The Impact of COVID-19 on Peer Relationships: Insights from Classroom Social Networks*

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Abstract

In the spring of 2020, as the COVID-19 pandemic swept across the globe, governments took drastic measures to curb the virus spread, including shutting down educational institutions. This sudden and unexpected closure of schools not only disrupted the education of millions of students but also deprived them of their primary social environment—the classroom. In this study, we analyze the impact of the COVID-19 pandemic on classroom peer relationships using a unique field dataset collected from 3rd and 4th-grade primary school children in Turkey that includes both pre-pandemic and pandemic cohorts. Our findings reveal that the pandemic cohort exhibited significant differences in classroom social networks after an extended school closure compared to the pre-pandemic cohort. We document adverse effects contingent upon the nature of peer relationships. Specifically, while friendship relationships deteriorated, certain aspects of academic support relationships among classmates improved, driven primarily by native students. Additionally, our investigation uncovers significant improvements in inter-ethnicity and inter-gender relationships in classrooms after COVID-19.

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1 Introduction

A socially cohesive society is one where individuals share strong bonds, and there is an absence of social conflict (Durkheim, 2005). Such societies are marked by mutual trust, support, and cooperation, fostering a harmonious environment among their members. According to Gradstein and Justman (2002), the foundations of such a society can be laid out by public education as it has a significant socializing force that facilitates social cohesion. Schools with a good social climate provide an excellent platform for social cohesion to appear (Maszk et al., 1999; Alan et al., 2021a). They serve as the primary environment where individuals establish and nurture their peer relationships, which are integral to social integration.

Peers are perhaps one of the most essential parts of an individual's education journey, as they contribute not only to academic achievements (Sacerdote, 2011; Epple and Romano, 2011) but also to various other outcomes, including socio-emotional skills and mental health (Kiessling and Norris, 2020; Kochenderfer-Ladd and Ladd, 2019; Wentzel, 2017; Bietenbeck, 2020). A large body of evidence demonstrates that peer relationships play a fundamental role in child development, and as a result schools have a crucial responsibility in fostering social cohesion through peer interactions.

Nonetheless, the platform that plays a crucial role in promoting social cohesion by facilitating peer relationships witnessed a large disruption during the COVID-19 pandemic. In response to the global spread of COVID-19 in the spring of 2020, governments worldwide implemented various measures to control the transmission of the virus, including the widespread closure of educational institutions. These closures impacted over 90 percent of the world's student population, roughly 1.5 billion students in more than 190 countries.[1] As students spend a substantial amount of time in school with their peers, these closures deprived them of their primary social environment. In addition, other safety measures such as lockdowns and social distancing further reduced social interaction among peers (Werner and Woessmann, 2021). All of these attributes together, in conjunction with other effects of the COVID-19 pandemic on students, bring about the concern that the COVID-19 pandemic may have continuing impacts on students even after their return to school.

In this paper, we investigate how COVID-19 has impacted peer relationships in the

[1] Accessed on the UNESCO website https://en.unesco.org/covid19/educationresponse#schoolclosures in November 2022.

classroom. We explore the innate complexity of peer relationships using tools from social network theory. To answer our research question, we employ a cross-cohort comparison strategy which allows us to uncover the impact of COVID-19 pandemic based on the comparability assumption of our cohorts. This assumption is grounded in the fact that both cohorts come from the same districts and same schools, with no major structural changes occurring between the two periods except for the pandemic. As the pandemic is likely to impact each student differently, we further examine heterogeneities in the impact based on refugee status[2], gender, and district-level socioeconomic status (SES).

We address our research question by utilizing unique and rich data collected in Mersin, Turkey as part of a large-scale study on early childhood educational interventions. Our data encompasses two cohorts of primary school students, with the first wave collected in October 2018, serving as the pre-pandemic cohort for our analysis. The second wave of data was collected in September and October 2021 after schools reopened following COVID-19, and we refer to this cohort as the pandemic cohort. The data comprises students' self-reported social network nominations, encompassing three layers of peer relationships: friendship, academic support, and emotional support. Moreover, it includes various other variables related to students, classrooms, teachers, and parents.

Our empirical analysis provides strong evidence that the COVID-19 pandemic caused significant changes in peer relationships within the classroom. More specifically, we show that the pandemic had a differential impact depending on student characteristics and the particular nature of the peer relationship. We observe a substantial deterioration in friendship networks, with the number of nominations per student decreasing considerably and the share of isolated students increasing by 22%. Conversely, academic support networks demonstrated an increase, with students in the pandemic cohort receiving approximately 20% more nominations than their pre-pandemic peers, along with a notable reduction in the likelihood of isolation in these networks. These changes in peer relationships also extend to reciprocity, particularly strong in friendship networks, where mutual nominations decreased. Our heterogeneity analysis reveals distinct patterns between refugees and native students. The observed improvements in academic support networks are entirely driven by native students, while the adverse effects on friendship networks are more pronounced among refugees. Additionally, we document significant changes in inter-group relationships, including a de-

[2]The province from which we collected data is located close to the Syrian border, resulting in many Syrians fleeing the war to settle in this Turkish province. As a result, a substantial portion of the sample we use comprises Syrian refugee children.

cline in ethnic segregation, as fewer refugees nominated other refugees. We also observe a reduction in gender segregation, with both males and females showing a greater tendency to nominate peers of the opposite gender.

Our paper makes several contributions. Firstly, we contribute to the large body of research on the impact of COVID-19 in educational settings, with a unique focus on peer relationships in classrooms. Previous work has primarily examined the impact of COVID-19 on outcomes such as academic achievement (Betthäuser et al., 2023; Alan and Turkum, 2024; Agostinelli et al., 2022; Bacher-Hicks et al., 2021; Maldonado and De Witte, 2021; Engzell et al., 2021; Kuhfeld et al., 2020; Hevia et al., 2022; Lichand et al., 2022; Ardington et al., 2021), socio-emotional skills (Alan and Turkum, 2024; Egan et al., 2021; Linnavalli and Kalland, 2021), and mental health (Loades et al., 2020; de Miranda et al., 2020; Singh et al., 2020). To the best of our knowledge, our study is the first to leverage tools from social network theory to explore how peer interactions were reshaped by the pandemic. As such, we offer new insights into how major disruptions like COVID-19 affect the social fabric of classrooms, a critical aspect of the educational experience.

Secondly, we add to the literature on social networks in educational settings by assessing different layers of networks (Jackson et al., 2022; Alan et al., 2023). Most studies are restricted to information on friendships, but our study includes three distinct layers: friendship, academic support, and emotional support. This allows us to offer a more nuanced understanding of the complexity of peer relationships. Our findings show that different network layers can respond to shocks in different ways.

Lastly, we contribute to the literature on the interaction between social networks and peer effects on academic achievement (Lavy and Sand, 2019; Calvó-Armengol et al., 2009) by examining the association between academic recovery and students' network positions. Our findings suggest that students who were not isolated within their networks experienced better academic recovery, highlighting the importance of peer interactions in supporting resilience in the face of disruptions. As a result, we underscore the critical role of onsite education and peer interaction in fostering children's skill development (Alan et al., 2021a; Lavy and Sand, 2019; Gauvain, 2016; Rardin and Moan, 1971; Gifford-Smith and Brownell, 2003)

The rest of the paper proceeds as follows: In section 2, we briefly provide the background. In Section 3, we describe the data set and the outcomes that we investigate, then in Section 4, we lay out the empirical strategy, and explain the empirical results in Section 5. In Section

6, we explore potential mechanisms underlying the results, and we conclude with our final remarks in Section 7.

2 Background and Context for Internal Validity

Turkey has a highly centralized public education system, with key decisions regarding curriculum, teacher appointments, and student assignments made at the national level. Elementary education constitutes the first stage of the country's 12-year mandatory education system, spanning four years. Public schools admit students from designated catchment areas, resulting in schools that reflect the demographic and socioeconomic characteristics of their surrounding neighborhoods. Students are randomly assigned to classrooms, ensuring balance in terms of class size, gender, and refugee status. Teachers are centrally appointed by the Ministry of Education, and each classroom is assigned a teacher who remains the primary educator throughout the school day, teaching most subjects.

In response to the first COVID-19 cases detected on March 11, 2020, the Turkish government swiftly enacted stringent measures, including the temporary closure of schools starting on March 13, 2020. Due to rising cases, the closures extended further, and despite efforts to reopen, schools remained largely closed through the 2019-2020 and 2020-2021 academic years. This resulted in one of the world's longest school closures, totaling 49 weeks—well above the global and OECD averages of approximately 38 and 35 weeks, respectively.[3] During this time, the Ministry of Education, teachers, and parents implemented remote learning through broadcasted lectures, Zoom sessions, and assignments shared via WhatsApp. Alongside school closures, various curfews and social distancing measures further restricted opportunities for peer interaction, amplifying the challenges posed by the absence of in-person schooling.

Given the extensive disruptions caused by school closures and changes in students' social environments, the comparability of the pre-pandemic and pandemic cohorts is crucial for isolating the impact of COVID-19 on peer relationships. The consistency of centralized regulations, catchment-based school assignments, and centrally appointed teachers ensure that changes in the socio-economic composition of students and teachers are minimal. Additionally, the random allocation of students to classrooms in both cohorts provides the same

[3]Accessed on the UNESCO website https://en.unesco.org/covid19/educationresponse#schoolclosures in February 2023.

ground for peer group formation. Statistical evidence in Table 2 supports these claims, showing no significant differences between the cohorts in terms of student, teacher, and classroom characteristics. Consequently, given the relatively short three-year gap between cohorts, any observed differences in outcomes can be attributed to the impact of COVID-19.

Although we lack data on the social networks of earlier cohorts, which limits our ability to demonstrate the absence of pre-trends directly, Alan and Turkum (2024) provide supporting evidence using an augmented version of our dataset. Their findings suggest that there were no pre-pandemic trends in student, teacher, and classroom characteristics, as well as in student cognitive and socio-emotional skills. This evidence bolsters the overall comparability of our cohorts.

Finally, while school closures and social distancing measures represent the most direct factors influencing peer interactions, we acknowledge that COVID-19 also impacted various aspects of students' lives, including their physical, emotional, and mental health, as well as the health of their parents and teachers. It disrupted work styles, time management, and family financial stability, introducing changes that could influence children's social, cognitive, and socioemotional development. Even if schools had remained open, these broader impacts could still have led to changes in student outcomes. Factors such as parental input, financial stress, and experiences like the loss of a family member may have directly and indirectly shaped peer relationships, often interacting in ways that make it challenging to isolate the specific effects of school closures. Therefore, our findings reflect the collective impact of the pandemic, rather than attributing changes solely to school closures or limited social interaction.

3 Data

3.1 Sample

Our data set includes information from two different cohorts: pre-pandemic and pandemic, drawn from the same schools and grade levels (3rd and 4th graders, aged 8-10). The pre-pandemic cohort data is a subset of a large-scale randomized controlled trial in Turkey, which aimed to evaluate early childhood interventions designed to enhance skill formation and academic performance. We only use the baseline data, which was collected in October 2018, to ensure that the sample has not undergone any form of treatment. Data collection for the

pandemic cohort took place immediately after in-person schooling resumed in September and October 2021, in the same schools where pre-pandemic data was collected. Additionally, we collected supplementary data on academic outcomes and social skills of the pandemic cohort in May 2022 to assess students' recovery after a year of in-person schooling. It is important to note that social network variables were not collected at the end of the academic year due to them not being the primary focus of the fieldwork and logistical constraints. As a result, we lack information on the lasting effects of the pandemic on social network outcomes.

For our analysis sample, we initially excluded 6 classrooms due to missing information provided by teachers—1 from the pre-pandemic cohort and 5 from the pandemic cohort. As a result, in some schools, only one classroom remained per cohort, making them singletons. Consequently, we also had to exclude an additional 15 classrooms, corresponding to 5 schools, as they no longer provided any within-school variation. Out of the resulting sample, the pre-pandemic subset includes 5,109 students from 66 primary schools and 174 classes, with 1,208 3rd-grade students and 3,901 4th-grade students and the pandemic cohort includes 5,178 3rd and 4th-grade students from 65 primary schools and 171 classes. Of these students, 1,218 are 3rd-graders, and 3,960 are 4th-graders.

3.2 Variables

The focus of our study is to evaluate the impact of COVID-19 on students' peer relationships using tools from social network theory. To this end, during data collection, we asked students to nominate up to three classmates[4] for three different layers of peer relationships—friendship, academic support, and emotional support—with overlaps allowed. The academic and emotional support layers were further divided into two categories: classmates to whom the student provides support and classmates from whom the student receives support.[5] Using these self-reported nominations, we first constructed classroom social networks and then derived several social network measures to describe each student's social ties within these networks.

[4]Before collecting our dataset, we conducted pilot studies several times. Based on the results of these pilot studies, we decided to limit the number of classmates students nominate to three. Although it was feasible to allow students to nominate more than three classmates (4 and 5 nominations were experimented with as well) in the social network elicitation surveys, we opted against it due to concerns about consuming a significant amount of class time and making it challenging for students to fill out larger templates.

[5]The template of survey questions on classmate nominations is given in the Online Appendix Figure B1.

In the first part of the analysis, we aim to document the changes in the structure of students' friendship, academic support, and emotional support networks. To do this, we summarize students' social networks using four key outcomes: isolate, in-degree ties, reciprocity, and clustering coefficient. The balance of these outcomes across cohorts is presented in Table 1.

The first two outcomes depend directly on the nominations each student receives from their classmates and measure both the extensive and intensive margins of popularity of a student in the classroom. *Isolate* is a binary variable that takes the value 1 if the student did not receive any nominations from their classmates and the value 0 if the student received any nominations (Alan et al., 2021b). *In-degree ties* describe the total number of nominations a student receives from their classmates, serving as a measure of a student's popularity within their classroom.

Our third measure, *reciprocity*, looks at the ratio of reciprocal nominations to the total nominations a student has in a given network layer. A nomination is considered reciprocal if a student nominates a classmate in a given layer, and that classmate nominates the student in the same layer in return. Reciprocal relationships are expected to be of superior quality, serving as indicators of higher cooperation and trust (Gifford-Smith and Brownell, 2003) . Lavy and Sand (2019) provide causal evidence on the positive impact of reciprocal friendships both on short-term test scores and several long-term outcomes such as test scores and probability of finishing high school.

Lastly, the *clustering coefficient* (Watts and Strogatz, 1998), also known as transitivity, measures how well-connected a student's direct peers are to each other. This measure is calculated at the individual level, representing the ratio of a student's neighbors who are connected with each other to the total number of neighbors the student has. The direction of nominations is ignored when computing this measure. Higher levels of clustering reflect the presence of tightly-knit groups and serve as a proxy for trust (Karlan et al., 2009).

The predictive power of social network measures on academic scores is presented in Tables A6, A7, A8, and A9 in Section A.2 of the Online Appendix. Across all network layers, being isolated is consistently associated with lower academic scores. In contrast, other network measures— in-degree ties, reciprocity, and clustering coefficient—are positively and significantly associated with academic performance, indicating that students who have higher values in terms of these measures in their networks tend to have higher academic scores.

In the second part of the analysis, we shift our focus to inter-group relationships based on ethnicity and gender. The primary outcome that we rely on for this part is Coleman's excess homophily index. This measure describes the excess propensity of individuals to nominate their in-group members and is computed for each group separately at the classroom level. Using the notation in Alan et al. (2023), we can define Coleman's excess homophily index as follows:

$$C_{ij} = \frac{\frac{s_{ij}}{t_{ij}} - w_{ij}}{1 - w_{ij}}$$

where C_{ij} is the Coleman's excess homophily index for group i in classroom j, s_{ij} denotes the total amount of ties within-group i in classroom j, t_{ij} is the total amount of ties of group i in classroom j and finally w_{ij} denotes the populations share of group i in classroom j. Its values range from -1 to 1, going from heterophily to homophily. Higher values represent a higher propensity to have a tie with an in-group student. Additionally, to reveal the source of change in Coleman's excess homophily index, we look at the number of outgoing ties of each student towards in-groups and out-groups.[6]

Besides social network outcomes, we use control variables that fall into three categories: student, teacher, and classroom characteristics. Student characteristics include gender and refugee status. Teacher characteristics comprise gender, age, years of experience, and marital status. Classroom characteristics involve the share of males and refugees in the classroom.

Lastly, our dataset encompasses a broader set of variables that we refrain from using as controls, as they are also suspected to be affected by the pandemic. However, we utilize these variables to investigate the mechanisms underlying our results. The first set of variables describes a student's socio-emotional skills, including emotional empathy and impulsivity, along with the socio-cognitive skill of cognitive empathy. Socio-emotional skills are derived using principal component analysis (PCA) on relevant survey items, yielding standardized measures for each skill. Cognitive empathy, in contrast, is measured by standardizing students' correct responses to the Reading the Mind in the Eyes test (RMET) (Baron-Cohen et al., 2001). Sample questions can be found in Table E1 and in Figure B2 in section A.7 of the the Online Appendix.

Moreover, we explore differences across SES indicators, parenting styles, teaching styles,

[6]Summary statistics of all social network measures are reported in the Online Appendix in Tables A1, A2, A3, A4 and A5.

and students' perspectives on teachers. SES indicators are elicited from student survey responses. Parenting styles are also derived from student survey data, with four distinct styles—obedience, warmth, punishment, and reasoning—constructed using PCA based on item response questions. A sample of these questions is provided in Table E2 in the Online Appendix. Similarly, teaching styles and teacher characteristics from the students' perspective are extracted from surveys administered to teachers and students, respectively, and PCA is applied to these data as well. A sample of questions for this inventory can be found in Table E3 in the Online Appendix.

Finally, our data also includes information on academic outcomes, math, and verbal test scores. Exceptionally, we have two rounds of data on academic outcomes for the pandemic cohort. The first round is measured at the beginning of the academic year, and the second round is measured at the end of the academic year. We utilize these to uncover associations between peer relationships and recovery in academic scores. Academic outcomes are elicited through standardized tests that we prepared in accordance with the national curricula of the respective grades. We standardize the total number of correct answers in a given test.

4 Empirical analysis

4.1 Estimation strategy

To examine the differences between the pre-pandemic and pandemic cohort in the outcomes of interest, we use the following empirical specification,

$$y_{isg} = \alpha + \beta COVID19 + X_{isg}\Gamma + \theta_{sg} + \epsilon_{isg}$$

where y_{isg} is the outcome of interest for student i in school s and grade g, which we regress on the $COVID19$, which is a dummy variable for the pandemic cohort (2021), as well as other covariates that are likely to be predictive of the outcome y. The vector of student, teacher, and classroom characteristics is denoted as X_{isg}. θ_{sg} is the school and grade fixed effect which enables us to discard all variation between schools and grades. Standard errors, ϵ_{isg}, are clustered at the school and grade level. The variable of interest in this study is COVID19, with the coefficient of interest being $\hat{\beta}$. It represents the impact of the COVID-19 pandemic[7]

[7]As described in Section 2, we interpret our findings as the collective impact of COVID-19.

on the outcome variables—the measures of social networks.

5 Results

This section presents the results of the empirical analysis. First, subsection 5.1 presents the main results derived from the above estimation equation, and then in subsection 5.2, we provide various heterogeneity analyses. For the second part of our analysis, we present results on inter-group relationships in subsection 5.3. Finally, subsection 5.4 details our robustness checks.

5.1 Main Results

In this section and the subsequent ones, we present the impact of COVID-19 on a selection of network statistics for each layer of social network elicited in classrooms, namely friendship, academic support (provided), academic support (received), emotional support (provided), and emotional support (received).

In Column 1 of Table 3, we present the impact of the pandemic on social network measures for friendship networks. Across all social network measures, we document a clear pattern of deterioration in friendship relationships in classrooms. Panel 1 of Table 3 shows a substantial increase of 5 percentage points in the likelihood of being isolated within friendship networks, representing a 22% rise in isolation. This indicates that more students were excluded from friendship ties during the pandemic period. Panel 2 highlights a decline in in-degree ties by 0.36 nominations, equivalent to a 16% decrease, suggesting a drop in the average number of friendship nominations students received, thus reflecting a reduction in students' popularity within these networks. Moreover, Panel 3 shows a decline of 10 percentage points in the share of reciprocal ties, a 25% decrease in effect size, indicating a reduction in the quality of friendships as fewer students had mutual relationships. Panel 4 further demonstrates a sharp decrease of around 30% in the clustering coefficient, suggesting that tightly-knit groups in friendship networks became less common after the pandemic.

Next, we discuss the impact of the pandemic on academic support networks, as shown in Column 2 for providing support and Column 3 for receiving support, of Table 3. The pandemic's impact on academic support networks contrasts sharply with that on friendship networks, as the impact of the pandemic is positive for academic support networks. According

to Panel 1, the likelihood of being isolated decreased by 3 percentage points for nominations in support provided and by 7 percentage points for nominations in support received, corresponding to an 8% and 16% decline in isolation, respectively. In Panel 2, we observe a rise of 0.22 in in-degree ties in both directions of academic support, leading to an approximately 20% increase, suggesting that students were more likely to seek or receive academic help from their peers. Panel 3 also reveals slight increases in reciprocity—around 3 percentage points for providing and 2 percentage points for receiving academic support—translating into an effect size of about 20%, indicating a higher proportion of mutual academic assistance relationships. In terms of clustering, Panel 4 shows no significant changes, suggesting that the overall structure of tightly-knit academic support groups remained stable despite the pandemic.

We present the results for emotional support networks in Columns 4 and 5. The impact of the pandemic on emotional support networks is more mixed. As shown in Panel 1, the likelihood of isolation increased by 2 percentage points when students were asked about receiving emotional support. Panel 2 shows a statistically significant 7% increase in the number of nominations students received when asked about providing emotional support, indicating that students might have become more willing to offer support to their peers. Reciprocity in emotional support networks declined by 3 percentage points for receiving support, a 14% decrease, indicating that mutual emotional support relationships became less common. Finally, Panel 4 shows reductions in clustering coefficients for emotional support networks—15% for provided support and 24% for received support—suggesting that groups of students providing and receiving emotional support became less interconnected during the pandemic.

In addition to the presented results, we conducted robustness checks by computing Romano-Wolf p-values (Clarke et al., 2020) to assess the validity of our findings under potential concerns of multiple hypothesis testing. The results of these tests support the robustness of our main findings, with the exception of the estimate related to the probability of isolation in the emotional support (received) network, which does not satisfy conventional significance levels ($p = 0.20$).

Overall, COVID-19 had a varied impact on peer relationships, depending on the nature of the relationship. Across all our social network measures, we consistently observe a deterioration in friendship networks and an improvement in academic support networks.

5.2 Heterogeneities

In this subsection, we briefly examine heterogeneities in the impact of COVID-19 based on students' demographic characteristics. We explore heterogeneities across students' gender, refugee status, and socio-economic status (SES).[8]

Numerous prior studies (e.g., Smith (2011); Underwood (2004); Schwartz et al. (2021); Çiçekoğlu et al. (2019); Samara et al. (2020); Due et al. (2016); Bukowski et al. (2020); Bai et al. (2021); Risi et al. (2003); Cavicchiolo et al. (2022)) consistently suggest that these demographic factors significantly contribute to variations in peer relationships.

5.2.1 Heterogeneities based on refugee status

Table 4 highlights intriguing differences in the impact of COVID-19 between native and refugee students. In Columns 1 and 2, we report the differences in friendship networks. Across all network measures, the impact of the pandemic on refugees appears to be stronger in terms of the effect size, but we find statistically significant differences in the probability of isolation; refugees experienced a more pronounced rise, with a 26% increase in social isolation compared to a 20% increase among native students.

Next, we document the differences in academic support networks in Columns 3-6. The effects of COVID-19 on academic support networks varied significantly between native and refugee students, contrasting with the pooled results that suggested overall improvements. Panel 1 indicates that the likelihood of isolation in the academic support (provided) network decreased for native students but increased by 9 percentage points for refugees, representing a 16% increase in isolation for the latter. Panel 2 further highlights these differences in in-degree ties, with natives showing a 24% increase in the number of nominations for providing support, while refugees experienced a 24% decline. A similar pattern is observed in academic support (received) networks, where the 21% increase in the pooled results was driven entirely by native students. These findings suggest that the overall positive changes in academic support networks mask the negative experiences of refugee students, who faced increasing isolation and diminished access to academic support from their peers.

[8] In addition to our main analysis of heterogeneity outlined in this subsection, we further explore variations based on factors such as teacher demographics, teaching styles, teachers' characteristics as perceived by students, parenting styles, and socioeconomic status indicators. These additional analyses are detailed in the Online Appendix A.5. See Tables C1, C2, C3, C4, C5.

The estimates for emotional support networks are reported in Columns 7-10. We only find statistically significant differences in the impact of COVID-19 on in-degree ties in the emotional support (provided) network, which indicates that the increase that we observed in the pooled results was again entirely driven by native students.

To sum up, we observe considerable differences in the impact of COVID-19 between native and refugee students; however, only some of these disparities yield statistically significant results at conventional levels. We argue that the deterioration in friendship networks is found to be stronger for refugee students. However, what stands out most is that the observed positive change in academic support networks, as reported in the pooled results, is entirely driven by the impact on native students. In contrast, we contend that the academic support networks of refugee students deteriorated, as evidenced by the increase in the likelihood of isolation, the decline in in-degree ties, and the diminished connectivity to other students. The evidence found here motivates a further investigation into the changing structure of peer relationships by taking a look at inter-ethnic ties and classroom homophily in section 5.3.1.

5.2.2 Heterogeneities based on gender

We present the results from regressions conducted separately for male and female students in Table 5. The differences based on students' gender in the impact of COVID-19 are primarily in terms of the effect sizes rather than direction, in contrast to the results based on heterogeneity in refugee status.

In Columns 1 and 2, we report the estimates for friendship networks for both genders. Estimates slightly differ between genders, except the estimate for in-degree ties. The estimated decline in in-degree ties was more pronounced for male students, with a 19% decline compared to a 13% decline for female students.

Results for academic support networks are presented in Columns 3-6 of Table 5. According to Panel 1, both genders saw a decrease in the likelihood of being isolated, but the decline was significantly larger for males in the academic support (received) network, with an 18% reduction compared to a 12% reduction for females. In terms of in-degree ties, Panel 2 reveals that female students benefited more from the increase in nominations in the academic support (provided) network, with a 23% rise compared to a 14% increase for males.

Overall, the impact of COVID-19 on peer relationships across genders is less divergent than the differences observed based on refugee status. However, key distinctions remain

within academic support networks. Male students experienced a significantly larger reduction in isolation in the academic support (received) network but a smaller increase in in-degree ties in the academic support (provided) network compared to females. Additionally, male students faced a more pronounced decline in friendship ties, suggesting greater challenges in maintaining social connections during the pandemic.

5.2.3 Heterogeneities based on SES

To examine heterogeneity based on SES, we utilize district-level variation in our sample, which includes five districts. Our approach involves a comparison between districts with the lowest and highest socio-economic development indices in our sample using the calculation of the Turkish Ministry of Industry and Technology (Acar et al., 2019).

Table 6 reports the results on heterogeneity in the impact of COVID-19 based on SES. Unlike the differences we observed associated with gender and ethnicity differences, SES differences explain a lot less. While we report different point estimates for some cases, none of the differences turn out to be statistically significant, which may stem from the fact that we are only using a small subsample for the SES-based analysis.

5.3 Results on inter-group relations

In this section, we conduct a more in-depth analysis of peer relationships by investigating how inter-ethnic and inter-gender dynamics have shifted in response to COVID-19. We summarize inter-group relationships using Coleman's homophily index for each subgroup of interest and explain the estimated changes in the index by examining shifts in nominations within and across these groups. Note that a higher value of excess homophily indicates a greater inclination to form within-group relationships, whereas a lower value indicates the opposite.[9]

5.3.1 Results on inter-ethnic relations

Table 7 presents results regarding the impact of COVID-19 on inter-ethnic relations in classrooms. Columns 1 and 2 report the estimated impact in the number of nominations from

[9]Figure A1 in the Online Appendix provides network plots of two example classrooms that visualizes the contrast between low versus high ethnic segregation within a classroom.

native students towards refugee and native students, respectively. Columns 3 and 4 report the estimated impact in the number of nominations from refugee students towards refugee and native students, respectively. Columns 5 and 6 summarize the estimated impact of COVID-19 on the excess homophily of native and refugee students, respectively.

We exclude several classrooms from the sample for this part of our analysis because Coleman's Homophily Index is undefined for them. These classrooms fall into three categories: those with no refugees (33 classrooms), those with only one refugee (34 classrooms), or those with more than one refugee, but where all refugees were absent on the day of the classroom visit (11 classrooms).

In Panel 1, our estimates for students' friendship networks reveal significant declines in all categories of nominations, once again demonstrating the deterioration of friendship relations. COVID-19 caused a substantial drop in native students' nominations to both refugees and other natives, with a 49% decline in native-to-refugee nominations and a 12% decline in native-to-native nominations when accounting for baseline levels. This results in a 0.05 unit increase in native students' excess homophily, though it is not statistically significant. For refugee students, we observe a 44% decrease in refugee-to-refugee nominations and a 23% drop in refugee-to-native nominations, leading to a 0.2 unit decrease in their excess homophily, significant at the 10% level.

Panel 2 shows the impact of COVID-19 on students' nominations for providing academic support. Unlike friendship networks, both student groups increased nominations toward natives while reducing those toward refugees. This led to a 0.11 unit rise in excess homophily for natives and a 0.33 unit decline for refugees. The increase in native homophily is due to a 26% rise in native-to-native nominations, compared to a 38% drop in native-to-refugee nominations. For refugees, the decline in homophily results from a 13% decrease in refugee-to-refugee nominations and a significant 40% increase in refugee-to-native nominations.

In Panel 3, we examine the impact of COVID-19 on students' nominations for receiving academic support. The effects are less pronounced in this network, with the only significant change being a 23% increase in native-to-native nominations. Despite this, the overall impact on native homophily is slightly negative, as a 17% rise in native-to-refugee nominations offsets the increase in native-to-native ties. For refugees, COVID-19 significantly reduced homophily by 0.21 units (significant at the 10% level). While changes in refugee nominations were not statistically significant, the combined decline in refugee-to-refugee nominations and increase in refugee-to-native nominations decreased the tendency of refugees to form ties within their

own group.

In Panel 4 and 5, we present the estimated impact of COVID-19 on emotional support networks (provided and received). For both networks, while refugee homophily witnessed a sharp decline, COVID-19 led to negligible effects on native homophily. In most cases, results for emotional support networks fail to reach statistical significance, except for an 8% increase in native-to-native nominations when students are asked to nominate to whom they provide emotional support. On the other hand, COVID-19 led to a sharp decline in refugee homophily due to fewer refugee-to-refugee nominations and higher refugee-to-native nominations.

Overall, these results provide valuable insights into how inter-ethnic ties shifted in response to COVID-19. Refugee students showed a decreased tendency to nominate fellow refugees, while native students maintained a slightly higher tendency to nominate each other. This suggests that COVID-19 contributed to reduced ethnic segregation in classrooms, largely driven by refugee students increasing their nominations of native peers or reducing their nominations of fellow refugees more sharply than their reduction in nominations of natives.

5.3.2 Results on inter-gender relations

Table 8 presents results regarding the influence of COVID-19 on inter-gender relations in classrooms. Columns 1 and 2 report the estimated impact in the number of nominations from male students towards female and male students, respectively. Columns 3 and 4 report the estimated impact in the number of nominations from female students towards female and male students, respectively. Columns 5 and 6 summarize the estimated impact of COVID-19 on the excess homophily of male students and female students, respectively.

In Panel 1 of Table 8, we report the estimated impact of COVID-19 on students' inter-gender nominations for their friendship networks. For both males and females, within-gender nomination decreased significantly as a response to COVID-19, with an effect size of 22% for males and 16% for females. These sharp declines are accompanied by increases in cross-gender nominations for both males and females, with an effect size of 28% for males and 6% increase for females, despite not reaching conventional statistical significance levels for female-to-male nominations. As a result, COVID-19 led to a statistically significant decrease in both male and female homophily, by 0.1 units and 0.04 units, respectively.

In Panels 2 and 3 of Table 8, we estimate the impact of COVID-19 on students' inter-gender relations within academic support networks. Our earlier findings of positive impacts in these networks are reflected in higher levels of nominations both within and across genders. Panel 2 focuses on nominations for providing academic support. The increase in male nominations is similar towards both genders, but when considering baseline levels, the effect size is more pronounced for male-to-female nominations at 54%, compared to 14% for male-to-male nominations. This change contributes to a 0.12 unit decrease in male homophily. For females, the increase in nominations is more substantial for female-to-female nominations (0.17) than for female-to-male nominations (0.03). However, the effect size is comparable, with increases of 16% for female-to-female and 15% for female-to-male nominations. This results in a slight, statistically insignificant decline of 0.01 units in female homophily.

In Panel 3, we report our estimates for students' nominations from whom they receive academic support. For this category of social network, the number of nominations from males to females increased by 30%, and from males to males increased by 23%. As a result, we detect a decline in the male homophily by 0.05 units, but the estimate is not statistically significant. For the nominations from females, COVID-19 led to an increase for nominations towards both genders, 10% and 53% towards females and males respectively. As a result, we detect a decline of 0.09 units in female homophily, which is statistically significant at 5% level.

Panel 4 presents our estimates on students' nominations to whom they provide emotional support. Although we observe small decreases in within-gender nominations, we fail to find significant changes, neither statistically nor economically. The estimates for cross-gender nominations, however, reveal a considerable increase of 72% for males-to-females and 63% for females-to-males nominations. Consequently, COVID-19 led to a decline in the propensity to nominate a student from their gender for both males and females, by 0.17 units and 0.09 units, respectively.

Panel 5 presents our findings on students' nominations from whom they receive emotional support. Similar to our previous findings, we observe an increase in cross-gender nominations, accompanied by significant drops in within-gender nominations. While male-to-female nominations increased by 44%, male-to-male nominations dropped by 8%. On the other hand, female-to-female nominations decreased by 11% and female-to-male nominations increased by 63%. As a result, homophily of both genders witnessed a statistically significant decline of 0.17 units for males and 0.09 units for females, as a response to COVID-19.

Our exploration into how students interact across genders reveals a positive trend amid the challenges posed by COVID-19. The noticeable decrease in gender-based homophily is mainly driven by an uptick in cross-gender nominations, while there are instances of reduced within-gender nominations. The overall increase in connections across genders signals a shift towards more inclusive peer relationships within classrooms in terms of gender.

5.4 Robustness Checks

In this section, we address potential concerns that might impact our estimates. A notable challenge in applied network analysis is the issue of missing data, wherein some ties may remain unobserved.[10]

In the context of our study, the source of missing data is student absenteeism. Students absent on the day of data collection could not nominate their peers for their social networks, eliminating our ability to observe their outgoing ties. Nevertheless, we can still observe the ties they received from present students.

A particular issue related to our study is the different levels of student absenteeism between the two cohorts we are investigating. Since we conducted our data collection on the post-pandemic cohort right after the schools were reopened, there were still many parents who were hesitant about sending their children to school (Zhan et al., 2022; Limbers, 2021; Hageman, 2020; Khattab et al., 2020). As such, we observe an increase in the share of students who were absent on the day of data collection in the pandemic cohort. We present detailed summary statistics on student absenteeism of our sample in the Online Appendix (see Table B1). While the average absence rate was around 8.6% for the pre-pandemic cohort, strikingly it increased to about 20% for the post-pandemic cohort. We report similar changes in the increase of absenteeism for all genders and ethnicities in our sample.

To ensure the robustness of our results against potential biases from missing nominations, we conduct several checks. Firstly, we replicate our analyses for classrooms with lower absenteeism. Based on the distribution of classrooms in the sample, we generate a subsample of classrooms that have less than 40% absenteeism (which corresponds to the 80th percentile). This sample restriction leaves us with 281 classrooms. Results obtained from this subsample are reported in the Online Appendix A.4.1.[11] Our results remain robust for this subsample

[10] See Kossinets (2006) and Chandrasekhar and Lewis (2016) for more details.

[11] See Tables B2, B3, B4, and B5.

of classrooms.

Secondly, we repeat our analyses based on induced subgraphs, which involve removing nominations for absent students. These subgraphs only include nominations between students present on the day of our visit. We report the results obtained from induced subgraphs in the Online Appendix A.4.2.[12] Our findings remain robust to this approach as well.

6 Discussion of Mechanisms

In this section, we explore the potential mechanisms underlying our main findings. One key mechanism underlying one of our primary findings, namely the deterioration of peer relationships in the friendship network, characterized by increased social isolation and diminished in-degree ties and reciprocity, may stem from the adverse effects of the pandemic on children's socio-cognitive and socio-emotional skills. To shed light on this, we draw upon previous research emphasizing the significant connection between social skills and peer interactions. Studies conducted by Peterson et al. (2016), Hughes and Leekam (2004), and Caputi et al. (2012) have highlighted the importance of cognitive empathy, as measured by the Reading the Mind in the Eyes test (Baron-Cohen et al., 2001), in shaping peer relationships. They found that higher levels of cognitive empathy are associated with greater social competence and improved friendship quality. Furthermore, research by Portt et al. (2020), Van der Graaff et al. (2014), and Van der Graaff et al. (2018) provides empirical evidence supporting the link between emotional empathy and peer relationships, underscoring the vital role of emotional empathy in fostering positive connections with peers. Additionally, a study by Bagwell et al. (2001), exploring the influence of impulsivity on peer interactions, reveals that children with higher levels of impulsivity are more likely to face peer rejection. Likewise, according to Parker et al. (2015), patience, which is a facet of self-regulation (opposite of impulsivity), can play a role in fostering more favorable peer relationships. These existing studies provide a strong foundation for our hypothesis that the pandemic-induced deterioration of sociocognitive and socioemotional skills could be a significant factor contributing to the observed decline in peer relationships in friendship networks.

Our data is rich enough to test the above associations in our context. In Panel 1 of Table 9, consistent with the literature, we find cognitive empathy and emotional empathy

[12]See Tables B6, B7, B8, and B9.

are negatively correlated with social isolation and positively correlated with the number of in-degree ties, reciprocity, and clustering coefficient. We also document that impulsivity is associated with an increase in isolation and a decrease in in-degree ties, reciprocity, and clustering coefficient. In Table 10, we present our estimates on the impact of COVID-19 on these skills and provide evidence on the erosion of these skills due to the pandemic. We document a 0.05 SD decrease in cognitive empathy, a 0.39 SD decrease in emotional empathy, and a 0.27 SD increase in impulsivity. While the estimates for emotional empathy and impulsivity are statistically significant at the 1% level, the estimate for cognitive empathy does not reach statistical significance. These results, combined with the existing literature on the role of these skills in shaping social relationships, suggest that the deterioration in friendship networks may be partially driven by the decline in sociocognitive and socioemotional skills.

In the academic support networks, we observe an improvement after the pandemic, largely driven by native students, as shown in Table 3. A plausible explanation for the pandemic cohort's increased engagement in forming academic support networks could be their effort to compensate for the academic setbacks they experienced during the pandemic.

To examine this channel, we first demonstrate that the pandemic cohort experienced academic losses, amounting to 0.24 SD in math scores and 0.16 SD in verbal scores, as shown in Column 1 of Table 11. In Columns 2 and 3, we present the results from the same analysis conducted separately for native students and refugee students. Our findings indicate that the overall impact of COVID-19 on academic scores is primarily driven by a decline in the scores of native students, as the coefficient is significant only for this group. However, when testing for differences in coefficients, we find significant differences between native and refugee students only in verbal scores.

Next, we focus solely on the pandemic cohort and evaluate the change in their academic outcomes from the beginning to the end of the 2021-2022 academic year. Table 12 presents the academic recovery observed in the pandemic cohort. We find that the academic losses due to COVID-19 are partly recovered after approximately one (academic) year of schooling, with an increase of 0.41 SD in math score and 0.38 SD in verbal score, as reported in Column 1 of Table 12. Having established that there were academic losses that were partially recovered, we now examine whether the extent of this recovery differs between students who held weak positions in their classroom social networks at the beginning of the 2021-2022 academic year and those who did not. To do this, we conducted the same analysis separately for students who were isolated—meaning they did not receive any nominations from their

classmates—and those who were not isolated. In columns 2 and 3, we present the results based on friendship networks, while columns 4 and 5 show the results based on academic support (received) networks. Our findings suggest that being isolated in either network layer is associated with a disadvantage for academic recovery. Isolated students exhibit smaller levels of recovery in both math and verbal scores.

These findings suggest that the pandemic cohort might have invested greater effort in forming academic support networks to mitigate the academic setbacks caused by the pandemic. Their active engagement in these networks contributed to a reduction in academic losses, particularly for students who were not isolated within their social networks.

Regarding the heterogeneous effects of the pandemic, while we cannot definitively identify the exact underlying mechanism, we can offer some potential explanations. Table 4 shows a general deterioration in peer relationships for refugee students, particularly in terms of isolation, in-degree ties, and reciprocity. Compared to native students, refugee students not only experienced greater deterioration in their friendship networks but also faced a decline in their academic support networks, contrasting with the improvement observed among native students.

One possible explanation for the observed heterogeneity based on refugee status may be linked to the parenting styles adopted by refugee parents. Table D1 in the Online Appendix reveals statistically significant differences between native and refugee students in various parenting styles to which they were exposed, including obedience, warmth, punishment, and reasoning. Furthermore, Table C4 in the Online Appendix shows some statistically significant associations between these parenting styles and the impact of the pandemic on classroom peer relationships. For instance, higher levels of parental reasoning are associated with reduced isolation in the friendship network, while increased parental warmth correlates with higher in-degree ties in the academic support (provided) network. In contrast, higher levels of parental punishment are linked to lower reciprocity in the academic support network. Since refugee students are generally exposed to less favorable parenting styles compared to native students, these factors may help explain the observed differences in how the pandemic has affected the classroom social networks based on refugee status.

Another potential explanation for these observed heterogeneities could be associated with the socioeconomic conditions of refugee households. Table D1 in the Online Appendix shows statistically significant differences between native and refugee students across most SES indicators, including the number of siblings, parental employment status, and access to a

computer at home. The analysis of heterogeneity regarding the pandemic's impact, based on these variables, is detailed in Table C5 in the Online Appendix. While we do not observe an overall consistent heterogeneous effect of these variables on the pandemic's effect on classroom peer relationships, we do identify some statistically significant correlations. For instance, having a working mother is associated with increased reciprocity in the friendship network. In the academic support network, a higher number of siblings correlates with a higher likelihood of isolation (in academic support provision), lower in-degree ties, and reduced reciprocity. Additionally, having a computer at home is associated with increased in-degree ties within academic support networks. Given that refugee students typically have more siblings and a lower likelihood of having a working mother or computer at home compared to native students, these factors may explain some of the disparities in the pandemic's effects on the classroom social networks of native and refugee students.

The differences observed in the context of the number of siblings may be partly attributed to children with more siblings experiencing reduced parental attention during the pandemic compared to those with fewer siblings. Our analysis of parenting styles highlights the role of parental input during the pandemic. As students spent more time at home, their exposure to parents significantly increased compared to the pre-pandemic period, with some parents even assuming roles typically fulfilled by teachers. As a result, parents played a central role in the pandemic's impact on students. However, when parents had to divide their time and attention among multiple children, they may have been less effective in mitigating the adverse effects of the pandemic. Additionally, the need to share technological devices, such as computers or tablets, with siblings for online education further strained resources and access to educational tools. Having to share technological devices may have led to less personalized learning experiences and hindered peer communication and social development during this challenging period.

Regarding gender-based heterogeneity, we do not observe an overall distinct variation in the effect of the pandemic on peer relationships. However, we find that male students experience a greater increase in isolation within the academic support (received) network. Additionally, concerning in-degree ties, males exhibit poorer outcomes compared to females in both the friendship and academic support (provided) networks. To explore the underlying mechanism behind these results, we examine how the pandemic impacted the socio-emotional and socio-cognitive skills of male and female students, as detailed in Table 10. Our analysis does not unveil statistically significant differences in skill changes between genders regarding cognitive empathy and impulsivity. However, we do find that the decline in emotional

empathy was more pronounced for males compared to females (0.44 SD vs. 0.34 SD). This discrepancy may contribute to the aforementioned gender heterogeneity observed in the pandemic's impact on peer relationships, as outlined in Table 5.

Furthermore, the gender differences in the impact of the pandemic may be partly explained by existing survey evidence, which suggests that boys spent more time engaging in certain activities such as playing computer games or watching TV than girls during the pandemic (Grewenig et al., 2021). The excessive exposure to these activities may have contributed further to the decline in their social skills. Moreover, traditional gender norms may discourage boys from expressing their emotions or coping with pandemic-related stress, potentially leading to greater isolation. These setbacks in social skill development could make it more difficult for them to form healthy peer relationships once in-person education resumes, given the cumulative nature of social skill development. However, our data do not include any information on these dimensions, and therefore we are unable to empirically investigate these channels.

7 Conclusion

In this study, we examine the impact of the COVID-19 pandemic on peer relationships within the classroom setting. Our investigation is motivated by the recognition of the critical role that peer interactions play in children's development. We find compelling evidence indicating substantial changes in peer relationships following the pandemic. Specifically, we observe a significant deterioration in the friendship network and a notable increase in academic support among peers. These findings underscore the complex nature of peer relationships and their vulnerability to external shocks.

Furthermore, our analysis of heterogeneity reveals distinct patterns in the impact of the pandemic across different student demographics, particularly evident in the experiences of refugees and native students. We observe a pronounced worsening in the friendship networks of refugee students compared to their native counterparts. Additionally, our analysis unveils a decline in the academic support network among refugee students, contrasting with the situation among native students. Understanding these distinctions between refugee and native students is crucial for developing targeted interventions to support vulnerable student populations.

In the latter phase of our analysis, we document significant shifts in inter-group dynamics. Our results indicate a reduction in ethnic segregation, primarily driven by a decreased likelihood of refugees nominating other refugees. Additionally, we observe a decline in gender-based segregation within classrooms, attributed to both males and females demonstrating an increased inclination to nominate peers of the opposite gender.

Importantly, our study fills a significant gap in the existing literature by shedding light on the understudied topic of how the pandemic affects peer interactions in educational settings. By providing empirical evidence on this relationship, we contribute to both the literature on the impact of COVID-19 on children and the broader field of social network analysis. Moreover, our findings underscore the vital role of onsite education and peer interaction in fostering children's skill development, echoing previous research highlighting the significance of social interactions in educational contexts. Initially, our study reveals a significant decline in crucial socio-emotional and socio-cognitive skills among the pandemic cohort. Subsequently, we show that the detrimental impacts of COVID-19 shock on academic outcomes are more striking and persistent for isolated students within the friendship network compared to students having healthier peer relationships, as presented in Table 12. Specifically, we demonstrate that the recovery in academic outcomes following approximately one year of school attendance is lower for isolated students than for those who are not isolated. This suggests that isolated students derive less benefit from the stimulating classroom environment, further emphasizing the critical role of peer relationships in academic success.

Overall, our study highlights the importance of considering social skill development in educational policymaking, particularly in the context of mitigating the potentially long-lasting effects of major shocks, such as the COVID-19 pandemic, on affected cohorts. By raising awareness of these challenges, we aim to inform policymakers and educators in their efforts to support students' development in the aftermath of such disruptions.

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8 Tables

Table 1: Balance of Social Network Outcomes

	(1) Mean of 2018	(2) Mean of 2021	(3) Difference	(4) p-value	(5) N
Friendship:					
Isolate	0.225	0.283	0.058	0.000	10287
In-degree ties	2.229	1.843	-0.386	0.000	10287
Reciprocity	0.381	0.281	-0.100	0.000	10287
Clustering coef.	0.357	0.247	-0.110	0.000	10287
Academic Support (provided):					
Isolate	0.366	0.338	-0.028	0.064	10287
In-degree ties	1.188	1.403	0.215	0.000	10287
Reciprocity	0.138	0.165	0.027	0.011	10287
Clustering coef.	0.149	0.148	-0.001	0.941	10287
Academic Support (received):					
Isolate	0.459	0.392	-0.067	0.000	10287
In-degree ties	1.112	1.314	0.202	0.000	10287
Reciprocity	0.116	0.140	0.024	0.012	10287
Clustering coef.	0.154	0.149	-0.005	0.651	10287
Emotional Support (provided):					
Isolate	0.320	0.321	0.001	0.963	10287
In-degree ties	1.515	1.592	0.077	0.055	10287
Reciprocity	0.189	0.188	-0.001	0.938	10287
Clustering coef.	0.222	0.189	-0.033	0.001	10287
Emotional Support (received):					
Isolate	0.310	0.341	0.031	0.007	10287
In-degree ties	1.583	1.512	-0.071	0.067	10287
Reciprocity	0.219	0.188	-0.031	0.006	10287
Clustering coef.	0.236	0.179	-0.057	0.000	10287

Note: All social network measures are elicited via students' self-reported nominations for given social network types. Differences are calculated by subtracting the mean of 2018 from the mean of 2021. Associated p-values are obtained by regressing the outcome variable on the COVID dummy, which takes the value 0 for the cohort of 2018 and the value 1 for the cohort of 2021, controlling for school and grade fixed effects.

Table 2: Balance of Covariates

	(1) Mean of 2018	(2) Mean of 2021	(3) Difference	(4) p-value	(5) N
Student characteristics:					
Male	0.510	0.514	0.004	0.613	10287
Refugee	0.161	0.189	0.028	0.007	10287
Classroom characteristics:					
Share of males	0.510	0.515	0.005	0.637	345
Share of refugees	0.160	0.186	0.026	0.022	345
Teacher characteristics:					
Male	0.327	0.369	0.042	0.485	345
Age	42.877	43.458	0.581	0.450	345
Experience in years	18.975	19.598	0.623	0.446	345
Married	0.832	0.826	-0.006	0.891	345

Note: All variables are obtained via survey answers from students and teachers. Differences are calculated by subtracting the mean of 2018 from the mean of 2021. Associated p-values are obtained by regressing the outcome variable on the COVID dummy, which takes the value 0 for the cohort of 2018 and the value 1 for the cohort of 2021, controlling for school fixed effects.

Table 3: Main Results

	(1) Friendship	(2) AS Provided	(3) AS Received	(4) ES Provided	(5) ES Received
Panel 1: Isolates					
COVID	0.05***	-0.03**	-0.07***	-0.01	0.02*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Control Mean	0.23	0.37	0.46	0.32	0.31
Effect Size	0.22	-0.08	-0.16	-0.02	0.07
Romano-Wolf p-Value	0.00	0.09	0.00	0.93	0.23
N	10287	10287	10287	10287	10287
R-Squared	0.09	0.07	0.09	0.09	0.10
Panel 2: In-degree ties					
COVID	-0.36***	0.22***	0.22***	0.10**	-0.05
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Control Mean	2.22	1.18	1.10	1.51	1.58
Effect Size	-0.16	0.19	0.19	0.07	-0.03
Romano-Wolf p-Value	0.00	0.00	0.00	0.08	0.78
N	10287	10287	10287	10287	10287
R-Squared	0.09	0.09	0.10	0.09	0.10
Panel 3: Reciprocity					
COVID	-0.10***	0.03**	0.02**	0.00	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Control Mean	0.38	0.14	0.11	0.19	0.22
Effect Size	-0.25	0.19	0.20	0.01	-0.14
Romano-Wolf p-Value	0.00	0.04	0.05	0.96	0.09
N	10287	10287	10287	10287	10287
R-Squared	0.09	0.05	0.05	0.06	0.07
Panel 4: Clustering coef.					
COVID	-0.11***	-0.01	-0.01	-0.03***	-0.06***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Control Mean	0.36	0.15	0.15	0.22	0.23
Effect Size	-0.30	-0.04	-0.05	-0.15	-0.24
Romano-Wolf p-Value	0.00	0.97	0.97	0.02	0.00
N	10287	10287	10287	10287	10287
R-Squared	0.09	0.06	0.06	0.06	0.07

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network measure at the beginning of the row and for the network type specified on top of columns. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table 4: Main Results by Refugee Status

	Friendship		AS Provided		AS Received		ES Provided		ES Received	
	(1) Native	(2) Refugee	(3) Native	(4) Refugee	(5) Native	(6) Refugee	(7) Native	(8) Refugee	(9) Native	(10) Refugee
Panel 1: Isolates										
COVID	0.04***	0.12***	-0.05***	0.09**	-0.08***	-0.02	-0.01	0.02	0.02	0.05
	(0.01)	(0.03)	(0.01)	(0.04)	(0.01)	(0.03)	(0.01)	(0.04)	(0.01)	(0.03)
Control Mean	0.18	0.44	0.33	0.55	0.41	0.70	0.27	0.57	0.26	0.56
Effect Size	0.20	0.26	-0.16	0.16	-0.20	-0.03	-0.05	0.04	0.06	0.10
p-Value (Native=Refugee)	0.05		0.01		0.13		0.39		0.31	
N	8490	1797	8490	1797	8490	1797	8490	1797	8490	1797
R-Squared	0.026	0.118	0.038	0.096	0.050	0.092	0.029	0.090	0.035	0.085
Panel 2: In-degree ties										
COVID	-0.33***	-0.48***	0.30***	-0.18**	0.26***	0.00	0.14***	-0.07	-0.03	-0.09
	(0.04)	(0.09)	(0.04)	(0.08)	(0.05)	(0.06)	(0.04)	(0.08)	(0.04)	(0.07)
Control Mean	2.43	1.16	1.27	0.73	1.23	0.49	1.66	0.74	1.75	0.69
Effect Size	-0.13	-0.41	0.24	-0.24	0.21	0.00	0.08	-0.10	-0.02	-0.14
p-Value (Native=Refugee)	0.19		0.00		0.00		0.03		0.49	
N	8490	1797	8490	1797	8490	1797	8490	1797	8490	1797
R-Squared	0.022	0.111	0.062	0.095	0.064	0.069	0.044	0.073	0.051	0.070
Panel 3: Reciprocity										
COVID	-0.09***	-0.13***	0.04***	-0.02	0.03**	0.01	0.01	-0.01	-0.03**	-0.03
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)
Control Mean	0.41	0.24	0.15	0.08	0.13	0.05	0.20	0.11	0.24	0.12
Effect Size	-0.22	-0.53	0.25	-0.21	0.21	0.11	0.03	-0.13	-0.12	-0.26
p-Value (Native=Refugee)	0.17		0.05		0.17		0.40		0.89	
N	8490	1797	8490	1797	8490	1797	8490	1797	8490	1797
R-Squared	0.051	0.129	0.043	0.105	0.051	0.071	0.045	0.105	0.059	0.126
Panel 4: Clustering coef.										
COVID	-0.10***	-0.14***	-0.00	-0.03**	-0.00	-0.02*	-0.03***	-0.04*	-0.06***	-0.03
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)
Control Mean	0.37	0.28	0.16	0.09	0.17	0.08	0.24	0.12	0.26	0.12
Effect Size	-0.27	-0.50	-0.00	-0.35	-0.03	-0.30	-0.13	-0.35	-0.23	-0.28
p-Value (Native=Refugee)	0.18		0.09		0.33		0.72		0.21	
N	8490	1797	8490	1797	8490	1797	8490	1797	8490	1797
R-Squared	0.075	0.142	0.055	0.104	0.055	0.084	0.048	0.099	0.058	0.090

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network measure at the beginning of the row, for the network type, and for the subgroup of the sample specified on top of columns. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table 5: Main Results by Gender Status

	Friendship		AS Provided		AS Received		ES Provided		ES Received	
	(1) Male	(2) Female	(3) Male	(4) Female	(5) Male	(6) Female	(7) Male	(8) Female	(9) Male	(10) Female
Panel 1: Isolates										
COVID	0.05***	0.05***	-0.04**	-0.02	-0.09***	-0.05***	0.00	-0.01	0.01	0.03**
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Control Mean	0.25	0.20	0.41	0.32	0.53	0.39	0.36	0.29	0.37	0.25
Effect Size	0.22	0.23	-0.10	-0.06	-0.18	-0.12	0.01	-0.05	0.04	0.14
p-Value (Male = Female)	0.74		0.26		0.03		0.44		0.20	
N	5271	5016	5271	5016	5271	5016	5271	5016	5271	5016
R-Squared	0.087	0.113	0.065	0.080	0.077	0.102	0.082	0.099	0.080	0.114
Panel 2: In-degree ties										
COVID	-0.42***	-0.29***	0.15***	0.30***	0.23***	0.19***	0.06	0.13**	-0.02	-0.08
	(0.05)	(0.05)	(0.04)	(0.06)	(0.05)	(0.06)	(0.04)	(0.07)	(0.04)	(0.06)
Control Mean	2.15	2.30	1.05	1.32	0.85	1.37	1.30	1.73	1.30	1.87
Effect Size	-0.19	-0.13	0.14	0.23	0.27	0.14	0.05	0.08	-0.02	-0.04
p-Value (Male = Female)	0.07		0.04		0.55		0.37		0.41	
N	5271	5016	5271	5016	5271	5016	5271	5016	5271	5016
R-Squared	0.091	0.086	0.076	0.091	0.078	0.084	0.075	0.091	0.072	0.101
Panel 3: Reciprocity										
COVID	-0.09***	-0.10***	0.02**	0.03*	0.03***	0.02	0.01	-0.00	-0.00	-0.06***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)
Control Mean	0.35	0.41	0.11	0.16	0.08	0.15	0.15	0.22	0.16	0.28
Effect Size	-0.26	-0.24	0.20	0.18	0.39	0.10	0.05	-0.01	-0.03	-0.20
p-Value (Male = Female)	0.73		0.66		0.40		0.58		0.01	
N	5271	5016	5271	5016	5271	5016	5271	5016	5271	5016
R-Squared	0.087	0.098	0.046	0.060	0.048	0.059	0.050	0.067	0.051	0.086
Panel 4: Clustering coef.										
COVID	-0.12***	-0.10***	-0.01	-0.00	-0.01	-0.01	-0.03***	-0.04***	-0.06***	-0.06***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Control Mean	0.34	0.37	0.13	0.17	0.12	0.18	0.19	0.25	0.21	0.27
Effect Size	-0.35	-0.26	-0.10	-0.00	-0.07	-0.03	-0.16	-0.14	-0.28	-0.22
p-Value (Male = Female)	0.31		0.47		0.85		0.81		0.95	
N	5271	5016	5271	5016	5271	5016	5271	5016	5271	5016
R-Squared	0.107	0.092	0.065	0.066	0.059	0.074	0.073	0.074	0.078	0.082

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network measure at the beginning of the row, for the network type, and for the subgroup of the sample specified on top of columns. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table 6: Main Results by SES

	Friendship		AS Provided		AS Received		ES Provided		ES Received	
	(1) Low	(2) High	(3) Low	(4) High	(5) Low	(6) High	(7) Low	(8) High	(9) Low	(10) High
Panel 1: Isolates										
COVID	0.08**	0.03	0.01	-0.04	-0.09**	-0.02	-0.01	-0.01	-0.02	0.02
	(0.03)	(0.02)	(0.05)	(0.04)	(0.04)	(0.02)	(0.04)	(0.04)	(0.05)	(0.03)
Control Mean	0.25	0.22	0.39	0.37	0.49	0.44	0.37	0.30	0.38	0.31
Effect Size	0.31	0.14	0.03	-0.10	-0.18	-0.05	-0.02	-0.02	-0.05	0.06
p-Value (Low = High)	0.34		0.74		0.52		0.98		0.69	
N	1567	1349	1567	1349	1567	1349	1567	1349	1567	1349
R-Squared	0.107	0.105	0.099	0.059	0.107	0.111	0.126	0.092	0.117	0.111
Panel 2: In-degree ties										
COVID	-0.49***	-0.24**	0.15	0.19*	0.23*	0.09	0.13	0.09	-0.00	-0.05
	(0.09)	(0.10)	(0.12)	(0.10)	(0.12)	(0.07)	(0.11)	(0.10)	(0.13)	(0.09)
Control Mean	2.12	2.31	1.18	1.20	1.06	1.15	1.35	1.62	1.41	1.65
Effect Size	-0.23	-0.10	0.13	0.16	0.22	0.07	0.09	0.06	-0.00	-0.03
p-Value (Low = High)	0.34		0.88		0.76		0.85		0.88	
N	1567	1349	1567	1349	1567	1349	1567	1349	1567	1349
R-Squared	0.089	0.096	0.085	0.081	0.091	0.109	0.095	0.101	0.103	0.123
Panel 3: Reciprocity										
COVID	-0.10***	-0.12***	0.04	0.02	0.03	-0.01	0.01	0.00	-0.01	-0.06**
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Control Mean	0.35	0.41	0.11	0.15	0.09	0.13	0.14	0.19	0.16	0.25
Effect Size	-0.28	-0.29	0.36	0.11	0.29	-0.09	0.05	0.01	-0.07	-0.25
p-Value (Low = High)	0.85		0.81		0.71		0.96		0.70	
N	1567	1349	1567	1349	1567	1349	1567	1349	1567	1349
R-Squared	0.078	0.098	0.050	0.066	0.039	0.055	0.063	0.077	0.064	0.098
Panel 4: Clustering coef.										
COVID	-0.11***	-0.05	-0.01	-0.03	-0.01	0.02	-0.03	-0.01	-0.05**	-0.02
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Control Mean	0.32	0.34	0.15	0.16	0.14	0.14	0.19	0.22	0.20	0.22
Effect Size	-0.33	-0.15	-0.03	-0.19	-0.10	0.12	-0.15	-0.04	-0.25	-0.09
p-Value (Low = High)	0.63		0.83		0.79		0.56		0.63	
N	1567	1349	1567	1349	1567	1349	1567	1349	1567	1349
R-Squared	0.096	0.055	0.070	0.054	0.069	0.079	0.070	0.073	0.074	0.085

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network measure at the beginning of the row, for the network type, and for the subgroup of the sample specified on top of columns. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table 7: Homophily based on Refugee Status

	Native Nominations		Refugee Nominations		Homophily	
	(1)	(2)	(3)	(4)	(5)	(6)
	N ⇒ R	N ⇒ N	R ⇒ R	R ⇒ N	N	R
Panel 1: Friendship						
COVID	-0.05**	-0.26***	-0.30***	-0.20***	0.05	-0.24***
	(0.02)	(0.05)	(0.06)	(0.07)	(0.05)	(0.09)
Control Mean	0.09	2.26	0.69	0.88	0.75	-0.01
Effect Size	-0.49	-0.12	-0.44	-0.23		
N	6385	6385	1728	1728	267	259
Panel 2: AS Provided						
COVID	-0.03**	0.31***	-0.04	0.13**	0.12**	-0.35***
	(0.01)	(0.04)	(0.05)	(0.06)	(0.05)	(0.12)
Control Mean	0.08	1.20	0.33	0.36	0.61	0.08
Effect Size	-0.38	0.26	-0.11	0.35		
N	6385	6385	1728	1728	267	230
Panel 3: AS Received						
COVID	0.01	0.27***	-0.01	0.02	-0.02	-0.15
	(0.01)	(0.05)	(0.04)	(0.05)	(0.06)	(0.12)
Control Mean	0.05	1.15	0.26	0.40	0.78	-0.05
Effect Size	0.17	0.23	-0.02	0.04		
N	6385	6385	1728	1728	267	226
Panel 4: ES Provided						
COVID	-0.00	0.13***	-0.04	0.06	-0.01	-0.31***
	(0.02)	(0.05)	(0.05)	(0.07)	(0.05)	(0.11)
Control Mean	0.07	1.57	0.37	0.47	0.71	0.05
Effect Size	-0.03	0.08	-0.10	0.13		
N	6385	6385	1728	1728	267	244
Panel 5: ES Received						
COVID	-0.01	0.01	-0.05	0.00	0.02	-0.23**
	(0.01)	(0.05)	(0.06)	(0.06)	(0.04)	(0.11)
Control Mean	0.06	1.65	0.36	0.50	0.75	0.01
Effect Size	-0.12	0.00	-0.14	0.00		
N	6385	6385	1728	1728	266	242

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network type at the beginning of the row and for the respective network measure specified at the top of the column. Columns 1-4 report native-to-refugee, native-to-native, refugee-to-refugee, and refugee-to-native nominations, respectively. Columns 5 and 6 report results on Coleman's Homophily index for natives and refugees, respectively. Results in columns 1-4 are based on fully specified models that control for school-fixed effects, student, teacher, and classroom characteristics. Results in columns 5-6 are based on fully specified models that control for district-fixed effects, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade for the results in columns 1-4 and clustered at the district level for the results in columns 5-6. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table 8: Homophily based on Gender Status

	Male Nominations		Female Nominations		Homophily	
	(1)	(2)	(3)	(4)	(5)	(6)
	M ⇒ F	M ⇒ M	F ⇒ F	F ⇒ M	M	F
Panel 1: Friendship						
COVID	0.05***	-0.43***	-0.34***	0.01	-0.10***	-0.05***
	(0.02)	(0.05)	(0.05)	(0.02)	(0.02)	(0.02)
Control Mean	0.19	2.00	2.10	0.16	0.82	0.86
Effect Size	0.28	-0.22	-0.16	0.06		
N	5271	5271	5016	5016	344	345
Panel 2: AS Provided						
COVID	0.12***	0.12***	0.17***	0.03*	-0.10***	-0.01
	(0.02)	(0.04)	(0.05)	(0.02)	(0.04)	(0.03)
Control Mean	0.22	0.84	1.08	0.22	0.57	0.68
Effect Size	0.54	0.14	0.16	0.15		
N	5271	5271	5016	5016	345	345
Panel 3: AS Received						
COVID	0.08***	0.16***	0.11**	0.08***	-0.03	-0.10***
	(0.02)	(0.04)	(0.05)	(0.02)	(0.05)	(0.03)
Control Mean	0.26	0.71	1.10	0.15	0.45	0.77
Effect Size	0.30	0.23	0.10	0.52		
N	5271	5271	5016	5016	343	344
Panel 4: ES Provided						
COVID	0.14***	-0.02	-0.02	0.08***	-0.17***	-0.09***
	(0.02)	(0.04)	(0.05)	(0.01)	(0.03)	(0.02)
Control Mean	0.20	1.19	1.52	0.12	0.70	0.85
Effect Size	0.72	-0.01	-0.01	0.63		
N	5271	5271	5016	5016	345	344
Panel 5: ES Received						
COVID	0.10***	-0.09**	-0.18***	0.07***	-0.14***	-0.10***
	(0.02)	(0.04)	(0.05)	(0.01)	(0.04)	(0.02)
Control Mean	0.23	1.19	1.63	0.11	0.67	0.87
Effect Size	0.44	-0.08	-0.11	0.63		
N	5271	5271	5016	5016	344	344

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network type at the beginning of the row and for the respective network measure specified at the top of the column. Columns 1-4 report male-to-female, male-to-male, female-to-female, and female-to-male nominations, respectively. Columns 5 and 6 report results on Coleman's Homophily index for males and females, respectively. Results in columns 1-4 are based on fully specified models that control for school-fixed effects, student, teacher, and classroom characteristics. Results in columns 5-6 are based on fully specified models that control for district-fixed effects, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade for the results in columns 1-4 and clustered at the district level for the results in columns 5-6. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table 9: Associations between Social Network Measures and Socio-emotional Skills

	(1) Isolate	(2) In-degree Ties	(3) Reciprocity	(4) Clustering coef.
Panel 1: Friendship				
Cognitive Empathy	-0.044***	0.326***	0.047***	0.015***
	(0.01)	(0.03)	(0.01)	(0.01)
Emotional Empathy	-0.020***	0.186***	0.024***	0.012***
	(0.01)	(0.02)	(0.00)	(0.00)
Impulsivity	0.021***	-0.187***	-0.026***	-0.016***
	(0.00)	(0.02)	(0.00)	(0.00)
N	7616	7616	7616	7616
R-Squared	0.072	0.100	0.081	0.058
Panel 2: AS Provided				
Cognitive Empathy	-0.020***	0.091***	0.015***	0.012**
	(0.01)	(0.02)	(0.00)	(0.01)
Emotional Empathy	-0.016***	0.075***	0.011***	0.002
	(0.01)	(0.02)	(0.00)	(0.00)
Impulsivity	0.016***	-0.067***	-0.008*	-0.011***
	(0.01)	(0.02)	(0.00)	(0.00)
N	7616	7616	7616	7616
R-Squared	0.056	0.082	0.049	0.069
Panel 3: AS Received				
Cognitive Empathy	-0.067***	0.248***	0.029***	0.014***
	(0.01)	(0.03)	(0.01)	(0.00)
Emotional Empathy	-0.015**	0.113***	0.011***	0.003
	(0.01)	(0.02)	(0.00)	(0.00)
Impulsivity	0.042***	-0.165***	-0.011***	-0.010***
	(0.01)	(0.02)	(0.00)	(0.00)
N	7616	7616	7616	7616
R-Squared	0.096	0.127	0.066	0.072

Note: Each cell reports the OLS estimates of the association between socio-emotional skills and network measures specified at the top of the column for the respective network typed specified at the beginning of the row. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table 10: Impact of COVID-19 on Socio-cognitive and Socio-emotional Skills

	(1) Pooled	(2) Natives	(3) Refugees	(4) Males	(5) Females
Panel 1: Cognitive Empathy					
COVID	-0.052	-0.034	-0.144	-0.052	-0.047
	(0.04)	(0.04)	(0.09)	(0.05)	(0.04)
Control Mean	0.00	0.11	-0.64	0.12	-0.12
p-Value (Native = Refugee)		0.29			
p-Value (Male = Female)				0.92	
N	8762	7552	1210	4300	4462
R-Squared	0.164	0.119	0.112	0.176	0.144
Panel 2: Emotional Empathy					
COVID	-0.395***	-0.383***	-0.445***	-0.444***	-0.343***
	(0.03)	(0.03)	(0.10)	(0.05)	(0.04)
Control Mean	0.00	0.06	-0.41	0.16	-0.16
p-Value (Native = Refugee)		0.63			
p-Value (Male = Female)				0.05	
N	8146	7137	1009	4012	4134
R-Squared	0.109	0.088	0.184	0.122	0.084
Panel 3: Impulsivity					
COVID	0.267***	0.266***	0.265***	0.256***	0.279***
	(0.03)	(0.03)	(0.08)	(0.04)	(0.04)
Control Mean	0.00	-0.08	0.53	-0.14	0.14
p-Value (Native = Refugee)		0.99			
p-Value (Male = Female)				0.68	
N	7779	6817	962	3820	3959
R-Squared	0.103	0.076	0.159	0.111	0.086

Note: Each cell reports the OLS estimates of the effect of COVID-19 on outcomes that are specified at the beginning of the row for the samples that are given at the top of the columns. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table 11: Impact of COVID-19 on Academic Outcomes

	(1) Pooled Sample	(2) Natives	(3) Refugees
Panel 1: Math scores			
COVID	-0.24***	-0.26***	-0.12
	(0.03)	(0.04)	(0.08)
Control Mean	-0.00	0.10	-0.57
p-Value (Native = Refugee)		0.26	
N	8762	7552	1210
R-Squared	0.26	0.26	0.19
Panel 2: Verbal scores			
COVID	-0.16***	-0.18***	0.05
	(0.03)	(0.03)	(0.07)
Control Mean	-0.00	0.12	-0.74
p-Value (Native = Refugee)		0.03	
N	8762	7552	1210
R-Squared	0.23	0.19	0.15

Note: Each cell reports the OLS estimates of the effect of COVID-19 on outcomes that are specified at the beginning of the row for the samples that are given at the top of the columns. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table 12: Associations between Networks and Academic Recovery

		Friendship		AS Received	
	(1)	(2)	(3)	(4)	(5)
	All	Non-Isolated	Isolated	Non-Isolated	Isolated
Panel 1: Math scores					
Post	0.41***	0.44***	0.37***	0.45***	0.37***
	(0.02)	(0.02)	(0.04)	(0.03)	(0.03)
Control Mean	0.00	0.08	-0.41	0.12	-0.30
p-Value (Isolated = Non-isolated)		0.09		0.02	
N	7079	5760	1319	4924	2155
R-Squared	0.26	0.26	0.30	0.29	0.28
Panel 2: Verbal scores					
Post	0.38***	0.42***	0.27***	0.41***	0.34***
	(0.02)	(0.02)	(0.04)	(0.02)	(0.03)
Control Mean	0.00	0.08	-0.39	0.13	-0.33
p-Value (Isolated = Non-isolated)		0.00		0.02	
N	7079	5760	1319	4924	2155
R-Squared	0.23	0.23	0.25	0.24	0.26

Note: Each cell reports the OLS estimates of the effect of COVID-19 on outcomes that are specified at the beginning of the row for the samples that are given at the top of the columns. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

A Online Appendix

A.1 Summary Statistics of Social Network Measures

Table A1: Summary Statistics for Network: Friendship

	(1) Mean	(2) SD	(3) Min	(4) Max
Isolate	0.254	0.435	0	1
In-degree ties	2.034	1.969	0	17
Reciprocity	0.331	0.370	0	1
Clustering coef.	0.302	0.315	0	1
Out-degree ties (native-to-native)	1.741	1.296	0	3
Out-degree ties (native-to-refugee)	0.065	0.276	0	3
Out-degree ties (refugee-to-refugee)	0.099	0.422	0	3
Out-degree ties (refugee-to-native)	0.129	0.516	0	3
Out-degree ties (male-to-male)	0.904	1.226	0	3
Out-degree ties (male-to-female)	0.108	0.387	0	3
Out-degree ties (female-to-female)	0.942	1.264	0	3
Out-degree ties (female-to-male)	0.081	0.330	0	3
Coleman's Excess Homophily Index (Natives)	0.772	0.267	-1	1
Coleman's Excess Homophily Index (Refugees)	-0.083	0.650	-1	1
Coleman's Excess Homophily Index (Males)	0.770	0.189	-0	1
Coleman's Excess Homophily Index (Females)	0.838	0.156	0	1

Note: This table reports summary statistics of social network measures constructed based on students' self-reported nominations regarding to whom they provide academic support.

Table A2: Summary Statistics for Network: AS Provided

	(1) Mean	(2) SD	(3) Min	(4) Max
Isolate	0.352	0.478	0	1
In-degree ties	1.296	1.375	0	12
Reciprocity	0.152	0.297	0	1
Clustering coef.	0.148	0.259	0	1
Out-degree ties (native-to-native)	1.108	1.225	0	3
Out-degree ties (native-to-refugee)	0.060	0.280	0	3
Out-degree ties (refugee-to-refugee)	0.059	0.317	0	3
Out-degree ties (refugee-to-native)	0.070	0.378	0	3
Out-degree ties (male-to-male)	0.463	0.894	0	3
Out-degree ties (male-to-female)	0.144	0.463	0	3
Out-degree ties (female-to-female)	0.576	0.996	0	3
Out-degree ties (female-to-male)	0.114	0.393	0	3
Coleman's Excess Homophily Index (Natives)	0.667	0.333	-1	1
Coleman's Excess Homophily Index (Refugees)	-0.053	0.753	-1	1
Coleman's Excess Homophily Index (Males)	0.512	0.323	-1	1
Coleman's Excess Homophily Index (Females)	0.674	0.237	-0	1

Note: This table reports summary statistics of social network measures constructed based on students' self-reported nominations regarding to whom they provide academic support.

Table A3: Summary Statistics for Network: AS Received

	(1) Mean	(2) SD	(3) Min	(4) Max
Isolate	0.426	0.494	0	1
In-degree ties	1.213	1.516	0	11
Reciprocity	0.128	0.281	0	1
Clustering coef.	0.151	0.269	0	1
Out-degree ties (native-to-native)	1.050	1.215	0	3
Out-degree ties (native-to-refugee)	0.042	0.216	0	3
Out-degree ties (refugee-to-refugee)	0.049	0.279	0	3
Out-degree ties (refugee-to-native)	0.073	0.376	0	3
Out-degree ties (male-to-male)	0.407	0.834	0	3
Out-degree ties (male-to-female)	0.153	0.486	0	3
Out-degree ties (female-to-female)	0.563	0.996	0	3
Out-degree ties (female-to-male)	0.090	0.350	0	3
Coleman's Excess Homophily Index (Natives)	0.768	0.308	-1	1
Coleman's Excess Homophily Index (Refugees)	-0.131	0.729	-1	1
Coleman's Excess Homophily Index (Males)	0.431	0.365	-1	1
Coleman's Excess Homophily Index (Females)	0.726	0.245	-1	1

Note: This table reports summary statistics of social network measures constructed based on students' self-reported nominations regarding from whom they receive academic support.

Table A4: Summary Statistics for Network: ES Provided

	(1) Mean	(2) SD	(3) Min	(4) Max
Isolate	0.320	0.467	0	1
In-degree ties	1.553	1.620	0	12
Reciprocity	0.189	0.315	0	1
Clustering coef.	0.205	0.286	0	1
Out-degree ties (native-to-native)	1.346	1.271	0	3
Out-degree ties (native-to-refugee)	0.059	0.262	0	3
Out-degree ties (refugee-to-refugee)	0.064	0.329	0	3
Out-degree ties (refugee-to-native)	0.085	0.413	0	3
Out-degree ties (male-to-male)	0.606	1.021	0	3
Out-degree ties (male-to-female)	0.136	0.459	0	3
Out-degree ties (female-to-female)	0.734	1.129	0	3
Out-degree ties (female-to-male)	0.078	0.328	0	3
Coleman's Excess Homophily Index (Natives)	0.723	0.306	-1	1
Coleman's Excess Homophily Index (Refugees)	-0.071	0.717	-1	1
Coleman's Excess Homophily Index (Males)	0.618	0.274	-0	1
Coleman's Excess Homophily Index (Females)	0.803	0.193	-0	1

Note: This table reports summary statistics of social network measures constructed based on students' self-reported nominations regarding to whom they provide emotional support.

Table A5: Summary Statistics for Network: ES Received

	(1) Mean	(2) SD	(3) Min	(4) Max
Isolate	0.326	0.469	0	1
In-degree ties	1.548	1.654	0	13
Reciprocity	0.203	0.327	0	1
Clustering coef.	0.207	0.291	0	1
Out-degree ties (native-to-native)	1.351	1.269	0	3
Out-degree ties (native-to-refugee)	0.051	0.243	0	3
Out-degree ties (refugee-to-refugee)	0.062	0.314	0	3
Out-degree ties (refugee-to-native)	0.085	0.413	0	3
Out-degree ties (male-to-male)	0.588	0.998	0	3
Out-degree ties (male-to-female)	0.139	0.461	0	3
Out-degree ties (female-to-female)	0.749	1.143	0	3
Out-degree ties (female-to-male)	0.071	0.315	0	3
Coleman's Excess Homophily Index (Natives)	0.774	0.269	-0	1
Coleman's Excess Homophily Index (Refugees)	-0.073	0.703	-1	1
Coleman's Excess Homophily Index (Males)	0.604	0.287	-1	1
Coleman's Excess Homophily Index (Females)	0.822	0.174	0	1

Note: This table reports summary statistics of social network measures constructed based on students' self-reported nominations regarding from whom they receive emotional support.

A.2 Predictive Power of Social Network Measures

Table A6: Predictive Power of Social Network Measures: Isolate

	(1)	(2)	(3)	(4)	(5)
Panel 1: Math Scores					
Isolate (Friendship)	-0.41***				
	(0.03)				
Isolate (AS Provided)		-0.15***			
		(0.02)			
Isolate (AS Received)			-0.39***		
			(0.02)		
Isolate (ES Provided)				-0.28***	
				(0.02)	
Isolate (ES Received)					-0.36***
					(0.02)
N	8762	8762	8762	8762	8762
R-Squared	0.27	0.25	0.28	0.26	0.27
Panel 2: Turkish Scores					
Isolate (Friendship)	-0.38***				
	(0.02)				
Isolate (AS Provided)		-0.17***			
		(0.02)			
Isolate (AS Received)			-0.38***		
			(0.02)		
Isolate (ES Provided)				-0.27***	
				(0.02)	
Isolate (ES Received)					-0.35***
					(0.02)
N	8762	8762	8762	8762	8762
R-Squared	0.24	0.22	0.25	0.23	0.24

Note: Each cell reports the OLS estimates of the association between the social network measure that is specified on the left and the academic score that is specified at the beginning of the panels. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade level. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table A7: Predictive Power of Social Network Measures: In-degree ties

	(1)	(2)	(3)	(4)	(5)
Panel 1: Math Scores					
In-degree ties (Friendship)	0.13***				
	(0.01)				
In-degree ties (AS Provided)		0.07***			
		(0.01)			
In-degree ties (AS Received)			0.16***		
			(0.01)		
In-degree ties (ES Provided)				0.11***	
				(0.01)	
In-degree ties (ES Received)					0.13***
					(0.01)
N	8762	8762	8762	8762	8762
R-Squared	0.31	0.26	0.31	0.28	0.29
Panel 2: Turkish Scores					
In-degree ties (Friendship)	0.13***				
	(0.01)				
In-degree ties (AS Provided)		0.08***			
		(0.01)			
In-degree ties (AS Received)			0.16***		
			(0.01)		
In-degree ties (ES Provided)				0.12***	
				(0.01)	
In-degree ties (ES Received)					0.13***
					(0.01)
N	8762	8762	8762	8762	8762
R-Squared	0.28	0.23	0.28	0.25	0.26

Note: Each cell reports the OLS estimates of the association between the social network measure that is specified on the left and the academic score that is specified at the beginning of the panels. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade level. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table A8: Predictive Power of Social Network Measures: Reciprocity

	(1)	(2)	(3)	(4)	(5)
Panel 1: Math Scores					
Reciprocity (Friendship)	0.51***				
	(0.03)				
Reciprocity (AS Provided)		0.22***			
		(0.04)			
Reciprocity (AS Received)			0.43***		
			(0.04)		
Reciprocity (ES Provided)				0.37***	
				(0.03)	
Reciprocity (ES Received)					0.42***
					(0.03)
N	8762	8762	8762	8762	8762
R-Squared	0.28	0.25	0.27	0.26	0.27
Panel 2: Turkish Scores					
Reciprocity (Friendship)	0.49***				
	(0.03)				
Reciprocity (AS Provided)		0.24***			
		(0.04)			
Reciprocity (AS Received)			0.45***		
			(0.04)		
Reciprocity (ES Provided)				0.35***	
				(0.04)	
Reciprocity (ES Received)					0.41***
					(0.04)
N	8762	8762	8762	8762	8762
R-Squared	0.25	0.22	0.24	0.23	0.24

Note: Each cell reports the OLS estimates of the association between the social network measure that is specified on the left and the academic score that is specified at the beginning of the panels. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade level. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table A9: Predictive Power of Social Network Measures: Clustering coef.

	(1)	(2)	(3)	(4)	(5)
Panel 1: Math Scores					
Clustering coef. (Friendship)	0.27***				
	(0.03)				
Clustering coef. (AS Provided)		0.21***			
		(0.04)			
Clustering coef. (AS Received)			0.20***		
			(0.04)		
Clustering coef. (ES Provided)				0.29***	
				(0.04)	
Clustering coef. (ES Received)					0.29***
					(0.03)
N	8762	8762	8762	8762	8762
R-Squared	0.26	0.25	0.25	0.26	0.26
Panel 2: Turkish Scores					
Clustering coef. (Friendship)	0.23***				
	(0.04)				
Clustering coef. (AS Provided)		0.20***			
		(0.04)			
Clustering coef. (AS Received)			0.22***		
			(0.04)		
Clustering coef. (ES Provided)				0.25***	
				(0.03)	
Clustering coef. (ES Received)					0.28***
					(0.03)
N	8762	8762	8762	8762	8762
R-Squared	0.22	0.22	0.22	0.22	0.23

Note: Each cell reports the association between the social network measure that is specified on the left and the academic score that is specified at the beginning of the panels. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade level. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

A.3 Classroom Network Visualization

Figure A1: Ethnic Segregation in Classrooms

(a) Classroom with Low Ethnic Segregation

(b) Classroom with High Ethnic Segregation

Figure A1 shows the friendship network in two separate classrooms, highlighting the ethnic segregation in these classes. Letters N and R describe whether the student is a native or a refugee. The classroom network on the left is an example of a classroom with a relatively low level of ethnic segregation. For this classroom on the left panel, the Coleman Index for native students is 0.15, and the Coleman Index for refugee students is 0.03. The classroom network on the right panel is an example of a classroom with a relatively high level of ethnic segregation. For this classroom on the right panel, the Coleman Index for native students is 0.82, and the Coleman Index for refugee students is 0.74.

A.4 Robustness checks

Table B1: Balance of Absence Rates

	(1) Mean of 2018	(2) Difference	(3) Effect Size	(4) p-value	(5) N
Absence rate	0.085	0.116	1.365	0.000	345
Absence rate of native students	0.063	0.090	1.429	0.000	345
Absence rate of refugee students	0.191	0.213	1.115	0.000	312
Absence rate of male students	0.081	0.132	1.63	0.000	345
Absence rate of female students	0.088	0.099	1.125	0.000	345

Note: A student is considered absent if they were not present on the day of our classroom visit. Differences are calculated by subtracting the mean of 2018 from the mean of 2021. Effect size size is the ratio of the calculated difference to mean of 2018. Associated p-values are obtained by regressing the outcome variable on a dummy variable, which takes 0 for natives and 1 for refugees, controlling for school fixed effects.

A.4.1 Results on classrooms with lower absenteeism

Table B2: Main Results

	(1) Friendship	(2) AS Provided	(3) AS Received	(4) ES Provided	(5) ES Received
Panel 1: Isolates					
COVID	0.05***	-0.04**	-0.07***	-0.00	0.03**
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)
Control Mean	0.21	0.37	0.45	0.30	0.29
Effect Size	0.23	-0.12	-0.16	-0.01	0.11
N	8383	8383	8383	8383	8383
R-Squared	0.09	0.07	0.09	0.08	0.10
Panel 2: In-degree ties					
COVID	-0.33***	0.24***	0.22***	0.11**	-0.06
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Control Mean	2.26	1.20	1.13	1.55	1.63
Effect Size	-0.15	0.20	0.20	0.07	-0.04
N	8383	8383	8383	8383	8383
R-Squared	0.08	0.09	0.10	0.09	0.10
Panel 3: Reciprocity					
COVID	-0.10***	0.02*	0.02*	0.00	-0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Control Mean	0.39	0.15	0.12	0.19	0.23
Effect Size	-0.25	0.14	0.15	0.01	-0.17
N	8383	8383	8383	8383	8383
R-Squared	0.08	0.05	0.06	0.06	0.07
Panel 4: Clustering coef.					
COVID	-0.11***	-0.01	-0.01	-0.03***	-0.06***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Control Mean	0.36	0.15	0.15	0.22	0.24
Effect Size	-0.30	-0.07	-0.06	-0.15	-0.26
N	8383	8383	8383	8383	8383
R-Squared	0.08	0.06	0.06	0.06	0.07

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network measure at the beginning of the row and for the network type specified on top of columns. The sample is restricted to classrooms with less than 40% absence on the day of the classroom visit. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table B3: Main Results by Refugee Status

	Friendship		AS Provided		AS Received		ES Provided		ES Received	
	(1) Native	(2) Refugee	(3) Native	(4) Refugee	(5) Native	(6) Refugee	(7) Native	(8) Refugee	(9) Native	(10) Refugee
Panel 1: Isolates										
COVID	0.04***	0.12***	-0.06***	0.07	-0.08***	-0.03	-0.01	0.03	0.03**	0.07
	(0.01)	(0.04)	(0.02)	(0.05)	(0.02)	(0.04)	(0.01)	(0.04)	(0.01)	(0.04)
Control Mean	0.18	0.44	0.33	0.56	0.41	0.71	0.26	0.56	0.25	0.56
Effect Size	0.21	0.28	-0.17	0.12	-0.19	-0.04	-0.03	0.05	0.10	0.13
p-Value (Native=Refugee)	0.12		0.13		0.32		0.55		0.53	
N	7102	1281	7102	1281	7102	1281	7102	1281	7102	1281
R-Squared	0.026	0.121	0.039	0.101	0.051	0.092	0.026	0.091	0.036	0.092
Panel 2: In-degree ties										
COVID	-0.31***	-0.44***	0.30***	-0.14	0.26***	0.00	0.14***	-0.10	-0.04	-0.14
	(0.05)	(0.12)	(0.05)	(0.10)	(0.05)	(0.07)	(0.05)	(0.10)	(0.05)	(0.10)
Control Mean	2.46	1.12	1.28	0.70	1.24	0.47	1.69	0.75	1.79	0.71
Effect Size	-0.13	-0.39	0.23	-0.20	0.21	0.01	0.08	-0.14	-0.02	-0.20
p-Value (Native=Refugee)	0.34		0.00		0.01		0.06		0.47	
N	7102	1281	7102	1281	7102	1281	7102	1281	7102	1281
R-Squared	0.022	0.118	0.061	0.106	0.065	0.075	0.043	0.086	0.050	0.081
Panel 3: Reciprocity										
COVID	-0.09***	-0.14***	0.03**	-0.02	0.02*	0.00	0.01	-0.04*	-0.04***	-0.06**
	(0.01)	(0.03)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)
Control Mean	0.41	0.25	0.16	0.08	0.13	0.05	0.21	0.12	0.25	0.15
Effect Size	-0.22	-0.56	0.17	-0.25	0.15	0.00	0.04	-0.36	-0.14	-0.42
p-Value (Native=Refugee)	0.24		0.29		0.37		0.30		0.60	
N	7102	1281	7102	1281	7102	1281	7102	1281	7102	1281
R-Squared	0.050	0.146	0.040	0.111	0.051	0.075	0.045	0.117	0.060	0.143
Panel 4: Clustering coef.										
COVID	-0.10***	-0.14***	-0.01	-0.03*	-0.01	-0.03	-0.03***	-0.05	-0.06***	-0.04*
	(0.01)	(0.03)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)	(0.03)
Control Mean	0.38	0.29	0.16	0.09	0.17	0.08	0.24	0.13	0.26	0.13
Effect Size	-0.27	-0.49	-0.05	-0.34	-0.04	-0.33	-0.13	-0.40	-0.24	-0.34
p-Value (Native=Refugee)	0.48		0.51		0.62		0.71		0.61	
N	7102	1281	7102	1281	7102	1281	7102	1281	7102	1281
R-Squared	0.075	0.161	0.055	0.110	0.055	0.096	0.046	0.125	0.060	0.107

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network measure at the beginning of the row, for the network type, and for the subgroup of the sample specified on top of columns. The sample is restricted to classrooms with less than 40% absence on the day of the classroom visit. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table B4: Main Results by Gender Status

	Friendship		AS Provided		AS Received		ES Provided		ES Received	
	(1) Male	(2) Female	(3) Male	(4) Female	(5) Male	(6) Female	(7) Male	(8) Female	(9) Male	(10) Female
Panel 1: Isolates										
COVID	0.05***	0.05***	-0.05***	-0.03	-0.10***	-0.04**	0.01	-0.01	0.02	0.04***
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
Control Mean	0.24	0.19	0.41	0.32	0.53	0.37	0.34	0.26	0.35	0.23
Effect Size	0.22	0.24	-0.12	-0.10	-0.18	-0.12	0.02	-0.03	0.07	0.19
p-Value (Male = Female)	0.71		0.33		0.02		0.55		0.28	
N	4311	4072	4311	4072	4311	4072	4311	4072	4311	4072
R-Squared	0.083	0.109	0.063	0.074	0.073	0.097	0.078	0.089	0.078	0.106
Panel 2: In-degree ties										
COVID	-0.40***	-0.25***	0.15***	0.34***	0.22***	0.21***	0.07	0.14*	-0.03	-0.10
	(0.06)	(0.06)	(0.05)	(0.07)	(0.06)	(0.07)	(0.05)	(0.07)	(0.05)	(0.07)
Control Mean	2.19	2.35	1.06	1.34	0.87	1.40	1.34	1.78	1.34	1.94
Effect Size	-0.18	-0.11	0.14	0.25	0.25	0.15	0.05	0.08	-0.02	-0.05
p-Value (Male = Female)	0.06		0.01		0.97		0.33		0.33	
N	4311	4072	4311	4072	4311	4072	4311	4072	4311	4072
R-Squared	0.085	0.082	0.071	0.090	0.072	0.084	0.068	0.085	0.064	0.093
Panel 3: Reciprocity										
COVID	-0.10***	-0.09***	0.02	0.02	0.03**	0.01	0.01	-0.00	-0.01	-0.07***
	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
Control Mean	0.36	0.42	0.12	0.17	0.08	0.16	0.16	0.23	0.17	0.30
Effect Size	-0.27	-0.22	0.15	0.13	0.36	0.03	0.04	-0.01	-0.05	-0.23
p-Value (Male = Female)	0.84		0.76		0.20		0.70		0.01	
N	4311	4072	4311	4072	4311	4072	4311	4072	4311	4072
R-Squared	0.086	0.095	0.047	0.053	0.053	0.052	0.049	0.065	0.050	0.081
Panel 4: Clustering coef.										
COVID	-0.12***	-0.10***	-0.01	-0.01	-0.01	-0.01	-0.03**	-0.04**	-0.06***	-0.06***
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)
Control Mean	0.35	0.38	0.13	0.18	0.12	0.19	0.20	0.25	0.21	0.27
Effect Size	-0.35	-0.25	-0.10	-0.06	-0.08	-0.05	-0.14	-0.15	-0.29	-0.23
p-Value (Male = Female)	0.27		0.95		0.97		0.61		0.94	
N	4311	4072	4311	4072	4311	4072	4311	4072	4311	4072
R-Squared	0.100	0.089	0.065	0.076	0.060	0.068	0.067	0.069	0.077	0.081

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network measure at the beginning of the row, for the network type, and for the subgroup of the sample specified on top of columns. The sample is restricted to classrooms with less than 40% absence on the day of the classroom visit. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table B5: Main Results by SES

	Friendship		AS Provided		AS Received		ES Provided		ES Received	
	(1) Low	(2) High	(3) Low	(4) High	(5) Low	(6) High	(7) Low	(8) High	(9) Low	(10) High
Panel 1: Isolates										
COVID	0.06*	0.03	0.00	-0.04	-0.11*	-0.02	-0.01	-0.01	-0.01	0.02
	(0.03)	(0.02)	(0.08)	(0.04)	(0.05)	(0.02)	(0.05)	(0.04)	(0.06)	(0.03)
Control Mean	0.22	0.22	0.38	0.37	0.46	0.44	0.32	0.30	0.34	0.31
Effect Size	0.26	0.14	0.00	-0.10	-0.24	-0.05	-0.02	-0.02	-0.04	0.06
p-Value (Low = High)	0.60		0.81		0.44		0.99		0.77	
N	969	1349	969	1349	969	1349	969	1349	969	1349
R-Squared	0.079	0.105	0.077	0.059	0.090	0.111	0.093	0.092	0.106	0.111
Panel 2: In-degree ties										
COVID	-0.52***	-0.24**	0.18	0.19*	0.16	0.09	0.25	0.09	-0.05	-0.05
	(0.13)	(0.10)	(0.22)	(0.10)	(0.20)	(0.07)	(0.21)	(0.10)	(0.21)	(0.09)
Control Mean	2.22	2.31	1.21	1.20	1.15	1.15	1.40	1.62	1.51	1.65
Effect Size	-0.23	-0.10	0.15	0.16	0.14	0.07	0.18	0.06	-0.03	-0.03
p-Value (Low = High)	0.34		0.97		0.87		0.54		0.99	
N	969	1349	969	1349	969	1349	969	1349	969	1349
R-Squared	0.079	0.096	0.080	0.081	0.084	0.109	0.083	0.101	0.076	0.123
Panel 3: Reciprocity										
COVID	-0.10***	-0.12***	0.03	0.02	0.00	-0.01	0.02	0.00	-0.05	-0.06**
	(0.03)	(0.02)	(0.04)	(0.03)	(0.02)	(0.02)	(0.04)	(0.02)	(0.03)	(0.02)
Control Mean	0.36	0.41	0.14	0.15	0.10	0.13	0.15	0.19	0.20	0.25
Effect Size	-0.27	-0.29	0.20	0.11	0.03	-0.09	0.12	0.01	-0.24	-0.25
p-Value (Low = High)	0.85		0.93		0.88		0.88		0.92	
N	969	1349	969	1349	969	1349	969	1349	969	1349
R-Squared	0.080	0.098	0.046	0.066	0.068	0.055	0.058	0.077	0.059	0.098
Panel 4: Clustering coef.										
COVID	-0.12***	-0.05	-0.02	-0.03	-0.04	0.02	-0.01	-0.01	-0.06*	-0.02
	(0.02)	(0.03)	(0.04)	(0.03)	(0.04)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)
Control Mean	0.34	0.34	0.16	0.16	0.16	0.14	0.19	0.22	0.20	0.22
Effect Size	-0.36	-0.15	-0.13	-0.19	-0.29	0.12	-0.03	-0.04	-0.30	-0.09
p-Value (Low = High)	0.56		0.94		0.60		0.97		0.52	
N	969	1349	969	1349	969	1349	969	1349	969	1349
R-Squared	0.084	0.055	0.073	0.054	0.061	0.079	0.080	0.073	0.051	0.085

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network measure at the beginning of the row, for the network type, and for the subgroup of the sample specified on top of columns. The sample is restricted to classrooms with less than 40% absence on the day of the classroom visit. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

A.4.2 Results on induced subgraphs

Table B6: Main Results

	(1) Friendship	(2) AS Provided	(3) AS Received	(4) ES Provided	(5) ES Received
Panel 1: Isolates					
COVID	0.03***	-0.05***	-0.09***	-0.03***	0.01
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Control Mean	0.18	0.33	0.43	0.28	0.27
Effect Size	0.14	-0.16	-0.22	-0.12	0.02
N	8826	8826	8826	8826	8826
R-Squared	0.05	0.06	0.08	0.05	0.07
Panel 2: In-degree ties					
COVID	-0.27***	0.30***	0.29***	0.18***	0.01
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Control Mean	2.37	1.25	1.18	1.61	1.68
Effect Size	-0.11	0.24	0.25	0.11	0.01
N	8826	8826	8826	8826	8826
R-Squared	0.06	0.08	0.09	0.08	0.08
Panel 3: Reciprocity					
COVID	-0.07***	0.05***	0.04***	0.03***	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Control Mean	0.42	0.15	0.13	0.21	0.24
Effect Size	-0.16	0.34	0.35	0.13	-0.04
N	8826	8826	8826	8826	8826
R-Squared	0.06	0.05	0.06	0.05	0.06
Panel 4: Clustering coef.					
COVID	-0.09***	0.01	0.01	-0.02	-0.05***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Control Mean	0.38	0.16	0.16	0.24	0.25
Effect Size	-0.24	0.05	0.04	-0.07	-0.18
N	8826	8826	8826	8826	8826
R-Squared	0.07	0.06	0.06	0.05	0.06

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network measure at the beginning of the row and for the network type specified on top of columns. The sample is restricted to students present on the day of the classroom visits and the subset of their nominations who were also present on the day of the classroom visits. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table B7: Main Results by Refugee Status

	Friendship		AS Provided		AS Received		ES Provided		ES Received	
	(1) Native	(2) Refugee	(3) Native	(4) Refugee	(5) Native	(6) Refugee	(7) Native	(8) Refugee	(9) Native	(10) Refugee
Panel 1: Isolates										
COVID	0.01	0.09**	-0.07***	0.04	-0.10***	-0.07*	-0.03***	-0.04	0.00	0.02
	(0.01)	(0.04)	(0.01)	(0.05)	(0.02)	(0.04)	(0.01)	(0.04)	(0.01)	(0.04)
Control Mean	0.16	0.34	0.31	0.47	0.39	0.64	0.25	0.49	0.24	0.48
Effect Size	0.09	0.27	-0.22	0.09	-0.25	-0.11	-0.14	-0.09	0.00	0.03
p-Value (Native=Refugee)	0.09		0.13		0.62		0.83		0.76	
N	7604	1222	7604	1222	7604	1222	7604	1222	7604	1222
R-Squared	0.019	0.127	0.043	0.123	0.056	0.124	0.026	0.110	0.033	0.098
Panel 2: In-degree ties										
COVID	-0.23***	-0.47***	0.36***	-0.08	0.33***	0.10	0.21***	0.03	0.02	0.01
	(0.04)	(0.11)	(0.05)	(0.10)	(0.05)	(0.08)	(0.04)	(0.10)	(0.04)	(0.10)
Control Mean	2.53	1.39	1.32	0.87	1.28	0.59	1.73	0.88	1.82	0.83
Effect Size	-0.09	-0.34	0.27	-0.10	0.26	0.16	0.12	0.04	0.01	0.01
p-Value (Native=Refugee)	0.07		0.00		0.03		0.11		0.93	
N	7604	1222	7604	1222	7604	1222	7604	1222	7604	1222
R-Squared	0.016	0.114	0.071	0.118	0.072	0.097	0.046	0.087	0.051	0.073
Panel 3: Reciprocity										
COVID	-0.06***	-0.11***	0.06***	0.01	0.05***	0.04*	0.03**	0.02	-0.01	-0.01
	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)	(0.03)
Control Mean	0.44	0.30	0.16	0.11	0.14	0.07	0.22	0.14	0.25	0.15
Effect Size	-0.14	-0.39	0.38	0.13	0.34	0.62	0.13	0.16	-0.03	-0.06
p-Value (Native=Refugee)	0.19		0.24		0.89		0.84		1.00	
N	7604	1222	7604	1222	7604	1222	7604	1222	7604	1222
R-Squared	0.045	0.141	0.052	0.135	0.060	0.111	0.049	0.143	0.060	0.157
Panel 4: Clustering coef.										
COVID	-0.08***	-0.13***	0.01	-0.01	0.01	-0.01	-0.02*	-0.02	-0.05***	-0.00
	(0.01)	(0.03)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)	(0.03)
Control Mean	0.39	0.34	0.16	0.12	0.17	0.10	0.25	0.15	0.27	0.15
Effect Size	-0.22	-0.38	0.07	-0.12	0.04	-0.06	-0.06	-0.14	-0.18	-0.03
p-Value (Native=Refugee)	0.24		0.47		0.67		0.91		0.12	
N	7604	1222	7604	1222	7604	1222	7604	1222	7604	1222
R-Squared	0.072	0.147	0.063	0.146	0.061	0.119	0.050	0.133	0.061	0.137

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network measure at the beginning of the row, for the network type, and for the subgroup of the sample specified on top of columns. The sample is restricted to students present on the day of the classroom visits and the subset of their nominations who were also present on the day of the classroom visits. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table B8: Main Results by Gender Status

	Friendship		AS Provided		AS Received		ES Provided		ES Received	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Panel 1: Isolates										
COVID	0.02*	0.03***	-0.07***	-0.04**	-0.12***	-0.06***	-0.03	-0.04**	-0.00	0.02
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
Control Mean	0.21	0.16	0.38	0.28	0.50	0.35	0.32	0.24	0.34	0.21
Effect Size	0.10	0.21	-0.18	-0.13	-0.24	-0.18	-0.08	-0.15	-0.01	0.09
p-Value (Male = Female)	0.55		0.06		0.02		0.59		0.26	
N	4496	4330	4496	4330	4496	4330	4496	4330	4496	4330
R-Squared	0.053	0.070	0.054	0.059	0.070	0.080	0.056	0.059	0.053	0.065
Panel 2: In-degree ties										
COVID	-0.32***	-0.21***	0.22***	0.38***	0.31***	0.26***	0.14***	0.22***	0.04	-0.02
	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.05)	(0.07)	(0.05)	(0.06)
Control Mean	2.28	2.46	1.11	1.41	0.90	1.47	1.38	1.85	1.38	2.00
Effect Size	-0.14	-0.09	0.20	0.27	0.34	0.18	0.10	0.12	0.03	-0.01
p-Value (Male = Female)	0.12		0.04		0.56		0.37		0.35	
N	4496	4330	4496	4330	4496	4330	4496	4330	4496	4330
R-Squared	0.061	0.058	0.072	0.081	0.074	0.073	0.059	0.069	0.052	0.075
Panel 3: Reciprocity										
COVID	-0.06***	-0.08***	0.05***	0.06***	0.05***	0.04**	0.03***	0.02	0.02	-0.04**
	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
Control Mean	0.38	0.45	0.12	0.18	0.09	0.17	0.17	0.25	0.18	0.30
Effect Size	-0.16	-0.17	0.38	0.32	0.61	0.22	0.19	0.09	0.11	-0.12
p-Value (Male = Female)	0.57		0.57		0.42		0.62		0.01	
N	4496	4330	4496	4330	4496	4330	4496	4330	4496	4330
R-Squared	0.064	0.074	0.050	0.065	0.056	0.064	0.047	0.062	0.047	0.074
Panel 4: Clustering coef.										
COVID	-0.10***	-0.08***	0.00	0.01	0.01	0.01	-0.01	-0.02	-0.04***	-0.05***
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Control Mean	0.37	0.40	0.13	0.18	0.13	0.20	0.21	0.27	0.22	0.29
Effect Size	-0.27	-0.21	0.01	0.07	0.04	0.04	-0.05	-0.08	-0.19	-0.17
p-Value (Male = Female)	0.41		0.57		0.91		0.61		0.68	
N	4496	4330	4496	4330	4496	4330	4496	4330	4496	4330
R-Squared	0.088	0.078	0.068	0.071	0.060	0.078	0.069	0.070	0.070	0.073

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network measure at the beginning of the row, for the network type, and for the subgroup of the sample specified on top of columns. The sample is restricted to students present on the day of the classroom visits and the subset of their nominations who were also present on the day of the classroom visits. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table B9: Main Results by SES

	Friendship		AS Provided		AS Received		ES Provided		ES Received	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Low	High	Low	High	Low	High	Low	High	Low	High
Panel 1: Isolates										
COVID	0.03	0.01	-0.04	-0.04	-0.11**	-0.04*	-0.05	-0.02	-0.06	0.00
	(0.03)	(0.02)	(0.04)	(0.03)	(0.03)	(0.02)	(0.04)	(0.04)	(0.05)	(0.03)
Control Mean	0.20	0.19	0.34	0.35	0.45	0.42	0.32	0.28	0.33	0.29
Effect Size	0.17	0.06	-0.11	-0.11	-0.24	-0.10	-0.16	-0.07	-0.19	0.01
p-Value (Low = High)	0.74		1.00		0.57		0.63		0.53	
N	1294	1206	1294	1206	1294	1206	1294	1206	1294	1206
R-Squared	0.046	0.087	0.068	0.058	0.080	0.107	0.076	0.086	0.078	0.097
Panel 2: In-degree ties										
COVID	-0.40***	-0.21**	0.27**	0.23**	0.31**	0.14	0.26**	0.13	0.09	-0.03
	(0.08)	(0.09)	(0.10)	(0.10)	(0.12)	(0.09)	(0.11)	(0.10)	(0.13)	(0.09)
Control Mean	2.31	2.40	1.27	1.25	1.15	1.20	1.48	1.68	1.54	1.72
Effect Size	-0.17	-0.09	0.22	0.18	0.27	0.12	0.17	0.08	0.06	-0.02
p-Value (Low = High)	0.29		0.89		0.74		0.65		0.74	
N	1294	1206	1294	1206	1294	1206	1294	1206	1294	1206
R-Squared	0.049	0.083	0.068	0.081	0.080	0.109	0.073	0.098	0.079	0.114
Panel 3: Reciprocity										
COVID	-0.07**	-0.08***	0.07**	0.04	0.05*	0.01	0.03	0.03	0.01	-0.03
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)
Control Mean	0.39	0.43	0.13	0.16	0.10	0.14	0.16	0.20	0.18	0.26
Effect Size	-0.18	-0.19	0.56	0.27	0.49	0.06	0.19	0.16	0.05	-0.13
p-Value (Low = High)	0.91		0.80		0.71		0.97		0.75	
N	1294	1206	1294	1206	1294	1206	1294	1206	1294	1206
R-Squared	0.049	0.080	0.050	0.074	0.047	0.058	0.061	0.079	0.055	0.096
Panel 4: Clustering coef.										
COVID	-0.09***	-0.03	0.01	-0.01	-0.00	0.03	-0.01	0.01	-0.04*	-0.01
	(0.02)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)
Control Mean	0.35	0.36	0.17	0.16	0.16	0.15	0.20	0.23	0.22	0.23
Effect Size	-0.25	-0.09	0.05	-0.09	-0.03	0.21	-0.07	0.03	-0.16	-0.04
p-Value (Low = High)	0.58		0.85		0.78		0.69		0.70	
N	1294	1206	1294	1206	1294	1206	1294	1206	1294	1206
R-Squared	0.071	0.046	0.072	0.055	0.061	0.085	0.058	0.067	0.061	0.081

Note: Each cell reports the OLS estimates of the effect of COVID-19 on the respective network measure at the beginning of the row, for the network type, and for the subgroup of the sample specified on top of columns. The sample is restricted to students present on the day of the classroom visits and the subset of their nominations who were also present on the day of the classroom visits. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

A.5 Additional Heterogeneity Analyses

Table C1: Associations between Social Network Measures and Teacher Demographics

	(1) Friendship	(2) AS Provided	(3) AS Received	(4) ES Provided	(5) ES Received
Panel 1: Isolates					
COVID x Male	0.01	0.04	-0.01	0.03	0.00
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
COVID x Age	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)
COVID x Experience	0.00	-0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
COVID x Children	0.01	0.01	0.00	-0.00	-0.02
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
COVID x Marital Status	0.02	0.00	-0.01	0.01	0.02
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)
N	10287	10287	10287	10287	10287
R-Squared	0.09	0.07	0.09	0.09	0.10
Panel 2: In-degree Ties					
COVID x Male	-0.11	-0.02	0.03	-0.06	-0.02
	(0.10)	(0.08)	(0.10)	(0.09)	(0.09)
COVID x Age	0.01	0.01	0.00	0.01	0.01
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
COVID x Experience	-0.00	-0.00	0.00	-0.01	-0.01
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
COVID x Children	-0.02	-0.02	-0.01	-0.01	0.05
	(0.06)	(0.05)	(0.06)	(0.07)	(0.06)
COVID x Marital Status	0.01	0.04	0.02	-0.08	-0.03
	(0.11)	(0.11)	(0.10)	(0.11)	(0.10)
N	10287	10287	10287	10287	10287
R-Squared	0.09	0.09	0.10	0.09	0.10
Panel 3: Reciprocity					
COVID x Male	0.02	-0.01	-0.04**	-0.01	-0.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
COVID x Age	0.01**	0.00	0.00	0.01***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
COVID x Experience	-0.00	-0.00	-0.00	-0.00*	-0.01**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
COVID x Children	-0.01	-0.02	-0.01	-0.00	0.02
	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)
COVID x Marital Status	-0.02	0.07**	0.04*	0.01	-0.01
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)
N	10287	10287	10287	10287	10287
R-Squared	0.09	0.05	0.06	0.06	0.07
Panel 4: Clustering coef.					
COVID x Male	-0.01	-0.01	0.02	-0.00	-0.00
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
COVID x Age	-0.00	-0.00	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
COVID x Experience	-0.00	-0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
COVID x Children	-0.00	-0.00	-0.00	0.01	-0.00
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
COVID x Marital Status	-0.01	0.00	0.02	-0.01	-0.04
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
N	10287	10287	10287	10287	10287
R-Squared	0.09	0.06	0.06	0.06	0.07

Note: Each cell reports the OLS estimates of the effect of COVID-19 interacted with a given SES indicator on outcomes that are specified at the beginning of the row for the samples that are given at the top of the columns. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table C2: Associations between Social Network Measures and Teaching Styles

	(1) Friendship	(2) AS Provided	(3) AS Received	(4) ES Provided	(5) ES Received
Panel 1: Isolates					
COVID x Growth Mindset	0.00	-0.02	-0.02	-0.01	-0.01
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)
COVID x Extrinsic Motivation	0.00	0.00	0.01	0.03**	0.01
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
COVID x Inquiry-based Pedagogy	-0.00	0.00	-0.01	0.01	-0.01
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
COVID x Modern Teaching	0.01	0.01	0.02	-0.02	0.01
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
COVID x Warmth	-0.01	0.02	0.01	0.02	0.02
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)
N	9553	9553	9553	9553	9553
R-Squared	0.09	0.08	0.09	0.09	0.10
Panel 2: In-degree Ties					
COVID x Growth Mindset	0.01	0.08*	0.09**	0.04	0.05
	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)
COVID x Extrinsic Motivation	-0.02	-0.01	-0.03	-0.04	-0.01
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
COVID x Inquiry-based Pedagogy	0.06	-0.04	-0.04	0.01	-0.02
	(0.04)	(0.04)	(0.05)	(0.05)	(0.04)
COVID x Modern Teaching	-0.06	-0.04	-0.03	0.02	0.01
	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)
COVID x Warmth	0.00	-0.04	-0.04	-0.04	-0.06
	(0.05)	(0.05)	(0.06)	(0.06)	(0.05)
N	9553	9553	9553	9553	9553
R-Squared	0.09	0.10	0.10	0.10	0.11
Panel 3: Reciprocity					
COVID x Growth Mindset	-0.01	0.01	0.01	-0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Extrinsic Motivation	-0.01	0.00	-0.00	0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Inquiry-based Pedagogy	-0.00	0.02	-0.01	-0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Modern Teaching	0.02	-0.02	-0.02*	0.03***	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Warmth	-0.01	-0.01	0.00	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N	9553	9553	9553	9553	9553
R-Squared	0.09	0.05	0.06	0.07	0.08
Panel 4: Clustering coef.					
COVID x Growth Mindset	0.00	0.01	0.00	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Extrinsic Motivation	-0.01	-0.01	0.00	-0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Inquiry-based Pedagogy	-0.00	-0.00	0.00	-0.01	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Modern Teaching	0.01	0.01	-0.00	0.02	0.01
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
COVID x Warmth	-0.00	-0.01	0.00	-0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N	9553	9553	9553	9553	9553
R-Squared	0.09	0.07	0.07	0.07	0.08

Note: Each cell reports the OLS estimates of the effect of COVID-19 interacted with a given teaching style on outcomes that are specified at the beginning of the row for the samples that are given at the top of the columns. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table C3: Associations between Social Network Measures and Students' Perspective on Teachers

	(1) Friendship	(2) AS Provided	(3) AS Received	(4) ES Provided	(5) ES Received
Panel 1: Isolates					
COVID x Captivate	0.01	-0.01	-0.00	0.02*	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Care	-0.01	-0.01	-0.01	-0.02	-0.01
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
COVID x Challenge	0.00	0.01	0.01	0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Clarify	0.02*	0.01	0.02	0.02	-0.00
	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)
COVID x Confer	-0.01	-0.02	0.00	-0.00	0.01
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)
COVID x Consolidate	-0.00	0.01	-0.01	0.02	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Control	-0.01	-0.00	0.02	-0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N	7355	7355	7355	7355	7355
R-Squared	0.07	0.06	0.09	0.06	0.08
Panel 2: In-degree Ties					
COVID x Captivate	0.04	0.14***	0.06	0.04	-0.01
	(0.05)	(0.03)	(0.04)	(0.04)	(0.04)
COVID x Care	-0.00	0.02	0.01	0.04	0.03
	(0.05)	(0.04)	(0.05)	(0.05)	(0.05)
COVID x Challenge	-0.09**	-0.02	-0.07*	-0.07	-0.08**
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
COVID x Clarify	-0.02	0.02	-0.04	-0.03	-0.00
	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)
COVID x Confer	0.12**	0.09*	0.10**	0.06	0.10*
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
COVID x Consolidate	-0.06	-0.05	-0.03	-0.09*	-0.03
	(0.06)	(0.03)	(0.04)	(0.05)	(0.04)
COVID x Control	-0.01	0.04	-0.02	0.06	-0.02
	(0.05)	(0.03)	(0.04)	(0.04)	(0.04)
N	7355	7355	7355	7355	7355
R-Squared	0.09	0.10	0.12	0.10	0.11
Panel 3: Reciprocity					
COVID x Captivate	0.00	0.01*	0.01	-0.00	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Care	-0.01	-0.00	0.00	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Challenge	-0.02*	-0.00	0.01	-0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Clarify	-0.00	0.01	-0.01	-0.00	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Confer	0.04***	-0.00	-0.00	-0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Consolidate	-0.01	0.00	-0.01	0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Control	-0.01	-0.00	-0.00	0.01*	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N	7355	7355	7355	7355	7355
R-Squared	0.08	0.06	0.07	0.06	0.08
Panel 4: Clustering coef.					
COVID x Captivate	0.00	0.01	0.01*	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Care	0.02**	-0.01	0.00	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Challenge	-0.01	-0.00	-0.00	0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Clarify	0.01	-0.00	0.01	0.01	0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Confer	-0.00	0.02***	-0.00	-0.01	-0.02*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Consolidate	-0.00	-0.01*	-0.01	0.01	-0.01*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Control	-0.00	0.00	-0.01	0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N	7355	7355	7355	7355	7355
R-Squared	0.08	0.07	0.07	0.06	0.08

Note: Each cell reports the OLS estimates of the effect of COVID-19 interacted with a given students' perspective on teacher on outcomes that are specified at the beginning of the row for the samples that are given at the top of the columns. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table C4: Associations between Social Network Measures and Parenting Styles

	(1) Friendship	(2) AS Provided	(3) AS Received	(4) ES Provided	(5) ES Received
Panel 1: Isolates					
COVID x Obedience	-0.01	-0.00	0.00	0.00	-0.02*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Warmth	-0.00	-0.01	0.01	0.01	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Punishment	-0.01	0.00	-0.02	-0.01	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Reasoning	-0.02*	-0.02	-0.00	-0.00	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N	7373	7373	7373	7373	7373
R-Squared	0.06	0.06	0.08	0.06	0.07
Panel 2: In-degree Ties					
COVID x Obedience	0.01	-0.05	-0.02	0.06	0.06
	(0.06)	(0.04)	(0.04)	(0.04)	(0.05)
COVID x Warmth	0.00	0.07**	-0.01	-0.01	-0.01
	(0.05)	(0.03)	(0.04)	(0.04)	(0.04)
COVID x Punishment	0.06	-0.02	-0.00	0.00	-0.04
	(0.05)	(0.04)	(0.04)	(0.05)	(0.04)
COVID x Reasoning	0.06	0.04	-0.00	0.07*	0.00
	(0.06)	(0.04)	(0.04)	(0.04)	(0.04)
N	7373	7373	7373	7373	7373
R-Squared	0.08	0.09	0.11	0.09	0.10
Panel 3: Reciprocity					
COVID x Obedience	-0.00	0.01	0.01	0.00	0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Warmth	-0.00	-0.00	-0.01	0.00	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Punishment	0.00	-0.02**	-0.02***	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Reasoning	0.00	0.00	-0.00	-0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N	7373	7373	7373	7373	7373
R-Squared	0.07	0.06	0.07	0.06	0.07
Panel 4: Clustering coef.					
COVID x Obedience	-0.00	0.00	-0.01	-0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Warmth	0.01	0.00	0.00	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Punishment	-0.01	0.00	-0.00	-0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Reasoning	-0.01	0.00	-0.00	-0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
N	7373	7373	7373	7373	7373
R-Squared	0.07	0.06	0.07	0.06	0.07

Note: Each cell reports the OLS estimates of the effect of COVID-19 interacted with a given parenting style on outcomes that are specified at the beginning of the row for the samples that are given at the top of the columns. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

Table C5: Associations between Social Network Measures and SES Indicators

	(1) Friendship	(2) AS Provided	(3) AS Received	(4) ES Provided	(5) ES Received
Panel 1: Isolates					
COVID x Number of Siblings	0.01*	0.01***	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
COVID x Father Working	0.06*	-0.03	-0.00	-0.02	0.04
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
COVID x Mother Working	-0.01	0.01	0.01	0.01	-0.02
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
COVID x Computer at Home	0.00	-0.03	-0.02	0.01	0.04
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
COVID x Internet at Home	-0.02	-0.02	-0.03	-0.00	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
N	7945	7945	7945	7945	7945
R-Squared	0.07	0.06	0.09	0.06	0.08
Panel 2: In-degree Ties					
COVID x Number of Siblings	-0.03	-0.07***	-0.03**	-0.03**	-0.01
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
COVID x Father Working	-0.10	0.18*	-0.00	0.19*	0.01
	(0.14)	(0.10)	(0.11)	(0.11)	(0.11)
COVID x Mother Working	0.07	-0.01	-0.03	0.07	-0.01
	(0.09)	(0.06)	(0.06)	(0.07)	(0.08)
COVID x Computer at Home	-0.01	0.13**	0.05	-0.02	-0.21**
	(0.08)	(0.06)	(0.07)	(0.08)	(0.08)
COVID x Internet at Home	0.10	0.00	0.09	-0.02	0.08
	(0.11)	(0.08)	(0.08)	(0.08)	(0.08)
N	7945	7945	7945	7945	7945
R-Squared	0.09	0.09	0.11	0.09	0.10
Panel 3: Reciprocity					
COVID x Number of Siblings	-0.01	-0.01**	-0.01	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
COVID x Father Working	0.01	0.02	0.02	-0.01	-0.01
	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)
COVID x Mother Working	0.04***	0.02	-0.03*	0.01	0.04***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
COVID x Computer at Home	-0.01	0.00	0.02	-0.01	-0.04**
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
COVID x Internet at Home	0.01	-0.00	-0.01	0.00	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
N	7945	7945	7945	7945	7945
R-Squared	0.07	0.06	0.07	0.06	0.07
Panel 4: Clustering coef.					
COVID x Number of Siblings	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
COVID x Father Working	0.07**	-0.01	0.01	0.02	0.00
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
COVID x Mother Working	0.02	-0.01	0.01	-0.00	-0.02
	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
COVID x Computer at Home	0.00	-0.01	0.00	0.00	-0.00
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)
COVID x Internet at Home	0.02	0.02	0.04***	-0.00	-0.00
	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
N	7945	7945	7945	7945	7945
R-Squared	0.07	0.06	0.07	0.06	0.07

Note: Each cell reports the OLS estimates of the effect of COVID-19 interacted with a given SES indicator on outcomes that are specified at the beginning of the row for the samples that are given at the top of the columns. All regressions use fully specified models that control for school and grade fixed effects, student, teacher, and classroom characteristics. Standard errors, given in parentheses, are clustered at the school and grade. *, **, or *** indicates significance at the 10%, 5%, and 1% levels, respectively.

A.6 Additional Balance Test

Table D1: Balance of SES Indicators and Parenting Styles Across Ethnicities

	(1) Natives	(2) Refugees	(3) Difference	(4) p-value	(5) N
SES Indicators:					
Number of Siblings	2.703	4.386	1.683	0.000	8316
Father working	0.930	0.831	-0.099	0.000	8356
Mother working	0.307	0.281	-0.026	0.185	8494
Computer at Home	0.518	0.373	-0.145	0.000	8499
Internet at Home	0.727	0.754	0.027	0.066	8436
Parenting styles:					
Obedience	-0.026	0.122	0.148	0.001	7954
Warmth	0.029	-0.223	-0.252	0.000	7945
Punishment	-0.018	0.272	0.290	0.000	8108
Reasoning	-0.001	-0.215	-0.214	0.000	8129

Note: All variables are obtained via survey answers from students. Differences are calculated by subtracting the mean of natives from the mean of refugees. Associated p-values are obtained by regressing the outcome variable on a dummy variable, which takes 0 for natives and 1 for refugees, controlling for school-fixed effects.

A.7 Data Inventories

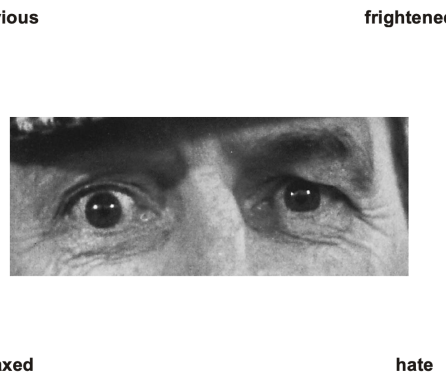
Figure B1: Network Elicitation Templates

	1	2	3
My best friends in the class			
Classmates whom I academically support			
Classmates who support me academically			
Classmates whom I emotionally support			
Classmates who support me emotionally			

Table E1: Student Survey Sample: Socioemotional Skills

4-point likert scale: completely agree, agree, disagree, completely disagree	
Inventory	**Items**
Emotional Empathy	When I see someone being treated unfairly, I feel very much pity for them. I often have tender, concerned feelings for people less fortunate than me. When I see someone being taken advantage of, I feel protective towards them. I would describe myself as a pretty soft-hearted person. Sometimes I do not feel very sorry for other people when they are having problems.
Impulsivity	I get on nerves when close to solving but can't figure it out. I cannot focus on a subject long time. I easily lose interest . I decide what to do quickly and then go and do it right away. Waits turn when playing a game. I get into trouble because I do things without thinking first. I tend to say the first thing that comes to mind, without stopping to think about.

Figure B2: Sample Question: Reading the Mind in the Eyes (Cognitive Empathy)



Note: The questions inquire about the emotion conveyed by the eyes. There are four options provided for each question, and the student is asked to select the correct one. The sub-scale of the Reading the Mind in the Eyes that we use contains 14 questions.

Table E2: Student Survey Inventory: Parenting Style

4-point likert scale: completely agree, agree, disagree, completely disagree	
Inventory	**Items**
Obedience	My mom asks me to do something without explaining why. My dad asks me to do something without explaining why. My mom does not allow me to question her decisions. My dad does not allow me to question her decisions.
Warmth	When I am scared or sad, my mom hugs and comforts me. When I am scared or sad, my dad hugs and comforts me. My mom jokes and plays games with me. My dad jokes and plays games with me.
Punishment	My mom uses physical punishment when I do something wrong. My dad uses physical punishment when I do something wrong. My mom takes away a privilege when I go against a rule. My dad takes away a privilege when I go against a rule.
Reasoning	My mom gets angry with me when I do something wrong, but she never explains why. My dad gets angry with me when I do something wrong, but she never explains why. My mom tells me how people feel. My dad tells me how people feel.

Table E3: Teachers' Inventory

4-point likert scale: completely agree, agree, disagree, completely disagree	
Inventory	**Exemplary Items**
Teachers' Survey	
Growth Mindset	Your intelligence is something that you cannot change very much.
Extrinsic Motivation	Punishment is necessary to create a disciplined class.
Inquiry-based Pedagogy	I encourage my students to do research on topics they are interested in and discuss these topics with me.
Modern Teaching	It does not matter if there is noise in the classroom as long as the students are busy with something productive.
Warmth	Teachers should be serious and authoritative in their relationships with students.
Students' Survey on Teacher	
Captivate	We have interesting homework.
Care	My teacher know what I am interested of.
Challenge	My teacher wants me to do my best.
Clarify	My teacher knows when the class understands, and when we do not.
Confer	My teacher asks us to discuss different ideas.
Consolidate	When my teacher marks my work, s/he writes notes on my papers.
Control	Some students behave so badly in the class that it slows down our learning.