nominated as victimized by any of their classmates.

These findings are of potential concern as they may suggest that victimized students are not recognized as victims by their classmates. However, it is also possible that the discrepancies between peer and self-reported victimization may be due to receivers reporting that they had been victimized whereas they actually had not (i.e., 'paranoid' receivers, Graham & Juvonen, 1998). In the current design, as in nearly all studies on this topic, it was impossible to disentangle why peer and self-reports were discrepant (Bouman et al., 2012; Cornell & Brockenbrough, 2004; Graham & Juvonen, 1998; Ladd & Kochenderfer-Ladd, 2002). Given that there is no consensus on an objective method for determining whether a student is actually victimized, a rational guideline for identifying victims would be to take students who have reported being victimized seriously, even though others do not perceive these students as victimized. Moreover, when classmates report that a certain student has been victimized but the student did not report being victimized, this information should be taken seriously as well, because students might deny their own victimization (Graham & Juvonen, 1998). In short, we contend that when students report they have been victimized, or are reported as victims by others, they should be considered victimized.

4.4.2 Characteristics of the reporter-receiver dyad and of the reporter

An important advantage of this study compared to studies using aggregated peer nominations was the dyadic approach. Using a dyadic approach made it possible to investigate factors contributing to discrepancies between peer reports and self-reports. The results supported the idea that discrepancies between peer and self-reports can, at least to some extent, be attributed to characteristics of the reporter-receiver dyad and to differences between reporters. As expected, more reporter-receiver agreement was found in same gender dyads, and in particular in boy-boy dyads. An explanation could be that children and early adolescents predominantly interact in peer groups of the same gender and, consequently, are more likely to have information about social interaction patterns within

their peer groups than about social interactions involving peers of the other gender (Baerveldt et al., 2014; Rubin et al., 2006). Furthermore, an additional explanation for why greater reporter-receiver agreement was found in boy-boy dyads is that victimization among boys is perhaps easier to recognize than victimization among girls. Research suggests that boys tend to bully more directly (e.g., hitting or kicking), whereas bullying among girls often has a more indirect or secretive nature (e.g., gossiping; Smith, Cowie, Olafsson, & Liefooghe, 2002).

In terms of reporter characteristics, the results indicated a negative association between receiving outsider nominations and reporter-receiver agreement. Based on previous studies, it was expected that outsiders were aware of the bullying in their classroom, but that they, for various reasons, avoided getting actively involved in it and, as a result, were the least likely of all roles (i.e., behaving as an outsider, bullying, reinforcing, and defending) to have information about what happened. The results of this study call into question the extent to which outsiders actually know about the bullying among their classmates. An alternative explanation for why students who received more nominations as outsiders were less likely to give victim nominations to the receivers who were self-reported victims is that these students knew which classmates had been victimized, but their desire to stay uninvolved in the bullying episodes in their classroom was so strong that they denied the victimization, and did not provide names of victimized classmates.

The extent to which outsiders are aware of the bullying in their classroom and are willing to report it is an important topic for future research, as outsiders are a frequently targeted group in anti-bullying interventions (e.g., the Finnish KiVa anti-bullying program, the Olweus Bullying Prevention Program). These interventions aim to stimulate outsiders to help and defend their victimized classmates; however, if students do not know which of their classmates are victimized, or know it but do not want to admit it, they are unlikely to actually intervene. Understanding whether outsiders actually know who the victims are should be a primary goal for future research. If outsiders really are unaware of the bullying, anti-bullying interventions may be more successful when they explicitly teach students how to recognize victimized classmates and stress that it is the students' responsibility to intervene.

It was expected that students who actively contributed to the bullying (i.e., bullies and reinforcers), were likely to underreport receivers' victimization because they had strong incentives to deny any knowledge of the bullying; however, no support for such a relationship was found. A possible explanation for why this relationship was not found is that nominating victims in an anonymous survey did not cause cognitive dissonance. If this is true, however, it seems reasonable to assume that students who actively contributed to the bullying should be more likely to nominate classmates who were self-reported victims because these students have first-hand knowledge of what happened. Given that no support for a negative or positive relationship was found, it is possible that both effects were simultaneously present but canceled each other out.

Future studies could investigate why no relationship between reporter-receiver agreement and behaving as a bully or reinforcer was found in the present study by taking into account to whom these behaviors were directed (Huitsing & Veenstra, 2012). As mentioned earlier, it was hypothesized that when students bully a classmate they would be

unlikely to nominate this classmate as a victim due to cognitive dissonance. However, in the present study, the measures of bullying behavior were derived from asking students to nominate classmates who generally behaved in the described ways. Thus, it was not possible to disentangle who bullies whom. Investigating behavior during bullying episodes at a dyadic level would allow us to ascertain whether bullies indeed are unlikely to give victim nominations to their victims.

Finally, consistent with our hypothesis, the results of the current study indicated greater levels of agreement when reporters received more defending nominations. It was expected that defenders would be likely to give victim nominations as they were actively involved in the bullying by trying to make the victim's situation better rather than worse. However, because the data were cross-sectional, it was not possible to draw conclusions about the causal directions of the relationships found. It may be that reporters behaved as defenders because they recognized that their classmates were bullied. From this perspective, recognizing that a classmate is victimized would be an antecedent of behavior. Consistent with this argument, reporters who seemed to be well-aware of which classmates had been victimized tended to behave as defenders, whereas reporters who seemed to be less aware of which classmates had been victimized tended to behave as outsiders. Disentangling the causal mechanisms of these relationships is certainly another important avenue for future research, and would require a longitudinal design, which allows researchers to test whether recognizing that a certain classmate is victimized leads to the defending of this classmate (e.g., Huitsing, Snijders, Van Duijn, & Veenstra, 2014).

In this study, we controlled for variables that possibly affected reporter-receiver agreement. At the dyadic-level, it was found that reporter-receiver agreement depended on how often the receiver had been victimized. One explanation is that because these students were victimized more frequently, their classmates had more chances to observe it and, consequently, were better informed about the victimization. An alternative explanation is that those who reported to be victimized sometimes were more likely to over-report their victimization.

4.4.3 Classroom characteristics

Although this study focused on characteristics of the reporter-receiver dyad and the reporter, the results suggested that reporter-receiver agreement depended on classroom characteristics as well. That is, in some classrooms, self-reported victims were more often perceived as victimized than in other classrooms. At the classroom-level, a lower reporter-receiver agreement was found in larger classrooms. A possible explanation for this relationship is that in larger classrooms it is less likely that all classmates know each other well. Thus, students in larger classrooms may have less information about social interactions between classmates than students in smaller classrooms. Furthermore, it was found that reporters were more likely to give victim nominations to receivers who had reported to be victimized sometimes when there were more self-reported victims in the classroom. A possible explanation for this finding is that in classrooms with more self-reported victims, students were more experienced in recognizing victimized classmates.

Accordingly, in these classrooms students would be more likely to perceive classmates who are victimized sometimes as victimized. These findings are in line with other studies in which the bullying process has been found to be influenced by the classroom context (e.g., Oldenburg et al., 2015; Pozzoli, Gini, & Vieno, 2012; Salmivalli et al., 1996). Future studies could further investigate the relationship between classroom climate and reporter-receiver agreement.

4.4.4 Limitations

An important limitation of this study is that the complexity of the data was reduced by focusing on a subset of all possible dyads. This was done by including only reporters who did not report victimization and receivers who had reported being victimized. The focus was on non-victimized reporters because they potentially can intervene and stop the bullying. In addition, by making this division, it was possible to test the hypotheses using straightforward logistic multilevel models. It is likely that in reality, however, the distinction between victims and non-victims is not as straightforward. Moreover, by dividing students into non-victimized reporters and victimized receivers, it was not possible to investigate to what extent victims gave victim nominations to classmates who were self-reported victims, even though a recent study demonstrates that victims can defend each other as well (Huitsing & Veenstra, 2012). Future studies could build upon this study by adopting a design that allows students to be reporters and receivers at the same time.

Another limitation of this study is that peer and self-reported victimization were measured using different types of questions. Peer-reported victimization was measured by asking students to nominate up to 10 classmates for each of the five types of victimization (i.e., physical bullying, property attacks, verbal bullying, and direct and indirect relational bullying), whereas self-reported victimization was measured using one question with five response categories reflecting the frequency of the victimization. Combining the different questions led to a broad definition of reporter-receiver agreement. That is, there was reporter-receiver agreement each time the reporter nominated the receiver for one of the five types of victimization and the receiver indicated that he or she had been victimized sometimes, often, or very often. The comparison between peer and self-reports would have been more straightforward if peer and self-reports had the same format and contained information on the form as well as the frequency of the victimization.

As in other studies on school bullying, in the present study there was no objective way to determine reporters' behavior during bullying episodes. Previous studies indicated that students tend to provide rather favorable presentations of their own behavior by over-reporting positive behavior (i.e., defending the victim) and under-reporting negative behavior (i.e., bullying and reinforcing the bully) (O'Connell et al., 1999; Salmivalli et al., 1996). Thus, peer nominations rather than self-reports were used to measure behavior during bullying episodes. Several studies (Bouman et al., 2012; Gromann et al., 2013; Olthof et al., 2011; Pronk, Olthof, & Goossens, 2014; Reijntjes et al., 2013a; Reijntjes et al., 2013b) indicated that peer-nominated bullying behavior is associated in theoretically meaningful ways with various variables, including peer-nominated popularity and resource control,

teacher-rated resource control, peer-rated likeability, and self-perceived social competence. However, the proportions of peer-reported bullying behavior should not be interpreted as the degree of behaving in that role; the values actually represent the degree of others' awareness of the behavior. Even though it is plausible that reporters receive more nominations when they frequently behave in a certain way, peer-nominations may not reflect the amount of actual behavior.

Finally, in the present study some children were older than one would expect in the first year of secondary school. In the Netherlands children usually enter secondary school when they are approximately 12 years old. Older children in the first year of secondary school most likely were weaker performing pupils who repeated one or two grades in elementary school. Classrooms with a relatively high mean age may contain several of these weaker performing pupils who repeated grades in the past. It could be that there was less reporter-receiver agreement in those classrooms. Unfortunately, we do not have information on the classrooms' level of education and therefore suggest that future studies investigate the relationship between reporter-receiver agreement and educational level.

4.4.5 Conclusions

Despite these limitations, by using a dyadic approach, the present study shed light on the discrepancies between peer and self-reported victimization found in earlier studies. Results of the current study suggest that these discrepancies, at least to some extent, can be attributed to characteristics of the reporter-receiver dyad (i.e., gender similarity) and differences between reporters (i.e., reporters who behave as outsiders and defenders). Future research could focus on whether there is more reporter-receiver agreement for certain types of victimization. It is likely that agreement is higher for more visible types of victimization (e.g., physical victimization) than for less visible types of victimization (e.g., indirect relational victimization). In addition, future studies could investigate whether the bullying behavior of reporters toward specific receivers affects the extent to which reporters agree on the victimization of that specific receiver. Understanding to what extent and under what circumstances peer and self-reported victimization overlap may contribute to the identification of victims and improve anti-bullying interventions.