Ethnic diversity fosters the social integration of refugee students

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Abstract

Refugee migration has become a global megatrend, and many asylum seekers are school-aged. As social integration is a key to their well-being and success, it is pivotal to determine factors that promote the social integration of refugee youth within schools. Using a large, nationally representative social network dataset of 39,154 students in 1,807 classrooms across Germany, we examine the social relationships of refugee adolescents with their peers. We find that, overall, refugee adolescents are less accepted by their classmates than their peers from other minority groups and the German majority. Crucially, however, ethnic diversity is a success factor in refugee students' social integration: they have more friends and are less often rejected as desk mates in more diverse classrooms. Descriptive and multivariate methods for social network analysis reveal that this effect results from two basic processes: 1) more opportunities to meet other ethnic minority peers, who are more accepting of refugees in general, and 2) a significantly higher acceptance of refugee adolescents by ethnic majority peers in more diverse settings. This work provides a scientific basis for organizing future allocations of young refugees to classrooms in ways that promote their social adjustment and mitigate the negative consequences of prejudice and intergroup bias.

Introduction

While migration has always been part of human history, the proportion of displaced people has grown rapidly in the last decade and now exceeds 1% of the world's population ¹. Due to political instability, armed conflicts, persecution, demographic change, economic deprivation, and severe effects of climate change, refugee migration is expected to remain a megatrend. In Western Europe, a large proportion of refugee migrants are children under the age of 18 ². These young people need access not only to formal education but also to peer relationships across ethnic boundaries because social integration is a key determinant of success in the school system and beyond ³. Yet, we know very little about the peer relations of refugee migrants. This is a major research gap given that the acculturation of refugees underlies special conditions, for instance, due to mental stress, insecure legal status, and interrupted educational careers ⁴.

In adolescence, peers are highly important socialization agents ^{5,6}, with social integration in peer groups influencing young people's lives in many ways ⁷. This is also the case for immigrants ⁸. The social integration of immigrant adolescents affects their well-being ⁹, their opportunities to acquire key resources such as language skills ¹⁰, and ultimately their educational ¹¹ and labor market success ¹². Low levels of social integration—not having many or any friends or being rejected and disliked by peers—can have serious social consequences for adolescents' psychological well-being ¹³. For refugee adolescents, barriers to peer acceptance may include language difficulties or consequences of traumatic experiences ^{14,15}. However, social integration is not a one-sided process but depends on the simultaneous attitudes and behaviors of multiple actors, and these attitudes and behaviors are in turn affected by the social context in which they are embedded.

To better understand the conditions of the social integration of refugee adolescents among peers, it is therefore pivotal to consider the role of the school and classroom context. One aspect that is likely to be particularly important is the extent to which schools are ethnically diverse. In more diverse school settings, refugee students have more opportunities to interact with peers who also have an immigrant background. These ethnic minority peers, in comparison to peers from the ethnic majority group, tend to have less intergroup anxiety¹⁶. Additionally, non-refugee ethnic minority peers might have more positive attitudes toward refugees than majority-group members because they are likely to share experiences of being perceived as culturally distinctive (e.g., due to being Muslims) and to face similar challenges in achieving their educational goals (e.g., due to language barriers)¹⁷. Thus, a higher level of ethnic diversity at school might facilitate refugee students' social integration because non-refugee ethnic minority members should be more likely to associate with them than majority-group members.

Additionally, school ethnic diversity might improve the social integration of refugee students by promoting preferences for interethnic relationships among the majority group. Negative attitudes and prejudice toward immigrants (including refugees) are widespread in Western societies¹⁸. However, a well-established finding from social psychology is that intergroup contact increases familiarity with outgroup members^{19,20} and reduces prejudice as well as racial and ethnic intolerance^{21,22}. Intergroup contact thus leads to more positive intergroup attitudes²³, particularly among members of the majority group²⁴. As a result, the number of interethnic friendship ties increases with higher ethnic diversity, although not necessarily proportionately^{25,26}, and aggression toward ethnic minority members decreases²⁷. These processes might also benefit the social integration of refugee students. Perceived ethnic threat—the perception by majority members that a minority group threatens their dominant position within communities, which can cause them to reject minority-group members—can counteract the positive effects of ethnic diversity on interethnic relationships. However, ethnic threat mostly arises when a minority group is relatively large^{25,28}, which is not the case for refugee students attending schools in Western destination countries²⁹.

Using techniques for social network analysis and focusing on Germany, where over two million people have requested asylum since 2015³⁰, we examine the social integration of refugee students among their classmates. Our analyses are based on the largest available dataset on refugee students' social networks currently available. The data include complete friendship and rejection networks of 39,154 secondary school students in 1,807 school classes in Germany, with 342,114 friendships and 161,430 rejection relations measured. We determine who the friends of refugee adolescents are and who rejects them. Moreover, we examine how different levels of ethnic diversity in the classroom affect friendship and rejection patterns.

Our identification strategy leverages the involuntary choice of residence among refugees in Germany. Upon arrival, asylum seekers are allocated to German federal states based on governmental quotas that consider the states' tax revenues, population size, and accommodation capacities³¹. Consequently, the allocation of refugees is related to the local population size but largely independent of refugees'

characteristics and the number of immigrants in a municipality ³². Until three years after granting the status of recognized refugees, asylum seekers are obliged to stay in the municipality (federal states of Baden Wurttemberg, Bavaria, Berlin, Bremen, Hamburg, Hessen, North Rhein-Westphalia, Saarland, Saxony, and Saxony Anhalt) or in the federal state (federal states of Brandenburg, Lower Saxony, Mecklenburg-Western Pomerania, Rhineland-Palatinate, Schleswig-Holstein, Thuringia). The restricted freedom of movement is only lifted if a person or a close relative starts a regular job, enrolls in a university, or starts vocational training. However, as these criteria are very rarely met, only 8 percent of the refugees in Germany moved to another state between 2016 and 2018 ³². Due to these allocation procedures, refugees' residence is largely independent from their personal characteristics and from key context characteristics such as ethnic diversity. This allows us to gain general insights into how variation in the receiving context affects the social integration of newly arrived immigrants.

In the following, we first describe refugees' social integration within schools and examine whether their friendship and rejection networks differ from those of majority students and other (non-refugee) ethnic minority students. Then, we investigate whether and (if so) why refugee adolescents who attend ethnically diverse schools are socially better integrated than their counterparts in less diverse schools.

Results

Friendship and rejection among of refugee students

Descriptive analysis of social ties shows that refugee students are less socially integrated than their ethnic minority and majority peers. Fig. 1 (A) and (B) show friendship and rejection nominations toward refugee students as reported by their classmates with varying immigrant status. We distinguish between refugee classmates, native classmates (student and both parents born in Germany; i.e., the ethnic majority), and two groups of non-refugee ethnic minority classmates: first-generation immigrants (born abroad) and second-generation immigrants (born in Germany, with at least one parent born abroad). The proportions of classmates who chose a student as a friend or rejected a student are shown on the horizontal axis; the density curves indicate the distribution of friendships and rejections of students by immigrant status. We find that refugee students have fewer friends and are more often rejected than their peers. While non-refugee students are chosen, on average, by 45% of their classmates as friends, refugee students are chosen by only 33%. Moreover, non-refugee students face an average rejection rate of 21% from their classmates, while refugee students are rejected by 31% of their classmates. Non-refugee ethnic minority students, in contrast, show a level of social integration similar to that of their native peers. Overall, social acceptance and rejection rates show little variation within the non-refugee groups (42-45% for friendship; 20-23% for rejection). These results hold when we control for refugee adolescents' gender, age, academic achievement, language skills, and length of stay in Germany (see Table S1 in SI Appendix A).

FIGURE 1 ABOUT HERE

The social networks of refugee students in classrooms with different levels of ethnic diversity

We continue by examining how refugees' social integration varies with classroom ethnic diversity. We calculate how many peers nominate refugee students as friends and how many peers reject them in classrooms with low, medium, and high ethnic diversity. Ethnic diversity is defined as the proportion of pairs of students who have different countries of origin^{25,26,33}. Emanating from the assumption that non-refugee ethnic minority students may be more likely to develop positive social relations with refugees than native students, we also analyze the ethnic composition of refugee students' social networks in these three types of classrooms. Fig. 2 visualizes typical friendship networks (A, B, C) and rejection networks (D, E, F) of refugee students in three classroom types (low, medium, and high classroom diversity). The bar charts indicate how many classmates from each immigration status group name refugee students as friends or reject them on average in each diversity setting (low, medium, and high). The network plots were constructed based on the (rounded) frequencies shown in these bar charts.

We find that refugee students receive a similar average number of friendship nominations across the three diversity settings: 5.35 nominations in low-diversity settings (see Fig. 2 (A)), 6.29 in medium-diversity settings (see Fig. 2 (B)), and 6.03 in high-diversity settings (see Fig. 2 (C)). The difference is only significant between the low- and medium-diversity settings. However, the composition of friendship networks covaries substantially with diversity. As diversity increases, refugee students' networks include more ethnic minority peers and fewer native peers. This is not surprising given that classes with higher ethnic diversity include more ethnic minority students by definition. Importantly, Fig. 2 also shows that, on average, a refugee student has one refugee friend across all diversity settings. This holds even though the majority of the classrooms include only one or two refugee students, with a mean of 1.6 refugee students per class in the analyzed sample. Thus, refugee students appear to be very likely to befriend each other if more than one of them is present in a classroom.

The rejection networks reveal a more pronounced association with diversity. Refugee students are rejected less often in more diverse classrooms. In low-diversity settings (see Fig. 2 (D)), refugee students are rejected by 7.69 of their classmates on average, of whom seven are native. In medium-diversity settings (see Fig. 2 (E)), the average number of rejections is reduced to 5.76 peers, of whom 4.21 are native (see Fig. 2 (B)). In high-diversity settings, refugee students face rejection by only 4.47 classmates, of whom 1.89 are native (Fig. 2 (C)). Overall, refugee students are rejected by 42% fewer classmates in high-diversity settings than in low-diversity settings, with the difference in rejection rates being significant between each pair of diversity setting.

FIGURE 2 ABOUT HERE

Preferences for befriending and rejecting refugee students in classrooms with different levels of ethnic diversity

Figure 2 shows students' social networks in classrooms with varying diversity. However, it does not provide any indications about the underlying processes. Are refugees in high-diversity settings better

socially integrated simply because of the presence of more ethnic minority students who may be more likely to accept them or because they develop more positive relations with peers from all ethnic groups, including native students? To answer these questions, we apply linear regression models specifically developed to analyze social network data³⁴. These models consider that observations in social networks (i.e., social ties) are not independent of each other. To compare all types of nominations, we add a variable capturing every possible nomination type based on the combination of the sender's and the receiver's immigrant status. We control for the gender, age, length of time living in Germany, academic achievement, and language skills of both the tie sender and the tie receiver as well as their match with regard to these variables and their country of origin. Fig. 3 shows the subset of the findings for refugee students' social ties (the full results are provided in Table S2 in SI Appendix A). It displays the estimated probabilities of a refugee student being chosen as a friend (Fig. 3 (A)) or of a refugee student being rejected (Fig. 3 (B)) by classmates from each immigrant-status category (as indicated by the color of the line) and depending on the level of classroom diversity (as shown on the horizontal axis). The black line represents the baseline nomination tendency (i.e., the probability of native → native nominations) in different diversity settings. Ethnic diversity is included as a continuous variable in these models. The histogram above each plot shows its distribution across the classrooms.

FIGURE 3 ABOUT HERE

Figure 3 (A) reveals that among non-refugee classmates, native students are the least likely to choose refugee students as friends in all diversity settings. Second-generation immigrant students take an intermediate position, while first-generation immigrant students are most likely to nominate refugee peers as friends, even more often than the baseline probability. Remarkably, in more diverse classrooms, students of all non-refugee backgrounds tend to name refugee students as friends more often than in less diverse classrooms, with native students showing the largest increase. The positive effect of diversity (shown by the slopes) is significant for native students. For refugee students, however, this effect is significant and negative, meaning that they nominate each other less often in more diverse settings. These findings indicate a substantial role of school diversity in refugees' friendships with native peers.

Figure 3 (B) shows that in low-diversity classrooms, native peers reject refugee students with the highest probability, followed by second-generation immigrant, first-generation immigrant, and refugee students. Rejections from native and second-generation immigrant students become less likely with increasing diversity, whereas first-generation immigrant and refugee students reject their refugee peers more when diversity increases (as shown by the slopes). These relationships between diversity and the rejection of refugees are significant for all groups except second-generation immigrants. In classrooms characterized by the highest levels of ethnic diversity, the immigrant-status groups differ only marginally in terms of their rejection rates of refugee students (8% maximum difference). This suggests that in more diverse school settings, group differences in the tendency to reject refugee students level out.

Discussion

Between 2015 and 2020, two million people requested asylum in Germany; in 2020, 54% of refugee applicants were less than 18 years old ³⁰. This study demonstrates that a few years after their arrival, refugee adolescents are less socially integrated within their classrooms than their ethnic majority and non-refugee ethnic minority peers. This constitutes a serious risk factor for their educational success and psychosocial adjustment ^{13,35}. However, in more ethnically diverse classrooms, refugee adolescents are socially better integrated: they have more friends and are rejected less frequently than in less diverse classrooms. This is shown descriptively as well as in regression analyses that control for various factors relevant to social network dynamics. As newly arrived refugees cannot choose their place of residence and their mobility is highly restricted within three years after arrival in Germany, it can practically be ruled out that the relationship between social integration and classroom diversity is due to selection effects on the refugee side. Selection effects on the classroom side are still possible (e.g., teachers and peers may differ across classrooms with different levels of diversity). As a robustness check, we include classroom-level fixed effects in the model, which allows us to rule out general classroom-level processes to a certain extent. Furthermore, in another robustness model, we include federal-state-level diversity measures in addition to classroom-level measures. The results indicate that small-scale diversity differences (at the school level) outweigh the effects of regional differences in ethnic diversity on refugee adolescents' social integration, while simultaneously, regional variation in ethnic diversity is also significantly associated with fewer rejections of refugee students by native peers (for more information on our robustness checks, see section Statistical analysis).

The findings suggest that ethnic diversity promotes the integration of refugee students and that this is due to two basic mechanisms. First, across different levels of diversity, non-refugee ethnic minority adolescents, particularly first-generation immigrant students, show a higher tendency to befriend refugee peers than majority adolescents. The higher share of ethnic minority students in more diverse classrooms hence supports refugee students' social integration. Second, majority-group students build more positive relationships with refugee students when ethnic diversity increases (especially in terms of decreased rejection). This might be due to lower levels of prejudice and more positive intergroup attitudes caused by increasing familiarity with outgroup members in more diverse settings ^{19,20} and/or the prevalence of social norms that promote intergroup contact in these settings ³⁶.

The finding that refugees are better integrated in classrooms with higher levels of diversity is in line with intergroup contact theory, which posits that outgroup contact leads to more positive outgroup attitudes and relationships ^{23,38}. At the same time, our results suggest that processes of (perceived) ethnic threat ^{33,39} are negligible in refugee adolescents' social integration: ethnic majority students do not reject refugees more often in more diverse contexts. A possible explanation for the lack of ethnic threat is the number of refugee students, which is relatively low in German schools.

It should be noted that while ethnic diversity is generally beneficial, it is not positively associated with all intergroup relations among refugees. In particular, first-generation immigrant students are more likely to both befriend and reject their refugee peers in more diverse classrooms. This may stem from a higher

acceptance of outgroup members in such contexts paired with an attempt of students who also immigrated to Germany to distance themselves from refugee peers, showing that beneficial and detrimental effects of contact can coexist and must be captured simultaneously through different measures of social relationships. Refugee students' decreasing likelihood of befriending other refugee peers and their increased likelihood of rejecting them in more diverse classrooms might also reflect an attempt to distinguish themselves from the ingroup, or it might be a consequence of other students' greater openness to friendships with refugees in more diverse classrooms. Overall, these findings suggest that a high level of diversity results in a lower degree of overall rejection, yet it also changes who rejects refugee students.

Politically, the finding that ethnically diverse school settings provide better conditions for the social integration of refugees challenges critical views of multiculturalism. Our results imply that placing recently arrived refugees, a particularly vulnerable group, in school environments that are already to some degree ethnically diverse can promote their social adjustment. Allocating young refugees to the more diverse classrooms within a school might not only entail the social acceptance by other ethnic minority peers but also a reduced likelihood of being confronted with prejudice and intergroup bias among ethnic majority members who are more accepting of refugee peers in more diverse classrooms. Given that positive contact with majority-group peers is critical for immigrant students' academic success and future life opportunities, ethnic diversity might also foster their economic integration³. At the same time, the almost random allocation procedure implemented in Germany and other countries might make low-diversity contexts more diverse in the long term. Through the processes reported in this study, this might blur ethnic boundaries in less diverse contexts in the long run and foster integration on a larger scale.

Methods

Data

Our analysis uses data from the Trends in Student Achievement study 2018 conducted by the Institute for Educational Quality Improvement (IQB)⁴⁰. The study measured the academic achievement of 9th graders in Germany in mathematics and science and collected questionnaire data, including information on students' family background. The sample was selected by randomly drawing schools based on the distribution of secondary school types (e.g., academic track, intermediate track, and comprehensive track) in each federal state of Germany. Subsequently, classrooms were randomly drawn in each school (one in academic track secondary schools and two in all other schools). Participation in the achievement tests was mandatory in all public schools, resulting in a participation rate of 92.4%. Completing the student questionnaire was voluntary in some federal states and mandatory in others (82.5% overall participation rate). The analyzed sample consists of 39,154 students from 1,807 classrooms and is representative of 9th graders in Germany (for details on the sampling process, see⁴⁰).

The statistical power provided by this large dataset is particularly important for the study of social processes among refugee students, as they are still a comparatively small group (refugees constituted

approximately 2.2% of the German population in 2020). For the analyses underlying Fig 3, we used subsamples of classrooms that were attended by at least one refugee student (Fig 3) and where at least 15 students answered the questions about friendships and rejections (Fig 2). These samples comprised 6,390 students from 304 classrooms and 5,328 students from 237 classrooms. Information on these samples and robustness analyses of various samples are provided in SI Appendix B.

Measurement

Friendship and rejection. Friendship and rejection were measured with a sociometric questionnaire. For friendship, students were asked, “Who are you friends with?”; for rejection, they were asked, “Who would you not want to sit next to?” (see SI Appendix C for an excerpt of the student questionnaire). While the latter question does not assess the full scope of social rejection, it captures a key aspect of rejection given the high importance of desk mate relations in adolescence ⁴¹.

Immigrant and refugee status. Students were asked about their country of birth as well as the country of birth of their parents and grandparents. School administrators provided information about the refugee status of students. From this, we derived a variable representing a student’s immigration status. Refugee students were identified based on the information provided by school administrators and were restricted to those who arrived in or after 2014 from Syria (60% of the refugee adolescents in our sample), Afghanistan (27%), Iraq (12%), or Lebanon (1%). Other students born outside of Germany were coded as first-generation immigrants. Those who were born in Germany but had at least one parent born outside of Germany were coded as second-generation immigrants. The rest of the students were categorized as native students. For the multivariate models, we created dyadic variables based on the immigrant status of the sender and the receiver of a friendship or rejection tie in each possible combination. We included all possible combinations of the immigrant status of the relationship sender and receiver in the model (16 combinations), except for the dyad native → native, which served as a reference category.

Classroom ethnic diversity. We calculated classroom diversity indices using the dissimilarity (or fractionalization) index ^{25,26,42,43}. This index expresses the number of pairs of students who have different countries of origin compared to the total number of student pairs in the classroom. The country of origin is the student’s birthplace for first-generation immigrant students and the parents’ birthplace for second-generation immigrant students. Second-generation immigrant students whose parents were born in different countries other than Germany were assigned to the category “other origin”. For native students, Germany was considered the country of origin. In Fig 2, low-diversity classrooms include diversity indices ranging from 0.11 (the sample minimum) to 0.52, those of medium-diversity classrooms range from 0.52 to 0.75, and high-diversity classroom indices range from 0.75 to 0.98 (the sample maximum). Each of the three diversity settings constitutes one-third of the whole sample.

Control variables. We used information from the questionnaire about the date the students first arrived in Germany (if they were born elsewhere) and about their country of origin. Information on students’ age

and gender was provided by school officials. Academic achievement was operationalized with students' grades in mathematics as reported by the schools. In Germany, grades range from 1 (excellent) to 6 (insufficient), yet we reversed this variable so that higher values indicate better achievement. The results from C-tests were used as indicators of general German language abilities. C-tests—a specific form of cloze tests—consist of a short text in which the second half of every second word is deleted. The students' task is to fill in the gaps ⁴⁴. These measures are of vital importance because refugees, on average, attain lower achievement levels than their classmates ⁴⁵, and controlling for academic achievement and German language skills allows us to rule out the possibility that the rejection of refugee students as desk-mates reflects the rejection of low-achieving peers or is due to language barriers.

Transforming individual variables into dyadic variables. To examine how immigrant status is associated with social ties in multivariate social network models, we created dyadic variables from the immigrant status information. As control variables, we considered the characteristics of the tie sender and the tie receiver to determine whether students with certain attributes nominate others more often (sender effects) or are named by others more often (receiver effects). These variables account for the fact that many student characteristics are confounded with refugee status (e.g., refugee students have lower achievement in school on average) and could affect their social acceptance. Additionally, we controlled whether pairs of students had the same country of origin, the same gender, a similar age, a similar length of stay in Germany, similar language skills, and similar achievement. This accounts for the fact that students with the same immigrant status are often also similar in other ways (e.g., language skills) and may thus cluster together in social networks due to homophily principles ⁴⁶.

Statistical analysis

The multivariate analyses aim to determine the statistical significance of associations between students' immigration status and their social ties after controlling for differences in the opportunity structure. For instance, we aim to determine whether friendships with and rejections of refugee students are more likely than would be expected at random. Standard statistical methods, such as regression, cannot be used for this purpose because they assume that observations are independent of each other. Due to endogenous processes such as reciprocity, clustering, and self-reinforcing popularity in social networks ^{47–49}, this assumption does not hold. Therefore, we applied the Multiple Regression Quadratic Assignment Procedure (MRQAP), a linear regression framework for network data ³⁴. MRQAPs are similar to linear probability models with nonparametric null distributions for standard errors ^{see 50, section 7.5}. Details on the method and its mathematical foundations can be found in SI Appendix D.

The dependent variables in our analyses were binary friendship and rejection variables between each pair of students. These variables had the value 1 if a friendship or rejection nomination existed and 0 if not. The independent variables were dummy or continuous variables representing characteristics of the tie senders, receivers, and their match (for binary variables) or their similarity (for continuous variables). We included the main effect of ethnic diversity as well as interaction effects between ethnic diversity and the variables representing immigrant status. Given the low number of refugee students in the vast majority of

the classes, the estimation was performed jointly for all the classrooms to ensure sufficient statistical power⁵¹.

Advantages of combining descriptive and multivariate methods of social network analysis

Using social network data, this study measures how accepted refugee students actually are among their peers instead of assessing how accepted they subjectively feel. Asking peers about social ties with classmates provides a more valid measure of refugees' acceptance than asking about attitudes toward refugees, which may be susceptible to social desirability bias. Furthermore, by combining detailed descriptive analyses with multivariate statistical modeling of refugee networks, our study not only quantifies students' preferences to form social ties with refugee peers given different opportunities (i.e., different levels of diversity) but also describes typical personal networks among refugee students that result from the opportunity structure, refugees' own preferences, and the preferences of their peers. Finally, while most network studies in the context of education focus on friendship only, we investigate a complementary indicator of social integration: rejection. This is important because being rejected may impact students' success and well-being even more than simply not having friends³⁷.

Robustness checks

First, to account for the nested nature of the data, we conduct a robustness check in which we include classroom fixed effects. These results are presented in SI Appendix E, Table S6. Second, we test whether a different definition of classroom diversity provides similar insights as the main model. This robustness model uses the proportion of immigrants instead of our original diversity measure; the results are presented in SI Appendix E, Table S7. Third, to rule out that the results are due to geographical differences in diversity instead of classroom-level differences, we include diversity measures (and their interactions with each nomination type) at both the classroom and federal-state levels. For diversity at the federal-state level, we rely on data on 2018's proportion of immigrants in each federal state⁵². On the classroom level, we include the proportion of immigrants as the diversity measures to maximize comparability.

Overall, the robustness analyses confirm our substantive conclusions. This implies that our results are not explained by small-scale selection processes (e.g., teachers assigning refugee students to more diverse classrooms) or geographical instead of classroom-level variation in ethnic diversity. It should be noted, however, that the effect of diversity on native → refugee friendship nominations does not seem to be robust across different model specifications (that is, it remains positive but is not significant in each model). This implies that the positive diversity effect on refugee students' social integration, which emanates from changes in the behavior of native peers, is mainly a result of reduced rejections, whereas the effect of diversity on natives' likelihood to befriend refugees is less clear. Interestingly, our analysis considering federal-state-level diversity additionally shows that not only classroom-level diversity but also increasing levels of diversity in the federal states go along with reduced rejections among native → refugee dyads (see SI Appendix E, Table S8).

Declarations

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Competing Interest Statement: The authors declare that there are no conflicts of interest.

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Figures

Figure 1

Friendships and rejections among refugee adolescents based on their peers' immigrant status. Density plots showing friendship and rejection nominations toward refugee adolescents received by native, first-generation immigrant, second-generation immigrant, and refugee classmates. N students = 39,154. N classrooms = 1,807.

Figure 2

Typical friendship and rejection ego networks of refugee students. The bar plots show the rounded average number of friendship (panels A, B, C) and rejection (panels D, E, F) nominations of refugee students by each immigrant status group. The network plots map the average number of nominations (e.g., the total number of friends). In addition, the network plots are a proportionate representation of the ethnic composition of nominations of refugee students (e.g., the number of native friends). Note that not every bar can be represented in the network plots by the value of the closest integer to its actual mean due to our primary goal to represent the total number of nominations accurately. N students = 5,328. N classrooms = 237.

Figure 3

Friendships and rejections among refugee students by classroom ethnic diversity. Results from MRQAPs showing the probabilities of friendships with (panel A) and rejections of (panel B) refugee students (see the Statistical Analysis section for details). The model controls whether the tie sender and receiver have the same country of origin, the same gender, a similar age, a similar length of stay in Germany, similar language skills, and similar achievement. Additionally, ego and alter effects of these control variables are controlled (see Measurement for details). The histograms above the plots represent the distribution of ethnic diversity across the classrooms. N students = 6,390. N classrooms = 304.

Supplementary Files

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