Humanities & Social Sciences Communications

ARTICLE

https://doi.org/10.1057/s41599-023-01880-y OPEN

Ukrainian refugees struggling to integrate into Czech school social networks

Tomáš Lintner [1,2]✉, Tomáš Diviák [2,3], Klára Šeďová [1,2] & Petr Hlado [1,2]

We provide a brief insight into the integration of Ukrainian refugees in school social networks in the Czech Republic following the mass migration caused by the Russian invasion of Ukraine. Our sample contains twelve classrooms with a total of 266 students in grades 5 to 9; 21.05% of the students were of Ukrainian origin. We employed multiplex exponential random graph modelling to assess the level to which Ukrainian refugees were integrated within peer networks, capturing both friendship and exclusion ties. We then employed a meta-analytical procedure to aggregate the results from the individual classrooms and a meta-regression to study the relationship between classroom ethnic composition and the level of integration of Ukrainian refugees. We found social networks to be formed heavily along ethnic lines with strong ethnic homophily in friendship ties and a propensity of the Ukrainian students to both send and receive fewer friendship ties than their Czech classmates. We found no evidence that the Ukrainian students sent or received more exclusion ties than their Czech classmates, suggesting that the Ukrainian students did not face explicit rejection from classmates; rather, we saw a tendency of the Ukrainian students to be neglected. Our findings stand in contrast to reports from school headmasters who asserted that the social integration of Ukrainian students was seamless. We further found a higher proportion of Ukrainian students in classrooms to be related to stronger homophilic behaviour and a lower tendency of Ukrainian students to make friends. Our results therefore imply that increased classroom diversity may negatively influence the integration of refugees in social networks.

[1] Department of Educational Sciences, Masaryk University, Brno, Czech Republic. [2] Institute SYRI, Brno, Czech Republic. [3] Mitchell Centre for Social Network Analysis and Department of Criminology, The University of Manchester, Manchester, UK. ✉email: tomas.lintner@mail.muni.cz

Introduction

On 24 February 2022, Russia launched an invasion of Ukraine, causing the biggest refugee crisis in Europe since World War II. As of September 2022, 7.5 million Ukrainians had fled to other European countries—0.4 million to the Czech Republic alone, making the Czech Republic the country hosting the highest per capita number of Ukrainian refugees among all countries, at 37 Ukrainian refugees per 1000 inhabitants (UNHCR, 2022).

The influx of refugees has put many Czech public services under an unprecedented strain, with the educational system among the most affected: 32% of the Ukrainian refugees fleeing to the Czech Republic were children under the age of 18 who required access to education (UNHCR, 2022). The Czech Republic pledged to provide free and accessible education to all refugee children in regular Czech state schools in inclusive classrooms along with Czech students (Bill no. 67/2022; Bill no. 199/2022). At the beginning of the 2022/2023 school year (September 2022), there were 52,107 Ukrainian children enrolled at Czech lower secondary schools, constituting 5% of the whole student population (Ministry of Education, 2022d). Hence, in a very short amount of time, Czech schools became home to large numbers of Ukrainian refugees who had no prior knowledge of Czech language, and Ukrainian refugees quickly became the largest ethnic minority in Czech schools.

To our knowledge, no study has yet researched peer relationships of Ukrainian refugees in the host country following the 2022 invasion. However, based on evidence from studies dealing with peer relationships of refugee students coming from other countries, we assume the Ukrainian refugees in the Czech Republic were at risk of social exclusion in schools[1]. Ukrainian refugee students in the Czech Republic faced a three-fold disadvantage in establishing peer relationships in schools—becoming an ethnic minority in an educational system operating in an ethnically homogeneous society, lacking proficiency in the Czech language, and managing psychosocial adjustment problems stemming from their relocation and war experience in their home country. First, previous studies from primary and secondary school classrooms have provided comprehensive evidence that ethnic minority students are more likely to be excluded (Boda and Néray, 2015; Fisher et al., 2000; Wilson and Rodkin, 2011) and more likely to form friendships with classmates of the same ethnicity (Bellmore et al., 2007; Currarini et al., 2010; Goodreau et al., 2009; Hajdu et al., 2021; Kruse et al., 2016; Leszczensky and Pink, 2015; Rodkin et al., 2007; Shrum et al., 1988; Smith et al., 2014; Vermeij et al., 2009; Wilson and Rodkin, 2011; Wittek et al., 2020). Being an ethnic minority is in itself linked to having worse relationships in schools; it has been further argued that the previously ethnically homogenous Czech educational system does not provide any tangible support for ethnic minority students and implicitly promotes lower acceptance of non-Czech students (Jarkovská et al., 2015; Obrovská et al., 2021). Second, most Ukrainian refugees lack proficiency in the Czech language. A lack of proficiency in the national language is one of the greatest barriers for refugees to establishing friendships in schools and largely limits them to establishing friendships with other refugees (Cavicchiolo et al., 2023; Evans and Liu, 2018; Li and Grineva, 2016; Trickett and Birman, 2005). Third, many Ukrainian refugees faced psychosocial distress stemming from their relocation and war experience, which further exacerbates refugee students' inability to form school friendships (Guarnaccia and Lopez, 1998; Lustig et al., 2004). It has been shown that traumatised children tend to isolate themselves from their peers (Cherewick et al., 2015; Macksoud et al., 1993). Numerous studies focusing specifically on the relationships of first-generation children in schools have confirmed that first-generation children are more likely to face exclusion (Alivernini et al., 2019; Bianchi et al., 2021; Boda et al., 2023; Cheung and Llu, 2012; Guo et al., 2019; Motti-Stefanidi et al., 2008; Oxman-Martinez and Choi, 2014; Plenty and Jonsson, 2017; Strohmeier et al., 2011; Zhang et al., 2020) and are more likely form friendships with other first-generation children (Campigotto et al., 2022; Schachner et al., 2016; Titzmann and Silbereisen, 2009; Windzio, 2015).

Having good peer relationships in school is, however, an essential part of a refugee's successful psychosocial adjustment to a new country, mental health, and academic performance. Adolescents often view school as their primary social context, where they develop and maintain social relations (Coleman, 1961; Steinberg, 2020). Student academic and social lives are therefore intrinsically connected (Juvonen and Wentzel, 1996). Good peer relationships help refugees with psychosocial adjustment by providing social support and a sense of safety (Almqvist and Broberg, 1999; Juang et al., 2018; Kovacev and Shute, 2004). Having good peer relationships in school also leads to better mental health among refugees (Emerson et al., 2022; Samara et al., 2020) and support from friends has a positive impact on refugees struggling with PTSD (Verelst et al., 2022). Furthermore, when refugees have good peer relationships in schools, it positively influences their academic performance (Wong and Schweitzer, 2017). Conversely, when refugees are excluded by their peers in school and face discrimination from their classmates, they become academically less engaged and more likely to drop out of school (Umaña-Taylor, 2016). Good relationships between refugees and non-refugees in schools further benefit not only the refugee students themselves, but also the non-refugee students—they positively affect student mental health (van der Does and Adem, 2021), lead to lower perceived vulnerability (Graham et al., 2014), and reduce prejudice among students (Pettigrew and Tropp, 2008).

Several studies tried to determine how school or classroom ethnic composition can influence the social integration of refugees and the formation of cross-ethnic relationships among students. The studies have provided inconclusive results and, except for Boda et al. (2023), the studies were not aimed specifically at exploring the effect of classroom composition on the peer relationships of refugee students. On the one hand, Boda et al. (2023) found that ethnically diverse classrooms in Germany enhanced opportunities for refugee students to interact with peers from other ethnic minorities and increase acceptance by peers from the ethnic majority. Similarly, Quillian and Campbell (2003) reported an increase in inter-ethnic friendships as school ethnic diversity increased. Moreover, Kawabata and Crick (2011) and Hajdu et al. (2021) reported an increase in inter-ethnic friendships as classroom ethnic diversity increased. On the other hand, Joyner and Kao (2000) found the adolescent likelihood of having an inter-ethnic friendship decreased as the proportion of same-ethnicity students in their school increased. Smith et al. (2016) reported that the immigrant tendency to form intra-ethnic friendships disproportionately increased as immigrants saw more same-ethnic peers. Similar findings were provided by Bellmore et al. (2007) among middle school students in the United States. Munniksma et al. (2022) found classroom ethnic diversity to be related to worse social adjustment. Altogether, the link between school and classroom composition and the formation of cross-ethnic relationships among students has not been sufficiently researched and requires more investigation. It is useful to consider that the proportion of refugees coming into the individual schools and classrooms can usually be adjusted by the city-level policymakers and school management.

Integration in social networks as an essential component of social integration. The theoretical framing of social integration

has evolved over the last hundred years. It has been established that social integration denotes the level of an individual's functioning within a wider social group. The ability of an individual to function within a social group is necessarily dependent on the interpersonal relationships they maintain with other members of the social group, as humans are innately social beings with a constant desire for interpersonal attachments and a need for belonging (Baumeister and Leary, 1995). Naturally, social integration of an individual encompasses more than just having relationships with other members of the group—a pivotal role is played by the quality of the relationships with others and by the level to which goals, values, and language are shared among the individuals (Callahan, 2009; Evans and Liu, 2018; Herrero and Gracia, 2004; Thorlindsson and Bjarnason, 1998). However, the ability to form and maintain interpersonal relationships with other members of a group, providing a sense of attachment and belonging, is arguably the essential component of successful social integration in any group. Without meaningful relationships with other members of a social group, an individual's functioning in the group is severely limited. The understanding of the importance of interpersonal attachments has led to a shift in the understanding of social integration, from role-based measures (e.g., Moen et al., 1992; Thoits, 1986) to measures based on interpersonal relationships (e.g., Cohen, 1991), and, more recently, to measures based on social networks (e.g., Hoffman et al., 2015; Rodkin et al., 2007; Wölfer et al., 2012).

Social network theory is highly complementary to the current understanding of social integration. Network theory asserts that to understand a social system, it is important to study how the individuals within that social system interact, what the whole structure of the interactions looks like, and what positions those individuals hold within the structure. As interpersonal relationships are inherently dyadic and dependent on the decisions of at least two individuals involved, social network analysis further asserts it is also important to assess the directionality of the relationships—both how each individual perceives others and how others perceive the individual. Network theory provides a framework for representing the real-world social structures as graphs and makes it possible to study the generative processes driving the network structures (Borgatti et al., 2009). Integrating Blau's (1960) theory of social integration and network theory (Borgatti and Lopez-Kidwell, 2014; Brissette et al., 2000), social integration represents an interactional and relational process in which members of a group form a cohesive social structure with each member both attracted to and attractive for others in the group in such a way that their relationships provide functional social support and equality. Social network analysis allows us to assess an individual's level of integration within a group by looking at how interconnected the individual is with others.

Integrating the paradigm seeing social integration as an interactional process and the paradigm of social networks, we understand the integration of a student within peer social networks as an essential component of the student's social integration within the school's social system, necessary for the student's social and academic functioning (Hoffman et al., 2015; Jiang and Altinyelken, 2022; Stinson and Antia, 1999). We understand student integration in school social networks (Stadtfeld et al., 2019; Windzio, 2015) as the degree to which students are interconnected with each other through friendship ties and the degree to which students are excluded by their classmates.

Context of the present study. The Czech educational system has placed a high priority on integrating Ukrainian students into mixed classrooms—i.e., classrooms including both Czech and Ukrainian students and the Czech government was explicit about not wanting segregated Ukrainian-only classrooms. Recognising the importance of successful social integration for the refugee students to ensure a good quality and equitable education, the Czech government has emphasised the need for successful social integration since the beginning of the invasion. In addition to the immediate benefits of social integration related to their academic outcomes, the Czech government expected that a significant number of the Ukrainian refugee students would remain in the Czech Republic indefinitely—eventually becoming a workforce for the Czech economy and members of the Czech society (Ministry of Education, 2022a; 2022c; Ministry of Interior, 2022). The Ministry of Education (2022b) launched a specialised web portal for schools with resources on how to deal with the influx of Ukrainian refugees; however, there were no specific guidelines on how to deal with the social integration of refugees.

Aiming to map the quickly developing situation in Czech schools and evaluate the process of social integration of Ukrainian refugee students, in April and May 2022, the Czech School Inspectorate (CSI) conducted a survey of 626 elementary schools that had ten or more enrolled refugees. The CSI survey was conducted mostly on the basis of inspector visits in the schools and interviews with school management. The CSI concluded that Czech schools were taking appropriate steps to promote the social integration of the Ukrainian students in mixed classrooms and that the social integration of Ukrainian students was adequate (Novosák et al., 2022). According to the CSI, almost all schools took some steps to promote the smooth start of school attendance for the Ukrainian refugees and approximately one fifth of the schools provided adaptation programmes comprised of intensive Czech language lessons and socialisation activities for groups of Ukrainian students. Additionally, the CSI noted that the relationships between Ukrainian and Czech students within the schools were generally positive, with most schools displaying mixed Ukrainian-Czech peer groups, and Czech students consistently demonstrating a willingness to assist their Ukrainian counterparts (Novosák et al., 2022).

Present study. We found the reports from the CSI to be intriguing, since the results of numerous previous studies dealing with the integration of refugee students in peer social networks have presented a different picture (e.g., Alivernini et al., 2019; Bianchi et al., 2021; Cheung and Llu, 2012; Campigotto et al., 2022; Schachner et al., 2016; Titzmann and Silbereisen, 2009). We assumed that the positive findings reported by the CSI could be related to the wave of solidarity with Ukrainian refugees and the strong support for the inclusion of Ukrainian pupils in Czech schools expressed by the Czech government and the Ministry of Education. We therefore decided to investigate the situation in the beginning of the 2022/2023 school year.

We provide a brief insight into the integration of Ukrainian refugees into social networks in Czech lower secondary school classrooms with the use of social network analysis. Our research is relevant to researchers, educators, and policymakers dealing with an influx of refugee students into the educational system. We address two research gaps—we provide early evidence on the peer relationships of refugees in the context of the Ukrainian refugee crisis, and we provide evidence on the influence of classroom composition on the formation of peer relationships with a focus specifically on classrooms with refugee students. Hence, we have two aims:

- to map the level to which Ukrainian refugee students are integrated within peer social networks by capturing two inverse dimensions—friendship and exclusion ties;

- to link the classroom ethnic composition to the level of integration of Ukrainian refugee students in peer social networks.

Methods

Participants and procedure. Our sample comprised 266 students in grades 5 to 9 (ages 11 to 15) in twelve classrooms in six lower secondary schools in Brno in the Czech Republic. Since we were interested in studying the integration of Ukrainian refugees in mixed classrooms, we aimed at including schools with high numbers of Ukrainian refugees. We employed data from the CSI and identified lower secondary schools with 30–60 Ukrainian refugees enrolled in the 2022/23 school year—there were a total of eight schools. We then contacted the school headmasters and invited them to participate in our research. Six of the eight schools agreed to participate. In each school, we randomly chose two mixed classrooms. We collected data in the first half of the 2022/2023 school year (October to December 2022)—in the period when most of the Ukrainian students were starting their education at Czech schools but had already spent some time with their Czech counterparts and had an opportunity to form relationships. Table 1 displays the key characteristics of the sample, which included a slight majority of boys and a diverse mix of genders and ethnicities across the classrooms. We had no missing data in the sample.

Our research team interviewed the six headmasters and their deputies in the schools in our sample before pursuing the data collection among the students. The school management unanimously called the social integration of Ukrainian refugees their priority and asserted that social integration at their respective school was a success. It was evident that social integration was perceived by the headmasters and their deputies as more important than academic goals. One of the deputies noted: 'Our initial response wasn't about their mastering the curriculum. It was about making them learn the Czech language and socialising in the classrooms.' There was a consensus that Ukrainian pupils were satisfactorily integrated and had established good relationships with their classmates. One of the headmasters commented: 'It looks to me like there's no problem with integration. The kids [Ukrainians] are just seamless in that classroom, they're having fun with the other kids during breaks, and they're running around outside with our [Czech] kids.' The noticeable optimism of the school management led us to employ a sociometric approach to capture the perspective of all students in the sample classes.

Measuring relationships. We employed a pen-and-paper sociometric questionnaire with two nomination questions (Del Vecchio, 2011; Poulin and Dishion, 2008)—one question about friendship ties and one question about exclusion ties. The aim of the questionnaire was to capture both friendship and exclusion ties among all the students within the classroom. The first question was worded as 'Write the names of the classmates you are friends with. You can write as many names as you want. The order of the names does not make any difference.' The second question was worded as 'Write the names of the classmates with whom you would not like to share a desk. You can write as many names as you want. The order of the names does not make any difference.' The questionnaire was in a bilingual Czech and Ukrainian form. A trained researcher administered the questionnaire in group settings in the classrooms during school lessons and provided the participants with the necessary assistance. We collected data on student gender and ethnicity from the school administrative records provided by the class teachers.

Constructing social networks. After collecting the sociometric questionnaires, we transcribed data from the questionnaires into adjacency matrices. Based on the adjacency matrices, we constructed multiplex social networks for each classroom. A multiplex network contains various layers of ties between the same set of nodes—in our case, the nodes represented the individual students and the ties represented friendship and exclusion nominations. The two layers of ties—friendship and exclusion—are not necessarily mutually exclusive—i.e., it is possible for student A to nominate student B for both friendship and exclusion ties—however, the multiplex projection allows us to account for the fact that student A excluding student B lowers the chance of student A also nominating student B as a friend. The networks were directed—meaning that the ties between the students are directional—we capture the fact that while student A may have nominated student B, student B might not have reciprocated the nomination. The full anonymised adjacency matrices are available in Supplementary Table S1.

Data analysis

Exponential random graph modelling (ERGM). To study the level to which Ukrainian refugees are integrated within peer social networks, we employed multiplex exponential random graph modelling (ERGM) (Lusher et al., 2013; Wang et al., 2009) on friendship and exclusion ties in *XPNet* software (Wang et al., 2009). ERGM identifies what influences network formation by assessing which micro-configurations (e.g., reciprocal ties) occur in a network above what would be expected by chance in a random graph given other effects included in the model. ERGM can incorporate multiple effects for a single network. ERGM results in log odds estimates of the existence of a tie conditioned by the model terms. The resulting log odds estimates implicitly account for the interdependency between the individual terms. With the increasing number of included terms, the model therefore yields more conservative estimates and multiple comparisons do not pose a problem. The model terms represent the specific micro-configurations that embody the relational mechanisms we are interested in modelling.

Table 1 Gender and ethnic composition of the sample.

	Whole sample abs (%)	Per classroom abs (%)			
	n	*M*	SD	Min	Max
Students	266	22.17	3.95	17	29
Gender composition					
Girls	120 (45.11)	10.00 (44.72)	3.38 (11.06)	5 (27.59)	16 (59.26)
Boys	146 (54.89)	12.17 (55.28)	3.16 (11.06)	8 (40.74)	21 (72.41)
Ethnic composition					
Czech	210 (78.95)	17.50 (78.07)	4.54 (8.60)	11 (61.11)	25 (92.6)
Ukrainian	56 (21.05)	4.67 (21.93)	1.44 (8.60)	2 (7.41)	7 (38.89)

We fitted a single model specification to all classrooms[2]. The model specification modelled the propensity of students to send and receive more ties dependent on their ethnicity, the tendency to form intra-ethnic friendship ties, and the tendency to form inter-ethnic exclusion ties while controlling for other nodal attribute, structural, and cross-layer dependency terms. The full list of included ERGM terms along with their descriptions is available as Supplementary Table S2.

We checked for the convergence and goodness of fit of all models. All the models converged. Goodness of fit was assessed by simulating a distribution of 1000 networks from the final converged model for each classroom and subsequently comparing this distribution to the observed data on several structural indices. Overall, the models were good fits on the observed data on friendship layers and modest fits on exclusion layers as we did not include the full array of structural effects on the exclusion layers. The full goodness of fit results with the individual structural indices for the individual classrooms are available in Supplementary Table S3.

Meta-analysis and meta-regression. To provide overall effect estimates across the classrooms, we aggregated the results from the individual classrooms using a meta-analytical method. We employed a random-effect model, assuming differences in true effect sizes among the classrooms due to varying school locations, student compositions, and teacher backgrounds[3]. In a random-effect model, we allow the true effect to vary from study to study and estimate the mean of a distribution of true effects. Each study is weighted by the inverse of both its within-study and its between-study variance. To link the classroom ethnic composition with the level of integration of its Ukrainian refugees, we conducted a mixed-effects meta-regression using the percentage of Ukrainian students in the classroom as a moderating variable for three friendship tie effects: the *sender* and *receiver* effect for Ukrainians and the ethnic *homophily* effect. The meta-analysis and the meta-regression were conducted in the *R* (R Core Team, 2020) package *metafor* (Viechtbauer, 2010).

Results

Descriptive statistics. We first provide an overview of the basic network descriptors showing several common characteristics present across the networks. Table 2 shows the network descriptors. Both friendship and exclusion layers exhibited several typical features of school networks—high density, centralisation, reciprocity, and transitivity, although the exclusion layers were generally lower on all observed network indices. This suggests that the exclusion layer is less cohesive than the friendship layer. We found positive gender and ethnic homophily on the friendship layer and negative gender and ethnic homophily on the exclusion layer, suggesting that both the exclusion and friendship ties were formed along the lines of gender and ethnicity. The negative correlation between friendship and exclusion ties indicates that the two relationships did not co-occur. The influence of gender and ethnicity on the formation of the ties is visible in Fig. 1, with sociograms on the friendship layer exhibiting clusters of students by ethnicity and sociograms on the exclusion layer exhibiting mainly mixed ties.

What shapes classroom networks? We followed the network descriptors with ERGM accounting for the interdependency of the individual effects. The findings from the ERGM meta-analysis indicate that relationships among students in the classrooms were, indeed, largely based on ethnicity and gender. Table 3 shows aggregate ERGM estimates. We found positive and significant ethnic homophily on friendship ties, indicating that students had a strong tendency to form friendship ties with those of the same ethnicity; this tendency influences the networks among the included effects the most. The sender and receiver effects for Ukrainians on friendship ties were found to be significant and negative, indicating a lower tendency of Ukrainian

Table 2 Network summary statistics of the individual friendship and exclusion networks.

		n	dens.	centr.	recip.	trans.	avg. dist.	avg. deg.	hom. gndr.	hom. et.	cor.: fr. v. excl.
network01	fr.	23	0.42	0.35	0.68	0.68	1.57	9.22	0.24	0.19	−0.33
	excl.		0.17	0.73	0.49	0.34	1.96	3.70	−0.14	−0.10	
network02	fr.	29	0.33	0.30	0.59	0.59	1.80	9.28	0.25	0.26	−0.33
	excl.		0.27	0.48	0.33	0.49	1.85	7.55	−0.24	−0.12	
network03	fr.	26	0.30	0.31	0.52	0.60	2.17	7.46	0.40	0.14	−0.25
	excl.		0.16	0.28	0.24	0.31	2.45	3.88	−0.43	0.07	
network04	fr.	18	0.41	0.35	0.66	0.66	1.65	6.94	0.28	−0.05	−0.35
	excl.		0.17	0.20	0.35	0.28	2.28	2.83	−0.25	−0.15	
network05	fr.	23	0.28	0.42	0.59	0.51	1.92	6.22	0.18	0.27	−0.29
	excl.		0.29	0.29	0.36	0.51	1.91	6.35	−0.05	−0.13	
network06	fr.	25	0.36	0.34	0.71	0.71	1.64	8.64	0.23	0.24	−0.19
	excl.		0.15	0.30	0.30	0.34	2.19	3.68	−0.17	−0.04	
network07	fr.	18	0.31	0.17	0.78	0.58	2.01	5.28	0.58	0.64	−0.35
	excl.		0.25	0.17	0.37	0.36	2.28	4.22	−0.46	−0.32	
network08	fr.	19	0.30	0.27	0.65	0.62	1.74	5.37	0.41	0.27	−0.13
	excl.		0.07	0.22	0.16	0.24	1.38	1.32	−0.32	0.35	
network09	fr.	21	0.46	0.33	0.69	0.73	1.62	9.14	0.30	0.10	−0.41
	excl.		0.20	0.42	0.44	0.35	2.03	4.10	−0.35	−0.14	
network10	fr.	17	0.29	0.19	0.78	0.62	2.08	4.71	0.65	0.78	−0.30
	excl.		0.25	0.29	0.38	0.35	1.89	4.06	−0.50	−0.25	
network11	fr.	20	0.31	0.37	0.64	0.64	1.76	5.90	0.63	0.14	−0.30
	excl.		0.24	0.24	0.41	0.40	2.29	4.60	−0.52	0.04	
network12	fr.	27	0.52	0.40	0.77	0.77	1.55	13.41	0.23	0.02	−0.34
	excl.		0.12	0.24	0.22	0.26	2.18	3.00	−0.21	−0.12	

fr. friendship, *excl.* exclusion, *dens.* density, *centr.* centralisation, *trans.* transitivity, *avg. dist.* average distance, *avg. deg.* average degree, *hom. gndr.* gender homophily, *hom. et.* ethnic homophily, *cor.: fr. v. excl.* correlation on friendship versus exclusion ties.

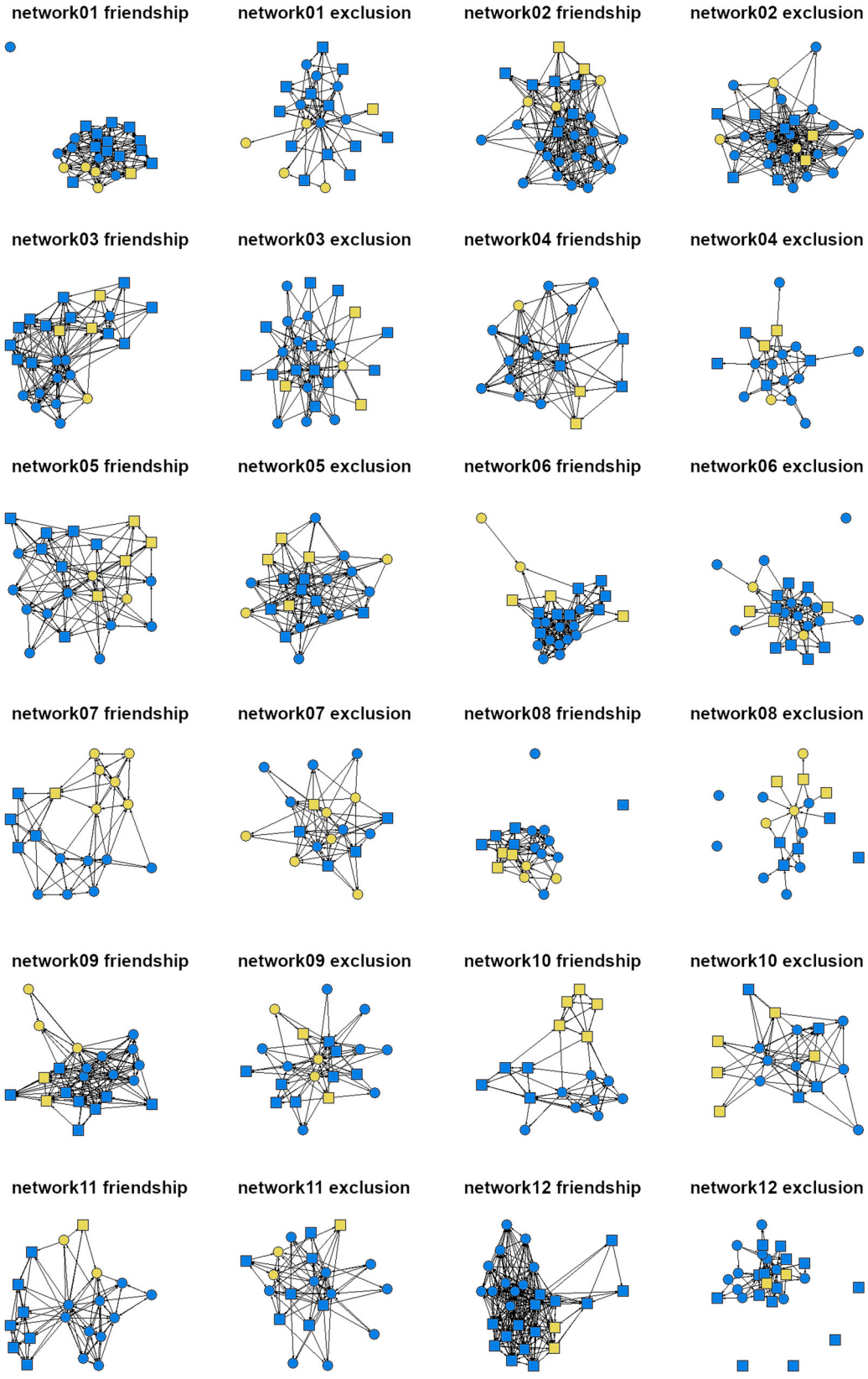

Fig. 1 Network visualisations of friendship and exclusion layers in the classrooms. Blue nodes denote Czech ethnicity, yellow nodes denote Ukrainian; squares denote girls and circles denote boys. Lines between the nodes denote the existence of a respective type of a tie between two students.

Table 3 Aggregate ERGM results.

Effect	Log odds	SE	*p*-value	95% CI
Structural effects on friendship ties				
$\text{intercept}_{\text{friendship}}$	−3.19	0.45	<0.01	[−4.08, −2.30]
$\text{reciprocity}_{\text{friendship}}$	1.63	0.18	<0.01	[1.27, 1.99]
$\text{path closure}_{\text{friendship}}$	1.39	0.17	<0.01	[1.05, 1.73]
$\text{cyclic closure}_{\text{friendship}}$	−0.21	0.12	0.08	[−0.45, 0.02]
$\text{multiple 2-paths}_{\text{friendship}}$	−0.06	0.08	0.48	[−0.21, 0.10]
$\text{alternating-in-alternating-out-star}_{\text{friendship}}$	0.77	0.24	<0.01	[0.31, 1.24]
Covariate effects on friendship ties				
$\text{ethnic homophily}_{\text{friendship}}$	1.83	0.24	<0.01	[1.37, 2.29]
$\text{sender effect for Ukrainians}_{\text{friendship}}$	−0.61	0.16	<0.01	[−0.92, −0.30]
$\text{receiver effect for Ukrainians}_{\text{friendship}}$	−0.43	0.16	0.01	[−0.73, −0.12]
$\text{gender homophily}_{\text{friendship}}$	1.32	0.19	<0.01	[0.95, 1.68]
$\text{sender effect for boys}_{\text{friendship}}$	−0.61	0.19	<0.01	[−1.00, −0.23]
$\text{receiver effect for boys}_{\text{friendship}}$	−0.54	0.16	<0.01	[−0.86, −0.22]
Structural effects on exclusion ties				
$\text{intercept}_{\text{exclusion}}$	−1.41	0.26	<0.01	[−1.92, −0.89]
$\text{reciprocity}_{\text{exclusion}}$	0.68	0.19	<0.01	[0.31, 1.04]
Covariate effects on exclusion ties				
$\text{ethnic homophily}_{\text{exclusion}}$	0.97	0.35	0.01	[0.28, 1.66]
$\text{sender effect for Ukrainians}_{\text{exclusion}}$	−0.42	0.32	0.19	[−1.04, 0.21]
$\text{receiver effect for Ukrainians}_{\text{exclusion}}$	−0.26	0.19	0.17	[−0.64, 0.11]
$\text{gender homophily}_{\text{exclusion}}$	−0.39	0.27	0.14	[−0.92, 0.13]
$\text{sender effect for boys}_{\text{exclusion}}$	0.34	0.29	0.25	[−0.23, 0.91]
$\text{receiver effect for boys}_{\text{exclusion}}$	0.48	0.22	0.02	[0.06, 0.90]
cross-layer dependence term				
$\text{cross-layer tie formation}_{\text{friendship x exclusion}}$	−2.43	0.20	<0.01	[−2.82, −2.03]

students to form and receive friendship ties than their Czech counterparts. Next, we found a positive and significant homophily effect for gender on friendship ties, suggesting that students had a strong tendency to form friendship ties with classmates of the same gender. Sender and receiver effects for boys on friendship ties were found to be significant and negative, suggesting that boys tended to send and receive fewer friendship ties than girls. Regarding the structural terms on friendship ties, we found reciprocity, path closure, and alternating-in-alternating-out-star effects to be positive and significant, suggesting that students tended to reciprocate ties and to form transitive ties; there was a correlation between the number of sent and received ties. We further found ethnic homophily on exclusion ties to be positive and significant, suggesting that exclusion in the classrooms also followed ethnic lines. This means that students tended to exclude classmates from the same-ethnic group. We did not find evidence that Ukrainian students had a higher tendency to exclude others or to be excluded by others compared to their Czech classmates, as both sender and receiver effects for Ukrainians on exclusion ties were not significant. We further found boys to receive significantly more exclusion ties than girls. We found reciprocity effects on exclusion ties to be positive and significant, suggesting that students also tended to reciprocate exclusion ties. Finally, we found the cross-layer tie formation term to be negative and significant, meaning that students had a negative tendency to form both friendship and exclusion ties with the same classmate.

How does classroom composition moderate the integration of Ukrainian refugees in social networks? Meta-regression revealed that the increasing percentage of Ukrainian students in classroom is related to their worse integration in social networks. Table 4 shows the results of the meta-regression; Fig. 2 shows the corresponding bubble plots. The ethnic homophily effect on friendship ties was moderated by classroom composition with a 1% increase of Ukrainian students in a classroom leading to a 0.07 increase in the log odds of homophily behaviour significant at a *p*-value of 0.04. We further found a sender effect for Ukrainians on friendship ties to be moderated by classroom composition, with a 1% increase of Ukrainian students in the classroom leading to a decrease in the tendency of Ukrainian students to send ties by −0.04 log odds at a *p*-value of 0.07. We find no evidence that the percentage of Ukrainian students in a classroom moderated the tendency of the Ukrainian students to receive ties.

Table 4 Meta-regression analysis results.

	Log odds	SE	*p*-value	95% CI
$\textit{ethnic homophily}_{\textit{friendship}}$				
intercept	0.16	0.84	0.85	[−1.92, −0.89]
classroom composition	0.07	0.04	0.04	[0.00, 0.15]
$\textit{sender effect for Ukrainians}_{\textit{friendship}}$				
intercept	0.26	0.50	0.61	[−0.72, 1.24]
classroom composition	−0.04	0.02	0.07	[−0.09, 0.00]
$\textit{receiver effect for Ukrainians}_{\textit{friendship}}$				
intercept	−0.34	0.49	0.48	[−1.30, 0.61]
classroom composition	−0.00	0.02	0.86	[−0.05, 0.04]

Discussion

We found solid evidence that social networks in Czech mixed classrooms with Ukrainian refugee students are heavily formed along ethnic lines even when interdependencies with gender and structural terms are accounted for, and that a higher percentage of refugee students in a classroom is related to refugees' worse integration in social networks. Ethnic homophily was found to have the strongest effect on the formation of friendship ties among all studied effects and this effect was higher with higher percentages of Ukrainian students in the classroom. Ukrainian students tended to both send and receive fewer friendship ties and the former effect is—like the homophily effect—higher with the higher percentage of Ukrainian students in classroom.

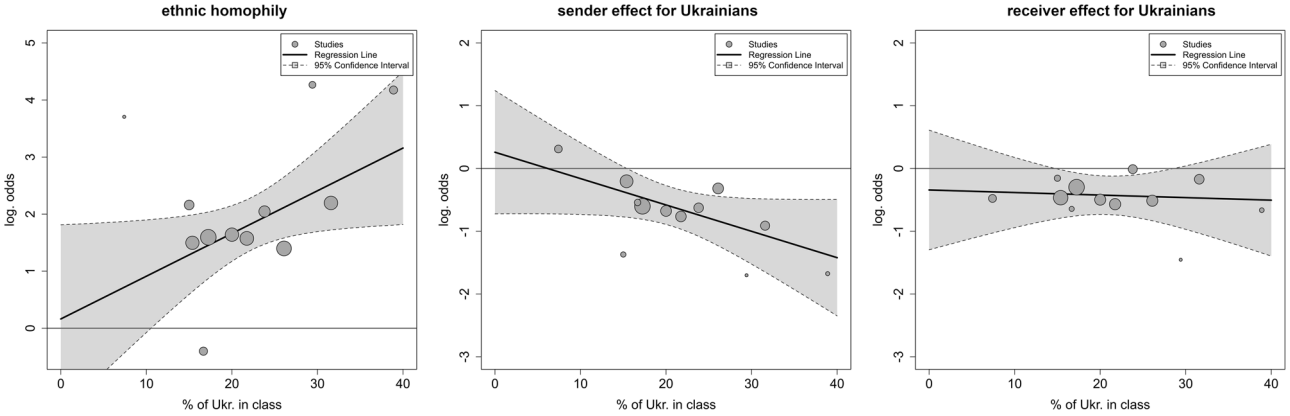

Fig. 2 Meta-regression bubble plots of ethnicity effects moderated by classroom composition. The point size is proportional to the weight that the ERGM estimates from the individual classrooms received in the analysis.

Our findings add to the array of previous studies proving that refugee students face a lack of integration in peer social networks. Our findings of strong ethnic homophily among refugee students support the findings of Campigotto et al. (2022), Schachner et al. (2016), Titzmann and Silbereisen (2009), and Windzio (2015). Our findings of a lower tendency of Ukrainian students to receive friendship ties indirectly support previous findings of a higher risk of exclusion among refugee students (Alivernini et al., 2019; Bianchi et al., 2021; Guo et al., 2019). However, we did not find a significant tendency of Ukrainian students to receive more exclusion ties. Hence, we cannot speak of explicit rejection by their classmates; rather, we saw a tendency of the Ukrainian students to be neglected.

We provide evidence to the developing line of literature that classroom ethnic composition may indeed influence the level of refugees' integration in peer social networks. Our results support the results of Smith et al. (2016) and Munniksma et al. (2022), suggesting that a higher ratio of refugee students in a classroom may lead to worse inter-ethnic relationships. This finding contradicts Boda et al. (2023) and challenges the widespread belief among many educators that schools should be aiming for ethnically diverse classrooms. While Boda et al. (2023) also employed a network analysis framework, they did not explicitly model network structure, leaving aside terms like reciprocity and transitivity. Furthermore, they assessed the relationship between classroom ethnic diversity and refugee integration by categorising classrooms into three groups. In contrast, our models explicitly modelled tie formation mechanisms, incorporated the structural terms, and measured the relationship between classroom ethnic diversity and refugee integration on a continuous scale, yielding finer results. We also believe our findings should be assessed in the light of our specific research context. We assume the relationship between the ratio of refugee students in the classroom and worse inter-ethnic relationships to be the result of increased opportunities for the refugee students to form ties and cliques with other refugee students, and more importantly with classmates speaking the same native language and with classmates sharing entry into classrooms in which peer social groups had already been formed and established before their arrival.

Our findings stand in contrast to reports from the CSI (Novosák et al., 2022) and the school management—while the CSI and the school management found social integration of Ukrainian refugees to be seamless, we found the opposite. We are convinced that this is a case of a perception bias in which the actors who are not part of the social system perceive situations in the social system differently than the actors who are part of the system. In our case, the perception of the school management—which was also the main source for the conclusions provided by the CSI—might perceive the situation among students differently than the students themselves do. The management might be unable to perceive the social integration among students accurately because it has little to no understanding of the relational nature of social integration (e.g., the management might perceive social integration as Ukrainian and Czech students simply sharing a common classroom) and because the management has only limited contact with the students and their perception is therefore skewed. It is also possible that the management pays attention to different aspects of peer relationships than we measured, such as breaktime interactions, sports, or extracurricular activities. Again, in such cases, the perception of the situation from an external management's perspective may differ from that of students within the social system.

Limitations. Our study has several limitations. We had a limited sample size of twelve classrooms and these classrooms were not a random sample from the Czech Republic. The estimates with the *p*-values in the meta-regression accounted for the limited sample size, but we cannot exclude the possibility that our findings were affected by sampling error. The limited sample size further prevented us from employing a multilevel meta-analytical approach with classrooms nested in the individual schools. Moreover, we considered only friendship and exclusion ties, not accounting for other possible types of ties that might exist between the students such as bully-victim or romantic ties. These limitations reduce the generalisability of our findings. Furthermore, in one classroom, there was almost perfect collinearity between the structural terms, preventing the convergence of the full model specification. This might have caused bias effect estimates from the one exhibited perfect heterophily due to non-existent exclusion ties among the Ukrainian students, and this perfect heterophily could not be incorporated in the aggregate model. Finally, we relied on cross-sectional data although school social networks evolve over time and cross-sectional data do not make it possible to study changes occurring in the networks.

Implications. This study has several practical implications. The higher proportion of Ukrainian students in classrooms leading to the higher tendency to form homophilic friendship ties and the lower tendency of Ukrainian students to send friendship ties implies that to achieve a better integration of refugees in peer social networks, it would be useful to place refugee students in classrooms in such a way that they do not constitute more than 20% of the students. We do not suggest schools should form segregated classrooms—quite the opposite—we advise a more

even distribution of refugees into the classrooms. Furthermore, the fact that Ukrainian refugee students face a lack of integration within peer social networks calls for the development, application, and evaluation of intervention strategies aimed at improving the cohesion of relationships in classrooms and overcoming the barriers limiting Ukraine students' ability to form relationships with the Czech students. The research has consistently shown that having good peer relationships in school is an essential part of refugees' successful psychosocial adjustment (Juang et al., 2018), mental health (Emerson et al., 2022), and academic performance (Wong and Schweitzer, 2017), and that good relationships between refugee and non-refugee students benefit the non-refugee students as well (Pettigrew and Tropp, 2008). However, the Czech Ministry of Education has not yet published guidelines for schools with evidence-based recommendations on intervention strategies aimed at improving the social functioning of Ukrainian students in Czech schools. We assert that future guidelines should follow the line of research dealing with interventions aimed at forming relationships between refugee and non-refugee students. Examples of interventions found to improve cross-ethnic relationships include inter-ethnic tutoring (Datta and Singh, 1994), cooperative learning (Weigel et al., 1975; Slavin and Oickle, 1981), shared sport activities (Makarova and Herzog, 2014), and school-based extracurricular activities (Suh and Kim, 2011). The refugees often lack proficiency in the Czech language; eliminating the language barrier should therefore be a priority as the lack of national language proficiency is a critical barrier in forming peer relationships (Cavicchiolo et al., 2023).

This study provides guidance for future research. Based on the comparison between the results of our network study and the reports of the CSI along with the school management, we are convinced that any research aiming to explore social integration or relationships between students should be a network study among the students themselves and such research should not rely solely on reports from other actors. Relying solely on reports from headmasters or teachers may provide results that do not reflect reality. We are further convinced that it is important to study how exogenous factors influence the formation of ties among students in classrooms. In our study, we have concluded that classroom composition influences homophilic behaviour. However, other actors involved in education, such as teachers with practices aimed at improving inter-ethnic relationships, might be able to influence student tendencies to form inter-ethnic relationships as well. Hence, our research team is already planning a more extensive data collection with a longitudinal design focused on peer networks in Czech mixed classrooms with the hope of shedding more light on practices improving the social functioning of Ukrainian refugee students.

Data availability

The dataset generated and analysed during the current study as well as the supplementary materials are available in the Humanities & Social Sciences Communications Dataverse repository at https://doi.org/10.7910/DVN/1CKYUV.

Received: 14 February 2023; Accepted: 20 June 2023;
Published online: 13 July 2023

Notes

1 In contrast to the context of the Ukrainian refugee crisis, however, previous studies are from contexts in which refugees were entering the educational systems continuously and in smaller numbers.

2 Network 12 had almost 100% collinearity between the structural terms (reciprocity, path closure, cyclic closure, multiple 2-paths, and alt.-in-alt.-out-star) and could not be fitted in the same specification as the rest of the networks. Hence, we fitted the next best model, which included reciprocity but excluded other structural terms. In networks 1, 2, 4, 10, and 12, there was no exclusion tie between any of the Ukrainian students, suggesting absolute heterophily. Since we could not get a model estimate, we had to exclude the homophilic effect for ethnicity on exclusion ties in these networks. Therefore, the aggregate effect estimate for the homophilic effect for ethnicity on exclusion ties should be taken only as tentative evidence.

3 We are aware that a multilevel meta-analytical procedure would have been methodologically more appropriate; however, we could not employ it due to the small sample size. Hence, we employed the second-best option, which was a random-effect model.

References

Alivernini F, Cavicchiolo E, Girelli L et al. (2019) Relationships between socio-cultural factors (gender, immigrant and socioeconomic background), peer relatedness and positive affect in adolescents. J Adolesc 76:99–108. https://doi.org/10.1016/j.adolescence.2019.08.011

Almqvist K, Broberg AG (1999) Mental health and social adjustment in young refugee children y 3½ years after their arrival in Sweden. J Am Acad Child Adolesc Psychiatry 38(6):723–730. https://doi.org/10.1097/00004583-199906000-00020

Baumeister RF, Leary MR (1995) The need to belong: desire for interpersonal attachments as a fundamental human motivation. Psychol Bull 117(3):497–529. https://doi.org/10.1037/0033-2909.117.3.497

Bellmore AD, Nishina A, Witkow MR, Graham S, Juvonen J (2007) The Influence of Classroom Ethnic Composition on Same- and Other-ethnicity Peer Nominations in Middle School. Social Development 16(4):720–40. https://doi.org/10.1111/j.1467-9507.2007.00404.x

Bianchi D, Cavicchiolo E, Manganelli S et al. (2021) Bullying and victimization in native and immigrant very-low-income adolescents in italy: disentangling the roles of peer acceptance and friendship. Child Youth Care Forum 50(6):1013–1036. https://doi.org/10.1007/s10566-021-09612-6

Bill no. 199/2022 (2022) https://aplikace.mvcr.cz/sbirka-zakonu/SearchResult.aspx?q=199/2022&typeLaw=zakon&what=Cislo_zakona_smlouvy

Bill no. 67/2022 (2022) https://aplikace.mvcr.cz/sbirka-zakonu/SearchResult.aspx?q=67/2022&typeLaw=zakon&what=Cislo_zakona_smlouvy

Blau PM (1960) A theory of social integration. Am J Sociol 65(6):545–556. https://doi.org/10.1086/222785

Boda Z, Néray B (2015) Inter-ethnic friendship and negative ties in secondary school. Soc Netw 43:57–72. https://doi.org/10.1016/j.socnet.2015.03.004

Boda Z, Lorenz G, Jansen M, Stanat P, Edele A (2023) Ethnic diversity fosters the social integration of refugee students. Nat Hum Behav. https://doi.org/10.1038/s41562-023-01577-x

Borgatti SP, Mehra A, Brass DJ et al. (2009) Network analysis in the social sciences. Science 323(5916):892–895. https://doi.org/10.1126/science.1165821

Borgatti SP, Lopez-Kidwell V (2014) Network theory. In: Scott J, Carrington PJ (ed.) The SAGE handbook of social network analysis. SAGE, 40–54 https://doi.org/10.4135/9781446294413

Brissette I, Cohen S, Seeman TE (2000) Measuring social integration and social networks. In Cohen S, Underwood LG, Gottlieb BH (eds.) Social support measurement and intervention: a guide for health and social scientists. Oxford University Press, pp. 53–85

Callahan RM (2009) Latino language-minority college going: adolescent boys' language use and girls' social integration. Biling Res J 31(1-2):175–200. https://doi.org/10.1080/15235880802640664

Campigotto N, Rapallini C, Rustichini A (2022) School friendship networks, homophily and multiculturalism: evidence from European countries. J Popul Econ 35(4):1687–1722. https://doi.org/10.1007/s00148-020-00819-w

Cavicchiolo E, Manganelli S, Bianchi D, Biasi V, Lucidi F, Girelli L, Alivernini F (2023) Social inclusion of immigrant children at school: the impact of group, family and individual characteristics, and the role of proficiency in the national language. Int J Incl Educ 27(2):146–166. https://doi.org/10.1080/13603116.2020.1831628

Cherewick M, Kohli A, Remy MM, Murhula CM, Kurhorhwa AK, Mirindi AB, Bufole NM, Banywesize JH, Ntakwinja GM, Kindja GM, Glass N (2015) Coping among trauma-affected youth: a qualitative study. Confl Health 9(1). https://doi.org/10.1186/s13031-015-0062-5

Cheung CK, Llu SC (2012) Acculturation, social integration and school achievement among low-ability seventh graders' school achievement in Hong Kong. Int J Adolesc Youth 8(1):81–108. https://doi.org/10.1080/02673843.2000.9747843

Cohen S (1991) Social supports and physical health. In: Greene AL, Cummings M, Karraker KH (eds.) Life-span developmental psychology: perspectives on stress and coping. Taylor & Francis, pp. 213–234

Coleman J (1961) The adolescent society: the social life of the teenager and its impact on education. Free Press

Currarini S, Jackson MO, Pin P (2010) Identifying the roles of race-based choice and chance in high school friendship network formation. Proc Natl Acad Sci USA 107(11):4857–4861. https://doi.org/10.1073/pnas.0911793107

Del Vecchio T (2011) Peer nomination technique. In: Goldstein S, Naglieri JA (eds.) Encyclopedia of child behavior and development. Springer, Boston, MA, p. 1074

Datta CJ, Singh BR (1994) Small scale study of the effects of cross-ethnic tutoring on inter-ethnic relationships. Br Educ Res J 20(4):407–427. https://doi.org/10.1080/0141192940200404

Emerson SD, Gagné Petteni M, Guhn M, Oberle E, Georgiades K, Milbrath C, Janus M, Schonert-Reichl KA, Gadermann AM (2022) Social context factors and refugee children's emotional health. Soc Psychiatr Psychiatr Epidemiol 57:829–841. https://doi.org/10.1007/s00127-021-02173-y

Evans M, Liu Y (2018) The unfamiliar and the indeterminate: language, identity and social integration in the school experience of newly-arrived migrant children in England. J Lang Identity Educ 17(3):152–167. https://doi.org/10.1080/15348458.2018.1433043

Fisher CB, Wallace SA, Fenton RE (2000) Discrimination distress during adolescence. J Youth Adolesc 29(6):679–695. https://doi.org/10.1023/A:1026455906512

Goodreau SM, Kitts JA, Morris M (2009) Birds of a feather, or friend of a friend? Using exponential random graph models to investigate adolescent social networks. Demography 46(1):103–125. https://doi.org/10.1353/dem.0.0045

Graham S, Munniksma A, Juvonen J (2014) Psychosocial benefits of cross-ethnic friendships in urban middle schools. Child Dev 85(2):469–483. https://doi.org/10.1111/cdev.12159

Guarnaccia PJ, Lopez S (1998) The mental health and adjustment of immigrant and refugee children. Child Adolesc Psychiatr Clinic 7(3):537–553. https://doi.org/10.1016/S1056-4993(18)30228-1

Guo Y, Maitra S, Guo S (2019) 'I belong to nowhere': Syrian refugee children's perspectives on school integration. J Contemp Issue Educ 14(1):89–105. https://doi.org/10.20355/jcie29362

Hajdu T, Kertesi G, Kézdi G (2021) Ethnic segregation and inter-ethnic relationships in Hungarian schools. On Education. J Res Debate 4(11):1–6. https://doi.org/10.17899/on_ed.2021.11.5

Herrero J, Gracia E (2004) Predicting social integration in the community among college students. J Commun Psychol 32(6):707–720. https://doi.org/10.1002/jcop.20028

Hoffman AS, Hamm JV, Farmer TW (2015) Teacher attunement: supporting early elementary students' social integration and status. J Appl Dev Psychol 39:14–23. https://doi.org/10.1016/j.appdev.2015.04.007

Jarkovská L, Lišková K, Obrovská J (2015) 'We treat them all the same, but…'. Disappearing ethnic homogeneity in Czech classrooms and teachers' responses. Race Ethn Educ 18(5):632–654. https://doi.org/10.1080/13613324.2015.1013457

Jiang L, Altinyelken HK (2022) Understanding social integration of Chinese students in the Netherlands: the role of friendships. J Intercult Commun Res 51(2):191–207. https://doi.org/10.1080/17475759.2021.1877178

Joyner K, Kao G (2000) School racial composition and adolescent racial homophily. Soc Sci Q 81(3):810–825. https://www.jstor.org/stable/42864005

Juang LP, Simpson JA, Lee RM, Rothman AJ, Titzmann PF, Schachner MK, Korn L, Heinemeier D, Betsch C (2018) Using attachment and relational perspectives to understand adaptation and resilience among immigrant and refugee youth. Am Psychol 73(6):797–811. https://doi.org/10.1037/amp0000286

Juvonen J, Wentzel KR (eds.) (1996) Social motivation: understanding children's school adjustment. Cambridge University Press

Kawabata Y, Crick NR (2011) The significance of cross-racial/ethnic friendships: associations with peer victimization, peer support, sociometric status, and classroom diversity. Dev Psychol 47(6):1763–1775. https://doi.org/10.1037/a0025399

Kovacev L, Shute R (2004) Acculturation and social support in relation to psychosocial adjustment of adolescent refugees resettled in Australia. Int J Behav Dev 28(3):259–267. https://doi.org/10.1080/01650250344000497

Kruse H, Smith S, van Tubergen F et al. (2016) From neighbors to school friends? How adolescents' place of residence relates to same-ethnic school friendships. Soc Netw 44:130–142. https://doi.org/10.1016/j.socnet.2015.07.004

Leszczensky L, Pink S (2015) Ethnic segregation of friendship networks in school: Testing a rational-choice argument of differences in ethnic homophily between classroom-and grade-level networks. Soc Netw 42:18–26. https://doi.org/10.1016/j.socnet.2015.02.002

Li X, Grineva M (2016) Academic and social adjustment of high school refugee youth in Newfoundland. TESL Can J 34(1):51–71. https://doi.org/10.18806/tesl.v34i1.1255

Lusher D, Koskinen J, Robins G (2013) Exponential random graph models for social networks: theory, methods, and applications. Cambridge University Press

Lustig SL, Kia-Keating M, Knight WG, Geltman P, Ellis H, Kinzie JD, Keane T, Saxe GN (2004) Review of child and adolescent refugee mental health. J Am Acad Child Adolesc Psychiatr 43(1):24–36. https://doi.org/10.1097/00004583-200401000-00012

Macksoud MS, Dyregrov A, Raundalen M (1993) Traumatic war experiences and their effects on children. In: Wilson JP & Raphael B (eds) International handbook of traumatic stress syndromes. Plenum Press, pp. 625–633

Makarova E, Herzog W (2014) Sport as a means of immigrant youth integration: an empirical study of sports, intercultural relations, and immigrant youth integration in Switzerland. Sportwissenschaft 44(1):1–9. https://doi.org/10.1007/s12662-013-0321-9

Ministry of Education (2022a) Adaptační skupiny pro děti cizince migrující z Ukrajiny 2022 [Press release] https://www.msmt.cz/mladez/adaptacni-skupiny-pro-deti-cizince-migrujici-z-ukrajiny-2022

Ministry of Education (2022b) Podpora MŠMT v době válečného konfliktu na Ukrajině https://www.edu.cz/ukrajina/

Ministry of Education (2022c) Podpůrné výzvy MŠMT využije přes 30 tisíc ukrajinských žáků [Press release] https://www.msmt.cz/ministerstvo/novinar/podpurne-vyzvy-msmt-vyuzije-pres-30-tisic-ukrajinskych-zaku

Ministry of Education (2022d) Průběžné počty ukrajinských dětí v českých školách [Press release] https://www.msmt.cz/ministerstvo/novinar/prubezne-pocty-ukrajinskych-deti-v-ceskych-skolach

Ministry of Interior (2022) Stanovení strategických priorit vlády ČR ke zvládání dopadů migrační krize související s invazí Ruské federace na Ukrajinu https://www.mvcr.cz/soubor/stanoveni-strategickych-priorit-vlady-pdf

Moen P, Dempster-McClain D, Williams Jr RM (1992) Successful aging: a life-course perspective on women's multiple roles and health. Am J Sociol 97(6):1612–1638. https://doi.org/10.1086/229941

Motti-Stefanidi F, Pavlopoulos V, Obradović J et al. (2008) Immigration as a risk factor for adolescent adaptation in Greek urban schools. Eur J Dev Psychol 5(2):235–261. https://doi.org/10.1080/17405620701556417

Munniksma A, Ziemes J, Jugert P (2022) Ethnic diversity and students' social adjustment in Dutch classrooms. J Youth Adolesc 51:1–15. https://doi.org/10.1007/s10964-021-01507-y

Novosák J, Andrys O, Zatloukal T et al. (2022) Interim report on the integration and education of Ukrainian children and pupils https://www.csicr.cz/cz/Aktuality/Tematicka-zprava-Prubezna-zprava-o-integraci-a-vzd

Obrovská J, Jarkovská L, Lišková K (2021) 'Since they are here in Czechia, they should talk in Czech'. Ethnicity in peer groups at school. Intercult Educ 32(1):62–82. https://doi.org/10.1080/14675986.2020.1844511

Oxman-Martinez J, Choi YR (2014) Newcomer children: experiences of inclusion and exclusion, and their outcomes. Soc Incl 2(4):23–37. https://doi.org/10.17645/si.v2i4.133

Pettigrew TF, Tropp LR (2008) How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators. Eur J Soc Psychol 38(6):922–934. https://doi.org/10.1002/ejsp.504

Plenty S, Jonsson JO (2017) Social exclusion among peers: the role of immigrant status and classroom immigrant density. J Youth Adolesc 46(6):1275–1288. https://doi.org/10.1007/s10964-016-0564-5

Poulin F, Dishion TJ (2008) Methodological issues in the use of peer sociometric nominations with middle school youth. Soc Dev 17(4):908–921. https://doi.org/10.1111/j.1467-9507.2008.00473.x

Quillian L, Campbell ME (2003) Beyond black and white: The present and future of multiracial friendship segregation. Am Sociol Rev 68(4):540–566. https://doi.org/10.2307/1519738

R Core Team (2020) R: a language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/

Rodkin PC, Wilson T, Ahn HJ (2007) Social integration between African American and European American children in majority Black, majority White, and multicultural elementary classrooms. N Direct Child Adolesc Dev 2007(118):25–42

Samara M, El Asam A, Khadaroo A, Hammuda S (2020) Examining the psychological well-being of refugee children and the role of friendship and bullying. Br J Educ Psychol 90(2):301–329. https://doi.org/10.1111/bjep.12282

Schachner MK, Van de Vijver FJR, Brenick A et al. (2016) Who is friends with whom? Patterns of inter- and intraethnic friendships of mainstream and immigrant early adolescents in Germany. In Roland-Lévy C, Denoux P, Voyer B et al. (eds.) Unity, diversity and culture. Proceedings from the 22nd Congress of the International Association for Cross-Cultural Psychology. https://scholarworks.gvsu.edu/iaccp_papers/194

Shrum W, Cheek Jr NH, Hunter SM (1988) Friendship in school: gender and racial homophily. Sociol Educ 61(4):227–239. https://doi.org/10.2307/2112441

Slavin RE, Oickle E (1981) Effects of cooperative learning teams on student achievement and race relations: treatment by race interactions. Sociol Educ 54(3):174–180. https://doi.org/10.2307/2112329

Smith S, Maas I, Van Tubergen F (2014) Ethnic ingroup friendships in schools: testing the by-product hypothesis in England, Germany, the Netherlands and Sweden. Soc Netw 39:33–45. https://doi.org/10.1016/j.socnet.2014.04.003

Smith S, Van Tubergen F, Maas I et al. (2016) Ethnic composition and friendship segregation: differential effects for adolescent natives and immigrants. Am J Sociol 121(4):1223–1272. https://doi.org/10.1086/684032

Stadtfeld C, Vörös A, Elmer T, Boda Z, Raabe IJ (2019) Integration in emerging social networks explains academic failure and success. Proc Natl Acad Sci USA 116(3):792–797. https://doi.org/10.1073/pnas.1811388115
Steinberg L (2020) Adolescence (12th edn.). McGraw Hill
Stinson M, Antia S (1999) Considerations in educating deaf and hard-of-hearing students in inclusive settings. J Deaf Stud Deaf Educ 4(3):163–175. https://doi.org/10.1093/deafed/4.3.163
Strohmeier D, Kärnä A, Salmivalli C (2011) Intrapersonal and interpersonal risk factors for peer victimization in immigrant youth in Finland. Dev Psychol 47(1):248–258. https://doi.org/10.1037/a0020785
Suh W, Kim J (2011) The exploration of the relationship between participation in organized activity and cross-group friendships. Interpersona: Int J Pers Relationship 5(2):222–236. https://doi.org/10.5964/ijpr.v5i2.65
Thoits PA (1986) Multiple identities: Examining gender and marital status differences in distress. Am Sociol Rev 51(2):259–272. https://doi.org/10.2307/2095520
Thorlindsson T, Bjarnason T (1998) Modeling Durkheim on the micro level: A study of youth suicidality. Am Sociol Rev 63(1):94–110. https://doi.org/10.2307/2657479
Titzmann PF, Silbereisen RK (2009) Friendship homophily among ethnic German immigrants: a longitudinal comparison between recent and more experienced immigrant adolescents. J Family Psychol 23(3):301–310. https://doi.org/10.1037/a0015493
Trickett EJ, Birman D (2005) Acculturation, school context, and school outcomes: Adaptation of refugee adolescents from the former Soviet Union. Psychol School 42(1):27–38. https://doi.org/10.1002/pits.20024
Umaña-Taylor AJ (2016) A post-racial society in which ethnic-racial discrimination still exists and has significant consequences for youths' adjustment. Curr Direct Psychol Sci 25(2):111–118. https://doi.org/10.1177/0963721415627858
UNHCR (2022) Operational data portal–Ukraine refugee situation [Dataset] https://data.unhcr.org/en/situations/ukraine
van der Does T, Adem M (2021) Friendship Homophily and Immigrant Youths' Mental Health [preprint] https://doi.org/10.31235/osf.io/7g9ak
Verelst A, Spaas C, Pfeiffer E, Devlieger I, Kankaapää R, Peltonen K…, Derluyn I (2022) Social determinants of the mental health of young migrants. Eur J Health Psychol 29(1):61–73. https://doi.org/10.1027/2512-8442/a000097
Vermeij L, Van Duijn MA, Baerveldt C (2009) Ethnic segregation in context: Social discrimination among native Dutch pupils and their ethnic minority classmates. Soc Netw 31(4):230–239. https://doi.org/10.1016/j.socnet.2009.06.002
Viechtbauer W (2010) Conducting meta-analyses in R with the metafor package. J Stat Softw 36(3):1–48. https://doi.org/10.18637/jss.v036.i03
Wang P, Robins G, Pattison P (2009) PNet: A program for the simulation and estimation of exponential random graph models. Melbourne School of Psychological Sciences, The University of Melbourne. https://www.melnet.org.au/pnet
Weigel RH, Wiser PL, Cook SW (1975) The impact of cooperative learning experiences on cross-ethnic relations and attitudes. J Soc Issue 31(1):219–244. https://doi.org/10.1111/j.1540-4560.1975.tb00754.x
Wilson T, Rodkin PC (2011) African American and European American children in diverse elementary classrooms: Social integration, social status, and social behavior. Child Dev 82(5):1454–1469. https://doi.org/10.1111/j.1467-8624.2011.01634.x
Windzio M (2015) Immigrant children and their parents: is there an intergenerational interdependence of integration into social networks. Soc Netw 40:197–206. https://doi.org/10.1016/j.socnet.2014.11.002
Wittek M, Kroneberg C, Lämmermann K (2020) Who is fighting with whom? How ethnic origin shapes friendship, dislike, and physical violence relations in German secondary schools. Soc Netw 60:34–47. https://doi.org/10.1016/j.socnet.2019.04.004
Wölfer R, Bull HD, Scheithauer H (2012) Social integration in youth: insights from a social network perspective. Group Dyn Theor Res Pract 16(2):138–147. https://doi.org/10.1037/a0024765
Wong CW, Schweitzer RD (2017) Individual, premigration and postsettlement factors, and academic achievement in adolescents from refugee backgrounds: a systematic review and model. Transcult Psychiatr 54(5–6):756–782. https://doi.org/10.1177/1363461517737015
Zhang L, He G, Chen Y et al. (2020) Migration status, emotional engagement, and social exclusion in Chinese schools. J Adolesc 80:192–203. https://doi.org/10.1016/j.adolescence.2020.02.013

Acknowledgements

Preliminary results of this study were presented at the *Kolokvium SPOLEČNOST A SÍTĚ* conference. This work was supported by the NPO 'Systemic Risk Institute' number LX22NPO5101, funded by European Union—Next Generation EU (Ministry of Education, Youth and Sports, NPO: EXCELES).

Author contributions

TL: conceptualisation, research design, data collection, data preparation, visualisation, data analysis, writing and revising the paper. TD: research design, data analysis, writing and revising the paper. KŠ: conceptualisation, supervision, writing and revising the paper. PH: writing ethics committee proposal, writing and revising the paper.

Competing interests

The authors declare no competing interests.

Ethical approval

All procedures in this study involving human participants were performed in accordance with the ethical standards of the institutional research committee. Prior to the data collection, the study was approved by the Research Ethics Committee of Masaryk University under the number EKV-2022-091.

Informed consent

Informed consent was given by all participants and their guardians. The teachers clearly explained the purpose of the study to the students and their guardians. Student guardians were given the option to contact the research team before, during, and after the data collection and the option to withdraw their consent and stop participating in the research at any time.

Additional information

Correspondence and requests for materials should be addressed to Tomáš. Lintner.