



## Who is bullying whom in ethnically diverse primary schools? Exploring links between bullying, ethnicity, and ethnic diversity in Dutch primary schools

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### ABSTRACT

This study investigated associations between ethnicity, ethnic diversity, and bullying among 739 pupils enrolled in their last year of primary school. Hypotheses derived from social misfit and inter-ethnic relations theories were tested using the multilevel  $p_2$  model. Our key findings were: (1) inter- and intra-ethnic bullying are just as common in ethnically heterogeneous as in homogeneous classes; (2) pupils belonging to the Turkish and Moroccan minority groups bully significantly more than native Dutch (in particular according to victims); the chance to be victimized does not depend on the ethnic background of the pupil; (3) the prevalence of inter- and intra-ethnic bullying depends on the level of ethnic diversity in the class; inter-ethnic and intra-ethnic bullying increase with increasing levels of ethnic diversity.

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### 1. Introduction

Bullying in ethnically diverse school classes is a topic of increasing concern (Vervoort et al., 2010; Hanish and Guerra, 2000; Verkuyten and Thijs, 2002). Inter-ethnic bullying is likely to have implications for inter-ethnic relations later in life because negative contact experiences are likely to increase prejudice and to erode social cohesion just as positive contact experiences are known to reduce prejudice (Aberson and Gaffney, 2008; Pettigrew, 2008). Attempts of policy makers to increase integration and social cohesion at early ages by mixing pupils of different ethnic groups might, thus, be undermined if bullying in ethnically diverse school classes mainly crosses ethnic lines.

Most studies on ethnic bullying aim to answer the question: “How does the prevalence of bullies and victims vary with ethnicity?” (Farrington, 1993). The focus is on determining the percentages of bullies and victims for different ethnic groups, along with identifying characteristics of these bullies and victims that may explain possible differences. Results so far have been inconsistent. Some scholars found no differences in the degree of bullying and victimization among ethnic groups (e.g. Fandrem et al., 2009; McKenney et al., 2006), whereas others found that ethnic minority groups were more at risk of victimization (e.g. Hanish and Guerra, 2000; Eslea and Mukhtar, 2000; Strohmeier and Spiel, 2003).

Surprisingly, little investigation has been devoted to the question whether there is a tendency for children in ethnically diverse school classes to direct their bullying behavior toward pupils of ethnic outgroups or ethnic ingroups. Such a tendency may explain the inconsistent findings on ethnic differences. To determine whether the disposition to bully and to be victimized varies with ethnicity, it is necessary to determine first whether bullying occurs more often within or between ethnic groups.<sup>1</sup>

The scarce empirical findings on the relationship between the ethnic diversity of a class and bullying have been inconsistent as well. In the Netherlands, Verkuyten and Thijs (2002), who could not make a distinction between inter- and intra-ethnic bullying, showed that the smaller the relative size of the ethnic minority group in the class, the more ethnic minorities were victimized. For

<sup>1</sup> Suppose that bullying is more prevalent between ethnic groups (in 20 percent of the cases there is a directed bully relationship between two students of different ethnic backgrounds) than within ethnic groups (we observe no bully relationships in homogenous ethnic dyads). Also suppose that bullying and victimization are not related to the ethnicities of the pupils constituting the dyad and that there are no reciprocal bullying relationships. Consider a class with 10 Surinamese and 20 native Dutch. There are 90 ethnic homogenous dyads consisting of two Surinamese students ( $10 \times 9$ ), 380 homogeneous dyads consisting of two native Dutch students ( $20 \times 19$ ) and 200 heterogeneous dyads ( $10 \times 20$ ). In 40 heterogeneous dyads we expect to observe a bullying relationship ( $200 \times 0.20$ ). If bullying is not related to pupils' ethnicities, we expect to observe 20 heterogeneous dyads in which a Surinamese pupil is the bully and 20 dyads in which a native Dutch is the bully even though there are fewer Surinamese than native Dutch in this class. Hence, without taking into account a dyad perspective we are likely to conclude that Surinamese are more involved in bullying.

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the U.S., Hanish and Guerra (2000) found that attending ethnically integrated schools decreased the chance to be victimized for minority groups. In contrast, Vervoort et al. (2010), who also could not make a distinction between inter-ethnic and intra-ethnic bullying, showed that overall victimization is more prevalent in classes with a higher percentage of ethnic minorities. But similarly to studies that looked at ethnic differences in bullying, studies on the relationship between the ethnic diversity of a class and bullying overlooked that ethnic diversity may affect inter- and intra-ethnic bullying differently.

This study contributes to the existing body of knowledge on bullying in multi-ethnic settings by taking a ‘who-is-bullying-whom’ perspective. We hereby follow recent research on inter-status and inter-gender bullying (e.g. Rodkin and Berger, 2008; Sijtsema et al., 2009; Veenstra et al., 2007). This perspective enables us to scrutinize inter- and intra-ethnic bullying and allows us to explain bullying relationships with dyad characteristics (e.g. whether the two pupils that constitute the dyad share the same ethnic background or not), next to individual level characteristics (e.g. ethnicity of the potential perpetrator/victim). Because we have information on bullying relationships within 36 classes of differing levels of ethnic heterogeneity, we are also able to investigate how ethnic diversity of the class affects both inter- and intra-ethnic bullying. To assess these associations, we will control extensively for characteristics of bullies, victims and classes known from previous research to be associated with bullying.

Our hypotheses on the associations between on the one hand the ethnic composition of the dyad, the ethnicity of the pupils and the level of ethnic diversity of the classroom, with on the other hand, bullying, are derived from social misfit theory (Wright et al., 1986) and dominant theories in the inter-ethnic relations research tradition such as conflict theory (Bobo and Hutchings, 1996) and contact theory (Allport, 1954; Pettigrew and Tropp, 2006). As we will show below, ultimately, contact theory and conflict theory predict contradictory outcomes.

To test our expectations we will use data from the primary school sample of The Arnhem School Study (TASS) (Stark and Flache, 2012; Stark et al., 2013), conducted in five multi-ethnic city districts in the mid-sized Dutch city of Arnhem at the end of 2007 and the beginning of 2008. We have complete network information for 36 classrooms, distributed over 26 schools. TASS is an ethnically rich dataset, with 50 different ethnic groups and a substantial variation in the levels of ethnic minorities across classrooms (ranging from 3.4 percent to 95.5 percent ethnic minority pupils).

In this contribution, we will apply the multilevel  $p_2$  model (Zijlstra et al., 2006) to analyze the 36 networks simultaneously. The multilevel  $p_2$  model enables us to take into account characteristics of dyads (a dyad is constituted by two pupils in the same classroom), individual pupils and the classroom. This enables us to answer the following research questions:

- (1) For primary school children, does bullying behavior manifest more within one’s own ethnic group or more toward ethnic outgroups, and to what extent?
- (2) How does the prevalence of bullies and victims vary with ethnicity?
- (3) To what extent is ethnic diversity of the class related to inter- and intra-ethnic bullying?

## 2. Hypotheses

### 2.1. The ethnic mix of potential bully–victim pairs

Social misfit theory was proposed to explain the complex relationship between personal behavior and group acceptance or

rejection (Wright et al., 1986). The term social misfit is used to describe individuals whose own characteristics deviate from what is normative for the group. In line with misfit theory, Eslea and Mukhtar (2000) and Strohmeier and Spiel (2003) argue that ethnic non-native pupils experience more victimization (by natives) than native pupils because they lack necessary cultural skills related to the dominant native culture.

But more generally, ethnicity may act as a signal for differences. If members of ethnic outgroups display strong differences in cultural practices or do not act in line with cultural norms of one’s own ethnic group, this may mark them as social misfits. For example, a Moroccan can be regarded as a social misfit by both Dutch and Surinamese pupils, because of the different cultural norms and practices that exist between these ethnic groups. If we assume that within-group differences in practices and cultural norms are smaller than between-group differences, we may expect bullying to be more common between two pupils of different ethnic backgrounds than between students with the same ethnic background (Hypothesis 1).

Prejudicial attitudes among pupils may also explain why inter-ethnic bullying is more prevalent than intra-ethnic bullying. Prejudice is an important predictor of ethnic hostile behavior (Schulz and Six, 1996), and bullying someone because of his/her ethnicity – which is labeled as ‘racist bullying’ – is clearly a form of ethnic hostile behavior (Verkuyten and Thijs, 2002). Although inter-ethnic bullying is not necessarily racist bullying (a native Dutch may pick Moroccan classmates to bully for other reasons than their ethnicity), only inter-ethnic bullying can be racist bullying. Because prejudicial attitudes are widespread, both among adults and adolescents (Tolsma et al., 2012; Verkuyten and Steenhuis, 2005), and we further assume that these prejudicial attitudes constitute an additional reason for a bully to pick a victim from an ethnic outgroup, we would come to the same expectation, namely that inter-ethnic bullying is more common than intra-ethnic bullying.

### 2.2. Ethnicity of bullies

There are not only reasons to expect that bullying mainly occurs between ethnic groups, but also that certain ethnic groups are more likely to be involved in this behavior. Potential bullies are less likely to engage in bullying if they fear disapproval from their peers (Veenstra et al., 2010). In agreement with the homophily principle, which states that persons like to meet and mingle with similar others, even without a necessary dislike for ‘the other’ (McPherson et al., 2001), previous research showed that relevant peers are mostly co-ethnics (Baerveldt et al., 2007).

In a study among Dutch children aged 10–13, Verkuyten (2003) showed that Turkish children scored higher on ethnic identification compared to Dutch children, and that higher ingroup identification was related to a more positive evaluation of ingroup bullies. The same study suggested that Dutch children were less tolerant of bullying than Turkish children. We assume that the mechanisms relating the strength of ethnic identification to tolerance toward bullies holds for all ethnic (minority) groups. Thus because relevant peers of pupils from non-Western ethnic groups are likely to be from non-Western descent themselves and are expected to be more tolerant toward bullying, we expect that pupils from non-Western ethnic groups are more involved in bullying as perpetrators than native Dutch (Hypothesis 2).

The present study is one of the first to explore the relationship between ethnicity and bullying and victimization, while taking into account characteristics of dyads and of school classes. We do not

have *a priori* expectations on the effect of ethnic background on the chance to become a victim.<sup>2</sup>

### 2.3. Ethnic diversity of the class and bullying

Bullying behavior implies the existence of a power imbalance between bullies and victims. A consistent finding in bullying research is that bullies target victims that are rejected, do not receive social support from their peers, and are, as a consequence, not likely to be defended (Hodges et al., 1997; Ladd et al., 1997; Veenstra et al., 2010). As stated above, relevant peers, or friends – whom we assume are most likely to provide social support – will mainly be found among co-ethnics (Hallinan and Williams, 1989; Quillian and Campbell, 2003). In more ethnically diverse classes, the chance that a (randomly picked) pair of students has the same ethnicity decreases (i.e. ethnically homogenous dyads are rare). Thus overall, the chance for pupils to find fellow pupils with the same ethnicity that might defend them decreases with increasing ethnic diversity. Based on this line of reasoning, we expect that overall prevalence of bullying will increase in more ethnically diverse classes (Hypothesis 3). That said, inter- and intra-ethnic bullying may not necessarily increase at the same rate.

One of the dominant theories in inter-ethnic relations research, and one which has received ample empirical support, is contact theory (Allport, 1954; Pettigrew and Tropp, 2006). Intergroup contact reduces prejudice, especially under 'Allport's' optimal conditions; when groups have equal status and common goals, when groups have to cooperate and when intergroup contact is supported by authorities. In more ethnically diverse classes, opportunities for inter-ethnic contact increase. Wagner et al. (2003) showed that when inter-ethnic contact opportunities increased in classrooms, actual inter-ethnic contact increased as well (cf. Quillian and Campbell, 2003). As inter-ethnic contact reduces ethnic prejudice – especially among our age group and in ongoing situations such as primary school classes where some degree of contact will be unavoidable (Pettigrew and Tropp, 2006) – we expect that with increasing ethnic diversity, inter-ethnic bullying decreases relative to intra-ethnic bullying (Hypothesis 4). If both Hypotheses 3 and 4 hold true, overall levels of bullying will increase, although inter-ethnic bullying at a slower rate.

Hypothesis 4 can also be derived from social misfit theory if we assume that in more ethnically diverse classes, ethnicity becomes a less important signal for someone's otherness. As a consequence, bullying someone for his/her ethnicity will be less prevalent in more ethnically diverse classes, and bullying will become relatively less common within ethnically mixed pupil pairs compared to ethnically homogenous pupil pairs. However, if we follow the reasoning as outlined in conflict theory (Bobo and Hutchings, 1996), we would come to a contradictory hypothesis, at least for native Dutch pupils.

Conflict theory states that with larger sizes of ethnic outgroups present in the direct living environment, feelings of ethnic threat will increase. Actual or perceived ethnic group threat increases prejudicial attitudes (Quillian, 1995; Scheepers et al., 2002) and, as a likely consequence of prejudice, presumably inter-ethnic bullying. We argue that perceived ethnic threat may also increase among pupils if the size of the ethnic outgroup increases in the classroom (cf. St. John and Lewis, 1975). Higher levels of ethnic diversity in the class are not, however, synonymous with larger ethnic outgroup sizes. For example, consider two classrooms: class 1 with 80

percent native Dutch and 20 percent Moroccan pupils, and class 2 with 80 percent native Dutch, 10 percent Moroccan pupils and 10 percent Surinamese pupils. Class 2 is more ethnically diverse than class 1 (i.e. the chance that two randomly picked students have a different ethnic background is higher), but for native Dutch the relative outgroup size is constant between classes (20 percent). Empirically, increasing ethnic diversity in (our sample of) Dutch school classes amounts to an increasing ethnic outgroup size for native Dutch, and to a decreasing ethnic outgroup size for ethnic minorities (Appendix A). Thus, following conflict theory, we expect that with increasing ethnic diversity, native Dutch will bully more inter-ethnically and ethnic minorities will bully less inter-ethnically (Hypothesis 5). If both Hypotheses 3 and 5 hold true, overall levels of bullying will increase, but for native Dutch, inter-ethnic bullying will increase at a faster rate.

Both the conflict mechanism and the contact mechanism may operate at the same time; some pupils may feel threatened by larger ethnic outgroup sizes, others may foremost experience more positive intergroup contact. The debate as to which mechanism dominates – and under which circumstances and for whom – has just begun (Savelkoul et al., 2011), but, ultimately contact theory and conflict theory predict contradictory outcomes; Hypothesis 4 and 5 cannot hold true simultaneously.

### 2.4. Previously identified correlates of bullies and victims

In order to answer the second research question, *How does the prevalence of bullies and victims vary with ethnicity?*, we argued above that it is necessary to adopt a who-with-whom perspective and to control for the ethnic composition of dyads constituted by two pupils of the same class, and for the level of ethnic diversity of the class. Because previous studies showed that bullies are stronger and more popular than their victims (Olweus, 1993; Sijtsema et al., 2009), we will also control for sporting abilities (as a proxy for physical strength) and how popular pupils are, as perceived by their classmates. Boys are more likely to be involved in general bullying and physical bullying than girls, although girls are more often involved in relational bullying. Boys are less likely to be victimized (Veenstra et al., 2005; Scheithauer et al., 2006). We therefore decided to take into account the gender of the pupils as well. The more friends a pupil has, the less likely it is that s/he will be picked as a victim (Ladd et al., 1997; Sainio et al., 2011). Bullies (in particular female bullies) have less friends than non-bullies (Mouttapa et al., 2004). As a final control variable at the pupil level we therefore controlled for the number of friendship nominations each pupil received. Members of an ethnic outgroup may be regarded as social misfits due to differing religious practices (cf. Eslea and Mukhtar, 2000). Unfortunately, we only have information on religious affiliation available to us and religious affiliation and ethnic background overlap too strongly in our dataset to include them simultaneously in our explanatory models. At the class-level, we take into account the size of the class since class size has been found to be associated with the occurrence of bullying behavior, although scholars have reached mixed findings (Houry-Kassabri et al., 2004; Verkuyten and Thijs, 2002; Wolke et al., 2001).

Ethnic diversity of local living environments is supposedly related to lower levels of social cohesion, both between and within ethnic groups (Putnam, 2007). But the negative effect of ethnic diversity in communities upon indicators of social cohesion is, when observed at all, to a large extent explained by the mean socio-economic status of the community (Tolsma et al., 2009). In a similar vein, higher prevalence of bullying in ethnically more diverse classrooms may actually be a consequence of the lower average socio-economic status in these classes. Accordingly, we aim to control for class SES as well, although it will remain unclear

<sup>2</sup> Social misfit theory cannot be applied to derive a hypothesis on the relationship between one's ethnicity and victimization; whether members of a specific ethnic category are regarded as misfits, and hence as potential victims, depends on the ethnicity of the bully.

whether the mean SES of a class is the actual cause or ‘merely’ interprets a possible effect of ethnic diversity.

### 3. Method

#### 3.1. Data

To test our hypotheses we made use of the second wave of the Primary School Module of The Arnhem School Study (TASS) (Stark and Flache, 2012; Stark et al., 2013). The data were collected in the winter of 2007–2008 in five multi-ethnic city districts in the mid-sized Dutch city of Arnhem. The respondents were enrolled in their last year of primary school (median age 11).<sup>3</sup> Parents’ passive consent for pupils’ participation was requested in cooperation with the schools, and in four languages (Dutch, English, Arabic, and Turkish). The overall response rate was 94.2 percent. Non-response was due to parents’ refused participation of their child (2.3 percent) or because children were ill when the questionnaire was administered (3.5 percent). Pupils were asked to fill in a paper questionnaire under the supervision of a trained research assistant.

#### 3.2. The multilevel $p_2$ model

Our dependent variable is measured at the dyadic level; whether or not a bullying relationship is present or absent in the pair of directed ties of the dyad constituted by two pupils within the same classroom. One bully can target several victims and one victim can be targeted by several bullies, thus, the bullying relationships – the bully–victim dyads – are nested in both the sender (pupils who are naming classmates whom they bully and by whom they are bullied) and the receiver (pupils who are named as victim or as bully). Moreover, pupils are nested within classes, which can be seen as autonomous social networks, stable in time and with identifiable borders. Our working sample consists of 15,344 dyads cross-nested in 739 pupils (i.e. 739 senders and 739 receivers) nested in 36 classes. By taking dyads as our unit of analysis, we implicitly control for opportunities for inter- and intra-ethnic bullying, as inter- and intra-ethnic dyads are represented in proportion to the level of ethnic diversity in the classroom.

In order to accommodate the nested structure of this type of data, we apply the multilevel  $p_2$  model (Zijlstra et al., 2006).<sup>4</sup> Although the  $p_2$  model does not take into account that pupils may be arranged in more complex network structures than dyads (e.g. triangular or tetradic structures), the  $p_2$  model permits multilevel modeling. Because our focus is in part on fixed and random effects of sender/receiver and class characteristics on bullying, we opted for the multilevel  $p_2$  model rather than alternative approaches such as exponential random graph modeling (Robins et al., 2007).

The multilevel  $p_2$  model can be viewed as the random effects multinomial logistic regression model for dyads. It models the likelihood that one of the four possible relationships in a dyad is observed: (1) pupil  $i$  bullies pupil  $j$ , but pupil  $j$  does not bully pupil  $i$ ; (2) pupil  $j$  bullies pupil  $i$ , but pupil  $i$  does not bully pupil  $j$ ; (3) pupil  $i$  and  $j$  bully each other; (4) pupil  $i$  and  $j$  do not bully each other. The general model parameters are *density* and *reciprocity*. With the density parameter, the likelihood that there is a bullying relationship in the directed ties of each dyad is modeled. The reciprocity parameter models the likelihood that bully–victim relationships are reciprocated. Because we set out to explain the likelihood of a bullying relationship in the directed ties of the dyad, we further modeled the density parameter by characteristics of the dyad (ethnically mixed

or homogeneous), and by random and fixed effects of the sender, the receiver (e.g. ethnicity), and the class (e.g. ethnic diversity). Reciprocity is not the focus of this study and no covariates are used to further model this parameter. The estimated parameters can be interpreted in a similar fashion as in regular (multinomial) logistic regression models: if a specific independent variable is to increase by one unit, given that the other variables in the model are held constant, the log-odds that there is a relationship in a directed tie of the dyad – versus there being no relationship – is expected to increase by the parameter estimate of this specific independent variable. The  $p_2$  model is estimated with a bootstrap procedure. Significance of parameters are based on  $t$ -tests taking into account the different degrees of freedom at each level of analysis and lead to similar conclusions as those based on bootstrap confidence intervals.

#### 3.3. Dependent variable – bullying

Bullying behavior was measured with a ‘who-with-whom’ procedure. Pupils were presented with a list of all classmates and asked “Whom do you bully?” and “By whom are you being bullied?”. We hence measured the occurrence of a bullying relationship twice; once from the perspective of the bully (as nominator) and once from the perspective of the victim (as nominator). No definition of bullying was provided beforehand, as we wanted to enhance the likelihood that differences in perspectives of bullying and victimization would come to the fore (cf. Veenstra et al., 2007). In our sample, nominated victims agreed in 22.5 percent of the cases with the self-declared bullies that there was indeed a bully–victim relationship. Vice versa, nominated bullies agreed in 14.8 percent of the cases with the self-declared victims that a bully relationship existed.

#### 3.4. Dyadic characteristics

Pupils’ ethnicities were determined via the country of birth of the parents, in accordance to the definition used by Statistics Netherlands (CBS, 2009). If one of the parents was born in another country, the pupil was assigned the ethnicity of the foreign country. If the parents were born in different foreign countries, the pupil was assigned the ethnicity of the mother. Applying this definition of ethnicity, our sample consists of pupils from 50 different ethnic

variables  $Y_{ijk}$ . Then the estimated multilevel  $p_2$  model for the probabilities of the two observed ties between actors  $i$  and  $j$  in class  $k$  is given by:

$$P(Y_{ijk} = y_{ijk}, Y_{jik} = y_{jik}) = \frac{\exp(Y_{ijk}\mu_{ijk} + Y_{jik}\mu_{jik} + Y_{ijk}Y_{jik}\rho)}{c},$$

$$\mu_{ijk} = \mu + \alpha_i + \beta_j + \delta_k,$$

$$\alpha_i = \alpha + A_i,$$

$$\beta_j = \beta + B_j,$$

$$\delta_k = \delta + M_k$$

$$c = \sum_{Y_{ijk}Y_{jik} \in \{0,1\}, i \neq j} \exp(Y_{ijk}\mu_{ijk} + Y_{jik}\mu_{jik} + Y_{ijk}Y_{jik}\rho)$$
(1)

where  $\mu$  is the density parameter,  $\rho$  the reciprocity parameter,  $\alpha$  a sender parameter,  $\beta$  a receiver parameter and  $\delta$  a class parameter.  $A_i$  and  $B_j$  are random sender and receiver effects, assumed to be independent, identically bivariate normally distributed variables with zero means and  $\sigma_A^2$  sender variance,  $\sigma_B^2$  receiver variance and  $\sigma_{AB}$  covariance.  $M_k$  is a random class effect with zero mean and  $\sigma_k^2$  class variance. The random effect at the class-level ( $k$ ) is independent from the random effects at the actor level ( $i$ ). We further extended this baseline model by including covariates (fixed effects) for  $\alpha$ ,  $\beta$  and  $\mu$ : the sender ( $\alpha$ ) and receiver ( $\beta$ ) parameters are regressed on pupil covariates, density ( $\mu$ ) is regressed on dyadic specific covariates and the class parameter ( $\delta$ ) is regressed on class-level covariates. For a previous application of the multilevel  $p_2$  model to school classes see Vermeij et al. (2009). The model has been described in detail by Zijlstra et al. (2006).

<sup>3</sup> Twenty-five of the 36 classes were so-called combination classes in which children of the last two or three years of primary education were taught together.

<sup>4</sup> Let  $k$  different dependent networks with  $n_k$  actors be denoted by the tie indicator

backgrounds.<sup>5</sup> The largest ethnic groups are native Dutch (56.3 percent), Turks (15.9 percent), Moroccans (3.9 percent), Surinamese (3.5 percent), and Antilleans (1.9 percent).

In theory, a dyad could have 2,500 different ethnic compositions ( $50 \times 50$ ). We opted for a more parsimonious variable “mixed dyad” with the value 1 when pupils belonged to different ethnic groups and 0 when they were part of the same ethnic group. Less parsimonious operationalizations in which we analyzed pairings of particular ethnic groups (e.g. native Dutch-native Dutch, native Dutch-Turks, etc.) led to similar conclusions. Approximately 49 percent of the dyads in our sample were ethnically mixed.

### 3.5. Ethnicity of the sender and of the receiver

At the sender and receiver levels we make a distinction between five ethnic groups: (1) native Dutch (2) Western ethnic background (e.g. Germans, Belgians), (3) Turks and Moroccans; (4) Surinamese and Antilleans; (5) other non-Western ethnic background. More detailed categorizations would result in sparsely filled ethnic categories and in a considerable loss of degrees of freedom. We therefore decided to focus on possible differences in bullying between the largest ethnic groups. A further rationale to combine Moroccans and Turks into a single category, as well as Surinamese and Antilleans into a single category, is that the paired groups share, to some extent, the same migration history and cultural background (Lucassen and Penninx, 1997).

### 3.6. Classroom characteristics

Ethnic diversity was operationalized as the complement of the Herfindahl Index.<sup>6</sup> This measure of ethnic diversity can be interpreted as the chance that two randomly chosen pupils within a classroom have different ethnic backgrounds. Theoretically the range of the index lies between 0 (complete homogeneity) and  $1 - 1/N$  (where  $N$  is the number of different ethnic groups in the class), with higher values indicating more ethnic diversity. Across the 36 classes, on average there was a 52 percent chance that two randomly selected pupils were of different ethnic groups. In general, higher levels of ethnic diversity are related to smaller proportions of native Dutch, larger proportions of pupils with a non-Western ethnic background, and with more different ethnic groups present in the class (Appendix A).

### 3.7. Controls and missing values

Both at the sender and the receiver level we included gender (males as reference category), perceived popularity (as an indicator of status among peers), number of friends and being good at sports (as an indicator of physical strength) as control variables. Perceived popularity, number of friends and being good at sports were measured with a nomination procedure where pupils received a list with the names of their classmates and had to nominate the ones whom they considered being popular and good at sports and with whom they were friends. We then computed the percentage represented by the nominations that each pupil received from the possible number of nominations that they could receive (referring

to the number of classmates). At the class-level we controlled for the size of the classroom.

Unfortunately, our pupil questionnaire did not contain questions regarding the socio-economic status of parents. However, most school boards in the Netherlands ask parents to provide their own levels of education when they enroll their children in elementary school. As an indicator of socio-economic status we hence used parental education as listed in the school administration. For three classes we have no information on parental education; for two classes, teachers were unwilling to collect the information on parental education, one class of our sample belongs to a school where parents do not have to provide their level of education. This means that including this control variable would lead to a considerable loss of data. We therefore decided to include these control variables only in a final step on a subsample for which the information was available in order to assess the robustness of our results. In this robustness check, we controlled for parental levels of education at all levels of observation. At the dyadic level, we constructed a variable indicating whether or not the educational levels of the highest educated parent of the two pupils constituting the dyad were similar or different. At the sender and receiver levels we categorized parental level of education as (1) primary education, (2) lower secondary education (i.e. LBO, MAVO), (3) higher secondary education (HAVO, VWO, MBO) and (4) tertiary education (HBO, university). At the class-level we calculated the average educational level in years, based on the highest educated parent of each pupil. The Pearson correlation between mean parental level of education and ethnic diversity at the class-level was  $-0.7$  (Appendix A).

Information on students who did not participate in the study was used to calculate class size and mean level of parental education, but these pupils were excluded from the analysis (due to missing values on the dependent variables). In order to maintain the size of the sample equal across sub-models, we treated missing values on categorical variables as an additional category. Descriptive statistics can be found in Table 1. Pearson's correlations between the variables at the class-level are summarized in Appendix A.

## 4. Results

### 4.1. Descriptive analysis

Of all pupils in our sample, 30.0 percent indicated to bully and 28.5 percent indicated to be bullied. According to bullies, there are 535 bullying relations, 3.4 percent of all ties. If we measure bullying from a victim perspective, we counted 776 bullying relations, 5.1 percent of all ties.

For descriptive purposes, we calculated the ratio of inter- and intra-ethnic bullying ties relative to the total ethnically mixed and homogenous ties present within a class (in order to control for the availability of mixed and homogenous ties within the class). Figs. 1 and 2 graphically represent the proportion of relative inter- and intra-ethnic bullying in the 36 classes. In Fig. 1 bullies were the nominators, in Fig. 2 victims were the nominators. The lines in the figures represent OLS regression lines of relative inter-ethnic bullying (solid line) and intra-ethnic bullying (dashed line) regressed on class ethnic diversity.

Figs. 1 and 2 show that, in general, inter- and intra-ethnic bullying are more common in more ethnically diverse classrooms. Figs. 1 and 2 also make clear that there is substantial variation in bullying across classes; there are quite a number of classes where hardly any bully relationships are observed, but we also observe classes where within approximately 20 percent of all ties a bully relationship exists. It seems that intra-ethnic bullying increases at a faster rate than inter-ethnic bullying, especially judging from the bully-nominations. However, in Figs. 1 and 2, we did not yet control for characteristics of pupils and for class size. To test our hypotheses

<sup>5</sup> Most ethnic minority pupils (81 percent) were born in the Netherlands and will have Dutch nationality. With the label ‘Turks’ we hence mean pupils of whom at least one parent is born in Turkey and not a pupil with Turkish nationality. The ethnic category ‘Turks’ hence indicates an ancestral connection to Turkey.

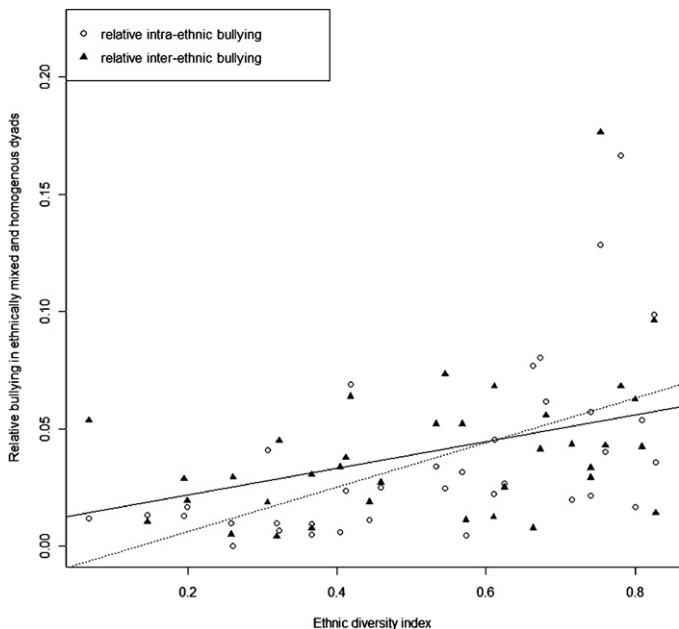
<sup>6</sup> The Herfindahl Index (HI) is given by:  $HI = \sum P_i^2$ , where  $P_i$  is the proportion of the ethnic group  $i$  within the school class. The measure of ethnic diversity is obtained by taking the complement of the HI:  $1 - HI$ .

**Table 1**  
Descriptives of the study variables.

Variable	Min	Max	Mean/Perc.	Std.	N. valid
<b>Dyad level</b>					
Bullying occurrence	0	1	3.4%		15,344
Victimization occurrence	0	1	5.06%		15,344
Ethnically mixed dyads	0	1	48.9%		15,344
Dummy missing ethnically mixed dyads	0	1	0.85%		15,344
SES mixed dyads <sup>a</sup>	0	1	48.05%		14,350
Dummy missing SES mixed dyads <sup>a</sup>	0	1	0.91%		14,350
<b>Individual level</b>					
Western ethnic minority	0	1	5.01%		739
Turks and Moroccans	0	1	19.35%		739
Surinamese and Antilleans	0	1	5.28%		739
Other non-Western ethnic minority	0	1	13.53%		739
Dummy missing ethnicity			0.41%		739
Gender (female)	0	1	50.07%		739
Missing dummy gender	0	1	2.84%		739
Friendship nominations	0	0.68	0.23	0.12	739
Popularity nominations	0	0.83	0.16	0.17	739
Good at sport nominations	0	1	0.34	0.25	739
SES low secondary education <sup>a</sup>	0	1	17.72%		683
SES higher secondary education <sup>a</sup>	0	1	23.28%		683
SES tertiary <sup>a</sup>	0	1	39.24%		683
Missing dummy SES individual level <sup>a</sup>	0	1	4.4%		683
<b>Class level</b>					
Ethnic diversity index	0.07	0.83	0.52	0.22	36
Size of classroom	12	30	21.78	4.93	36
SES class <sup>a</sup>	7.62	15.07	11.08	2.44	33

Source: The Arnhem School Study (TASS).

<sup>a</sup> Descriptives are calculated for the 33 classes for which this data was available.



**Fig. 1.** Relative inter- and intra-ethnic bullying across levels of ethnic diversity of class. Note. For each class, the proportion of inter-ethnic bullying (filled triangles) and intra-ethnic bullying (circles) was calculated based on the bully-nominations (y-axis in Fig. 1) or the victim-nominations (y-axis in Fig. 2). The level of ethnic diversity of each class is shown on the x-axis. The dashed line represents the OLS regression line of intra-ethnic bullying on ethnic diversity of the class (N = 36). The solid line represents the OLS regression line of inter-ethnic bullying on ethnic diversity of the class (N = 36).

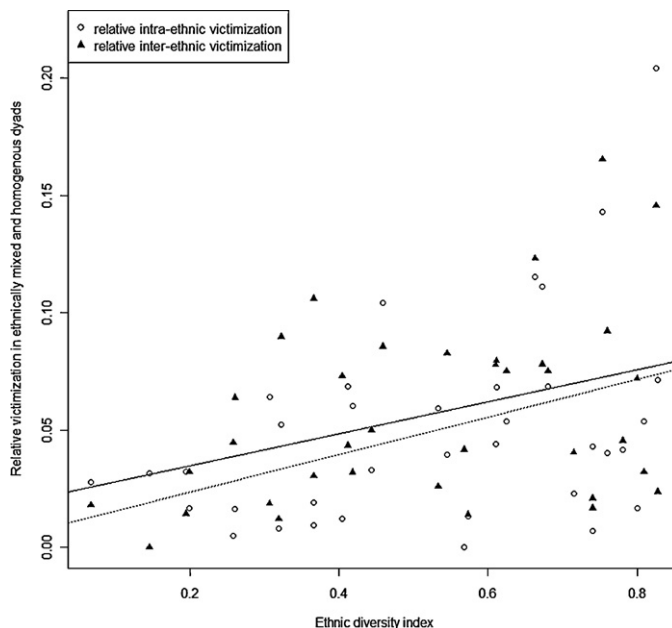
appropriately, we continued our analysis by estimating multilevel  $p_2$  models.

4.2. Multilevel  $p_2$  models

Table 2 presents the results on bullying relationships based on reports of bullies. The same type of analysis is presented in Table 3,

when bullying is measured from the perspective of the victims. At the bottom of Tables 2 and 3, we report the random effects at the sender, receiver and classroom levels.

In Model 1, we included all variables at the dyadic and individual levels. The negative density parameter estimate of Model 1 in Table 2 (the intercept or constant of the density parameter is -1.76) reflects that the expected probability of a bully tie is low. More precisely, the predicted probability – conditional on the random effects – to observe a directed bully tie between two native Dutch male pupils with mean levels of popularity, friendships and sporting abilities in a class of 22 pupils is 0.7 percent. The corresponding marginal probability (or population average, where we



**Fig. 2.** Relative inter- and intra-ethnic victimization across levels of ethnic diversity of class. Note. see Fig. 1.

**Table 2**  
Results of multilevel  $p_2$  model – bullies make the nominations.

	Model 1		Model 2		Model 3	
	Posterior mean	SE	Posterior mean	SE	Posterior mean	SE
Intercept						
Density	<b>-1.76</b>	0.91	<b>-2.21</b>	0.84	<b>-1.60</b>	0.53
Reciprocity	<b>0.97</b>	0.35	<b>0.77</b>	0.27	<b>0.92</b>	0.29
Dyadic characteristics						
Ethnically mixed dyads (homogeneous = ref.)	0.05	0.17	0.02	0.20	0.08	0.16
Sender (bully) characteristics						
Ethnicity (Dutch = ref.)						
Western ethnicity	-0.34	0.39	-0.36	0.44	-0.77	0.48
Turks and Moroccans	<b>0.81</b>	0.29	0.27	0.30	0.35	0.31
Surinamese and Antilleans	1.24	0.64	<b>0.68</b>	0.31	0.56	0.51
Other non-Western ethnic groups	0.07	0.34	-0.28	0.44	-0.42	0.29
Female (male = ref.)	<b>-0.82</b>	0.19	<b>-0.72</b>	0.19	<b>-0.77</b>	0.26
Friendships in class	<b>-3.03</b>	0.97	-2.77	1.49	<b>-3.31</b>	0.85
Popularity	<b>2.74</b>	0.73	<b>2.36</b>	0.64	<b>2.46</b>	0.76
Good at sports	-0.47	0.42	-0.24	0.42	-0.10	0.52
Receiver (victim) characteristics						
Ethnicity (Dutch = ref.)						
Western ethnicity	-0.39	0.44	-0.69	0.42	<b>-0.76</b>	0.32
Turks and Moroccans	0.22	0.22	0.04	0.24	-0.06	0.24
Surinamese and Antilleans	-0.46	0.36	-0.58	0.49	-0.71	0.38
Other non-Western ethnic groups	-0.07	0.23	-0.27	0.30	-0.22	0.28
Female (male = ref.)	<b>-0.49</b>	0.16	<b>-0.52</b>	0.15	<b>-0.50</b>	0.15
Friendships in class	<b>-4.05</b>	0.88	<b>-4.66</b>	0.68	<b>-5.08</b>	0.74
Popularity	0.30	0.60	0.25	0.52	0.32	0.71
Good at sports	<b>-0.95</b>	0.38	<b>-1.05</b>	0.49	-0.74	0.49
Classroom characteristics						
Ethnic diversity			<b>4.56</b>	0.83	<b>5.22</b>	0.95
Size	<b>-0.07</b>	<b>0.02</b>	<b>-0.04</b>	0.02	<b>-0.07</b>	0.01
Interactions						
Ethnic diversity × ethnically mixed dyads					-0.77	0.82
Variance components						
Sender variance	3.73		3.61		4.06	
Receiver variance	1.41		1.38		1.57	
Covariance sender–receiver	-0.18		-0.08		-0.17	
Classroom variance	1.08		0.54		0.55	

Source: The Arnhem School Study (TASS).

Observations: 15,344 dyads, 739 pupils, 36 classes. Bold effects are significant for  $\alpha < 0.05$ , two tailed. Significance of these estimates is derived from the approximately normal distribution of the  $t$ -ratio, calculated as the ratio of the parameter by its standard error.

average over all random effects) is 6.0 percent.<sup>7</sup> The positive and significant reciprocity parameter indicates that there is a tendency for the nominated victims to reciprocate the bullying behavior.

We expected inter-ethnic bullying to be more common than intra-ethnic bullying (Hypothesis 1). Our results are not in line with this expectation: the effect of an 'ethnically mixed dyad' is close to zero and not significant (0.05, SE: 0.17, Table 2, Model 1; -0.19, SE: 0.15, Table 3, Model 1). These results do not lend support for our rationale that ethnicity may act as a signal for someone's otherness, nor does it seem to imply that ethnic prejudice is related to inter-ethnic bullying.

In Hypothesis 2, we formulated the expectation that pupils from non-Western ethnic groups are more involved in bullying as perpetrators than native Dutch. Let us first look at the nominations of bullies. In Table 2, Model 1, the parameter estimate of the ethnic category 'Turks and Moroccans' (sender characteristic) is 0.81 and significant (SE: 0.29), the estimate for the ethnic category 'Surinamese and Antilleans' is 1.24 (SE: 0.64) and almost reaches the conventional significance level ( $p = 0.053$ ). Based on victims' nominations we also conclude that Turks and Moroccans bully more, the estimate is 0.74 (SE: 0.18; receiver characteristics) but not that

Surinamese and Antilleans bully more. There are no significant differences between native Dutch and pupils of other non-Western or Western ethnic backgrounds in the prevalence of bullying behavior as perpetrator. Thus, without controlling for the level of ethnic diversity of the class, we would be unable to reject Hypothesis 2. Before we include the level of ethnic diversity into the explanatory model and put Hypothesis 2 to a more stringent test, we will first briefly discuss the impact of the control variables.

We did not formulate any specific hypothesis with respect to the ethnicity of the victim and the chance to observe a bully relationship, but the results presented in Models 1 (receiver effects of ethnicity in Table 2 and sender effects of ethnicity in Table 3) show that ethnic groups do not differ significantly from one another in the chance to be victimized. Girls are less likely to be bullies (-0.82, SE: 0.19, Table 2, Model 1; -0.96, SE: 0.14, Table 3, Model 1). Girls are also less likely to be nominated as victims (-0.49, SE: 0.16, Table 2, Model 1), but girls, just as often as boys, state being victimized; the parameter estimate for 'female' as sender characteristic in Table 3, Model 1 is not significant. Pupils with more friends bully less (-3.03, SE 0.97, Table 2, Model 1; -3.31, SE 0.69, Table 3, Model 1). Physical strength – measured via the proxy 'good at sports' – is related to a higher chance at being involved in bullying as perpetrator, but only according to the victims' perspective (0.67, SE: 0.30, Table 3, Model 1). Being good at sports lowers the chance of being victimized (-0.95, SE: 0.38, Table 2, Model 1; -2.22, SE: 0.43, Table 3, Model 1). Our results on pupil characteristics are hence fairly consistent across type of measurement (bully-nominations

<sup>7</sup> Following the rationale of Rasbach et al. (2005, p. 114), we calculated the marginal probability with 1000 values for  $A_i$ ,  $B_j$  and  $M_k$  based on the estimates of the variance/covariance components of the fitted model. An R script is available at [www.jtolsma.nl](http://www.jtolsma.nl) to replicate the reported (marginal) probabilities.

**Table 3**  
Results of the multilevel  $p_2$  model – victims make the nominations.

	Model 1		Model 2		Model 3	
	Posterior mean	SE	Posterior mean	SE	Posterior mean	SE
Intercept						
Density	<b>-1.99</b>	0.56	<b>-2.53</b>	0.76	<b>-1.34</b>	0.44
Reciprocity	<b>1.36</b>	0.31	<b>1.27</b>	0.22	<b>1.33</b>	0.25
Dyadic characteristics						
Ethnically mixed dyads (homogeneous = ref.)	-0.19	0.15	-0.15	0.18	-0.19	0.13
Sender (victim) characteristics						
Ethnicity (Dutch as ref.)						
Western ethnicity	0.23	0.36	0.18	0.40	0.15	0.50
Turks and Moroccans	0.39	0.26	-0.09	0.30	-0.04	0.27
Surinamese and Antilleans	1.16	0.72	0.51	0.32	0.35	0.43
Other non-Western ethnic groups	0.48	0.30	0.09	0.34	-0.01	0.30
Gender (male = ref.)	0.10	0.22	0.16	0.21	0.02	0.21
Friendships in class	<b>-4.57</b>	1.10	<b>-3.49</b>	1.17	<b>-4.77</b>	0.76
Popularity	-1.00	0.73	<b>-1.69</b>	0.75	<b>-1.12</b>	0.80
Good at sports	<b>-2.22</b>	0.43	<b>-1.80</b>	0.50	<b>-2.10</b>	0.41
Receiver (bully) characteristics						
Ethnicity (Dutch = ref.)						
Western ethnicity	0.60	0.36	0.21	0.27	0.35	0.26
Turks and Moroccans	<b>0.74</b>	0.18	<b>0.51</b>	0.21	<b>0.44</b>	0.21
Surinamese and Antilleans	0.08	0.27	-0.15	0.33	-0.30	0.39
Other non-Western ethnic groups	0.26	0.19	0.05	0.28	0.12	0.25
Gender (male = refs)	<b>-0.96</b>	0.14	<b>-0.95</b>	0.11	<b>-1.02</b>	0.14
Friendships in class	<b>-3.31</b>	0.69	<b>-3.83</b>	0.56	<b>-3.83</b>	0.66
Popularity	<b>4.49</b>	0.42	<b>4.42</b>	0.44	<b>4.60</b>	0.55
Good at sports	<b>0.67</b>	0.30	0.62	0.34	0.66	0.39
Classroom characteristics						
Ethnic diversity			<b>3.27</b>	0.59	<b>3.44</b>	1.11
Size	<b>-0.06</b>	0.01	-0.03	0.02	<b>-0.08</b>	0.01
Interactions						
Ethnic diversity × ethnically mixed dyads					-0.05	0.67
Variance components						
Sender variance	4.59		4.45		4.93	
Receiver variance	1.07		1.03		1.20	
Covariance sender–receiver	0.15		0.15		0.12	
Classroom variance	0.74		0.44		0.47	

Source: The Arnhem School Study (TASS).

Observations: 15,344 dyads, 739 pupils, 36 classes. Bold effects are significant for  $\alpha < 0.05$ , two tailed. Significance of these estimates is derived from the approximately normal distribution of the  $t$ -ratio, calculated as the ratio of the parameter by its standard error.

versus victim-nominations), with the exception of good at sports (as bully characteristic) and gender (as victim characteristic). These latter inconsistencies indicate that bullying is a subjective experience. The final control variable is class size; the estimated impact of class size ( $-0.07$ , SE: 0.02, Table 2, Model 1;  $-0.06$ , SE 0.01, Table 3, Model 1) indicates that there is less bullying in classes with more pupils.

In Model 2 (Tables 2 and 3), we introduced the ethnic diversity measure at the level of the classroom. The level of ethnic diversity explains a substantial part of the variance in bullying relationships observed across classes; after introducing the level of ethnic diversity, the class-level variance decreased by 50 percent ( $[1.08 - 0.54]/1.08$ ) in Table 2 and by 40 percent ( $[0.74 - 0.44]/0.74$ ) in Table 3. Our results indicate that in more ethnically diverse classrooms, the occurrence of bullying behavior increases significantly and substantially (4.56, SE: 0.83, Table 2, Model 2; 3.27, SE: 0.59, Table 3, Model 2). According to the estimates as reported in Table 2, Model 2, the estimated marginal probability to observe a directed bully tie between two native Dutch male pupils with mean levels of popularity, friendships and sporting abilities in a class of 22 pupils and low in ethnic diversity (one standard deviation below average) is 2.7 percent. For the same boys in a class of 22 pupils but high in ethnic diversity (one standard deviation above average), this probability is 10.4 percent (see also footnote 7). These findings clearly provide support for our expectation (Hypothesis 3) that in ethnically diverse classes, pupils may find it difficult to receive social support from peers, and hence bullying increases.

Once we include the level of ethnic diversity of the class, the effect sizes of ‘Turks and Moroccans’ as bully characteristics are substantially reduced: from 0.81 (SE: 0.29) to 0.27 (SE: 0.30) in Table 2 and from 0.74 (SE: 0.18) to 0.51 (SE: 0.21) in Table 3. This clearly demonstrates that the explanation that Turks and Moroccans bully more is rooted partly in the fact that they are more often in classes high in ethnic diversity where bullying is more common. The estimate for ‘Surinamese and Antilleans’ as bully characteristic in Table 2 is also reduced substantially but now does reach significance (0.68, SE: 0.31, Table 2, Model 2). We hence find only weak corroborative evidence in favor of Hypothesis 2 that pupils of non-Western ethnic backgrounds bully more.

In Model 3 (Tables 2 and 3), we test whether in more ethnically diverse classes inter-ethnic bullying will become less common (Hypothesis 4). Consistent with this hypothesis (that could be derived from contact theory and social misfit theory), we observe a negative interaction term between ‘ethnic diversity’ and ‘ethnically mixed dyad’ in both tables – albeit neither interaction is significant;  $-0.77$  SE: 0.82, Table 2, Model 3;  $-0.05$ , SE: 0.67, Table 3, Model 3. The descriptive results of Figs. 1 and 2 suggest that with increasing ethnic diversity, the increase in bullying *between* ethnic groups is slower than the increase in bullying *within* ethnic groups, the results obtained from the  $p_2$  model make clear that this difference is not significant.

Our last hypothesis was derived from conflict theory and stated that in particular native Dutch pupils will bully more inter-ethnically in ethnically diverse classes (Hypothesis 5). We will test



**Table 4**  
Results of the multilevel  $p_2$  model – bullies make the nominations.

	Posterior mean	SE
Model 4a		
Ethnic diversity × sender Dutch	2.11	1.12
Model 4b		
Sender Dutch × ethnically mixed dyads	0.40	0.37
Model 4c		
Ethnic diversity × sender Dutch	2.98	1.88
Sender Dutch × ethnically mixed dyads	0.46	0.52
Ethnic diversity × ethnically mixed dyads	0.65	1.46
Ethnic diversity × sender Dutch × ethnically mixed dyads	−1.06	2.20

Source: The Arnhem School Study (TASS).

Observations: 15,344 dyads, 739 pupils, 36 classes. Bold effects are significant for  $\alpha < 0.05$ , two tailed. Significance of these estimates is derived from the approximately normal distribution of the  $t$ -ratio, calculated as the ratio of the parameter by its standard error.

this hypothesis in a stepwise procedure and, for reasons of parsimony, show results for bully nominations only (Table 4). Results based on victim reports lead to similar conclusions and are available on request. We first assessed whether native Dutch pupils in particular bully more in ethnically diverse classes. We find weak corroborative evidence for this claim (2.11 SE: 1.12, Table 4, Model 4a). In a second step we showed that, in general, native Dutch – just as pupils with an ethnic minority background – do not engage more often in inter-ethnic bullying compared to intra-ethnic bullying; the interaction between native Dutch (sender characteristic) and ethnically mixed dyad is not significant (0.40, SE: 0.37, Table 4, Model 4b). In our last model we find that, contrary to Hypothesis 5, Native Dutch bullies do not especially pick minority pupils as their target in more ethnically diverse classes; the three-way interaction is not significant (−1.06, SE: 2.20, Model 4c).

#### 4.3. Robustness check, controlling for parental education

As a final robustness check, we controlled for parental education at all levels of analysis (dyadic, sender, receiver and class) among a subsample for which this information was available (14,350 dyads nested in 683 pupils nested in 33 classes). Among this subsample, results without controlling for parental education were similar to those presented in Tables 2 and 3. In classes with higher mean levels of parental education, bullying is less common; the parameter estimates for ‘mean parental education’ are −0.20 (SE=0.06; bully nominations) and −0.32 (SE=0.08; victim nominations; results not shown). This also explains why in larger classes bullying is less common: larger classes have higher mean levels of parental education (Appendix A). As a consequence, the effect of class size is reduced to almost null after controlling for mean parental education of the class. The effect of ethnic diversity is also to some extent interpreted by mean parental education; after controlling for mean parental education, the parameter estimate of ‘ethnic diversity’ is reduced by approximately 11 percent (from 2.75, SE=0.98 to 2.46, SE=0.98) when bullies are nominators and by 25 percent (from 1.58, SE=0.69 to 1.18, SE=0.80) when victims were nominators.<sup>8</sup> That said, even after controlling for parental education, bullying is significantly more common in ethnically diverse classes, according to the bully perspective.

## 5. Discussion

In this study we set out to answer the question “Who is bullying whom?” within multi-ethnic school classes. We took into account

the distinction between intra-ethnic and inter-ethnic bullying and expected that the level of ethnic diversity of school classes could affect the prevalence of bullying as well. We acknowledged that ethnic minorities and native Dutch may have different patterns of involvement in bullying toward ethnic in- and outgroups. We looked at bullies and their victims as part of dyads: pairs of pupils that can share specific characteristics (e.g. ethnically mixed or homogenous pairs). We refrained from using umbrella concepts for ethnic categories when possible, and used detailed information on the ethnic background of the respondents in our sample to identify ethnically mixed or homogeneous bully–victim pairs and to measure the level of ethnic diversity in each class. We applied multilevel  $p_2$  models, allowing us to take into account the complex scenario in which bullying manifests itself: school classes with different ethnic compositions where pupils can engage in bullying toward their classmates of either the same or different ethnicity. We used both bullies and victims reports of bullying to give more robustness to our conclusions. We controlled for previously identified predictors of bullying to assess the net impact of our determinants of interest: the ethnic composition of a bully–victim pair, ethnicity of bully and victim, and the ethnic diversity of the class.

We showed that bullying between pupils of a different ethnic background is just as common as bullying within one’s own ethnic group.

The chance to be victimized does not depend on the ethnicity of the pupil. Once we control for the level of ethnic diversity of the class, Turks and Moroccans no longer state themselves that they bully significantly more than native Dutch. However, according to victims, Turks and Moroccans bully significantly more than native Dutch. Conclusions on the impact of ethnicity on bullying are hence contingent on whether bully–nominations or victim–nominations are used to measure bullying. It may also imply that bullying is not only a subjective experience for bullies and victims but also between ethnic groups. A necessary step for future research is to formally assess measurement equivalence of bullying across ethnic groups.

Our most important finding is that in ethnically diverse classes both inter- and intra-ethnic bullying is more common. Especially ethnic minorities find themselves in ethnically diverse classes, and without controlling for this class characteristic, scholars may hence prematurely conclude that ethnic minorities bully more. The reported detrimental impact of the level of ethnic diversity in the class is likely to refer to a real phenomenon; we observe it for both inter- and intra-ethnic bullying, both when we use bully–nominations and victim–nominations. Moreover, we do not consider it likely that our results are an artifact of measurement non-equivalence between ethnic groups as this is not likely to be influenced by the level of ethnic diversity of the class.

We would like to mention two other weaknesses of our study, aside from the possible non-equivalence of the bullying measure across ethnic groups. First, we mentioned that the impact of the level of ethnic diversity of the class is to some extent interpreted by mean levels of parental education. In ethnically diverse classes, bullying – both inter- and intra-ethnic – is more common. This is in part due to differences in mean levels of parental education across classes. With a more comprehensive measurement of parents’ socio-economic status, the effect of ethnic diversity may possible be even further explained. Secondly, we acknowledge that children are not just arranged in series of dyads, but may also form triads and more complicated group structures. In ethnically diverse classrooms, different friendship networks may be formed than in homogeneous classes, and these network structures may affect the prevalence of inter- and intra-ethnic bullying. How these structures affect bullying remains to be investigated.

The finding that both inter- and intra-ethnic bullying are negatively affected by ethnic diversity echoes Putnam’s statement that

<sup>8</sup> In the baseline model, parental education was already included as control variables at the dyad level and at the sender and receiver levels.

higher levels of ethnic diversity trigger social isolation and erode relationships between *and* within ethnic groups (Putnam, 2007); not a very positive message for our increasingly ethnically diverse classrooms. However, our hypotheses derived from conflict theory did not meet strong corroborative evidence. Based on this study, we tentatively conclude that ethnic tensions are not very salient between ethnic groups or do not play an important role in explaining the occurrence of a bully–victim relationship in primary schools. Similarly, someone’s ethnicity does not provide an important signal for someone’s otherness, thereby offering a reason or explanation to be bullied.

In ethnically diverse classes, pupils may have fewer friends to protect themselves from being victimized, but a

possible – admittedly *post hoc* – alternative explanation for our observation that bullying is more common in ethnically diverse classes might be that teachers are not able to maintain discipline and control in these classes. This, in turn, may be due to the more diverse pupil population, or due to the fact that less experienced or less able teachers are in front of ethnically diverse classes. Our data do not allow exploring these potential alternative explanations that have high practical relevance for counter-balancing the damaging effect of ethnic diversity, leaving it as an open invitation for future research.

#### Appendix A. Correlations between variables at the class level

	D	W	TM	SA	ONW	NEG	SES	SC	HI
Dutch (D)	1.00								
Western ethnicity (W)	0.30	1.00							
Turks and Moroccans (TM)	<b>-0.86</b>	-0.31	1.00						
Surinamese and Antilleans (SA)	<b>-0.39</b>	-0.23	0.09	1.00					
Other non-Western ethnic groups (ONW)	<b>-0.60</b>	<b>-0.34</b>	0.18	0.30	1.00				
Number ethnic groups in class (NEG)	<b>-0.42</b>	0.05	0.04	<b>0.47</b>	<b>0.62</b>	1.00			
SES class (SES) <sup>a</sup>	<b>0.79</b>	0.23	<b>-0.76</b>	-0.28	<b>-0.36</b>	-0.24	1.00		
Size class (SC)	<b>0.49</b>	0.14	<b>-0.44</b>	-0.27	-0.22	0.07	<b>0.70</b>	1.00	
Ethnic diversity (HI)	<b>-0.72</b>	-0.12	<b>0.39</b>	<b>0.57</b>	<b>0.68</b>	<b>0.75</b>	<b>-0.69</b>	<b>-0.45</b>	1.00

Bold effects are significant for  $\alpha < 0.05$ , two tailed.

<sup>a</sup> Values calculated for 33 classes.

## References

- Aberson, C.L., Gaffney, A.M., 2008. An integrated threat model of explicit and implicit attitudes. *European Journal of Social Psychology* 39, 808–830.
- Allport, G.W., 1954. *The Nature of Prejudice*. Addison-Wesley, Cambridge, MA.
- Baerveldt, C., Zijlstra, B., De Wolf, M., Van Rossem, R., Van Duijn, M.A.J., 2007. Ethnic boundaries in high school students' networks in Flanders and the Netherlands. *International Sociology* 22, 701–720.
- Bobo, L., Hutchings, V.L., 1996. Perceptions of racial group competition: extending Blumer's theory of group position to a multiracial social context. *American Sociological Review* 6, 951–972.
- CBS, 2009. Standaarddefinitie allochtonen. Retrieved from <http://www.cbs.nl/NR/rdonlyres/26785779-AAFE-4B39-AD07-59F34DCD44C8/0/index1119.pdf> (2 November 2009).
- Eslea, M., Mukhtar, K., 2000. Bullying and racism among Asian schoolchildren in Britain. *Educational Research* 42, 207–217.
- Fandrem, H., Strohmeier, D., Roland, E., 2009. Bullying and victimization among native and immigrant adolescents in Norway: the role of proactive and reactive aggressiveness. *Journal of Early Adolescence* 29, 898–923.
- Farrington, D.P., 1993. Understanding and preventing bullying. *Crime and Justice* 17, 381–458.
- Hallinan, M.T., Williams, R.A., 1989. Interracial friendship choices in secondary schools. *American Sociological Review* 54, 67–78.
- Hanish, L.D., Guerra, N.G., 2000. The roles of ethnicity and school context in predicting children's victimization by peers. *American Journal of Community Psychology* 28, 201–223.
- Hodges, E.V.E., Malone, M.J., Perry, D.G., 1997. Individual risk and social risk as interacting determinants of victimization in the peer group. *Developmental Psychology* 33, 1032–1039.
- Khouri-Kassabri, M., Benbenishty, R., Astor, R., Zeira, A., 2004. The contribution of community, family and school variables on student victimization. *American Journal of Community Psychology* 34, 187–204.
- Ladd, G.W., Kochenderfer, B.J., Coleman, C.C., 1997. Classroom peer acceptance, friendship, and victimization: distinct relational systems that contribute uniquely to children's school adjustment. *Child Development* 68, 1181–1197.
- Lucassen, J.M.W.G., Penninx, M.J.A., 1997. Newcomers: Immigrants and Their Descendants in the Netherlands 1550–1995. *Het spinhuis*, Amsterdam (M. Wintle, Trans.).
- McKenney, K.S., Pepler, D., Craig, W., Connolly, J., 2006. Peer victimization and psychosocial adjustment: the experiences of Canadian immigrant youth. *Electronic Journal of Research in Educational Psychology* 4, 239–264.
- McPherson, M., Smith-Lovin, L., Cook, J.M., 2001. Birds of a feather: homophily in social networks. *Annual Review of Sociology* 27, 415–444.
- Mouittapa, M., Valente, T., Gallaher, P., Rohrbach, L.A., Unger, J.B., 2004. Social network predictors of bullying and victimization. *Adolescence* 39, 315–335.
- Olweus, B., 1993. *Bullying at School: What We Know and What We Can Do*. Understanding Children's Worlds. Blackwell, Oxford.
- Pettigrew, T.F., 2008. Future directions for intergroup contact theory and research. *International Journal of Intercultural Relations* 32, 187–199.
- Pettigrew, T.F., Tropp, L.R., 2006. A meta-analytic test of intergroup contact theory. *Interpersonal Relations and Group Processes* 90, 751–783.
- Putnam, R., 2007. *E Pluribus Unum: diversity and community in the twenty-first century: the 2006 Johan Skytte Prize lecture*. *Scandinavian Political Studies* 30, 137–174.
- Quillian, L., 1995. Prejudice as a response to perceived group threat: population composition and anti-immigrant and racial prejudice in Europe. *American Sociological Review* 60, 586–611.
- Quillian, L., Campbell, M.E., 2003. Beyond Black and White: the present and future of multiracial friendship segregation. *American Sociological Review* 68, 540–566.
- Rasbach, J., Steele, F., Browne, W., Prosser, B., 2005. *A User's Guide to MLwiN: Version 2.0*. Centre for Multilevel Modelling, University of Bristol, Bristol.
- Robins, G., Pattison, P., Kalish, Y., Lusher, D., 2007. An introduction to exponential random graph ( $p^*$ ) models for social networks. *Social Networks* 29, 173–191.
- Rodkin, P.C., Berger, C., 2008. Who bullies whom? Social status asymmetries by victim gender. *International Journal of Behavioral Development* 32, 473–485.
- Sainio, M., Veenstra, R., Huitsing, G., Salmivalli, C., 2011. Victims and their defenders: a dyadic approach. *International Journal of Behavioral Development* 35, 144–151.
- Savelkoul, M., Scheepers, P., Tolsma, J., Hagendoorn, L., 2011. Anti-muslim attitudes in The Netherlands: tests of contradictory hypotheses derived from ethnic competition theory and intergroup contact theory. *European sociological review* 27 (6), 741–758.
- Scheepers, P., Gijsberts, M., Coenders, M., 2002. Ethnic exclusionism in European countries. Public opposition to civil rights for legal migrants as a response to perceived ethnic threat. *European Sociological Review* 18, 17–34.
- Scheithauer, H., Hayer, T., Petermann, F., Jugert, G., 2006. Physical, verbal, and relational forms of bullying among German students: age trends, gender differences, and correlates. *Aggressive Behavior* 32, 261–275.
- Schulz, H., Six, B., 1996. How strong is the relationship between prejudice and discrimination? A meta-analytic answer. *International Journal Intercultural Relations* 20, 441–462.
- Sijtsema, J.J., Veenstra, R., Lindenberg, S., Salmivalli, C., 2009. Empirical test of bullies' status goals: assessing direct goals, aggression, and prestige. *Aggressive Behavior* 35, 57–67.
- St. John, N.H., Lewis, R.G., 1975. Race and the social structure of the elementary classroom. *Sociology of Education* 48, 346–368.
- Stark, T.H., Flache, A., 2012. The double edge of common interest: ethnic segregation as an unintended byproduct of opinion homophily. *Sociology of Education* 85, 179–199.
- Stark, T.H., Flache, A., Veenstra, R., 2013. Generalization of positive and negative attitudes towards individuals to outgroup attitudes. *Personality and Social Psychology Bulletin*, in press.
- Strohmeier, D., Spiel, C., 2003. Immigrant children in Austria: aggressive behavior and friendship patterns in multicultural school classes. In: Maurice, J.E., Zins, J.E. (Eds.), *Bullying, Peer Harassment, and Victimization in the Schools: The Next Generation of Prevention*. The Haworth Press, Inc., NY, pp. 103–120.
- Tolsma, J., Van der Meer, T., Gesthuizen, M., 2009. The impact of neighbourhood and municipality characteristics on social cohesion in The Netherlands. *Acta Politica* 44, 286–313.
- Tolsma, J., Lubbers, M., Gijsberts, M., 2012. Education and cultural integration among ethnic minorities and natives in The Netherlands: a test of the integration paradox. *Journal of Ethnic and Migration Studies* 38, 793–813.
- Veenstra, R., Lindenberg, S., Oldehinkel, A.J., De Winter, A.F., Verhulst, F.C., Ormel, J., 2005. Bullying and victimization in elementary schools: a comparison of bullies, victims, bully/victims, and uninvolved preadolescents. *Developmental Psychology* 41, 672–682.
- Veenstra, R., Lindenberg, S., Zijlstra, B.J.H., De Winter, A.F., Verhulst, F.C., Ormel, J., 2007. The dyadic nature of bullying and victimization: testing a dual perspective theory. *Child Development* 78, 1843–1854.
- Veenstra, R., Lindenberg, S., Munniksma, A., Dijkstra, J.K., 2010. The complex relation between bullying, victimization, acceptance, and rejection: giving special attention to status, affection, and sex differences. *Child Development* 81, 480–486.
- Verkuyten, M., 2003. Ethnic in-group bias among minority and majority early adolescents: the perception of negative peer behavior. *British Journal of Developmental Psychology* 21, 543–564.
- Verkuyten, M., Steenhuis, A., 2005. Preadolescents' understanding and reasoning about asylum seeker peers and friendships. *Journal of Applied Developmental Psychology* 26, 660–679.
- Verkuyten, M., Thijs, J., 2002. Racist victimization among children in The Netherlands: the effect of ethnic group and school. *Ethnic and Racial Studies* 25, 310–331.
- Vermeij, L., Van Duijn, M.A.J., Baerveldt, C., 2009. Ethnic segregation in context: social discrimination among native Dutch pupils and their ethnic minority classmates. *Social Networks* 31, 230–239.
- Vervoort, M.H.M., Scholte, R.H.J., Overbeek, G., 2010. Bullying and victimization among adolescents: the role of ethnicity and ethnic composition of school class. *Journal of Youth and Adolescence* 39, 1–11.
- Wagner, U., Van Dick, R., Pettigrew, T.F., Christ, O., 2003. Ethnic prejudice in East and West Germany: the explanatory power of intergroup contact. *Group Processes and Intergroup Relations* 6, 22–36.
- Wolke, D., Woods, S., Schulz, H., Stanford, K., 2001. Bullying and victimization of primary school children in England and Germany: prevalence and school factors. *British Journal of Psychology* 92, 673–696.
- Wright, J.C., Giammarino, M., Parad, H.W., 1986. Social status in small groups: individual-group similarity and the social misfit. *Journal of Personality and Social Psychology* 50, 523–536.
- Zijlstra, B.J.H., Van Duijn, A.J., Snijders, T.A.B., 2006. The multilevel  $p_2$  model. A random effects model for the analysis of multiple social networks. *Methodology* 2, 42–47.