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The ethnic composition of schools and students' problem behaviour in four European countries: the role of friends

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ABSTRACT

This study examines the relation between the proportion of co-ethnics in school and adolescents' problem behaviour in school (e.g. skipping class and arguing with teachers) and whether friendship patterns are underlying this relationship. We use data from the Children of Immigrants Longitudinal Survey in Four European Countries on $\pm 16,000$ students in England, Germany, The Netherlands, and Sweden and find that children display less problem behaviour when the proportion of co-ethnics in school is higher. This relationship is mediated by the characteristics of the friends that students have: the proportion of co-ethnics in school positively relates to students' proportion of in-school friends and co-ethnic friends in class, which are in turn negatively associated with problem behaviour in school. The strength and significance of these paths depend on students' ethnicity and country of residence. Implications of this study are discussed in the conclusion.

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Introduction

The effect of a school's ethnic composition on students' school outcomes has received considerable attention in the scientific as well as the political debate. Most of these studies have focused on the effect of the ethnic composition of schools on school performance, such as standardised test scores (Bankston and Caldas 1996; Driessen 2002) and grades (Szulkin and Jonsson 2007). This line of research has shown that especially for ethnic minority students, the proportion of ethnic minorities in school tends to have a detrimental effect on cognitive school outcomes (Hallinan 1998; Thijs and Verkuyten 2014) and thereby calls for the ethnic integration of schools.

Much less research has examined the effect of the ethnic composition of schools on *non-cognitive school outcomes* and existing studies on this relationship seem to provide a different picture. Recent US-based studies indicate that students who are surrounded by more co-ethnics in school exhibit less problem behaviour in school (Eitle and Eitle 2004; Benner and Crosnoe 2011; Georgiades, Boyle, and Fife 2013) (with the exception of the study by Johnson, Crosnoe,

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and Elder (2001)). This association has been found for ethnic minority students as well as for ethnic majority students (Benner and Crosnoe 2011; Georgiades, Boyle, and Fife 2013).

Although various US-based studies show support for the relation between the proportion of co-ethnics – also referred to as ethnic density (Fleischmann et al. 2012) or ethnic congruence (Benner and Graham 2007; Georgiades, Boyle, and Fife 2013) – and problem behaviour in school, Western-European research on this relationship is scarce. After the Second World War, ethnic diversity has risen steadily in Western-Europe (Castles and Miller 2009). Hence, ethnic majority students are increasingly surrounded by minority students, while ethnic minority students are increasingly surrounded by co-ethnics in school. In order to better understand how students are affected by this, the first research question is: ‘To what extent does the proportion of co-ethnics in school affect students’ problem behaviour in school in Western-Europe?’ Problem behaviour in school – sometimes also referred to as behavioural disengagement (Fredricks, Blumenfeld, and Paris 2004) or adjustment problems (Berndt and Keefe 1995) – is the extent to which students do not follow the school rules, such as skipping class, coming late or arguing with teachers.

To be able to tackle the possible aversive effects of being surrounded by fewer co-ethnics in school, it is important to understand *why* this association exists. The ethnic density hypothesis (Halpern 1993) and the belongingness approach (Benner and Crosnoe 2011) posit a possible explanation for the relationship. According to these theoretical accounts, students receive more social support from peers and feel more at home at school when they are surrounded by more co-ethnics. Because of this, they would engage in less problem behaviour (Johnson, Crosnoe, and Elder 2001; Benner and Crosnoe 2011). However, the proposed underlying mechanism has rarely been explicitly measured and tested in the school context. The second research question is: ‘To what extent can the relationship between the proportion of co-ethnics in school and students’ problem behaviour in school be explained by students’ friendships?’

A recent US-based study provides some preliminary answers to this question (Georgiades, Boyle, and Fife 2013). Georgiades, Boyle, and Fife (2013) show that the relationship between the share of co-ethnics in school and problem behaviour is mediated to some extent by students’ sense of school belonging. A possible reason why only a small mediation effect is found, is that, in this study, belongingness in school refers to feelings of relatedness to teachers and a general connectedness to (people in) the school. However, the share of co-ethnics in school is a characteristic of the peer context and may therefore only affect students’ relationships to peers in school. Hence, we contribute to previous research by explicitly focusing on students’ friendships as an underlying mechanism between the share of co-ethnics and students’ problem behaviour. We answer the research questions by using cross-national comparative data on adolescents in Germany, England, Sweden and the Netherlands (Children of Immigrants Longitudinal Survey in Four European Countries (CILS4EU) (Kalter et al. 2013)). These data contain information on 18,716 adolescents in 480 schools with different ethnic compositions and thus offer a unique opportunity to examine the research questions.

Theory

Ethnic composition of schools and problem behaviour in school

Several studies have examined the effect of the ethnic composition in school on students’ problem behaviour. Much of this research has examined the consequences of the overall

share of ethnic minority students in school (rather than the proportion of co-ethnics). Empirical evidence on the association between the share of ethnic minority students in school and problem behaviour is mixed. While Finn and Voelkl (1993) find that students exhibit more school-related problem behaviour when they attend a school with a higher share of ethnic minority students, Demanet and Van Houtte (2012) find no significant association. In contrast, Gieling, Vollebergh, and van Dorsselaer (2010), who focus on more severe indicators of misbehaviour, show that ethnic minority students who attend a school with a higher share of ethnic minority students exhibit less delinquent and aggressive behaviour. Demanet and Van Houtte (2014) even report that *both* ethnic minority and ethnic majority students engage in less school-related problem behaviour in schools with a higher share of ethnic minority students. Yet, a different study by the same authors indicates that only ethnic majority students exhibit less school misconduct in schools with a high concentration of ethnic minority students (as compared to schools with a medium concentration) (Demanet and Van Houtte 2011). For minority students, no association is found. Note that variations in the findings of different studies may be explained by differences in the school features that are accounted for. For example, some studies account for the average socio-economic status of the school (Demanet and Van Houtte 2011; Demanet and Van Houtte 2012; Demanet and Van Houtte 2014), while others do not (Finn and Voelkl 1993; Gieling, Vollebergh, and van Dorsselaer 2010).

Scholars have criticised the use of *the share of ethnic minorities* as an indicator of ethnic composition, since it does not distinguish between different ethnic minority groups. For people from the ethnic minority, the presence of ethnic in-group members is not separated from the presence of ethnic out-group members (Halpern 1993; Fleischmann et al. 2012). Moreover, for ethnic majority students, the share of ethnic minority students is inversely related to the presence of co-ethnics. The importance of this distinction was highlighted first in mental health research, which used *the share of co-ethnics* as an indicator and showed that this measure was positively related to mental health outcomes for all ethnic groups (Halpern 1993). Later, the share of co-ethnics has also been applied in research on ethnic composition effects on educational outcomes (Fleischmann et al. 2012), including problem behaviour in school. US-based studies indicate that the proportion of co-ethnics in school is negatively related to general problem behaviour, such as getting drunk, and fighting (Benner and Crosnoe 2011; Georgiades, Boyle, and Fife 2013), as well as school-specific problem behaviour, such as school absences (Benner and Graham 2009) and school suspension (Eitle and Eitle 2004). However, Johnson, Crosnoe, and Elder (2001), do not find a significant relationship between the share of co-ethnics in school and school-specific problem behaviour.

Explaining the school composition effect

The ethnic density hypothesis provides one explanation for the benefits of being surrounded by co-ethnics. It states that the presence of co-ethnics heightens social support and buffers against discrimination, victimisation, exclusion and feelings of alienation (Halpern 1993; Fleischmann et al. 2012).

Social support is usually defined as a multidimensional concept including emotional, informational, appraisal and instrumental support (Schaffer 2013). Moreover, social support may be negative. While accounts on the ethnic density hypothesis tend to use

the generic term 'social support', positive social support is implied. More concretely, Halpern (1993, 603) specifies that the absence of co-ethnics leads to a lack of emotional and instrumental support. For reasons of readability, we sometimes use the generic term 'social support'.

The ethnic density hypothesis closely resembles the belongingness approach. When people are surrounded by more co-ethnics in school, they are more likely to feel that they fit in and to feel emotionally connected to their peers (Benner and Crosnoe 2011). People are expected to find it easier to make friends in such a context (Georgiades, Boyle, and Fife 2013) and this adds to a person's sense of security and safety in school. In sum, it contributes to feelings of school belonging and relatedness (Benner and Crosnoe 2011). Research indeed shows that students have higher levels of school belonging when the proportion of co-ethnics in school is higher (Johnson, Crosnoe, and Elder 2001; Benner, Graham, and Mistry 2008).

According to the belongingness approach, the need for positive interpersonal relationships (i.e. belongingness) is a basic human need essential to human development. A need is considered to be a basic human need when it meets certain criteria (Baumeister and Leary 1995). Among others, it has to be universal and a lack thereof should cause negative effects on health, adjustment or well-being. Baumeister and Leary (1995) show that belonging meets these criteria. With respect to school outcomes belonging is found to be associated with, among others, higher levels of school motivation and orientation, enjoyment of school, school attendance, lower levels of school suspension, better grades and lower levels of school dropout (see Osterman (2000) for a review).

Belongingness in school is therefore expected to be negatively related to problem behaviour. Belongingness in school through positive relationship with peers makes spending time at school and doing schoolwork more enjoyable (Witkow and Fuligni 2010) and provides students a reason to go to school (e.g. to not skip class) (Johnson, Crosnoe, and Elder 2001; Hamm and Faircloth 2005). Hence, it leads to school involvement and buffers against disaffection from school (Furrer and Skinner 2003). Moreover, when students identify more with school and have a higher sense of school belonging, they value the school-environment more, which makes them more likely to adhere to the norms and rules of that environment (Finn 1989). We hypothesise:

(H1) When the proportion of co-ethnics in school is higher, a student's problem behaviour in school is lower.

In this paper we test the belongingness and social support ideas via friendships. Belongingness and important aspects of social support (e.g. emotional and instrumental support) in school are to a large extent determined by friendships in school (Hamm and Faircloth 2005; Juvonen, Espinoza, and Knifsend 2012). We examine two friendship characteristics that are expected to promote belonging (or social support) in school: (1) the proportion of co-ethnic friends (as compared to inter-ethnic friends) in class and (2) the proportion of in-school (as compared to out-of-school) friends.

The idea that positive co-ethnic ties, such as co-ethnic friendships, provide social support and belonging that tie the share of co-ethnics in school to educational outcomes is not new (Benner and Crosnoe 2011; Georgiades, Boyle, and Fife 2013). First, a student's share of co-ethnic friendship is expected to be larger in schools with a higher share of co-ethnics. According to homophily theory people prefer friendships with co-ethnic peers,

since they are (perceived) to be more similar with respect to tastes, worldviews and behaviour (McPherson, Smith-Lovin, and Cook 2001). The extent to which people will actually satisfy this preference depends on their *opportunity* to do so (Blau 1977; Moody 2001). This opportunity will be larger in schools with a higher share of co-ethnics. We hypothesise:

(H2) When the proportion of co-ethnics in school is higher, a student has a higher proportion of intra-ethnic – as compared to inter-ethnic – friends in class. (see Figure 1, path a)

Based on homophily theory, co-ethnic friendships are also assumed to be more intimate and provide more emotional support (which are seen as (sub)dimensions of social support, see Schaffer 2013) than inter-ethnic friends. Because co-ethnic friends are preferred friends that are (perceived) to be more similar with respect to tastes, worldviews and behaviour (McPherson, Smith-Lovin, and Cook 2001), they are less likely to disagree and run into conflicts (Smith 2015). Same-ethnic friendships have therefore been argued to be of higher quality than inter-ethnic friendships. High-quality friendships are an example of supportive relationships and are marked by the presence of positive features (e.g. closeness and intimacy) and the absence of negative features (e.g. conflict) (Berndt 1989, 1999). Moreover, they tend to be more stable than low-quality friendships (Berndt 1999).

Previous research shows that co-ethnic friendships are of higher quality than inter-ethnic friendships, albeit differences are sometimes small. Co-ethnic friends are more likely to engage in shared activities (Kao and Joyner 2004), are less likely to dissolve their friendship (Aboud, Mendelson, and Purdy 2003; Schneider, Dixon, and Udvari 2007; Smith 2015) and are closer and more intimate (Aboud, Mendelson, and Purdy 2003; Schneider, Dixon, and Udvari 2007) than inter-ethnic friends.

Co-ethnic friends may likewise enhance belongingness in school (Ueno 2009). Students who are ethnically different from their friends in school are assumed to feel more out of place in school than students with same-ethnic friends in school. The ethnic composition of one’s friendship group in school may affect belongingness even more than the ethnic composition of the larger peer context, as students are closer to their friends and compare themselves more to friends than to non-friends. Ueno (2009) indeed finds a significant relationship between students’ share of same-race friendships in school and school attachment.

We focus on the share of co-ethnic friends (as compared to inter-ethnic friends) in class. Students spend most of their time in the classroom and especially the social support that they receive from their friends in class may thus be related to their

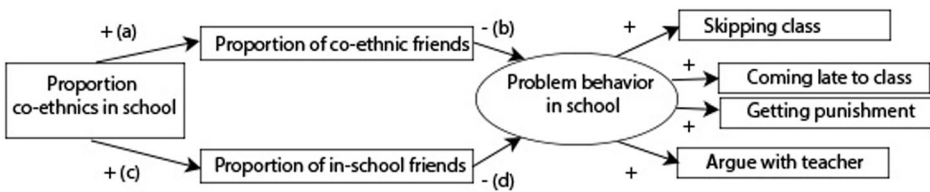


Figure 1. Theoretical model.

problem behaviour in school. Hamm and Faircloth (2005) show in a small-scale qualitative study that high-quality friends in class motivated students to go to school.

(H3) The more intra-ethnic – as compared to inter-ethnic – friends in class a student has, the less he/she engages in problem behaviour in school. (see [Figure 1](#), path b)

Besides co-ethnic friends, in-school friends (as compared to out-of-school friends) are assumed to provide social support and belongingness in school and are expected to link the share of co-ethnics in school to problem behaviour in school. When there is less opportunity to realise the preference for co-ethnic friends within the school context, adolescents might try to find their preferred friends outside school (Van Houtte and Stevens 2009; Witkow and Fuligni 2010). We hypothesise:

(H4) When the proportion of co-ethnics in school is higher, a student has a higher proportion of in-school – as compared to out-of-school – friends. (see [Figure 1](#), path c)

A lack of in-school friendships might hamper students' social support and belongingness in school (Witkow and Fuligni 2010). For example, a US-based study shows that college students with a higher proportion of friends who attend the same college identify more with school (Witkow, Gillen-O'Neel, and Fuligni 2012). Similarly, Vaquera (2009) finds that adolescents whose best friend attends the same school have a higher sense of school belonging. According to the belongingness approach, in-school friends will therefore reduce a student's problem behaviour in school. We hypothesise:

(H5) The more in-school – as compared to out-of-school – friends a student has, the less he/she engage in problem behaviour in school. (see [Figure 1](#), path d)

Although friendships are expected to have behavioural benefits, these benefits may be suppressed when friends display problem behaviour in school. Previous research shows that adolescents match their problem behaviour in school to the problem behaviour of their friends (Geven, Weesie, and van Tubergen 2013). Hence when in-school and/or co-ethnic friends engage in higher levels of problem behaviour, they might encourage adolescents to also engage in problem behaviour. Despite these possible counterworking effects, we expect that, in general in-school and co-ethnic friendships have a negative effect on problem behaviour in school by the social support and belongingness they offer. Hence, *grosso modo* we expect a negative effect.

Differences between ethnic minority and ethnic majority students?

In England, Germany, The Netherlands and Sweden, native ethnic group members are in the numerical majority compared to members of other ethnic groups. Moreover, many ethnic minority groups tend to have a lower socio-economic status than their native counterparts and suffer from ethnic discrimination in school and the labour market (Luciak 2004; Heath, Rothon, and Kilpi 2008; Van Tubergen and van Gaans 2013). Discrimination is not limited to ethnic minority groups with a relatively low socio-economic status. For example, South Asians outperform the ethnic majority in school in Britain, but report relatively high levels of racial harassment by peers in school (Heath, Rothon, and Kilpi 2008). Because ethnic minority students are in the (numerical) subordinate position, they may be more in need for belongingness and a buffer against victimisation and

discrimination in school (Benner and Crosnoe 2011). A lack of belongingness in school may thus especially harm the school adjustment of ethnic minority students. Hence, we expect that a higher share of co-ethnic friends and in-school friends is more negatively related to the problem behaviour of ethnic minority students than that of ethnic majority students.

Using a similar line of reasoning, Benner and Crosnoe (2011) hypothesise that the effect of co-ethnics in school on externalising problem behaviour will be larger for ethnic minority students than for ethnic majority students in the US. However, they do not find support for this. Similarly, Georgiades, Boyle, and Fife (2013) find small ethnic group differences in the strength of the association between the share of co-ethnics in school and problem behaviour in the US. The association was found for almost all ethnic groups in the study (i.e. native Americans and non-Hispanic Whites, Blacks, Hispanics and Asians from the first, second and third generation), except for Black students from the third generation. For Asians from the third generation the negative association was significantly stronger than for third generation Non-Hispanic Whites. Although US-based research has found few/small ethnic group differences for the direct effect, we hypothesise for the European context:

(H6) The effect of having co-ethnic friends in class (as compared to inter-ethnic friends) on problem behaviour in school is stronger for students from the ethnic minority group than for students from the ethnic majority group.

(H7) The effect of having in-school friends (as compared to out-of-school friends) on problem behaviour in school is stronger for students from the ethnic minority group than for students from the ethnic majority group.

Contextual background of the study

Ethnic diversity has been increasing in England, Germany, the Netherlands and Sweden after the Second World War. About 19% of the English and Welsh population (ONS 2012), 20% of the German population (Destatis 2013), 32% of the Dutch population (CBS 2014) and 26% of the Swedish population (SCB 2014) are now part of an ethnic minority group. There are various similarities between the migration histories of these four countries. First, both Germany and The Netherlands received a large share of guest-workers from southern European countries during the 1940s and 1950s and from Turkey and Morocco during the 1960s and 1970s (Heath, Rethon, and Kilpi 2008; Castles and Miller 2009). While these guest-workers were assumed to be temporary, they tended to stay and establish (or reunite) their families in the destination country. Sweden also received guest-workers from Turkey in the 1960s and 70s, though the guest-worker system was less formalised (Heath, Rethon, and Kilpi 2008).

Since the 1940s several Western-European countries have experienced an influx of migrants from former colonies. England received migrants from Ireland, the Caribbean, India and Africa, while the Netherlands received migrants from East India (i.e. Indonesia), Suriname and the Caribbean's (Castles and Miller 2009). In the 1990s, a large group of asylum seekers came to Western Europe after political upheavals in various world regions. Examples of migrants that were part of this influx are Bosnians in Sweden (who fled from the Yugoslavian civil wars) and Nigerians in England. Finally, the opening of the European Union (EU) borders has stimulated migration within the EU.

Migration from neighbouring countries is common (e.g. Poles in Germany, Germans in the Netherlands and Finns in Sweden). Although there are similarities between the migration histories of England, Germany, the Netherlands and Sweden, we will explore country variations in the hypothesised paths as countries differ in their migration and integration policies.

Data

We use the CILS4EU data collected in the school year of 2010–2011 among 18,716 adolescents between 14 and 15 years old in 480 schools in England, the Netherlands, Germany and Sweden (Kalter et al. 2013). Respondents were sampled according to a stratified three-stage sampling design. First, schools were selected with a probability proportional to their size, so that larger schools were more likely to be selected. Schools with a high share of students with an immigrant background were oversampled. In the second sampling stage two classes were randomly selected. Finally, all students in each class were invited to participate. The response rate at the student level varied between 80.5% (England) and 91.1% (The Netherlands). In the analyses we excluded classes (6.2% of all classes) with a high share of erroneous nominations (e.g. nominations of people outside class).

Measurements

Dependent variable

Problem behaviour in school is measured with four items asking students how often they argue with their teachers, get a punishment in school, skip a lesson without permission and come late to school ($\alpha = 0.695$). Answer categories are on a five-point scale and range from every day to never. We recode the items, so that higher scores refer to more problem behaviour.

We conduct a multi-level confirmatory factor analysis of these items at the individual-level and the school-level (i.e. the school population of ± 14 years old). Based on the modification indices, we add a covariance at both levels between the errors of the items on students' argument with teachers and their received punishment in school. Because both items involve relationship with school authorities, they seem theoretically related. The model fit is good ($\chi^2(3) = 22.609$, $p < .001$; CFI = .998; TLI = .992; RMSEA = .020). The supplemental data provides information on measurement invariance across countries and between ethnic minority and ethnic majority students. [Figure 2](#) shows the distribution of the factor scores for both ethnic majority students and ethnic minority students.

Mediators

To measure the *proportion of co-ethnic friends* in class we use student reports about their five best friends in class. Because all classmates were sampled to participate in the study, we have information on the ethnic background of most friends in class. We did not consider friendship nominations to classmates who did not participate in the study. Although 17.6% nominated someone who did not participate in the study, analyses in which we control for this lead to similar conclusions. The ethnicity of a student is based on

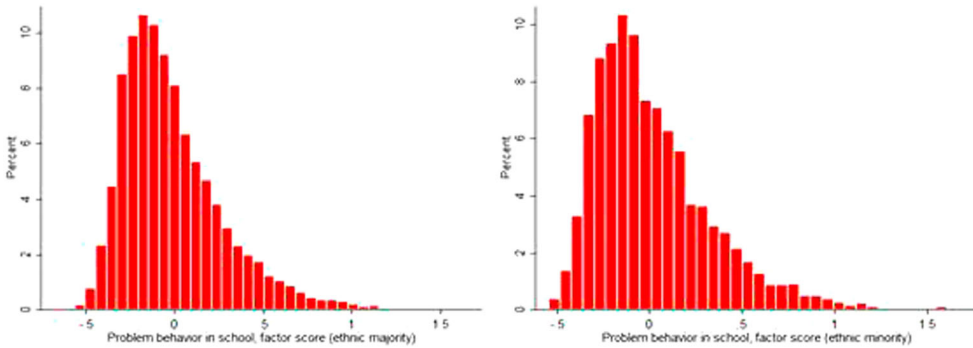


Figure 2. Distribution of the factor score of problem behaviour in school for ethnic majority students (left figure) and ethnic minority students (right figure).

his/her self-identified ethnicity.¹ Students were asked to which group(s), besides the native-origin group, they feel they belong. If a student identifies with more than one group (5.6% of the cases),² we use the self-identified group that matches the parental country of birth. If this is not possible, the first identity is chosen (2.4%). If the self-identified ethnicity is missing, ethnicity is based on parental country of birth, or if this was missing, on the student's country of birth. Students whose ethnic background was missing after this procedure were dropped from the analyses (about 1%). The data contains 138 ethnic groups. The 10 largest ethnic minority groups are (in decreasing order): Turks (5.8%), Russians, Moroccans, Poles, Italians, Pakistanis, Indians, Fins, Assyrians and Surinamese (0.9%).

After determining the ethnic background of all students and their friends, we construct the respondent's *proportion of co-ethnic friends* in class. Co-ethnic friends are those friends who belong to the same-ethnic group as the adolescent (based on the 138 ethnic groups described above). Students' proportion was set to zero when they did not nominate any friends in class (5.3%). On average 57.2% of the friendships are co-ethnic friendships (Table 1). However, the standard deviation on this variable is high, which indicates that there are many students who either have (almost) no or (almost) only co-ethnic friends in class.

We construct the *proportion of friends in school* by using students' reports about their five best friends. For each reported friend, respondents indicated whether this friend attended their school. On average 70.8% of all friends are in-school friends (see Table 1).

Independent variable

The *proportion of co-ethnics in school* is the proportion of participants in school who belong to the same-ethnic group as the respondent (of the 138 groups described above). Note that the data only contain participants from the, on average, 14-year old school population (i.e. grade mates). We do not think this is problematic, since students mostly interact with grade mates (indicated by the fact that 93.8% of the friends in school are either classmates or between 14 and 15 years old). The *proportion of co-ethnics in school* is an individual-level variable, since it is dependent on a student's

Table 1. Descriptive statistics (*N* at individual-level is 16,892 in case there are no missings on that variable, *N* at the school-level is 452).

	Mean (SD)	Range	% missing
Individual-level			
Dependent variables			
Late to class	1.052 (1.018)	0–4	0.40
Argue with teacher	0.906 (1.064)	0–4	0.35
Punished in school	0.774 (0.919)	0–4	0.38
Skip class	0.307 (0.679)	0–4	0.46
Mediators			
Prop. co-ethnic friends in class	0.572 (0.407)	0–1	0.11
Prop. in-school friends	0.708 (0.297)	0–1	0.47
Independent variables			
Prop. co-ethnics school	0.558 (0.339)	0–1	0
Control variables			
Male	0.497	0/1	0.08
Parental education	2.919 (0.924)	1–4	25.48
Region of origin			
Native-born (ref.)	0.703	0/1	0
Anglo-countries	0.005	0/1	0
North- and West-Europe	0.022	0/1	0
South Europe	0.018	0/1	0
Eastern Europe	0.056	0/1	0
Latin America	0.004	0/1	0
Caribbean	0.020	0/1	0
Asia	0.045	0/1	0
Islamic	0.111	0/1	0
Africa	0.017	0/1	0
Number of siblings	1.439 (1.332)	0–25	2.88
Problem behaviour friends	0.723 (0.506)	0–4	0.09
Parents divorced	0.249	0/1	3.21
School-level			
Control variables			
Mean parental education	2.902 (0.574)	1.714–4	0
Prop. co-ethnics school (ethnic homogeneity)	0.550 (0.229)	0.106–1	0
Prop. co-ethnic friends in class	0.562 (0.211)	0.092–1	0
Prop. in-school friends	0.702 (0.124)	0.244–1	0
Country/track			
EN (ref.)	0.195	0/1	0
NL-VMBO-BK	0.073	0/1	0
NL-VMBO-GT	0.066	0/1	0
NL-HAVO	0.038	0/1	0
NL-VWO	0.044	0/1	0
GE-Lower	0.108	0/1	0
GE-inter	0.069	0/1	0
GE-upper	0.049	0/1	0
GE-combination	0.018	0/1	0
GE-comprehensive	0.042	0/1	0
GE-special	0.027	0/1	0
SW	0.272	0/1	0

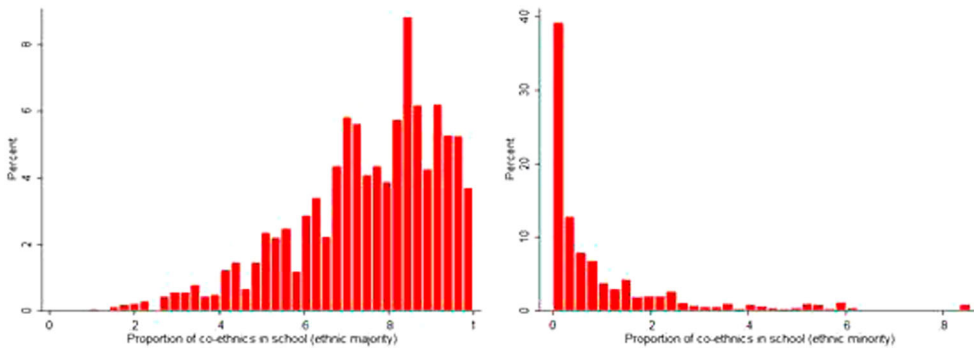


Figure 3. Distribution of the students share of co-ethnics in school for ethnic majority students (left figure) and ethnic minority students (right figure).

ethnicity. Figure 3 shows the distribution of this variable for ethnic majority students and ethnic minority students.

Individual-level controls

The level of problem behaviour in school may vary across different ethnic groups. While for the construction of the proportion of co-ethnics in school and the proportion of co-ethnics friends in class we distinguish between 138 ethnic groups, we cannot include a dummy for all these ethnic groups in the analyses. Hence, to control for ethnic differences in students' problem behaviour in school, we collapse multiple ethnic groups into larger groups that are relatively homogeneous. We create these larger groups on the basis of world regions that the ethnic group stems from, namely: *Anglo-America* (including Australia, New Zealand and neighbouring Islands), *North and Western Europe*, *Southern Europe*, *Eastern Europe*, *Latin America*, *Caribbean*, *Asia*, *Islamic* and *African*. Natives are the reference category. When ethnic groups fall into multiple categories (e.g. Roma's), the category was based on the parental country of birth. If this was not possible, we based the category on the region that most people from this ethnic group stemmed from (e.g. Eastern Europe for Roma's).

We control for gender (*male*) and for the following family characteristics: the *number of siblings* at home, whether *parents are divorced/separated* and *parental education*. *Parental education* indicates the educational level of the parent with the highest educational attainment as provided by the parent of the child. In Sweden, England and Germany parents reported their educational attainment on a four-point scale: no degree, degree below upper secondary, degree from upper secondary and university degree. In the Netherlands, parents answered on a six-point scale. We recoded these answers into the four-point scale. If the educational attainment of both parents was missing, we relied on respondents' reports about their parents' educational attainment. There are many missings on the parental education variable (i.e. 25.48%). Hence, we made it part of the model by estimating its variance. Because we rely on the Full Information Maximum Likelihood approach (FIML), non-missing values for students with a missing on parental education are in this way still used for the estimation. While more cases are

retained through this procedure, it implies that parental education is treated as being normally distributed.

Finally, we control for the *problem behaviour in school of adolescents' friends in class*. Research shows that students converge to the problem behaviour of their friends in class (Geven, Weesie, and van Tubergen 2013). The behavioural advantage of having co-ethnic and in-school friends may be suppressed by the problem behaviour of these friends. For example, a Dutch study indicates that some ethnic minority groups skip class more often than the majority group (Van Tubergen and van Gaans 2013). For these ethnic minority groups, having more co-ethnic friends in class might imply that they are more exposed to, and influenced by anti-school norms. This could suppress the expected protective effect of co-ethnic friends. The *problem behaviour in school of adolescents' friends in class* controls for the problem behaviour of friends in class, and serves as a proxy for the problem behaviour of friends in school. We construct the variable by calculating the average score on the *problem behaviour in school* items for each of the respondent's five best friends in class. Subsequently, we take the average score of all five friends.

School-level controls

We control for the socio-economic composition of the school by including the school's average parental educational attainment (*mean parental education*). For this measure we rely on the non-missing observations within a school.

We control for respondents' country of residence and for the educational level/track that students follow within a country. Because only the Netherlands and Germany have a tracked school system (both based on ability-level), we make several dummy variables that combine the country of residence and the educational track of the school (*Country/Track*). For Sweden we create one dummy variable, since there are no tracks in Sweden. In the Netherlands, we include the dummies: *NL-VMBO-BK* (the most basic vocational tracks), *NL-VMBO-GT* (the follow-up vocational tracks), *NL-HAVO* (senior secondary education track) and *NL-VWO* (pre-university track). For Germany, we include: *GE-lower* (the most basic track), *GE-intermediate*, *GE-upper* (pre-university track in Germany), *GE-comprehensive* (schools in which children with different abilities are integrated), *GE-special* (schools for students with special needs) and *GE-combination* (schools in which several tracks are combined). England serves as the reference category.

The central independent variable and mediators – the proportion of co-ethnics in school, the proportion of friends in school and the proportion of co-ethnic friends in class – are all individual-level (i.e. within-level) variables. Individual-level variables often have variance at both the school-level (i.e. between-level) and the individual-level (Preacher, Zhang, and Zyphur 2011). To establish whether the relationships between these variables occur, as hypothesised, at the individual-level and not at the school-level, we control for the relationship between these variables at the school-level (Preacher, Zhang, and Zyphur 2011). At the school-level the variables have a slightly different meaning. The *proportion of co-ethnics in school* at the school-level indicates the average proportion of co-ethnics by which students in a school are surrounded. It can be interpreted as a measure of ethnic homogeneity: the higher the average proportion of co-ethnics in school by which students are surrounded, the more ethnically

homogeneous the school is. This measure is almost perfectly correlated (.965) to the Herfindahl index. The *proportion of friends in school* and the *proportion of co-ethnic friends in class* at the school-level respectively indicate the average proportion of co-ethnic friends in class and the average proportion of friends in Model fit: $\chi^2(101) = 1729.662$, $p < .001$; CFI 0.877; TLI 0.832 RMSEA 0.032 school that students have at the school-level.

Methods

We use multi-level structural equation modelling (MSEM) in Mplus 7 to test the hypotheses (Muthén and Muthén 1998–2012).³ MSEM enables us to test for the significance of direct and indirect paths, while taking into account the nesting of students within school (Preacher, Zhang, and Zyphur 2011). In traditional multi-level models, between-level effects and within-level effects cannot be distinguished from each other in an appropriate way. While these models report a single effect that combines the between- and the within-level effect, researchers are able to accurately decompose these effects in MSEM (Preacher, Zhang, and Zyphur 2011). By estimating both within- and between-level effects we can, for example, establish whether the extent to which students are surrounded by co-ethnics at the individual-level or ethnic homogeneity in school is related to problem behaviour in school. The individual-level effects need to be significant to find support for the hypotheses.

Because (the items of) the endogenous variables are not normally distributed, we use maximum likelihood estimation with robust standard errors (Kline 2011). We use the FIML estimation for missing data, which implies that observations with missings on one of the endogenous variables are not excluded from the analyses. Instead, estimations make use of all available information. Observations with missings on one of the exogenous variables (i.e. 682 cases – 4.052% – in total) or all endogenous variables (i.e. 13 additional cases – 0.077% – in total) are excluded. Table 1 presents descriptive statistics obtained in STATA.

To test the hypotheses we conduct pooled analyses on ethnic majority and ethnic minority students in all four countries. We estimate models with and without mediators. Subsequently, we examine ethnic group differences and country differences by means of multiple group analyses.

Results

Table 2 presents the results of the MSEM model without mediators. We find a significant negative relationship between the extent to which a student is surrounded by co-ethnics in school and problem behaviour in school (H1). A one-standard-deviation increase in the proportion of co-ethnics in school at the individual-level is associated with a reduction of 0.068 standard deviations in a student's level of problem behaviour. While this effect is significant, it is small.⁴

As explained in the methods and measurement section, we examine the hypothesised relationships also at the school-level. The results indicate that at the school-level there is a significant negative relationship between students' average proportion of co-ethnics in a school (i.e. a level of ethnic homogeneity) and the collective problem behaviour in school.

Table 2. Multi-level structural equation model without mediators, standardised model estimates. Model fit: $\chi^2(101) = 1729.662$, $p < .001$; CFI 0.877; TLI 0.832 RMSEA 0.032.

Individual-level (N=16,197)	Problem behaviour in school	
	Est. (s.e.)	p-Value
Prop. Co-ethnics school	-.068** (.023)	.003
Male	.093** (.011)	.000
Parental education	.020 (.011)	.199
Region of origin		
Anglo-countries	.004 (.010)	.701
North- and West-Europe	.004 (.013)	.740
South Europe	.012 (.012)	.333
Eastern Europe	.003 (.016)	.835
Latin America	-.001 (.012)	.938
Caribbean	.029* (.013)	.020
Asia	-.047** (.015)	.002
Islamic	.001 (.016)	.949
Africa	.015 (.011)	.205
Number of siblings	.055** (.012)	.000
Parents divorced/separated	.121** (.010)	.000
Problem behaviour friends	.344** (.017)	.000

* $p < .05$.

** $p < .01$ (two-tailed tests).

School-level (N=443)	Problematic school behaviour	
	Est. (s.e.)	p-Value
Prop. Co-ethnics school (i.e. ethnic homogeneity)	-.225** (.050)	.000
Mean parental education	.264** (.100)	.009
Country/track (ref. England)		
NL-VMBO-BK	.012 (.073)	.871
NL-VMBO-GT	.013 (.071)	.858
NL-HAVO	-.031 (.057)	.584
NL-VWO	-.020 (.069)	.769
GE-lower	-.339** (.077)	.000
GE-inter	-.318** (.059)	.000

(Continued)

Table 2. Continued.

School-level (<i>N</i> =443)	Problematic school behaviour	
	Est. (s.e.)	<i>p</i> -Value
GE-upper	-.177** (.052)	.001
GE-combination	-.160** (.054)	.003
GE-comprehensive	-.211** (.048)	.000
GE-special	-.166* (.082)	.041
Sweden	-.043 (.110)	.697

p* < .05.*p* < .01 (two-tailed tests).

In [Table 3](#) we present the MSEM model with friendship mediators. The table shows the relationships between the proportion of co-ethnics in school and the two mediators (column 2 and 3 in [Table 3](#)), and the relationships between the mediators and problem behaviour in school (column 1 in [Table 3](#)). We find that a student who is surrounded by more co-ethnics in school has a higher proportion of co-ethnic friendships: a one-standard-deviation increase in the proportion of co-ethnics in school is associated with a 0.784 standard deviation increase in the proportion of co-ethnic friendships (H2). The proportion of co-ethnic friendships is in turn negatively related to a student's problem behaviour in school (H3). A one-standard-deviation increase in the proportion of co-ethnic friends in class is related to a 0.119 standard deviation decrease in problem behaviour in school.

The proportion of co-ethnics in school is positively related to the proportion of in-school friends (as compared to out-of-school friends) (H4), which is in turn negatively related to a student's problem behaviour in school (H5). When the proportion of co-ethnics in school is one-standard-deviation higher, a student's proportion of in-school friends is 0.116 standard deviations higher. A one-standard-deviation increase in the proportion of in-school friends is in turn associated with a 0.107 standard deviation decrease in problem behaviour in school.⁵

[Table 4](#) presents the direct, indirect and total effects of the proportion of co-ethnics in school on problem behaviour in school. There is a significant negative indirect relationship between the proportion of co-ethnics in school and problem behaviour in school via a student's friendship characteristics. After adding the friendship mediators to the model, the direct relationship between the proportion of co-ethnics in school and problem behaviour in school becomes positive and insignificant. Hence, the small negative overall effect of the proportion of co-ethnics in school is fully mediated by a student's friendship characteristics.

Although we have no specific hypotheses about school-level effects, relationships are also tested at the school-level in model 2. Findings indicate that in schools in which students are on average surrounded by a higher proportion of co-ethnics (i.e. more ethnically homogeneity), the average proportion of co-ethnic friendships and in-school friendships is higher. In schools in which students have on average a higher proportion of in-school friends, the collective problem behaviour in school is lower.

Table 3. Multi-level structural equation model with mediators, standardised estimates. Model fit: $\chi^2(115) = 1883.705, p < .001$; CFI .925; TLI .861 RMSEA .031.

	Problem behaviour in school		Prop. co-ethnic friends (mediator)		Prop. in-school friends (mediator)	
	Est. (s.e.)	p-Value	Est. (s.e.)	p-Value	Est. (s.e.)	p-Value
Individual-level (N= 16,197)						
Prop. co-ethnics in school	.035 (.025)	.161	.784** (.018)	.000	.116** (.023)	.000
Prop. co-ethnic friends	-.119** (.013)	.000				
Prop. in-school friends	-.107** (.010)	.000				
Male	.091** (.010)	.000	-.008 (.008)	.292	.009 (.010)	.389
Parental education	.017 (.015)	.279	.000 (.008)	.963	-.017 (.011)	.136
Region of origin (ref. native)						
Anglo-countries	.006 (.010)	.552	.008* (.004)	.030	.016 (.009)	.080
North- and West-Europe	.009 (.013)	.456	.021** (.008)	.007	.027* (.012)	.025
South Europe	.016 (.012)	.196	.017* (.007)	.013	.026* (.012)	.033
Eastern Europe	.011 (.016)	.488	.041** (.011)	.000	.029* (.015)	.047
Latin America	.001 (.012)	.953	.005 (.003)	.169	.011 (.008)	.147
Caribbean	.034** (.012)	.006	.021* (.008)	.013	.031** (.010)	.003
Asia	-.036** (.015)	.017	.043** (.010)	.000	.060** (.015)	.000
Islamic	.019 (.016)	.231	.091** (.013)	.000	.074** (.016)	.000
Africa	.018 (.012)	.119	.018** (.006)	.005	.018 (.011)	.099
Number of siblings	.056** (.012)	.000	-.009 (.007)	.172	.012 (.010)	.219
Parents divorced/separated	.115** (.010)	.000	-.019** (.006)	.001	-.030** (.008)	.000
Problem behaviour friends	.360** (.017)	.000	.111 (.011)	.000	.036 (.010)	.001

* $p < .05$.

** $p < .01$.

School-level (N=443)	Problematic school behaviour		Prop. co-ethnic friends (mediator)		Prop. in-school friends (mediator)	
	Est. (s.e.)	p-Value	Est. (s.e.)	p-Value	Est. (s.e.)	p-Value
Prop. co-ethnics school (i.e. ethnic homogeneity)	.060 (.177)	.734	.889** (.022)	.000	.198** (.041)	.000
Prop. co-ethnic friends	-.253 (.192)	.189				
Prop. in-school friends	-.282** (.099)	.005				
Mean parental education	.194* (.096)	.044	-.043 (.052)	.404	-.240** (.075)	.001
Country/Track (ref. England) NL-VMBO-BK	-.123 (.084)	.145	.010 (.043)	.814	-.485** (.055)	.000

(Continued)

Table 3. Continued.

School-level (N=443)	Problematic school behaviour		Prop. co-ethnic friends (mediator)		Prop. in-school friends (mediator)	
	Est. (s.e.)	p-Value	Est. (s.e.)	p-Value	Est. (s.e.)	p-Value
NL-VMBO-GT	-.064 (.080)	.424	.092** (.034)	.008	-.346** (.046)	.000
NL-HAVO	-.076 (.062)	.223	.032 (.024)	.190	-.183** (.041)	.000
NL-VWO	-.028 (.073)	.704	.084** (.0210)	.000	-.090* (.040)	.023
GE-Lower	-.512** (.097)	.000	.043 (.046)	.347	-.654** (.059)	.000
GE-inter	-.409** (.073)	.000	.098** (.034)	.004	-.403** (.047)	.000
GE-upper	-.212** (.060)	.000	.089** (.025)	.000	-.193** (.036)	.000
GE-combination	-.213** (.056)	.000	.030 (.026)	.258	-.211** (.040)	.000
GE-comprehensive	-.251** (.054)	.000	.077** (.028)	.006	-.211** (.046)	.000
GE-special	-.297** (.092)	.001	-.046 (.047)	.328	-.426** (.056)	.000
Sweden	-.024 (.105)	.821	.091* (.045)	.043	.015 (.055)	.785

* $p < .05$.
** $p < .01$.

Table 4. Overview of direct, indirect and total effect of the (individual-level) proportion of co-ethnics in school on a student’s problem behaviour in school, standardised estimates.

Proportion of co-ethnics in school	Problem behaviour in school	
	Est. (s.e.)	p-Value
Direct effect	0.035 (0.025)	.161
Indirect effect via proportion of co-ethnic friends	-.093** (0.011)	.000
Indirect effect via proportion of in-school friends	-.012** (0.003)	.000
Total indirect effect	-.106** (0.011)	.000
Total effect	-.071** (0.023)	.002

** $p < .001$.

Differences by ethnic groups and countries

We conduct two multiple group analyses of the model with mediators to examine differences across ethnic groups and countries. First, we examine differences between ethnic minority students and ethnic majority students. For both groups we find that the relationships are significant and in the expected direction. However, the effect sizes differ across the groups. First, the positive association between the proportion of co-ethnics in school and the proportion of co-ethnic friendships in class is significantly larger for ethnic minority students (the effect is 1.3 times larger, $p < .001$). Second, the

negative association between the proportion of co-ethnic friends in class and problem behaviour is smaller for ethnic minority students, a pattern that is opposite of what was expected (H6) (the effect is 2.4 times smaller, $p = .005$). The relationship between the proportion of in-school friends and problem behaviour in school does not differ for ethnic minority and ethnic majority students. This does not support the hypothesis (H7).

We also examine difference across the countries. Since measurement invariance is not obtained for Sweden (see the Supplemental data), we exclude Sweden from the multiple group analysis. A separate analysis on Sweden indicates that all hypothesised paths are significant and in the expected direction in Sweden. A multiple group analysis on the model with mediators shows that all paths of the mediation model are also significant and in the expected direction in the other three countries. However, we find differences in the sizes of the effects. The positive relationship between the proportion of co-ethnics in school and the proportion of co-ethnic friends in class is slightly weaker in England than in the Netherlands (the effect is 1.05 times larger in the Netherlands, $p = .005$). Moreover, the direct relationship between the proportion of co-ethnics in school and problem behaviour in school differs across the countries. When taking into account the mediators, the direct relationship between the proportion of co-ethnics in school and a student's problem behaviour in school is significant and positive in England, the Netherlands and Sweden whereas it is insignificant in Germany. The multiple group analysis on the Netherlands, England and Germany shows that the insignificant effect in Germany significantly differs from the positive effect in the Netherlands ($p = .028$).

Discussion and conclusion

In this paper we examined the extent to which the proportion of co-ethnics in school is related to problem behaviour in school and whether this relationship can be explained by students' friendship characteristics in Western Europe. MSEM analyses on large-scale cross-national comparative data of four European countries (England, Germany, the Netherlands and Sweden) indicated that there is a small negative association between the proportion of co-ethnics in school and problem behaviour in school. In addition, we found that a student who is surrounded by more co-ethnics in school has a higher share of co-ethnic friends and a higher share of in-school friends, and these friendship patterns are in turn related to lower levels of problem behaviour in school.

The finding that the relative size of one's own ethnic group in school is related to an increase in in-school friendships diverges from the results of a study by Joyner and Kao (2000) which found no relationship between the proportion of same-race students in school and in-school friendships. The difference in empirical findings might be due to the fact that we use a more specific measure of ethnicity. Whereas the groups in this study were based on *ethnic* self-identification, Joyner and Kao (2000) studied broader *racial* groups. It is possible that students attend a school in which they are surrounded by many same-race students (e.g. Asians), but not by students with the same specific ethnicity (e.g. Japanese). Consequently, these students might still try to find co-ethnic friends outside of school.

Some effects differed depending on a student's ethnic background. The relationship between the proportion of co-ethnics in school and the proportion of co-ethnic friendships in school was larger for ethnic minority students than for ethnic majority students. Additional analyses⁶ showed that there is a diminishing positive relationship

between the proportion of co-ethnics in school and the proportion of co-ethnic friends. Since, ethnic majority students are generally surrounded by more co-ethnics in school than ethnic minority students (see [Figure 3](#)), an increase in the proportion of co-ethnics in school leads to a greater increase in co-ethnic friends for ethnic minority students.

Results did not indicate that the social support or belongingness provided by in-school and/or co-ethnic friends have more behavioural benefits for ethnic minority students than for ethnic majority students. To the contrary, we found that the negative relationship between the proportion of co-ethnic friends in class and problem behaviour in school is stronger for ethnic majority students. Perhaps this could be explained by the fact that ethnic minority students are used to be surrounded by few co-ethnics. In contrast, ethnic majority students are in the numerical majority in the society at large and are rarely surrounded by inter-ethnic peers. Ethnic majority students may therefore be more likely to experience themselves to be (ethnically) different when they are embedded in an inter-ethnic friendship group than ethnic minority students. Students who are ethnically different from their friends in school may feel that they are not fitting in or are more likely to think that their friends in school do not understand them. This may lead to heightened levels of problem behaviour in school.

Hypothesised effects also differed across countries. One interesting finding is that when taking into account the negative indirect relationship between the proportion of co-ethnics in school on problem behaviour in school (via in-school and co-ethnic friendships), a significant and positive direct relationship between the proportion of co-ethnics in school and problem behaviour was found in England, The Netherlands and Sweden. This might indicate that in these countries students' behaviour in school does not always benefit from being surrounded by more co-ethnics in school. Instead, positive as well as negative mechanisms may be underlying the relationship between the proportion of co-ethnics in school and problem behaviour. Country differences need to be addressed in future research.

Future research may also want to study the direction of the proposed relationships between friendship characteristics and problem behaviour in school. Students' problem behaviour in school could affect their friendships, rather than the other way around. For example, students who skip class might be more likely to meet their friends outside school.

In multiple Western-European countries, such as the Netherlands and Belgium, the media and policy-makers have stressed the disadvantages related to schools with a high immigrant proportion ([Merry 2005](#)). Moreover, scholars have emphasised these disadvantages by focusing on the negative effect of the share of immigrants in school on immigrants' cognitive school outcomes. This study suggests that there are also advantages related to schools with a high immigrant proportion, as a higher share of co-ethnics in schools is negatively related to problem behaviour in school. To provide a nuanced vision on ethnic school composition effects we argue that scholars and policy-makers should consider its effects on cognitive, as well as non-cognitive school outcomes. This is especially important since students' final school attainment is affected by both types of school outcomes. More specifically, research shows that school performance, but also school behaviour and attitudes towards schools predict eventual school dropout ([Rumberger 1995](#)). In line with what [Benner and Crosnoe \(2011\)](#) propose, students might be best off in diverse schools in which they are surrounded by sufficient co-ethnics.

We want to emphasise that the results do not necessarily imply that the ethnically mixing of schools will hamper non-cognitive school outcomes. Maybe more attention has

to be paid to the social integration of ethnic groups in schools, so that students will feel equally 'at home' in schools with many co-ethnics and schools with few co-ethnics. Perhaps the proportion of co-ethnics in school affects non-cognitive school outcomes less in schools in which inter-ethnic contacts are stimulated. In line with the belongingness approach, a social environment in which all ethnic groups profit from supportive relationships may prevent problem behaviour and, in the long run, even school dropout.

Notes

1. Pooled analyses in which ethnicity is based on parental country of birth lead to similar conclusions. The total indirect effect and the total effect of the share of co-ethnics in school on problem behaviour in school are respectively -0.099 and -0.065 .
2. Pooled analyses in which we control for whether students identify with more than one group or not lead to similar conclusions.
3. Longitudinal methods are better suited to establish the causality of the relationships and account for unobserved characteristics of individuals. Unfortunately, part of the second wave of the data is not publicly available yet. In a robustness test we examined whether the results were confounded by unobserved characteristics of schools. School fixed effects analyses performed in STATA on the pooled data lead to similar conclusions as the results reported in the text. In these analyses we used Bartlett factor scores obtained in STATA as the dependent variable.
4. We test for a non-linear relationship between the proportion of co-ethnics in school and problem behaviour in school. A model in which we include a quadratic term for this relationship at both the individual and the school-level does not fit the data better than a model without quadratic terms ($\Delta\chi^2(7) = 5.243$, $p = .630$). The quadratic term was not significant at the individual-level.
5. We test whether relationships are non-linear by estimating a model in which we add quadratic effects of the proportion of co-ethnics in school on (1) problem behaviour in school and (2) the mediators. This analysis shows that there is a diminishing positive effect of the share of co-ethnics in school on the proportion of co-ethnic friends in class at the individual-level. This model does not have a significant better fit than a model without quadratic effects ($\Delta\chi^2(7) = 5.454$, $p = .605$).
6. See note 5.

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