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How classroom composition affects social trust in secondary schools: The role of attribute alignment

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This study examines how the alignment of ethnic origin and gender in school classes affects adolescents' social trust. We argue that adolescents whose co-ethnic classmates tend to be of a different gender than classmates of other ethnic origin are less likely to trust unknown others – compared to students in classes where both boys and girls are well represented within their ethnic ingroup and outgroup. Moreover, previous scholarship suggests this impact of attribute alignment to vary between ethnic majority and minority students, as majority students' higher levels of social trust may be particularly reduced by the experience of attribute alignment. We evaluate these hypotheses using data from a large-scale school survey among 8th-grade students in Germany. Our analyses show that the alignment of ethnic origin and gender in the school class reduces generalised trust in people as well as context-specific trust in unknown grade mates among majority students, whereas for minority students no significant relationship was found.

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1. Introduction

With rising levels of ethnic diversity, many Western countries face the challenge to avoid conflicts along ethnic lines and ensure trust across groups, or more generally, trust towards strangers and people in general. This so-called social trust has been found to be important for people's mental health, life satisfaction and economic success (e.g. Mikucka et al., 2017; Prada & Roman, 2021; Zhang, 2020) as well as for the functioning of society more generally (Stolle, 2001; Uslaner, 2002). Previous work on the diversity-trust nexus has yielded mixed findings with a recent meta-analysis suggesting a moderately negative relationship on average (Dinesen et al., 2020). The variance of findings suggests that it is only under certain conditions that ethnic origin becomes a salient social characteristic and that ethnic diversity reduces social trust. Our study examines one condition that has received little attention in previous research: attribute alignment.

Across the social sciences, a seminal idea has been that group boundaries tend to be stronger in social contexts where people across the boundary differ also along other dimensions, e.g. when people of different ethnic origin also differ in terms of social

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class, religion, or gender. This phenomenon has been studied as ‘consolidation’ in sociology (Blau, 1977; Zhao, 2023), as the absence of ‘cross-cutting cleavages’ in political science (Lipset, 1960), and as ‘demographic faultlines’ in organisational studies (Thatcher et al., 2024).

Focusing on the school context, our study examines how the alignment of ethnic origin and gender in school classes relates to adolescents’ social trust. For example, attribute alignment in a school class would be high for ethnic majority students if most of them were girls, while most classmates of other ethnic origin were boys. During childhood and early adolescence, gender is a highly salient characteristic and gender homophily strongly shapes friendship choices (Block & Grund, 2014). When gender strongly aligns with ethnic origin in a school class, this gender segregation of friendships will translate into stronger ethnic segregation (Kroneberg et al., 2021a). Moreover, adolescents, who are involved in ‘an ongoing meaning-making process of working out “whom one is”’ (Atewologun et al., 2016, p. 226), will experience non-friend classmates as more different, because those will mostly be of different gender *and* different ethnic origin. We argue that the more students interact with classmates who share these salient attributes, the more attention they draw to their differences from others, making them less likely to trust unknown others. Being exposed to a school class with stronger ethnic boundaries on a daily basis makes students more uncertain about whether those beyond their inner friendship circle share their views and standards of behaviour. This could lead to a smaller radius of trust, yielding lower trust levels vis-à-vis unknown students in the grade or even people in general.

The school context provides an ideal setting to trace the impact of attribute alignment. Early adolescence is a particularly formative period, during which young ‘people learn to what extent others can be trusted’ (Schilke et al., 2021, p. 243), before these expectations tend to stabilise in late adolescence and early adulthood (Abdelzadeh & Lundberg, 2017; Flanagan & Stout, 2010). Moreover, in Germany, where our study is located, students spend the school day mostly in fixed school classes, which provide a highly frequented context of generally stable composition. These contexts provide an important site for social learning and we assume that adolescents partially generalise from their everyday experiences in the school class. In contrast to experimental studies with older participants and artificial groups (Oliveira & Scherbaum, 2015), school classes therefore provide an opportunity to trace the real-world influences of continued exposure to different degrees of attribute alignment.

We focus on how ethnic divides may be strengthened by their alignment with gender for three reasons: First, gender is a highly important social characteristic during adolescence (McMillan, 2022). It, therefore, has great potential to reinforce divisions across other attributes. Second, gender allows us to trace the causal effects of attribute alignment because its alignment with ethnic origin in school classes is largely accidental (Kroneberg et al., 2021a). This is not the case with regard to other attributes that often align with ethnic origin. For example, the association of social class and ethnic origin originates in the selectivity of different migration streams. And the alignment of religiosity and ethnic origin is indicative of cultural differences. Third, to the extent that the composition of the school class in terms of ethnic origin and gender is actually consequential for students’ social trust, it would provide potential leverage to promote social trust. When assigning students to school classes, school administrators could facilitate the development of higher social

trust by making sure that gender does not align with ethnic origin. Again, this would not be feasible with characteristics that are more systematically related to ethnic origin.

In their review on trust in social relations, Schilke et al. (2021) stressed that ‘we need more research into the interrelationships between more particularized and more generalized forms of trust’ (Schilke et al., 2021, p. 249). Our study contributes to this task by distinguishing between generalised social trust and context-specific social trust. The former refers to a very abstract form of trust ‘in people’ in general which is conceptually not limited in its radius (Delhey et al., 2011; Fukuyama, 2000). Context-specific social trust, in our case, is trust in an unknown peer *within the school grade*. Importantly, both are forms of social trust that require generalisation, as they target unknown individuals. For attribute alignment *within* the classroom to affect these types of trust, students must form broader expectations about other people by generalising from the relationships with their classmates.

By asking how the alignment of ethnic origin and gender in school classes relates to social trust among adolescents, our study investigates the significance of early learning experiences. To arrive at a differentiated understanding, we examine school context-specific social trust (trust in unknown grade mates) and generalised social trust (trust in people in general), which differ in their level of abstraction. Lastly, we examine these relationships also separately for ethnic minority and majority students, as they are likely to experience ethnic boundaries and trust in different ways.

Our analyses use data from a new study that surveyed almost 3000 students in early adolescence (approx. age 12–13) in 37 schools in Germany. To measure generalised social trust, we use the common survey item ‘In general, people can be trusted’. To examine context-specific trust, we developed a measure of trust within the school grade that randomly assigns each respondent another student in the grade. Focusing on those students who got assigned an *unknown* fellow student allows us to examine how attribute alignment in the school class relates to social trust to unknown grade mates.

Our results show that social trust tends to be lower among students who attend school classes where ethnic origin and gender align. Among ethnic majority students, attribute alignment is associated with both lower generalized trust and lower context-specific trust in unknown grade mates. In comparison, for ethnic minority students, we find no statistically significant associations.

2. Theoretical background and previous research

2.1. Generalised and context-specific social trust

Trust can be defined as ‘a psychological state of willingness to be vulnerable based on the trustor’s positive expectations of the trustee’ (PytlikZillig & Kimbrough, 2016, p. 18). Such expectations rest on the trustor’s perceptions of the trustee’s ability, benevolence, and integrity (Mayer et al., 1995). While trust behaviour in everyday life is inherently relational and situational (Hardin, 2002; Small, 2017; Weiss et al., 2021), we contribute to the line of scholarship that focuses on people’s general expectation (or feeling) that most people can be trusted (Freitag & Traunmüller, 2009; Uslaner, 2002; Yamagishi & Yamagishi, 1994). Actors form such general expectations regarding others’ trustworthiness partially by extrapolating from their experiences (e.g. Hardin, 2002; Stolle, 2001).¹ Our

study starts from the premise that, during adolescence, classrooms are a place where such significant experiences take place and where students learn who can and cannot be trusted.

Generalised social trust, or ‘trust in people in general’, is often viewed and measured as a particularly demanding form of trust. People generally find it more difficult to trust those who are more socially distant from them (e.g. friends and family, vs. colleagues and neighbours, vs. complete strangers). Generalised social trust is, conceptually, not limited in its radius as everyone would be included in this form of trust (Delhey et al., 2011; Fukuyama, 2000). Hence, truly generalised trust requires both a high level and a wide radius of trust (Delhey et al., 2011). The level of trust refers to the extent to which persons trust others and the radius to the width of people to which these feelings apply.

However, when asking respondents to what extent they agree or disagree that most people or people in general can be trusted, there are two problems: Researchers neither know what respondents’ imagined circle of ‘most people’ is (Delhey et al., 2011), nor whether they think of the same target behaviours that demand the placement of trust (Hardin, 2002). We therefore share the view that ‘research on particularized and generalized trust should not be thought of as separate’ (Schilke et al., 2021, p. 248).

One way towards a more integrative approach is to include measures which specify the radius and target behaviours when investigating the conditions for and processes of trust generalisation. In the current study, we therefore use both a standard survey item of generalised trust (‘In general, people can be trusted’) as well as a newly developed scenario-based measure of context-specific social trust. This new measure captures expectations of trustworthiness towards *an unknown peer within the school grade*. Trust in unknown students in the grade is an example of categorical trust, which ‘may represent the most realistic middle ground in many everyday-life trust decisions’ (Schilke et al., 2021, p. 247). For the sake of concreteness, we use a scenario in which another student forgets her or his money for the school kiosk and asks if they could *borrow money* from the respondent. Students are then asked to what extent they expect the other student to return the money (for details, see the measurement section). Lending money to one another is a common act of trust in students’ daily lives. A key consideration in the willingness to do so is the expectation to get one’s money back.

Based on these measures, our study examines the extent to which classroom experiences generalise towards other unknown students in the grade, or even to people in general. We view the school class as a developmental context and assume that experiences made in this context shape adolescents’ general expectation that other people can be trusted. This assumption is at the heart of the common idea that schools are not only sites of human capital acquisition but also provide young people with opportunities for socio-emotional learning (Domitrovich et al., 2017). While the sources of social trust are manifold, the aim of the current study is to examine one particular contextual driver that provides a leverage for schools to promote trust in the face of high levels of ethnic diversity.

2.2. Alignment of ethnic origin and gender in the school class: Previous findings and its role for social trust

Several studies have examined the association between social trust and ethnic diversity in European schools, sometimes also focusing on the share of the majority group as a

characteristic that is closely related to low diversity (Badescu & Sum, 2015; Dinesen, 2011; Janmaat, 2009, 2015; Loxbo, 2018). While there is no consistent evidence for a strong effect of ethnic diversity on social trust in European schools, several studies found a positive relationship between the share of majority students in a school class and social trust, especially for majority students (Badescu & Sum, 2015; Janmaat, 2015; Loxbo, 2018). Going beyond previous studies on trust in the school context, we theorise and examine the role of attribute alignment in school classes for students' social trust.

The idea that social cohesion is stronger in contexts where people's socio-demographic attributes do not align – making ingroup members by one criterion outgroup members by another – is a classic one (Blau, 1977; Lipset, 1960; Simmel, 1908). In the school context, Moody (2001) showed for the United States that students tend to befriend same-race students in schools where racial groups differ in their socio-economic composition. Another study examining Dutch students suggests that the alignment of ethnic origin and cultural tastes (such as music preferences) or attitudes towards pro- and antisocial behaviours increases tendencies to choose same-ethnic friends (Stark & Flache, 2012).

Many important attributes, such as socio-economic status or religion, correlate with ethnic origin in the general population. For schools, this makes it hard, if not impossible, to avoid that these characteristics are also correlated within classrooms. In contrast, gender is usually more or less equally distributed within every ethnic group. Thus, when assigning students to school classes, school administrators could try to avoid classroom compositions in which gender and ethnic origin are accidentally correlated within a school class. For example, if six female and six male Turkish students need to be allocated across three classrooms, school administrators could ensure low attribute alignment by assigning two girls and two boys to each class. However, based on a survey of German headmasters, Kroneberg et al. (2021b) showed that schools rarely pay systematic attention to the question of how gender will align with ethnic origin when assigning students to school classes. Current practices mainly aim to balance gender compositions, try to group students that come from the same primary school or neighbourhood, or allow students to nominate other students whom they (do not) want to have as classmates (Kroneberg et al., 2021b). From a research perspective, the largely accidental alignment of gender and ethnic origin is an advantage, as it allows one to trace the causal effects of attribute alignment in school classes.

Focusing on this type of alignment and using survey data from schools in England, Germany, the Netherlands, and Sweden (CILS4EU, 2016; Kalter et al., 2016), Kroneberg et al. (2021a) showed that, especially for minority students, the alignment between ethnic origin and gender in school classes leads to more same-ethnic friendship and less identification with the country they live in. However, they did not consider the potential effects on social trust because their data, like other previous large-scale school surveys, lacked measures of social trust. In the literature on demographic faultlines, Oliveira and Scherbaum (2015) already tested and found no support for the hypothesis that the alignment of gender and ethnic origin reduces social trust. However, their experiment created artificial teams of university students who met only once and for the duration of just one hour. This result has little relevance to our conjecture about how continued exposure to attribute alignment shapes social trust, especially in the formative period of adolescence.

Figure 1 illustrates the concept of attribute alignment using the example of 2 school classes that comprise 30 students each.² In this stylised example, we assume that all students are either boys or girl and either of German or of Turkish origin. In school class A, 20 Turkish-origin and 10 German students are distributed relatively evenly across both genders. In contrast, there is an extremely strong attribute alignment between ethnic origin and gender in school class B: Out of 15 boys 14 are German, whereas out of 15 girls 14 are of Turkish origin. The friendship networks depicted below these distributions assume the same degree of gender segregation, which tends to be very pronounced during adolescence (Hooijsma et al., 2021). Obviously, gender segregation translates into very different levels of ethnic segregation due to the different levels of attribute alignment. In school class A, interethnic friendships are common. In school class B, they are rare. Moreover, students in school class B experience students to whom they are not related as more different, as those neither share their ethnic origin, nor their gender (and the respective behavioural and attitudinal correlates of these attributes). We argue that these everyday experiences of difference and stronger group boundaries in the classroom produce lower trust in unknown others even beyond this context.

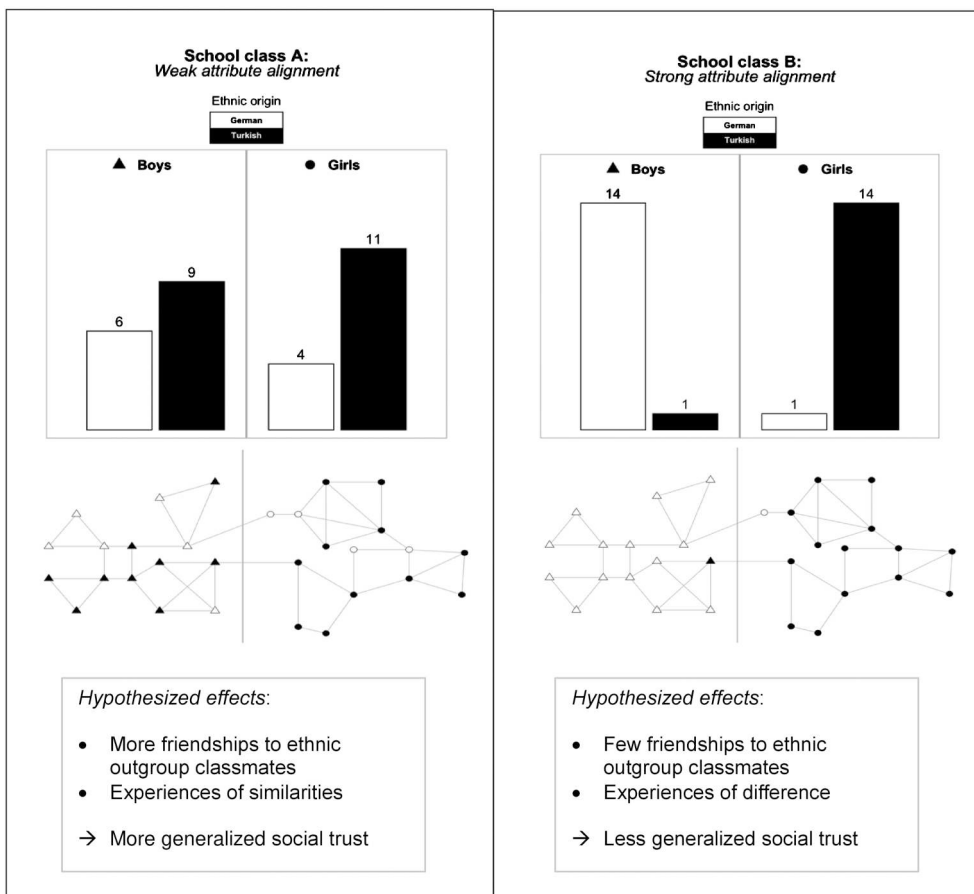


Figure 1. Stylised examples of weak and strong attribute alignment and its hypothesised effects.

To acknowledge the potential effects of attribute alignment on social trust, one has to take into account the intensity and significance of school experiences for children and adolescents (Eccles & Roeser, 2011). It is in this context that they meet other people outside of their immediate family and spend, on a very regular basis, long periods of their days with the same group of people for several years. As such, they might transfer the cleavages they perceive in this surrounding to their general perception of the world as a whole (Atewologun et al., 2016). Divisions will be reinforced if a highly salient characteristic, such as gender in adolescence, aligns with another characteristic such as ethnic origin. As students are most likely to interact with their own gender, such a classroom composition reduces the incentives and opportunities to interact across ethnic lines. In contrast, a division of the class into homogenous subgroups becomes unlikely if important characteristics lead to different ingroup–outgroup boundaries (e.g. when splitting the school class by gender or by ethnic origin would lead to vastly different subgroups). Students in such classrooms are more likely to interact with and befriend peers who are dissimilar to them (e.g. who do not share either the same ethnicity or the same gender). In such a case, students might be more likely to experience the whole class as a single group. Given the importance of and regularity in which they attend this context, this experience might strengthen the general perception that (most) people, inside and outside of the school context, belong to the same community and can be trusted.

Hypothesis 1: Strong alignment between ethnic ingroup vs. ethnic outgroups and gender in the school class decreases generalised and context-specific social trust.

Following previous research on ethnic diversity and social trust in the school context (Badescu & Sum, 2015; Dinesen, 2011; Janmaat, 2009, 2015; Loxbo, 2018), we expect that attribute alignment may affect majority and minority students in different ways. Three studies found a positive relationship between the share of majority students in school classes and majority students' social trust (in Sweden, Loxbo, 2018; in England, Janmaat, 2015; in Romania, Badescu & Sum, 2015). In turn, majority students' social trust seems to be lower in school classes with a greater share of minority students. But why would majority students be particularly sensitive to a stronger presence of ethnic minorities? Smith et al. (2016, pp. 1256–1257) argued that

ethnically diverse classes are threatening to natives but not to immigrants. Native adolescents are used to being part of the majority ethnic group in their countries, and as such, becoming part of the numerically ethnic minority in a class challenges their dominant position. Immigrants, however, are familiar with a minority status, and as such, ethnic threat plays a weaker role in their friendship choice.

While the assumption that the outgroup is perceived as threatening may often be too strong (Kroneberg & Wittek, 2023), this argument rightly highlights the different starting points of majority and minority students. For minority students, most people they encounter belong to ethnic outgroups (i.e. the ethnic majority group or another ethnic minority group). Even in areas or classrooms with a low proportion of majority group members, their specific ethnic ingroup often remains a distinct minority. Ethnic background may therefore be a naturally relevant criterion along which most ethnic minority students distinguish groups in society and which may be important for their own identity (Kinket & Verkuyten, 1997). In contrast, for majority students most people belong to their

ethnic ingroup. Ethnic origin might not be a criterion that most majority students use to distinguish people into different groups. As their belonging to the majority group may be largely unquestioned, ethnic or national identity may not be as salient to them as for minority students (Kinket & Verkuyten, 1997; Skey, 2010).

If generalised social trust partially captures the perception of the width of one's trustworthy community then attribute alignment might not make much of a difference for ethnic minorities. They already perceive society as being split along ethnic lines and their own group as occupying a relatively small niche. In contrast, attribute alignment may produce a heightened salience of group divides for majority students. Again, this logic should apply to school context-specific social trust in a similar way as to generalised social trust. This yields the following, second hypothesis:

Hypothesis 2: Strong alignment between ethnic ingroup vs. ethnic outgroups and gender in the school class decreases generalised and context-specific social trust for majority students. For minority students, such alignment is less strongly associated with social trust.

3. Data, measures and methods

To test our hypotheses, we use data from a large-scale survey that included 37 schools in North-Rhine Westfalia, Germany, in 2019. The survey was conducted in an urban area characterised by high levels of ethnic diversity and was designed to gain a better understanding of social boundary making in the school context. The questionnaire collected information on students' social networks, ethnic background, self-identification, and their trust in peers and people in general. In the participating schools, all students of the 8th grade with parental permission were interviewed (response rate: 80.44%). One school had to be excluded due to marked changes in class composition prior to the data collection.

3.1. Measures

3.1.1. Dependent variables

We use two measures of social trust, which capture respondents' trust (1) in people in general (generalised social trust) and (2) in unknown peers in the school grade (context-specific social trust). *Generalised social trust* was measured using a standard approach by asking students to report their agreement with the statement that 'In general, people can be trusted' (on a scale ranging from 0 to 4, with higher values indicating higher trust).

Context-specific social trust is measured using a newly developed scenario-based approach. We deliberately did not ask about trust towards other students in general, because the limited size of schools and the salience of friendship relations could lead respondents to think mainly about their friendship clique when answering such a question. Rather, we assigned each participant *one* random fellow student from one of the other classes within their grade. In our analysis, we include only those students who received an unknown partner (either name or appearance was unknown). Students then read a short story in which the assigned grade mate forgets their money for the school kiosk and now asks if they could borrow 5 euros from the

participant.³ Participants subsequently stated their expectation that the other student would return the money (on a scale ranging from 1 to 4, higher values again indicating higher trust). Importantly, both forms of social trust go beyond the context in which alignment is measured (i.e. the school class). Therefore, a student's classroom experiences must be generalised to influence their trust in unknown *grade* mates or people in general.

3.1.2. Independent variables

Ethnic origin: Following Dollmann et al. (2014), we define ethnic origin using the country of birth of the student and their parents. If the student and their parents were born in Germany, their ethnic origin is coded as 'German'. If the student migrated themselves, their country of birth defines their ethnic origin; otherwise, their (immigrated) parent's country of birth is considered. In the case, that both parents are born in different non-German countries, the mother's country of birth is chosen.

Attribute alignment of ethnic origin and gender: Students face strong attribute alignment whenever their co-ethnics tend to be boys and outgroup members tend to be girls, or vice versa. Hereby, the outgroup consists of all classmates of different ethnic origin. The underlying assumption is that people tend to perceive a diverse set of ethnic others as one outgroup (Brewer, 1999). Following Kroneberg et al. (2021a), we use Cramer's *V* to quantify the degree of attribute alignment (that is, the association between ethnic origin and gender). This measure of association for categorical, unranked data ranges from 0 (no alignment) to 1 (perfect alignment). For instance, in a school class in which all students with a Turkish background are girls and all other students are boys, there would be a perfect alignment between ethnic group and gender for those Turkish girls (or a Cramer's *V* of 1). Each member of an ethnic group in a school class receives the same value for attribute alignment.

As a group size of at least three is generally necessary for group-formation processes, our analysis excludes students who have no or only one co-ethnic classmate (again following Kroneberg et al., 2021a). As this strongly reduces the sample size, in particular for minority students of less prevalent ethnic origins, we conduct a robustness analysis in which we include also students with only one co-ethnic classmate.

3.2. Control variables

Structural confounders: As argued by Kroneberg et al. (2021b), the non-attention given to the alignment of ethnic origin and gender in school classes by headmasters produces a substantial share of random variation in this contextual characteristic. However, one needs to control for several structural variables that are analytically related to the extent of alignment: the number of students attending a school class, the ethnic ingroup size, the share of the majority group, the share of females, as well as ethnic and gender diversity in the school class.

Student-level controls: We control for a binary measure of gender, age (in month), and migration background (first generation, second generation, mixed origin, i.e. one foreign-born and one native parent, and no migration background). As measures of students' socio-economic background, we include two dummy variables, one indicating whether both parents had higher education (higher track or university degree) and one indicating

whether both parents were unemployed. If a student only provided information for one parent (e.g. due to living in a single-parent home), this parent's characteristics provided the sole basis for assigning the respective value on these variables.

School-level controls: We control for the type of secondary school in Germany's formally stratified school system (basic track, intermediate track, academic track, combined schools). Moreover, we included our measures of socio-economic background also at the school level by calculating the percentage of students with unemployed or highly educated parents, respectively.

3.3. Analytical strategy

To test the hypothesis that attribute alignment is associated with lower (generalised and context-specific) social trust, we estimated several linear regressions with cluster-robust standard errors that account for the clustering of students in school classes.⁴ We further explored the possibility that associations may differ between ethnic majority and minority students by conducting separate analyses for both groups and for both generalised and context-specific social trust.

The final sample for the analysis of generalised social trust consists of 1665 students attending 139 school classes at 36 schools (47.33% girls and 70.2% majority students).⁵ This means that our analysis uses only 57.21% of the original sample of almost 3000 students. Notably, this drop in the number of cases is not due to missing values. Rather, it results from an analytic sample definition that reflects that attribute alignment is only experienced by a subset of students, i.e. those who have co-ethnic classmates. Accordingly, we draw inferences only with respect to this subset of students (and do not include other students in our models for whom attribute alignment cannot be defined). Due to their numerical strength, this restriction of our sample does not affect majority group students, for whom we expect the strongest alignment effects (see Hypothesis 2). We first report results for the analysis sample that includes only students who had at least two other ingroup members in the school class. As a robustness check, we relax this requirement to include also students who have only one co-ethnic classmate.

For the analysis of context-specific social trust, we used only the subsample of students who randomly were partnered with an unknown student ($n = 1069$). While this fellow student was assigned randomly, whether or not the participant *knows* this random student by name or appearance, depends on the percentage of people they know in their grade. The higher this percentage the less likely they are to be part of our analytic sample (e.g. the chance to be matched with a known grade mate and therefore being excluded from our analyses is twice as high for students who know 20% of their grade mates outside their own class compared to those who know only 10%). To remove this potential selection bias, we applied inverse probability weights from a logistic regression analysis:⁶ Students are weighted more strongly in the analysis, the more students they stated to know within the grade outside their own school class, the more students outside their own school class know them and the smaller their school grade. Those students are underrepresented in our analyses because they have a higher risk to get assigned a known grade mate. Results were substantively identical to analyses without this weighting strategy. The final sample for the analysis consists

of 633 students attending 133 school classes in 36 schools (42.92% girls and 68.27% majority students).⁷

4. Results

4.1. Descriptive analyses

The mean attribute alignment in the analytical sample for generalised social trust is moderate with a Cramer's V of 0.2, ranging between 0 and 0.681. There is no significant difference in the extent of attribute alignment faced by ethnic majority or minority students ($t(252.93) = -0.4095$, $p = .683$). The average number of students per ethnic (majority or minority) group within the school class is 6.83 with a previously defined minimum of three and an empirical maximum of 22. The average group size for majority groups was expectedly higher ($M = 9.346$) than that of ethnic minority groups ($M = 4.276$; $t(162.97) = -10.602$, $p < .001$). The largest ethnic minority group within one school class consisted of 11 students of Turkish origin. Besides majority students, only students with a Turkish background ever attended school classes with more than five fellow students of the same ethnic origin. Generally, out of the over 100 different ethnic origins in our highly diverse sample, only 18 fulfilled the minimum group size criterion of at least 3 students per ethnic origin in any of the school classes.

The average generalised social trust in the analytical sample is 2.187 on a scale ranging from 0 to 4.⁸ On average, majority group members are more trusting than minority group members ($M = 2.26$ vs. $M = 2.01$ in the final analytical sample, $t(855.43) = -4.61$, $p < .001$). The average context-specific social trust was 1.891 on a scale ranging from 1 to 4. As with generalised social trust, we find lower context-specific social trust of minority students ($M = 1.7$) compared to majority students ($M = 1.968$, $t(457.39) = -3.64$, $p < .001$ in the final sample). This is also evident in Figure 2, which shows how both outcome variables are distributed for ethnic majority and minority students.

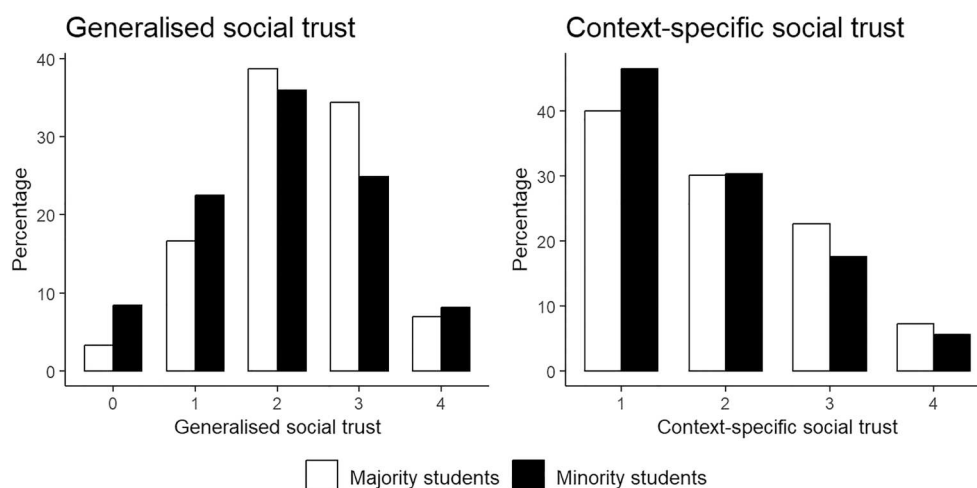


Figure 2. Distribution of generalised and context-specific social trust by majority status.

4.2. Multivariate analyses

Table 1 summarises the result of the linear regressions of generalised and context-specific social trust in a pooled analysis of both majority and minority students. R^2 values, indicating the proportion of explained variance, are 0.06 and 0.11, meaning that the linear model accounts for only 6% or 11% of the variance in social trust in this sample. This indicates that, not surprisingly, adolescents' social trust varies a lot and there will be many idiosyncratic influences on how their willingness to trust unknown others, which are not

Table 1. Linear regression models (OLS) of social trust: Full analytical sample.

	Generalised social trust	Context-specific social trust
Intercept	4.56*** (0.80)	0.58 (1.08)
Attribute alignment	−0.51** (0.20)	−0.35 (0.29)
<i>Class characteristics</i>		
Size ethnic group in class	0.00 (0.01)	0.05** (0.02)
Number of students	−0.01 (0.01)	−0.03* (0.01)
Ethnic diversity	−0.50 (0.60)	1.23 (0.72)
Gender diversity	−0.58 (0.58)	0.62 (0.68)
Majority share	0.21 (0.41)	0.67 (0.50)
Share of girls	0.01 (0.22)	0.01 (0.36)
<i>Student characteristics</i>		
Gender (ref.: male)	−0.18*** (0.05)	0.12 (0.08)
Age (in month)	−0.01** (0.00)	−0.00 (0.01)
Migration background (ref.: first generation)		
Second generation	−0.14 (0.14)	−0.10 (0.17)
Mixed origin	0.06 (0.14)	−0.06 (0.20)
No migration background	0.00 (0.14)	−0.16 (0.18)
Highly educated parents (ref.: at least one not highly educated)	0.13** (0.05)	−0.09 (0.08)
Unemployed parents (ref.: at least one employed)	0.31* (0.15)	0.28 (0.21)
<i>School characteristics</i>		
%students with unemployed parents	0.17 (0.63)	1.38 (0.93)
%students with highly educated parents	0.04 (0.32)	0.38 (0.53)
School track (ref.: combined track)		
Lower track	0.20* (0.11)	−0.47* (0.18)
Intermediate track	−0.04 (0.08)	0.06 (0.09)
Higher track	0.03 (0.11)	0.25 (0.20)
Num. obs.	1665	633
R-squared	0.06	0.11
F-statistic (full model)	5.94***	4.08***

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$. Coefficients are unstandardised. Standard errors, reported in parentheses, are cluster-corrected at the class level.

captured by the predictors of our regression models. Also note that the regression models has not been specified to maximise R^2 , but to allow to trace the impact of attribute alignment.

The results partially support Hypothesis 1: The coefficient for attribute alignment is negative for both trust measures. However, this association is only statistically significant for generalised trust ($p < .01$), while the estimate is less precise for context-specific trust and does not reach conventional levels of statistical significance ($p = .23$). To assess the strength of the statistically significant association, note that the alignment of ethnic origin and gender has an empirical minimum of 0 (no alignment at all) and a maximum of 0.68 (for the generalised social trust sample). Thus, the difference between the minimum and maximum alignment translates into a difference on the 5-point generalised social trust scale of -0.35 points (or 8.68% of the scale).

Table 2 estimates separate regression models for ethnic majority and ethnic minority students. The results reveal that majority students mainly drive our finding of a negative association of alignment and social trust. While attribute alignment never significantly relates to social trust among minority students, it is significantly and negatively associated with generalised and context-specific social trust for majority students. The empirical maximum of attribute alignment in the case of majority students was 0.65, so that a coefficient of -0.66 corresponds to a maximum difference of 0.43 scale points on the outcome variable (or 10.65% of the full generalised social trust scale). For context-specific social trust, the difference between the empirical minimum and empirical maximum of attribute alignment translates to 0.45 scale points (or 15.06% of the full context-specific trust scale). In contrast, the respective coefficients are statistically non-significant and close to zero in the subsample of minority students ($b = -0.16$ for generalised trust and $b = 0.10$ for context-specific trust).

Figure 3 illustrates these associations. The wide confidence intervals for minority students indicate a high uncertainty in the estimation, which likely reflects the small sample sizes among minority students. Still, the close-to-zero average association in the subsample points towards a potentially greater importance of attribute alignment for majority students, as expected in Hypothesis 2. However, formal statistical tests of these group differences fall short of conventional levels of statistical significance: As reported in Table A4 in the appendix, the interaction effect between majority status and attribute alignment is -0.63 ($p = .08$) for generalised social trust and -0.91 ($p = .22$) for context-specific social trust. Hence, while the average estimates are in line with Hypothesis 2, the differences across groups cannot be estimated with sufficient certainty.

4.3. Robustness analyses

We examined the robustness of our results in several additional analyses. First, we estimated all models including minority students using ethnic group fixed effects. Second, we repeated the analyses using different minimal response rates per school class (ranging from no minimal response rate to 80%). These variations yielded substantively identical results. In particular, we again found a negative relationship between attribute alignment and social trust for majority students but no indication of a relationship for minority students.

Finally, we repeated our analyses using a less restrictive minimal group size criterion. Many minority students were not included in the analytical sample as they were the

Table 2. Linear regression models (OLS) of social trust: Subsample analyses.

	Generalised social trust		Context-specific social trust	
	Majority students	Minority students	Majority students	Minority students
Intercept	5.19*** (1.12)	5.89*** (1.67)	1.57 (1.41)	−1.16 (2.16)
Attribute alignment	−0.66** (0.23)	−0.16 (0.32)	−0.70* (0.35)	0.10 (0.61)
<i>Class characteristics</i>				
Size ethnic group in class	0.04 (0.04)	−0.01 (0.02)	0.03 (0.05)	0.05 (0.04)
Number of students	−0.03 (0.02)	−0.01 (0.01)	−0.04 (0.03)	−0.02 (0.02)
Ethnic diversity	−0.23 (0.74)	−2.45** (0.86)	0.97 (0.86)	1.39 (1.42)
Gender diversity	−0.69 (0.69)	−0.56 (1.02)	0.43 (0.87)	0.87 (1.22)
Majority share	−0.58 (1.16)	−0.62 (0.57)	0.70 (1.40)	0.78 (1.04)
Share of girls	−0.22 (0.24)	0.69 (0.56)	0.03 (0.38)	−0.18 (0.80)
<i>Student characteristics</i>				
Gender (ref.: male)	−0.18*** (0.05)	−0.18 (0.12)	0.11 (0.10)	0.12 (0.14)
Age (in month)	−0.01* (0.00)	−0.01 (0.01)	0.00 (0.01)	0.00 (0.01)
Migration background (ref.: first generation)				
Second generation		−0.09 (0.15)		−0.03 (0.19)
Mixed origin		0.05 (0.15)		0.10 (0.21)
Highly educated parents (ref.: at least one not highly educated)	0.09 (0.06)	0.18 (0.10)	−0.13 (0.11)	−0.01 (0.12)
Unemployed parents (ref.: at least one employed)	0.24 (0.24)	0.35 (0.20)	0.27 (0.32)	0.24 (0.26)
<i>School characteristics</i>				
%students with unemployed parents	−0.21 (1.09)	0.35 (0.72)	−0.33 (0.83)	3.41* (1.63)
%students with highly educated parents	0.09 (0.37)	0.00 (0.71)	−0.13 (0.11)	1.28 (0.98)
School track (ref.: combined track)				
Lower track	0.10 (0.18)	0.27 (0.15)	−0.55* (0.23)	−0.56 (0.35)
Intermediate track	−0.10 (0.11)	0.02 (0.11)	−0.07 (0.12)	0.13 (0.16)
Higher track	0.01 (0.14)	−0.08 (0.28)	0.43 (0.23)	−0.24 (0.37)
Num. obs.	1174	491	431	202
R-squared	0.06	0.07	0.12	0.09
F-statistic (full model)	4.35***	1.95*	3.67***	1.00

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$. Coefficients are unstandardised. Standard errors, reported in parentheses, are cluster-corrected at the class level.

only member or one of two members of their ethnic origin group within the school class. This led to a substantial reduction of sample sizes. If we instead included also ethnic groups that consisted of only two students (instead of at least three), the sample size for minority students increased by roughly 300 (i.e. by 18.7%) for the analysis of generalised social trust and roughly 100 (i.e. by 13.4%) for the analysis of context-specific social trust.

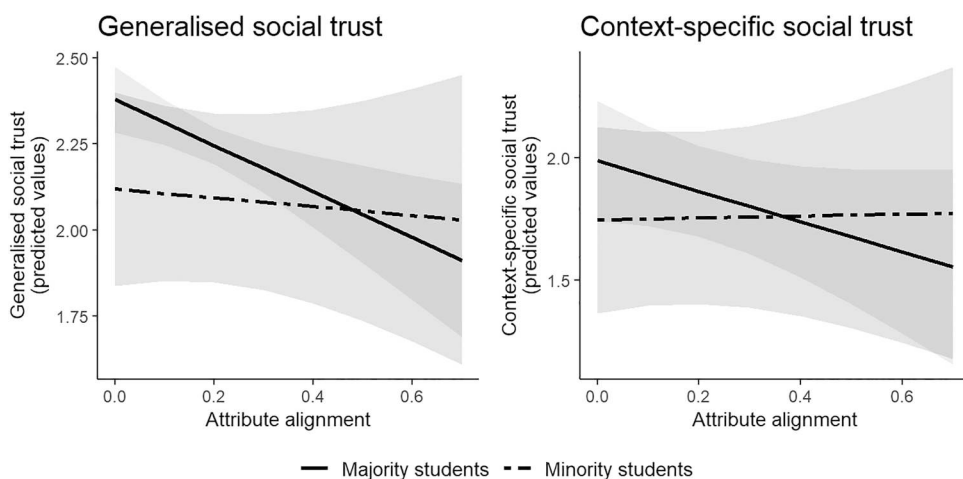


Figure 3. The relationship between attribute alignment between ethnic origin and gender in the school class and two types of social trust.

Notes: Lines depict slope of regression lines for majority students (solid lines) and minority students (dashed lines) based on the models in Table 2; surrounded by 95%-confidence intervals.

Table 3 presents the results based on this larger sample. In the pooled analysis, we again found a negative and significant association between attribute alignment and generalised social trust. In this larger sample, this association is also significant for context-specific social trust.

For minority students the associations between attribute alignment and both trust measures are again non-significant – in line with the second part of Hypothesis 2. However, the coefficients are of substantial size so that we cannot rule out that their non-significance mainly reflects statistical uncertainty due to the smaller subsample size. This is especially the case for generalised social trust, where the coefficient just falls short of statistical significance ($p = .06$).

Table 3. Linear regression models (OLS) of social trust: Broadened analytical sample with at least two students per group in the class.

	Generalised social trust All students		Context-specific social trust All students	
Attribute alignment	−0.60*** (0.16)		−0.56* (0.28)	
Num. obs	1976		752	
R-squared	0.06		0.10	
F-statistic (full model)	6.765***		4.293***	
	Majority students	Minority students	Majority students	Minority students
Attribute alignment	−0.67** (0.22)	−0.43 (0.23)	−0.71* (0.35)	−0.59 (0.49)
Num. obs.	1198	778	441	311
R-squared	0.06	0.05	0.13	0.07
F-statistic (full model)	4.514***	2.286**	3.788***	1.136

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$. Standard errors are cluster-corrected at the class level. The models include the same set of control variables as in Tables 1 and 2.

5. Discussion and conclusion

Research on ethnic diversity and social trust tends to assume that ethnic origin is a key factor in how individuals categorise their social environment into different groups. However, certain circumstances may weaken or reinforce the significance of ethnic boundaries, thereby further influencing social trust. Starting from the seminal idea of attribute alignment (Blau, 1977; Lipset, 1960; Simmel, 1908), this study examined whether students' trust in unknown grade mates and in people in general tends to be lower if classmates of different ethnic origin also differ in terms of gender from their ethnic ingroup.

We deliberately focused on how *gender* reinforces ethnic divisions in *adolescence*. Gender is a highly salient characteristic at that age (Block & Grund, 2014). Adolescents of the same gender are much more likely to share interests and activities and become friends. Gender therefore has the power to weaken the significance of other social categories, such as ethnic origin. For example, Hooijsma et al. (2021) found that students were more likely to defend peers of other ethnic origin against bullying if they shared the same gender. Similarly, Block and Grund (2014) found that ethnicity became less important for friendship formation when students shared the same gender. Conversely, however, when gender and ethnicity align in a school class, students may perceive group differences to be stronger. We argued that these influences can be assumed to be particularly relevant in early adolescence, since this is a formative period for the development of social trust (Abdelzadeh & Lundberg, 2017; Flanagan & Stout, 2010). It is therefore not surprising that an experimental study among university students, who were assigned to teams for only one hour, found no evidence for the hypothesis that the alignment of gender and ethnic origin reduces social trust (Oliveira & Scherbaum, 2015).

When the relevant scope conditions are met – a salient attribute like gender and continued exposure in a formative period – attribute alignment can influence social trust. Specifically, we argued that an alignment of gender and ethnic origin would lead to stronger ingroup–outgroup divisions in the school class. Young people who experience such divisions on an everyday basis may be more likely to restrict their perceived trustworthy community to a smaller group of people. In comparison, students who attend school classes in which their ethnic and gender boundaries do not align may be more likely to see most people as belonging to the same larger community. As school classes in Germany are an important everyday context for adolescents, we assumed that students will to some extent generalise what they experience and learn in this setting. While unknown fellow students in the same grade are a first step beyond the classroom, trusting people in general is arguably the most generalised and abstract form of social trust.

Overall, our findings support this view: For the groups who face the strongest attribute alignment, trust in schoolmates and in people in general tends to be lower by about 0.4–0.51 scale points (on 4- or 5-point scales, respectively), compared to those who face no attribute alignment in their school classes. This is in line with Hypothesis 1. We also examined the impact of attribute alignment separately for majority and minority students. For majority students, the associations were even stronger and consistently suggested that the alignment of ethnic origin and gender relates to both lower context-specific as well as generalised social trust. While this supports the first part of Hypothesis 2, it is unclear whether this effect is indeed smaller or even absent among minority students.

We hypothesised that attribute alignment is more consequential for majority students as they are used to situations where most people in their surroundings belong to their ethnic ingroup. As argued by Skey (2010), this gives members of national majority groups a greater sense of security and unquestioned belonging – which may yield higher levels of social trust. For them, ethnic origin may only be a salient and important characteristic under certain circumstances, for example, in the case of high attribute alignment or a high share of ethnic outgroup members in their surroundings (Smith et al., 2016). In line with this idea, several previous studies reported that a higher share of minority students in the school class relates to lower social trust for majority students (Badescu & Sum, 2015; Janmaat, 2015; Loxbo, 2018). Evaluating these theoretical interpretations empirically would require indicators of the mediating mechanisms. In addition, qualitative studies could be used to capture the underlying processes ‘involving recognition of sameness or difference in others’ (Atewologun et al., 2016, p. 227).

As shown by Kroneberg et al. (2021a), also minority students are negatively affected by attribute alignment, but in different ways. For them, it tends to decrease their identification as members of the nation. Again, this difference is likely due to the fact that *majority* students ‘typically identify with the nation without much questioning’ (Kroneberg et al., 2021a, p. 922). While experiencing attribute alignment and its correlates on an everyday basis may undermine their otherwise higher levels of social trust, their national identification is much more robust to such influences. In contrast, identifying as a member of the nation to the same extent as the majority group is demanding and less self-evident for minority students.

While we consistently found evidence for a negative association between attribute alignment and social trust for majority students, the null results for minority students should be interpreted with caution. Sample sizes for minority students were much smaller than for majority students. This is primarily due to the group size criterion: Due to the very high ethnic diversity among minority groups in our school sample, many students were the only members (or one of two) of their respective ethnic origin in the school class. This strongly decreases the number of minority students in the analysis sample, leaving mostly students from larger minority groups (e.g. students with a Turkish background). Robustness analyses showed that, when relaxing this inclusion criterion to a minimum group size of two students, the estimate for attribute alignment becomes more pronounced also among minority students, especially for generalised social trust, although it is still statistically non-significant ($p = .06$). So while we cannot reject the hypothesis of a null effect, this may be due to the small subsample size. Arriving at a more certain conclusion is therefore an important task for future studies that should incorporate measures of social trust in large-scale nationwide school surveys.

In any case, our main analyses and robustness analyses consistently showed that, overall, attribute alignment is associated with lower social trust. While this relationship is rather moderate and only clearly visible for majority students, evidence for the negative impact of attribute alignment in school classes is adding up (Hooijsma et al., 2021; Kroneberg et al., 2021b; Stark & Flache, 2012; Zhao, 2023). In addition to lower social trust, alignment has been shown to come with fewer interethnic friendships and a reduced inclination among minority students to identify as members of the nation (Kroneberg et al., 2021a). Furthermore, Hooijsma et al. (2021) found that students are more likely to defend a peer of a different ethnic background against bullying if they share the

same gender, providing further evidence for the importance of shared gender in fostering positive relationships and prosocial behaviour among young people. As there is no evidence for a *beneficial* effect of alignment in any of those studies, we see clear implications for practitioners: School administrators should pay closer attention to ensure that gender and ethnic boundaries do *not* align when assigning students to school classes. Together with its other consequences, even a moderate increase in social trust can help to strengthen social cohesion.

There is still much to learn about the effects of attribute alignment on social trust and other relevant outcomes in (and outside of) the school context. In concluding, we would like to point out some limitations of our study that future research could attempt to overcome. First, our survey data was collected in an urban ethnically diverse region and it remains to be seen whether our results generalise to more homogeneous rural areas. However, the alignment of ethnic origin and gender may generally be of less relevance in such areas, where the vast majority has no immigration background at all and the few minority students are not likely to form larger groups that could be considered in such analyses. Second, we cannot establish causality based on our observational data. Although it can be argued that assignment to school classes with varying levels of attribute alignment between ethnic origin and gender is conditionally ignorable (Kroneberg et al., 2021a), a more rigorous test could use experimental research designs to manipulate the level of alignment in randomly selected schools. Third, our cross-sectional data do not allow us to investigate possible long-term effects. Future studies should examine whether the effects of attribute alignment in school classes mainly exist for the time that students attend those school classes or reach beyond that period. Fourth, we were only able to focus on one particular age group, early adolescents. While this is a highly important formative period, it would be interesting to see whether similar effects exist already earlier in childhood or during late adolescence and in early adulthood when many young people still attend (vocational) schools and form study groups and work teams. Fifth, the relatively low proportions of explained variance indicate that, not surprisingly, there are many other influences on adolescents' willingness to trust unknown others. Identifying such influences is another important task for future research. Theoretically, it would be particularly worthwhile to examine attribute alignment not only at the level of school classes, but to focus also on intersectionality at the level of individual students (Crenshaw, 1991; Hill Collins, 2019). If students have several attributes that combine to yield particularly intense discriminatory experiences in certain educational settings – for example, being an ethnic minority boy in certain schools – this may have profound consequences for their trust in others. We invite future studies to advance towards such a comprehensive perspective on how the salience of complex identities shapes social trust.

Notes

1. We assume that social trust in people in general, as well as in unknown fellow students, is based on a general sense of perceived trustworthiness. In particular, there is no information on specific characteristics of the trustee or the trustee's past behavior. While our conceptualization and measurement focuses on the positive expectation that underlie trust behavior (Mayer et al., 1995), we recognize that such behavior may also take place in the absence of such expectations and that we do not capture variation in trust-relevant vulnerability (Hamm et al., 2024).

2. This visualization was developed by Susanne Böller in the SPINS ('Sorting Decisions and Peer Processes in Schools') project (Kruse et al., 2024), an ongoing field experimental study of the impact of attribute alignment in school classes.
3. This scenario was found to be easily imaginable and realistic for school students in a cognitive pretest carried out with adolescents at a youth center ($N = 12$).
4. We decided not to use multilevel models for several reasons. First, attribute alignment is not a school class characteristic but differs for students of different ethnic origin within the same class. Second, estimation of standard errors in multilevel models would be hampered by very few observations in many school classes (Maas & Hox, 2004). In our analysis of context-specific trust there were less than five students per class in 57.89% of the classes in our analytical sample. And this was even more drastic in the subsample analysis of minority students, in which there was only one student in 28.77% of the classes. Finally, empty multi-level models suggest that the variance at the level of school classes is only between 5% and 7% for our outcome variables and samples.
5. For a minimal group size of 2, the final sample for generalised social trust consists of 1976 students visiting 146 classrooms at 36 schools (47.08% girls and 60.16% majority students).
6. The predictors used in the logistic regression were: (1) the percentage of fellow students in the school grade who do not visit the same school class mentioned in the network section (this includes a wide range of network types, e.g. friends, people one dislikes, people one talks about with ones friends, as well as members of cliques one knows about in the grade), (2) the percentage of fellow students in the school grade who do not visit the same school class that mention the participant in the network section, and (3) the number of students in the grade who do not visit in the same school class (this is the pool of people the random student was drawn from).
7. For a minimal group size of 2, the final sample for context-specific social trust consists of 764 students attending 141 classrooms at 36 schools (43.32% girls and 58.77% majority students).
8. Average generalised social trust is slightly lower among those excluded from the sample due to an ethnic ingroup size below the inclusion criterion of $n = 3$ ($M = 2.03$, $t(2296.4) = 3.948$, $p < .001$). This is mainly due to the overrepresentation of minority students in the group excluded from the analysis: only 26 majority students in comparison to 1124 minority students do not fulfil the minimum group size criterion.

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Appendix

Table A1. Descriptive statistics: Analytical sample for the models of generalised social trust.

	Mean	Min	Max
Generalised social trust	2.187	0	4
Attribute alignment	0.191	0.000	0.681
Size of ethnic group in class	10.081	3	22
Gender (ref.: male)	0.475	0	1
Age (in month)	153.627	127	185
<i>Migration background:</i>			
First generation	0.046	0	1
Second generation	0.157	0	1
Mixed origin	0.092	0	1
No migration background	0.705	0	1
Highly educated parents (ref.: at least one not highly educated parent)	0.475	0	1
Unemployed parents (ref.: at least one employed parent)	0.035	0	1

Note: *N* (students) = 1665.

Table A2. Descriptive statistics: Analytical sample for the models of context-specific trust.

	Mean	Min	Max
Context-specific social trust	1.891	1	4
Attribute alignment	0.191	0.000	0.645
Size of ethnic group in class	9.924	3	22
Gender (ref.: male)	0.428	0	1
Age (in month)	153.709	127	181
<i>Migration background:</i>			
First generation	0.049	0	1
Second generation	0.175	0	1
Mixed origin	0.095	0	1
No migration background	0.681	0	1
Highly educated parents (ref.: at least one not highly educated parent)	0.449	0	1
Unemployed parents (ref.: at least one employed parent)	0.043	0	1

Note: *N* (students) = 633.

Table A3. Descriptive statistics at the level of school classes.

	Mean	Min	Max
Number of students	21.158	7	30
Ethnic diversity	0.711	0.169	0.907
Gender diversity	0.469	0.142	0.500
Majority share	0.416	0.036	0.909
Share of girls	0.462	0.077	0.808
<i>School characteristics</i>			
%students with unemployed parents	0.058	0.000	0.353
%students with highly educated parents	0.439	0.121	0.800
<i>School track:</i>			
Lower track	0.158	0	1
Intermediate track	0.165	0	1
Higher track	0.360	0	1
Combined track	0.317	0	1

Note: *N* (school classes) = 139.

Table A4. Attribute alignment and social trust: Testing the interaction of alignment and majority status (OLS linear regression models).

	Generalised social trust	Context-specific social trust
Intercept	4.58*** (0.79)	0.64 (1.08)
Attribute alignment	−0.08 (0.32)	0.22 (0.60)
Interaction: Alignment × majority status (no migration background)	−0.63 (0.36)	−0.91 (0.73)
Majority status (no migration background)	0.13 (0.16)	0.04 (0.23)
Num. obs.	1665	633
Adj. <i>R</i> -squared	0.05	0.09

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$. Standard errors are cluster-corrected at the class level. The models include the same set of control variables as in [Tables 1](#) and [2](#).