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**Identity and Cooperation
in Multicultural Societies**

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Identity and Cooperation in Multicultural Societies

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Abstract

This paper studies whether alternative integration-policy framings affect cooperation in ethnically diverse groups. We conduct a lab-in-the-field experiment with 390 adolescents in mixed classrooms in Italy. Within each class, students were randomly assigned to small groups that received either a neutral condition, a common-identity framing emphasizing shared school belonging, or a multicultural framing highlighting family origins and local cultural diversity, and then played a repeated public goods game with and without punishment. In the neutral condition, students with an immigrant background contributed about 17 percent more than natives. Framing diversity through a multicultural lens increased natives' contributions by about 13 percent relative to their baseline level, nearly eliminating the initial cooperation gap, whereas the common-identity framing had no detectable effect. When punishment was introduced, treatment effects on contributions became small, but multicultural framing increased the sanctioning of free riders, particularly among natives. The results suggest that cooperation in diverse settings depends not only on minority integration but also on how majority-group members respond to diversity. Policies that recognize multicultural identities, rather than emphasizing generic shared belonging alone, can strengthen cooperative norms in heterogeneous environments. **JEL Classification:** C93, D91, J15, Z13

Keywords: Cooperation, Multiculturalism, Public Goods, Integration, Identity Priming, Natural Identity, Social Identity

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The study received the approval of the Bioethics Committee of Bologna University, N. 0111100 on 22/05/2019. The study was not pre-registered; however, the hypotheses associated with both awarded grants were clearly specified prior to data collection. At the time the project was initiated, pre-registration was not yet a standard practice in experimental economics—except for field experiments—so no formal pre-analysis plan was filed.

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Non-technical abstract

This study examines how cooperation can be strengthened in increasingly diverse societies. As migration rises across Europe and beyond, schools have become everyday spaces where young people from different cultural backgrounds interact. The central question of the research is whether simple, low-cost messages about identity can influence how native and immigrant students cooperate with one another. The researchers conducted an experiment with 390 middle school students aged 12 to 14 in Bologna, Italy. About one-third of the participants had an immigrant background, although most of them were born in Italy. Students were randomly assigned to small groups and exposed to one of three brief introductory activities before taking part in a group decision-making task. In one condition, students reflected on their shared belonging to the same school. In another, they reflected on their family origins and the cultural diversity present in their community, while a third group completed a neutral activity unrelated to identity. After this exercise, students participated in a public goods game in which they could either keep points for themselves or contribute them to a common pool that benefited the whole group. In a second phase of the game, students were given the opportunity to punish group members who contributed little, at a personal cost. The findings reveal clear differences in behavior. In the neutral condition, students with an immigrant background contributed significantly more to the group than native students. In other words, immigrant-origin students were more cooperative from the outset. When students were encouraged to reflect on multicultural identity and cultural diversity, native students increased their contributions substantially, nearly closing the initial gap between the two groups. In contrast, emphasizing a shared school identity had no meaningful effect on cooperation. When punishment was introduced, the multicultural framing continued to shape behavior by increasing natives' willingness to sanction free riders and reducing unfair punishment of high contributors. The results also show that the multicultural framing was particularly effective in classrooms where immigrant students were fewer in number or less socially connected. In these environments, making cultural diversity more visible appeared to have a stronger impact on native students' behavior. Overall, the study suggests that cooperation in diverse settings depends not only on the integration efforts of immigrants but also on how members of the majority group perceive and respond to diversity. Recognizing and highlighting multicultural identities can strengthen cooperative norms, whereas simply emphasizing a generic shared identity may not be sufficient. These findings point to the importance of integration policies and educational practices that openly acknowledge diversity as a normal and valuable feature of society, rather than attempting to downplay differences.

1 Introduction

Over the past decade, both international migration flows and the share of foreign-born residents have risen markedly. In 2023, about 146 million people lived outside their country of birth across OECD countries—over 25% more than ten years earlier. Foreign-born populations now represent 14% of the U.S. population, 17% in Germany, and 10.6% in Italy (OECD, 2025). Looking ahead, conflicts and climate change are expected to further accelerate displacement and make host societies increasingly diverse (IPCC, 2023; UNHCR, 2024). This growing diversity raises the question of how institutions and policies can foster cooperation and social cohesion in increasingly heterogeneous societies. Without adequate economic, political, and social inclusion, immigrants may face marginalization and limited opportunities in the host country. At the same time, perceived threats to jobs, housing, or cultural identity among natives can fuel concerns about fiscal costs, segregation, and social tensions (Gathmann and Garbers, 2023). Unsurprisingly, European citizens consistently identify immigration and integration as among the most pressing issues for the European Union (Eurostat, 2022). Yet relatively little is known about which concrete, low-cost interventions can strengthen cooperative behavior across native–immigrant lines in everyday settings such as schools, or whether alternative integration *policy framings*—emphasizing either shared belonging or the recognition of diversity—differentially affect cooperation.

Integration is a multifaceted phenomenon that cannot be fully captured by a single measure (Hainmueller et al., 2015). Although economists have traditionally focused on comparing the outcomes of immigrants with those of natives—such as educational attainment (Schüller, 2015), labor market performance (Rienzo, 2022; Sweetman and van Ours, 2015), and health status (Qureshi et al., 2022)—an equally important dimension of integration concerns social interactions, namely, social integration. These interactions—ranging from casual daily encounters to collaborative tasks and service provision—frequently require cooperation to achieve socially optimal outcomes. However, disparities in opportunities (Hoffman et al., 1996), as well as differences in socioeconomic background, ethnicity, and cultural identity between immigrants and natives, can undermine cooperation (Akerlof and Kranton, 2000). As such, when assessing integration policies or interventions, it is not sufficient to measure success solely in terms of reducing disparities in education or employment. Rather, it is also crucial to evaluate their potential to foster cooperation between diverse social groups. However, there is limited causal evidence on whether simple, scalable interventions can durably affect cooperation between natives and immigrants, especially in naturally diverse youth populations, and on which margins of adjustment—involving immigrants, natives, or

both—such interventions operate.

In this paper, we experimentally investigate whether cooperation within mixed groups—composed of natives and migrants—can be influenced by low-cost identity priming that exogenously alters the salience of *naturally existing* social identities. To our knowledge, this study is among the first to examine how identity priming affects public-good cooperation and punishment in naturally diverse groups of natives and migrants.¹ Following the framework of [Akerlof and Kranton \(2000\)](#), we view identity as a multidimensional construct that, for immigrants, combines ethnic components linked to their country of origin and host-country elements. This perspective is consistent with developmental work on bicultural youth, which emphasizes that ethnic and national identities often coexist and interact during adolescence (e.g. [Vedder and Phinney \(2014\)](#)). Our study investigates whether cooperation between natives and migrants can be shaped by making different identity dimensions salient, corresponding to alternative integration approaches that either emphasize common identity or explicitly recognize multicultural diversity. We implement three identity priming treatments: (i) a *Common Identity* treatment, which highlights shared belonging to the same school community, in line with assimilation-oriented integration strategies; (ii) a *Multicultural Identity* treatment, which encourages students to reflect on their family origins while emphasizing the coexistence of multiple cultural backgrounds within the broader group; and (iii) a *Neutral Identity* treatment, involving no specific identity activation.

To this end, we conducted a lab-in-the-field experiment with more than 390 adolescents (aged 12–14), 33% of whom have a migrant background, in two middle schools in Bologna, Italy. Students in each classroom were randomly assigned to one of three priming treatments and then participated in a repeated Public Good Game. This within-class randomization kept constant class-level characteristics—such as peer networks, teaching quality, and extracurricular activities—across treatment arms. Data were collected between December 2019 and February 2020. We also gathered rich individual background information, social network data, and incentivized measures of altruism, risk preferences, general trust, ethnic stereotypes, as well as an open-ended self-description task following [Bugental and Zelen](#)

¹Previous studies on cooperation and trust between migrants and natives have primarily examined discrimination ([Cettolin and Suetens, 2019](#); [Chen et al., 2014](#); [Cox and Orman, 2015](#); [Fershtman and Gneezy, 2001](#); [Guillen and Ji, 2011](#)). A smaller set of papers investigates how such biases change exogenously, for instance, after refugee inflows ([Albrecht and Smerdon, 2022](#)) or reforms to birthright citizenship ([Felfe et al., 2021](#)). While our study does not focus on trust or altruism per se, it contributes by testing whether cooperation can be shaped through priming interventions that alter the salience of social identities. Our approach builds on the priming methodology introduced by [Shih et al. \(1999\)](#) and applied to migration contexts by [Chen et al. \(2014\)](#). Relatedly, [Alan et al. \(2021\)](#) examine how curriculum changes in Turkish schools receiving Syrian refugees affect prosocial behavior. We further review this literature in Section 2.

(1950). This lab-in-the-field design allows us to study cooperation and sanctioning in pre-existing peer groups where ethnic diversity, social networks, and classroom composition are policy-relevant features rather than purely experimental artefacts. The results show that immigrants are substantially more cooperative than natives at baseline, contributing about 17% more than the baseline mean. Natives significantly increase their contributions when exposed to the *Multicultural Identity* treatment, which makes the coexistence of multiple cultural backgrounds salient. The effect amounts to roughly 3 points on a 0–50 scale—about 13% of baseline native contributions—and nearly closes the initial cooperation gap between natives and immigrants. By contrast, emphasizing a *Common Identity* has no detectable effect on contributions. When punishment is introduced in the second phase, the effects of priming on contributions become small and imprecisely estimated, but priming continues to shape *social punishment*: immigrants remain more likely to sanction free riders, and so do natives exposed to the multicultural prime. Together, these findings point to two insights: immigrants exhibit higher baseline cooperation, and making multicultural identity salient encourages natives to align their cooperative behavior with that of immigrants. From an economic perspective, the multicultural priming effect on natives is comparable in magnitude to the baseline immigrant–native gap, suggesting that identity salience can substitute for part of the cooperative advantage associated with immigrant status in these classrooms. These results indicate that fostering cooperation in diverse groups cannot focus solely on immigrants. The responses of host-society members to diversity also matter, highlighting that integration is inherently a mutual process and that policies aimed exclusively at immigrant adaptation may overlook a key margin of adjustment. Our analysis further shows that these effects are not driven by differences in socioeconomic background or baseline generosity, as measured with an incentivized Dictator Game. Moreover, the impact of the *Multicultural Identity* priming on natives is particularly strong in classrooms with fewer immigrant students, a higher share of first-generation immigrants, or less dense social networks in which immigrant students occupy more peripheral friendship positions—contexts in which natives may not clearly perceive the multicultural nature of their everyday environment. These heterogeneous effects speak directly to debates over classroom composition policies, suggesting that the returns to identity-based interventions are largest where diversity is less visible or where immigrants are more socially peripheral. Finally, we rule out several alternative explanations: our findings are not driven by differences in comprehension of the instructions, experimenter demand effects, or variation in emotional states.

This paper contributes to the literature on the *contact hypothesis*, which argues that interaction with minority groups can reduce prejudice, strengthen social bonds, and promote

integration.² Using experimentally elicited data combined with natural variation in classroom diversity, we assess whether contextual classroom factors explain our main findings. As classrooms become more diverse, they provide a natural setting to study how intergroup contact shapes cooperation. In economic terms, they offer a field environment in which group composition, peer networks, and exposure to diversity jointly determine the production of cooperative norms (e.g. [Lavy and Schlosser \(2011\)](#); [Patacchini and Zenou \(2016\)](#)). Schools, in particular, generate frequent peer interactions across backgrounds and can produce both conflict and cooperation ([Allport et al., 1954](#); [Lowe, 2021](#); [Mousa, 2020](#)). We leverage the quasi-random assignment of students to classes within schools to exploit variation in peer-group composition and network structure.³ We show that policy-relevant identity priming—specifically, interventions that emphasize the multicultural dimensions of society—can significantly enhance cooperation, as reflected in contributions to a public good. This suggests shifting from integration strategies focused solely on assimilating immigrants toward approaches that also engage native populations by shaping how diversity is framed and recognized in everyday institutional settings. Finally, our priming intervention provides a low-cost, easily scalable tool for enhancing cooperation in diverse contexts. Schools offer a particularly promising platform for such interventions, with potential long-term benefits for social cohesion and economic performance ([Gradstein and Justman, 2002](#)).

The remainder of this paper is organized as follows. Section 2 reviews the relevant literature. Section 3 presents the institutional background of the study. Section 4 describes the experimental design and provides details on the experimental setting and procedures. Section 6 reports the main findings and Section 7 examines potential mechanisms. Section 8 shows the robustness checks we run on the main results. Section 9 concludes with policy implications and directions for future research. Additional analyses and extended institutional details are provided in the Appendix 9.

²According to the contact hypothesis, cross-group interactions reduce bias when treatments such as shared goals, cooperation, and institutional support are present ([Allport et al., 1954](#); [Williams Jr, 1947](#)). In contrast, the *social comparison hypothesis* ([Festinger, 1954](#)) suggests that individuals evaluate themselves relative to peers in their immediate environment, and that comparisons with higher-status or higher-performing peers may induce negative emotions.

³This work also relates to research on the non-pecuniary returns to education, which shows that exposure to diverse peers fosters cross-cultural interaction and social cohesion ([Goldin and Katz, 2008](#); [Oreopoulos and Salvanes, 2011](#)).

2 Literature Review

Our study uses a lab-in-the-field experiment with naturally occurring identities to provide new evidence on the relationship between immigration, social identity, and cooperation. By integrating insights from experimental economics, social psychology, and labor economics, we contribute to a broader understanding of cooperative behavior in ethnically diverse environments.

Closest to our work, (Butler and Fehr, 2024) studies how cultural identity affects cooperation in a public-good setting, showing that identity can significantly shape non-kin cooperation in the lab.⁴ We differ by focusing on naturally occurring native–migrant identities in adolescent classrooms, by comparing multicultural and common-identity priming, and by studying punishment as well as contributions.

A large body of research on immigrant–native integration has focused on economic outcomes such as labor market performance, health, and educational attainment (see Brell et al., 2020; Edo, 2019; Giuntella et al., 2018; Schneeweis, 2011). Other work examines social integration through identity formation, cultural values, intermarriage, residential patterns, and political participation (Laurensyeva and Venturini, 2017). Yet, integration also depends on everyday social interactions and on the ability of migrants and natives to cooperate across cultural lines—a dimension that is comparatively underexplored in the economic literature.

Developmental work on bicultural youth similarly emphasizes that immigrant adolescents often navigate multiple, overlapping identities, with implications for their social interactions and adjustment (see e.g. Vedder and Phinney (2014)).

Most experimental work on native–migrant interactions studies discrimination in trust-based games. The seminal contribution by Fershtman and Gneezy (2001) documented systematic trust discrimination between Jewish subgroups in Israel. Similar patterns have been observed in Australia (Guillen and Ji, 2011), the United States (Cox and Orman, 2015), and the Netherlands (Cettolin and Suetens, 2019). More recent studies demonstrate that exogenous shocks can reshape trust discrimination: Albrecht and Smerdon (2022) show that refugee resettlement increased trust toward refugees in Australia, while Felfe et al. (2021) find that exposure to a German birthright citizenship reform increased immigrant children’s trust in native peers. Relatedly, Achard et al. (2025) find that local exposure to refugees during the European crisis improved Dutch residents’ attitudes toward ethnic minorities and reduced far-right voting, with effects driven by interethnic contact rather than large-scale shocks. However, this literature largely focuses on dyadic trust and discrimination, rather than on

⁴See, for example, Butler and Fehr (2024).

group-level public good provision and norm enforcement in naturally diverse groups

A related strand investigates how identity shapes cooperative behavior in public-good and related games. [Chen et al. \(2014\)](#) study interactions between Caucasian and Asian participants in Prisoner’s Dilemma and minimum-effort games and test whether salient ethnic identity affects discriminatory behavior. They find heterogeneous effects: activating ethnic identity reduces effort in the minimum-effort game, whereas a common-identity prime improves coordination in the Prisoner’s Dilemma. These results highlight that identity salience interacts with the strategic environment. Similarly, [Butler and Fehr \(2024\)](#) show that cultural identity can causally affect cooperation toward non-kin in a public-good experiment, underscoring that identity is an important determinant of cooperative behavior even outside migration contexts. Experimental work on identity and social exclusion also documents how minority status can affect patterns of inclusion and cooperation in school-age samples ([Candelo et al., 2017](#)).

Our work builds on these insights, shifting the focus from dyadic interactions to group-level cooperation and punishment dynamics in naturally diverse populations.

While we do not study discrimination directly, we make a distinct contribution by testing whether cooperation in mixed groups can be shaped through identity salience. To our knowledge, this is the first study to examine the effect of identity priming on Public Goods Game behavior in groups comprising both native and migrant adolescents.

Following the priming framework introduced by [Shih et al. \(1999\)](#) and applied in economics by [Chen et al. \(2014\)](#), we activate identity dimensions through a short pre-experimental questionnaire and visual cues shown during the game. Our design follows the broader social-priming literature in using subtle identity cues to shift the salience of particular group memberships without altering incentives (e.g. [Molden \(2014\)](#)). These subtle interventions heighten the salience of specific identity components without requiring explicit reflection. We implement two priming treatments: a *Multicultural Identity* treatment that highlights ethnic diversity, family origins, and cultural heritage; and a *Common Identity* treatment that emphasizes shared membership in the school community. These dimensions align with [Akerlof and Kranton \(2000\)](#), who conceptualize immigrants’ identities as comprising both ethnic and institutional components.⁵

Our study departs from prior work in several important ways. First, we examine group-

⁵Two experimental strategies dominate the literature on identity: induced identities generated in the laboratory and priming of naturally occurring identities ([Charness and Chen, 2020](#)). While most studies rely on the former, we prime naturally held ethnic and school-based identities that are meaningful to participants. Naturally occurring identity primes have been shown to affect economic behavior across domains ([Chang et al., 2019](#); [Chen et al., 2014](#); [Cohn et al., 2017, 2015](#); [Hetey and Eberhardt, 2014, 2018](#); [Li et al., 2017](#); [McLeish and Oxoby, 2011](#); [Peffley and Hurwitz, 2007](#)).

level cooperation and punishment rather than bilateral trust or coordination, thereby capturing dynamics that more closely resemble interaction structures in real social settings. In doing so, we provide, to our knowledge, the first experimental evidence on how identity priming shapes public-good cooperation and punishment between natives and migrants in naturally diverse youth groups. Second, we vary group size (3, 4, or 5 members) to examine how cooperative behavior responds to changes in group composition. Third, unlike experiments restricted to two predefined ethnic groups, our subject pool exhibits substantial natural heterogeneity in migration backgrounds. Finally, our participants—middle school students aged 11–13—belong to the first Italian cohorts widely exposed to ethnic diversity from early schooling.⁶

Our work also complements [Alan et al. \(2021\)](#), who study prosociality in ethnically mixed Turkish schools following a major curricular reform. Their setting involves a large policy shock and two dominant ethnic groups. In contrast, our identity-priming interventions are low-cost, scalable, and suited to environments where diversity emerges gradually through long-term migration. Moreover, many immigrant students in our sample were born in Italy but do not hold Italian citizenship, providing a unique perspective on identity salience and cooperation among second-generation youth. More broadly, our results complement field evidence that large institutional changes—such as citizenship reforms—affect trust and integration (e.g. [Felfe et al. \(2021\)](#)), by showing that low-cost identity priming can shift cooperative behavior and punishment norms in everyday school environments.

Together, these features allow us to causally identify how different dimensions of naturally held identity shape cooperation in heterogeneous groups, and to do so in a population where the formation of social norms around diversity is still unfolding. This positions our study as one of the first to test identity priming in a public-goods environment using a naturally diverse youth population, offering new insights into the mechanisms supporting cooperation in multicultural societies.

3 Institutional Setting

In this section, we outline the demographic and educational context of our study, focusing on immigration in Italy and the structure of the school system. A more detailed description is provided in [Appendix A.1](#).

⁶Participants were born between 2006 and 2011 and began primary school during a period of rising diversity in Italian classrooms ([MIUR, 2021](#)).

3.1 Immigration in Italy

Since the early 2000s, Italy has experienced a steady increase in the share of students without Italian citizenship. By the 2019/2020 school year—when our experiment was conducted—non-Italian students represented about 10% of the national student population, and more than 60% of them were born in Italy (MIUR, 2021). This highlights a distinctive feature of the Italian context: although many students are formally classified as non-Italian due to citizenship rules, most have spent their entire lives in the country and are integrated into Italian schools from an early age.

Emilia-Romagna, the region where our study took place, records the highest share of non-Italian students nationwide (17.1%). In Bologna, this figure is 16.4% among middle school students, mirroring the broader demographic diversity of the city. The two districts involved in our study—Borgo Panigale–Reno and Savena—are among the most diverse in Bologna, with foreign resident shares of 15–16% and substantial variation in the socioeconomic composition of their neighborhoods. In line with Italy’s *jus sanguinis* citizenship regime, we classify as “immigrant students” those whose parents were not born in Italy, including both first- and second-generation immigrants. In our sample, approximately 75% of immigrant students were born in Italy, while the remainder came primarily from other European countries, Asia, and Africa. Table A.15 reports the distribution of countries of origin.

3.2 The Educational System in Italy

Italian schooling is publicly funded and compulsory from ages 6 to 16. Students progress through primary school, middle school, and then choose one of three high school tracks (academic, technical, or vocational). Schools enjoy considerable autonomy in curriculum design and class organization, and students typically remain with the same classmates across all subjects. This structure creates stable peer groups over several years, making schools a particularly well-suited environment for studying social interactions.

Classroom diversity has become an increasingly central policy issue, and the Ministry of Education has introduced a series of national guidelines to promote inclusion and support students with non-Italian citizenship. A key recommendation is that the proportion of students with limited Italian proficiency should generally not exceed 30% per class, although schools may adjust this threshold based on the linguistic skills of their student population. Emilia-Romagna—the region of our study—has the highest share of classes meeting or exceeding this limit. Table A.18 summarizes the characteristics of the two schools involved in our study, where the average share of immigrant students per class is approximately 33%,

reflecting the high levels of diversity in the area.

4 Experimental Framework

4.1 Schools

The experiment was implemented as a within-class randomized controlled trial. The pool consists of 390 students from two middle schools in Bologna, a municipality in the Emilia-Romagna region of Italy. The average number of students per class is around 19, and approximately 33% of students in each class are immigrants.⁷

The timeline of our study is as follows. In spring 2019, we first examined the distribution of immigrant students across classes using administrative data from the Ministry of Education and class numbers from school websites.⁸ This allowed us to prioritize schools with larger student bodies and sufficient diversity. At the start of the 2019/2020 academic year, we recruited two schools—one in the “Borgo Panigale–Reno” district and one in “Savena”—as shown in Table A.18. Each school headteacher received a description of the project and IRB approval during our initial visit. Together with the headteachers, we then scheduled class-by-class meetings during school hours to ensure a consistent research protocol and to avoid conflicts with afternoon activities.⁹

4.2 Experimental Design

The experiment took place over two meetings of about two hours each, held one week apart. In the first meeting, students were randomly assigned to one of the priming treatments and played the Public Good Game on tablets. Randomization, priming, and game-play were implemented using oTree (Chen et al., 2016). The second meeting was devoted to collecting the additional measures described in Section 4.2.3, including incentivized and non-incentivized tasks—administered mostly with pen and paper—as well as a questionnaire on students’ demographic characteristics.

⁷Class sizes are slightly larger in School 2 than in School 1. However, because treatment is randomized within each class, these differences do not affect identification or treatment effect estimates.

⁸We collected information on the number of classes in each school from the schools’ websites and focused on those with an immigrant-student share close to the 30% threshold, computed using publicly available Ministry of Education data: <https://dati.istruzione.it/opendata/progetto/>.

⁹We also recruited a pilot school in June 2019 to test the duration of the experiment, device functionality, and the clarity of instructions. The procedure is described in Section 4.3.

4.2.1 Priming Treatment

The priming intervention was designed to manipulate the salience of shared or distinct identity elements and examine how these influence cooperation in the Public Good Game. Within each class, students were first randomly allocated to groups, and treatments were then randomly assigned at the group level. All members of a given group therefore received the same priming condition, and participants assigned to different treatments were placed in different groups. Because randomization occurred within classrooms, class-specific factors (such as peer networks, teaching styles, and curricula) are held constant across treatment arms.

- **Common Identity Treatment:** activates a shared school identity (e.g., attending the same middle school);
- **Multicultural Identity Treatment:** primes students’ ethnic background while explicitly conveying the coexistence of multiple identities within the group—for example, by displaying the flags of the various communities represented in the city;
- **Control Treatment:** provides a neutral baseline with no identity content.

We used the priming technique first introduced by [Shih et al. \(1999\)](#), according to which a specific identity can be activated unconsciously by exposing participants to certain stimuli (e.g., images, videos, and pre-experimental questionnaires) and its adaptation to migration contexts in [Chen et al. \(2014\)](#). [Table 1](#) reports the questionnaires used in each treatment, and [Figure 1](#) shows the corresponding welcome and waiting screens.

In the Common Identity treatment, we primed a shared school identity. Participants answered questions about the middle school they attended—why they chose it and what they liked most ([Table 1](#)). During the experiment, they also viewed “welcome” and “waiting” screens displaying pictures and the logo of their school (see the first panel of [Figure 1](#)). In the Multicultural Identity treatment, we highlight the presence of different ethnic and cultural backgrounds by asking participants questions such as: “What is the country of origin of your family?” or “Which language is spoken in your family?”, as shown in [Table 1](#). Unlike [Chen et al. \(2014\)](#), who study a single minority group (Chinese) within a native Australian context, our setting—as is common in Italy—includes several minority communities. Consequently, the treatment not only activates students’ own ethnic origins but also conveys a broader message of multiculturalism. To reinforce this, the “welcome” and “waiting” screens display a multilingual message and the flags of the main ethnic communities represented in the

municipality of Bologna (Figure 1).¹⁰ For the Control group, we administered neutral questions (e.g., extracurricular activities, TV habits) and used neutral screens throughout the experiment, ensuring that participants experienced the same procedure but without activating any particular dimension of identity (third panel of Figure 1).

After the pre-experimental priming questionnaires, participants played the Public Good Game, during which they repeatedly viewed the treatment-specific “welcome” and “waiting” screens. At the end of the game, all students -regardless of treatment assignment- answered the priming questions used in the other two treatment arms, which allows us to compare identity salience across treatments in a consistent way. They then completed an open-ended self-description task, framed as a letter to a student in Sweden of the same grade, following the approach in Bugental and Zelen (1950). We use this task to validate the effectiveness of the priming manipulation (see Section 6.1).

In addition, we collected individual background information, social network data, and a series of incentivized and non-incentivized measures of altruism, risk-taking, trust, and ethnic stereotypes. While a few of these measures were administered during the first meeting, most were collected in the second meeting (details in Section 4.2.3).

4.2.2 Public Good Game

To elicit cooperative preferences, we used a standard Public Good Game implemented in the take frame (Fosgaard et al., 2019) under a partner-matching protocol within each class. We adopted this frame because Fosgaard et al. (2019) show that it is the most intuitive and easiest to understand for non-standard (i.e., non-university) participants, particularly in repeated decision settings. Since the number of students present on the day of data collection could not be determined ex ante, each session began with a headcount. We then used an automated algorithm to implement randomization in two steps. First, within each classroom, students were randomly assigned to groups of size 3, 4, or 5.¹¹ Second, each group was randomly assigned to one of the three priming treatments. All members of a given group therefore received the same priming condition. Groups remained fixed throughout the entire experiment, and participants interacted exclusively and anonymously with members of their own group. There was no interaction, communication, or information flow across groups during the experimental sessions. As a result, treatment variation occurs across groups within

¹⁰Information on ethnic communities is retrieved from the statistical registry of residents in the municipality of Bologna (ISTAT): <http://inumeridibolognametropolitana.it/dati-statistici/popolazione>.

¹¹Although consent forms were collected about a week before each session, some students were occasionally absent due to illness or other reasons.

classrooms, and potential interference across treatment arms is ruled out by design. After the first part (10 rounds), participants received the instructions for the second part, which was identical except for the introduction of punishment opportunities. Groups remained unchanged across the two parts of the experiment, so participants continued interacting with the same group members and under the same priming condition. In the punishment stage, after observing the number of points taken by each group member and their associated earnings (see Figure 2), participants could assign costly punishment to any other group member. For each target, participants could choose among four options: no punishment (0 points), or a reduction of 15, 30, or 45 points in the target’s earnings. These punishment levels imposed a cost on the punisher of 0, 2, 5, or 9 points, respectively. Thus, punishment was costly and featured increasing marginal costs. Punishment decisions were made simultaneously and independently for each group member. Importantly, participants knew from the outset that the experiment consisted of several parts, but they only learned the content of each subsequent part after completing the previous one. In each round of the Public Good Game, groups started with a common pool containing 150, 200, or 250 points depending on group size (i.e., $50 \times N$ points). Each participant began with zero points and chose either to leave points in the common pool or to take between 0 and 50 points (in increments of 5). Points taken represented private earnings, while the remaining amount in the common pool was doubled and then evenly redistributed among all group members.¹² All instructions were read aloud, and participants completed comprehension questions before proceeding. The written instructions included an example for a group of four participants, and we also solved the corresponding cases for groups of three and five on the blackboard to ensure full understanding. At the end of each round, participants received detailed feedback: how many points they left in the common pool, how many the group collectively left, their private earnings, their share of the doubled common pool, and their total earnings for that round.

4.2.3 Other measures

After the Public Good Game, participants completed an open-ended self-description task, framed as a letter to a student in Sweden (Bugental and Zelen, 1950). As illustrated in the priming section, this task serves to validate the manipulation, with treated students expected to refer more often to the primed identity dimension. Results are reported in Table 2 and discussed in Section 4.2.1. After this activity, we also collect each student’s friends network using the methodology applied by Landini et al. (2016) and Chen et al. (2016). These data

¹²The experiment was conducted in Italian. An English translation of the instructions appears in Online Appendix A, while the original Italian version is available at the following [link](#).

enable us to construct measures of the intra- and intercultural friendship links among class peers, which can be interpreted as indicators of socialization and assimilation between students from different cultural backgrounds in the class (see, for example, [Patacchini and Zenou \(2016\)](#) and [Facchini et al. \(2015\)](#)). Specifically, as in [Landini et al. \(2016\)](#), participants had to fill out a sheet of paper depicting a table and five chairs. Each participant had to write his/her ID number on the chair on the head of the table and (up to) five other ID numbers of his/her friends in the same class that s/he would like to have seated close to him/her on the same line (from the closer to the farther, see [Figure 3](#)). We informed participants that we would keep the IDs they reported confidential and that neither the parents, the teachers, nor other friends would know what they wrote. Children received a fixed number of points for completing this task.

After this activity, we collected incentivized measures on generosity using the standard Dictator Game ([Kahneman et al., 1986](#)) and on fairness views using the impartial version of the same game ([Konow, 2000](#)). Participants were divided into pairs comprising one dictator and one recipient. Dictators were endowed with 10€ and had to decide how much to keep for themselves and how much to give to the recipient, who had no decision to make. A self-interested dictator should keep the entire endowment, while positive transfers are interpreted as a proxy for generosity. Here, we used role reversal; all players were asked to make decisions as dictators. Roles were assigned and revealed at the end of the experiment.

Finally, participants also answered a questionnaire that collected information on household composition, participants' aspirations, risk preferences, general trust, and stereotypes. Notice that the questionnaire was collected in a second meeting with each class, which was scheduled one week after the first meeting; during the second meeting, we also finalized the data collection of the first meeting, in case students didn't finish all the activities in the first meeting. In the next section, we provide more details on the experimental procedures.

4.3 Experimental Procedures

As introduced in [Section 4](#), we coordinated with each school headteacher to schedule class-level sessions -held in December 2019 in School 1 and in February 2020 in School 2. About one week before each session, parents or legal guardians received a leaflet describing the study and were asked to sign a consent form.¹³

In each school, we set up a temporary laboratory in a dedicated room. At the beginning

¹³Participation rates exceeded 95%. Children who did not participate assisted the experimenters with distributing materials and received a small show-up prize to avoid absences or any stigma associated with non-participation.

of each session, one class at a time entered the lab, accompanied by their teacher, who then left; all data collection was conducted solely by the research team. Students completed the experimental tasks individually, earning points as they progressed. Points were converted into euros at an exchange rate of 100 points = 1 euro and paid using Feltrinelli¹⁴ or Amazon gift cards. The average payment was approximately 8 euros per participant.

For the additional measures collected in the second meeting (Section 4.2.3), we experienced partial attrition in School 2 because some class sessions were postponed to June 2020 due to the school closure during the first wave of the COVID-19 emergency. We systematically tested whether attrition was correlated with treatment assignment and found no evidence of differential attrition across treatments. Table 3 shows no treatment differences in the likelihood of completing the activities in February versus June; Table 4 confirms no differences in overall completion probabilities. Observable characteristics measured in the first meeting do not differ between early and late completers (Table 5) nor between completers and non-completers (Table 6). These checks indicate that neither midline nor endline attrition generates selection concerns. The main analysis relies solely on outcomes collected in the first meeting. When additional measures are used, the sample is restricted to those who completed them before the COVID-19 disruption.

5 Theoretical Framework: Identity, Norms and Cooperation

This section provides a conceptual framework to rationalize how identity salience affects cooperation in heterogeneous groups. The framework builds on the economics of identity (Akerlof and Kranton, 2000) and on models of norm-based cooperation and norm enforcement (Fehr and Gächter, 2000; Herrmann et al., 2008). Its key feature is that identity priming affects behavior by altering the salience of reference-group norms, rather than by changing material incentives or group composition.

Consider individual i , observed in round t . In each round, individual i chooses a contribution $Y_{it} \in [0, 50]$ to the public good, interpreted as the number of points left in the common pool. Monetary payoffs are given by:

$$\pi_{it} = \pi(Y_{it}, Y_{-i,t}), \tag{1}$$

where $Y_{-i,t}$ denotes the vector of contributions by other group members.

In our experimental framework, in a group of size N , each point left in the common pool is

¹⁴Feltrinelli is an Italian book store, for more details see the following [link](#).

doubled and evenly redistributed. The monetary payoff from contributing Y points is therefore:

$$\pi(Y, Y_{-i}) = (50 - Y) + \frac{2}{N} \left(Y + \sum_{j \neq i} Y_j \right), \quad (2)$$

where $50 - Y$ denotes points taken for private use. The marginal monetary payoff of contributing one additional point is constant and given by:

$$\frac{\partial \pi}{\partial Y} = -1 + \frac{2}{N}, \quad (3)$$

which is strictly negative for all group sizes used in the experiment ($N = 3, 4, 5$). Thus, in the absence of non-material motives, the unique payoff-maximizing strategy is $Y = 0$.

Following [Akerlof and Kranton \(2000\)](#), utility depends not only on material payoffs but also on conformity to identity-based behavioral prescriptions. Individuals experience disutility from deviating from contribution levels prescribed by the norms associated with salient identity dimensions. Each identity is associated with a reference contribution norm \tilde{Y}_i^* .

In addition, individuals may exhibit other-regarding preferences, deriving utility from the overall level of cooperation in the group, as in standard models of social preferences ([Charness and Rabin, 2002](#); [Fehr and Schmidt, 1999](#)). Utility is given by:

$$U_{it} = \pi(Y, Y_{-i}) - \lambda_i \left(Y - \tilde{Y}_i^* \right)^2 + \phi_i W \left(\sum_j Y_j \right), \quad (4)$$

where $\lambda_i \geq 0$ captures the degree of norm internalization, \tilde{Y}_i^* denotes the identity-based contribution norm that is salient at the time of choice, $\phi_i \geq 0$ captures the weight placed on group welfare, and $W(\cdot)$ is an increasing function.

A key feature of the framework is that individuals may differ not only in their sensitivity to norms (λ_i) and in their other-regarding preferences (ϕ_i), but also in whether identity-related norms are already salient in the absence of experimental manipulation. In particular, for some individuals—such as those with a migration background—identity-related norms may be chronically salient due to repeated exposure in everyday interactions, while for others these norms may be activated only situationally ([Benjamin et al., 2016](#)).

Identity priming is modeled as affecting the salience of reference norms \tilde{Y}_i^* , rather than the underlying norms Y_i^* themselves, norm internalization λ_i , or social preferences ϕ_i . That is, priming alters which identity dimension is cognitively accessible at the time of decision, consistent with the social-priming literature ([Chen et al., 2014](#); [Shih et al., 1999](#)).

The individual optimization problem is:

$$Y_{it}^{\text{opt}} = \arg \max_{Y \in [0,50]} \left\{ (50 - Y) + \frac{2}{N} \left(Y + \sum_{j \neq i} Y_j \right) - \lambda_i (Y - \tilde{Y}_i^*)^2 + \phi_i W \left(\sum_j Y_j \right) \right\}. \quad (5)$$

Because the monetary payoff is linear in Y and the cost of deviating from the salient identity-based norm is strictly convex and enters negatively, the objective function is strictly concave for $\lambda_i > 0$, ensuring a unique interior solution. Abstracting from strategic considerations regarding expectations about others' contributions, the first-order condition yields:

$$Y_{it}^{\text{opt}} = \tilde{Y}_i^* + \frac{1}{2\lambda_i} \left(-1 + \frac{2}{N} \right) + \Gamma(\phi_i), \quad (6)$$

where $\Gamma(\phi_i)$ is a weakly increasing function capturing the contribution-enhancing effect of other-regarding preferences, under standard monotonicity assumptions.

This expression illustrates that optimal contributions increase with the salience of cooperative identity norms (captured by \tilde{Y}_i^*), the degree of norm internalization (captured by λ_i), and the weight placed on group welfare (captured by ϕ_i). For expositional convenience, we summarize optimal behavior in the reduced form:

$$Y_{it}^{\text{opt}} = \alpha + \beta \tilde{Y}_i^*(T_i), \quad \beta > 0, \quad (7)$$

where α captures the net effect of material incentives and other-regarding preferences, and β measures the responsiveness of contributions to shifts in the salient identity-based norm induced by the priming treatment T_i .

The framework developed above has the following implications for the empirical analysis:

- Cooperative behavior may differ systematically across social groups due to heterogeneity in the salience or internalization of identity-based norms, even in the absence of differences in material incentives or observable characteristics.
- Identity priming operates by shifting the salience of reference-group norms and may therefore generate asymmetric responses across individuals for whom such norms are already salient versus situationally activated.
- When punishment is available, sanctioning behavior can be interpreted as a form of norm enforcement, providing complementary evidence on the role of identity-based norms in shaping cooperative behavior.

These considerations guide our empirical analysis of contribution and punishment behavior under different identity priming conditions.

6 Results

In this section, we examine the effects of the priming interventions on cooperative behavior in the Public Good Game. We first assess whether the priming successfully activated the intended identity dimensions and then analyze contributions in the first part of the experiment (without punishment). We subsequently turn to the second part, where punishment opportunities were introduced, and study both contribution decisions and sanctioning behavior. Throughout, we compare outcomes across priming treatments and by immigration status. Because students are nested within classes, classes within schools, and schools within districts, we estimate Multilevel Mixed-Effects Models to account for dependence in the data. Section 8 shows that our main findings are robust to alternative estimation strategies.

6.1 Priming effectiveness

We use the open-ended self-descriptions to assess whether the priming interventions successfully activated the intended identity dimension. Table 2 reports how the share of words referring to each identity type varies across treatments. Column (1) shows changes in the probability of mentioning origin-related terms (e.g., ethnicity, place of birth, or residence) when exposed to the Multicultural or Common priming relative to the Neutral treatment; Column (2) performs the analogous test for references to the school or student identity. Across both dimensions, students in the relevant priming treatment mention the corresponding identity more frequently than those in the Neutral group. These patterns confirm that our priming interventions effectively increased the salience of the targeted identity, consistent with the validation found in previous studies using similar techniques (Shih et al. (1999), Chen et al. (2014)).

6.2 Inference and Dependence Structure

Participants interacted in fixed groups throughout the experiment, with treatment assigned at the group level. Each individual made repeated contribution decisions over 20 rounds, generating within-subject serial correlation. The data therefore have a hierarchical structure: repeated decisions are nested within individuals, individuals within groups, groups within classes, and classes within schools. To account for this structure, we estimate multilevel mixed-effects models with random intercepts at the group, class, and school levels, and random intercepts and slopes

at the individual level to accommodate repeated observations over rounds. Round fixed effects are included to capture common time trends. Because treatment is assigned at the group level, inference must allow for within-group dependence. As a robustness check, we also estimate ordinary least squares specifications with classroom fixed effects and clustered standard errors; these yield similar conclusions.

6.3 Identity Priming and Cooperative Behavior

In this subsection, we present the main results from the first part of the experiment, where participants played the Public Good Game without punishment (Section 4.2.2). Figure 4 plots individual contributions (i.e., points left in the common pool) by treatment and immigration status. Panel (a) shows average contributions over all ten rounds, and Panel (b) shows the round-by-round dynamics for natives and immigrants under each priming treatment. In the Neutral treatment, immigrants contribute substantially more than natives—both on average and in every round—indicating a clear baseline cooperation gap. This gap remains essentially unchanged under the Common Identity treatment. In contrast, under the Multicultural Identity treatment, natives consistently increase their contributions across all rounds, effectively shifting their contribution path upward. Thus, the descriptive evidence suggests that multicultural priming increases cooperation, and this effect is driven by natives rather than immigrants.

These results—the higher baseline contributions of immigrants and the positive effect of the Multicultural Identity priming on natives—are confirmed by a more formal analysis. Table 7 reports estimates from a regression model using all rounds from the first part of the experiment (periods 1-10).

$$Y_{itgcs} = \alpha + \beta_1 Treatment_i + \beta_2 Immigrant_i + \beta_3 Treatment_i * Immigrant_i + \beta_4 X_i + \beta_5 Z_g + \tau_{it} + \delta_i + \delta_i * \tau_{it} + \gamma_g + \lambda_c + \psi_s + \epsilon_{itgcs} \quad (8)$$

where, Y_{itgcs} denotes individual contributions (points left in the common pool) in each round; $Treatment_i$ indicates exposure to the Common, Multicultural, or Neutral priming; and $Immigrant_i$ is a dummy for immigration status (equal to 1 if at least one parent is not Italian). X_i includes individual controls (gender and group size), while τ_t captures round fixed effects. The model includes random intercepts and slopes at the individual level (δ_i , $\delta_i \times \tau_t$) and random intercepts at the group (γ_g), class (λ_c), and school (ψ_s) levels, with ϵ_{itgcs} as the error term. This specification follows the dependence structure described in Section 6.2.

Columns 1–2 of Table 7 report estimates of equation 8 for the full sample (390 participants

observed over 10 rounds). Columns 3–4 restrict the model to immigrants (N=130), while Columns 5–6 focus on natives (N=260). In the full sample, immigrants contribute 3.74 points more than natives at baseline, corresponding to roughly 17% of the predicted neutral-native contribution (22.35 points) and about 7.5% of the maximum possible contribution. Group size also matters: participants in groups of five contribute more than those in groups of three. Turning to treatment effects, both *Common* and *Multicultural* priming are associated with higher contributions in the full sample, but the effect of the latter is substantially larger. The interactions between treatment dummies and immigration status are not significant, indicating no differential response among immigrants. Indeed, when estimating the model separately for immigrants (Columns 3–4), neither priming treatment has a significant effect, though group size remains positively related to contributions. By contrast, results for natives (Columns 5–6) show that the *Multicultural* prime significantly increases contributions at the 1% level, whereas the *Common* prime has no discernible effect. The coefficient on the female dummy is also positive and significant in both native-only models.

The results of the first part of the experiment are summarized in Result 1.

Result 1 (Priming and cooperation). *Priming a multicultural identity increases cooperation relative to both the common-identity and the control treatments. This effect is driven by natives, whose contributions rise under the multicultural prime, while immigrants remain more cooperative than natives across all treatments.*

In the next section, we turn to the second part of the public good (periods 11–20), where participants could punish free riders, to examine how priming affects cooperation under this alternative institutional setting.

6.4 Identity Priming and Cooperative Behavior under Punishment

We now turn to the second part of the public good, where the same groups played the Public Good Game with punishment. As described in Section 4.2.2, after making their contribution decision in each round, participants observed the points taken by each group member, their own earnings, and the earnings of others. They then had the opportunity to reduce the earnings of any group member through costly punishment.

6.4.1 Punishment

Following Herrmann et al. (2008), we distinguish between two types of punishment: (i) *social punishment*, defined as punishment directed at free riders (i.e., group members who contributed

less than the punisher), and (ii) *anti-social punishment*, defined as punishment of those who contributed more than the punisher.

Figure 5 displays average punishment by treatment and immigration status, separating social punishment (panel a) from anti-social punishment (panel b). A joint reading of both panels shows that, at baseline, immigrants punish more than natives, particularly through social punishment. Panel a further suggests that both priming treatments—and especially the Multicultural Identity treatment—increase natives’ social punishment. In contrast, panel b indicates that the Multicultural prime may reduce natives’ anti-social punishment.

To formally examine the determinants of punishment behavior, we estimate the following model:

$$\begin{aligned}
Y_{itgcs} = & \alpha + \beta_1 Treatment_i + \beta_2 Immigrant_i + \beta_3 Treatment_i * Immigrant_i + \\
& + \beta_4 PunishedContribution_{it} + \beta_5 Contribution_{it} + \beta_6 ContributionOthers_{it} + \\
& + \beta_7 PunishmentReceived_{it-1} + \beta_8 X_i + \sigma_5 Z_g + \tau_{it} + \delta_i + \delta_i * \tau_{it} + \gamma_g + \lambda_c + \psi_s + \epsilon_{itgcs}
\end{aligned} \tag{9}$$

where Y_{itgcs} denotes the (anti-)social punishment points assigned in each round; $Treatment_i$ indicates exposure to the Common, Multicultural, or Neutral priming; and $Immigrant_i$ is a dummy for immigration status (equal to 1 if at least one parent is not Italian). $PunishedContribution_{it}$ is the contribution of the player being punished, $Contribution_{it}$ is the punisher’s own contribution, and $ContributionOthers_{it}$ is the average contribution of the remaining group members. $PunishmentReceived_{it-1}$ captures punishment received in the previous round. X_i includes individual controls (gender and group size), while τ_t absorbs round fixed effects. The model further incorporates random intercepts and slopes at the individual level (δ_i , $\delta_i \times \tau_t$) and random intercepts at the group (γ_g), class (λ_c), and school (ψ_s) levels, with ϵ_{itgcs} as the error term. Table 8 reports estimates of equation 9 for social punishment, defined as the points deducted from free riders. Columns 1–2 present results for the full sample, while Columns 3–4 and 5–6 restrict the analysis to immigrants and natives, respectively.

In Columns 1–2, immigrants are significantly more likely to punish free riders—by roughly 12 points. Among natives (Columns 5–6), both priming treatments increase social punishment, with the *Multicultural* treatment producing a larger and more precisely estimated effect. For immigrants, however, neither treatment generates a statistically significant change relative to the Neutral treatment (Columns 3–4), although the point estimates are negative and non-negligible. Consistent with Herrmann et al. (2008), social punishment is positively

associated with the punisher’s own contribution (*Contribution*) and negatively associated with the average contribution of other group members (*Contribution Others*). Female participants generally punish less, particularly among immigrants (Columns 3–4). Finally, social punishment is stronger in larger groups: groups of four or five exhibit a higher intensive margin of punishment than groups of three. Overall, this evidence indicates that exposure to Multicultural priming increases the intensity of social punishment among natives. Consistent with previous findings, the strongest predictors of social punishment are the punisher’s own contribution (positive correlation) and the group’s average contribution (negative correlation). Immigrant students also display higher baseline levels of social punishment in the Neutral treatment.

Turning to anti-social punishment, Table 9 in the Appendix reports estimates of the same model as in equation 9. We find no baseline differences between natives and immigrants: when they do punish anti-socially—i.e., when they subtract points from group members who contributed more—the two groups punish with similar intensity (about 31 points, as shown by the constant term). Among natives, both the *Common* and *Multicultural* treatments reduce anti-social punishment, with the latter producing a somewhat larger reduction (5–6 points versus about 3 points; Columns 1–2 and 5–6). For immigrants, treatment effects are larger in magnitude and opposite in sign; only the *Common* treatment significantly increases anti-social punishment—by roughly 7 points, or about 20% of the baseline mean (Columns 3–4). Other covariates behave consistently across specifications: anti-social punishment decreases with one’s own contribution and increases with the punished subject’s contribution. Moreover, it rises with lagged punishment received, indicating the presence of a “punishment–counterpunishment” dynamic among participants.

These patterns in both social and antisocial punishment closely parallel the contribution results from Part 1. In particular, the Multicultural treatment not only increases natives’ contributions in the no-punishment environment but also makes them more willing to sanction free riders and less prone to engage in antisocial punishment. Both behaviors reflect additional forms of cooperation in the Public Good environment, albeit operating through enforcement rather than direct contribution.

Results from the second part of the experiment can be summarized as follows:

Result 2 (Punishment). *When punishment opportunities are introduced, immigrants tend to engage more in social punishment at baseline, while natives exposed to multicultural priming are more likely to punish free riders and reduce antisocial punishment.*

6.4.2 Contributions in Part 2 and Across All Rounds

We now examine contribution behavior in the second part of the experiment (Rounds 11–20), where punishment was introduced, and then consider cooperation over the full 20 rounds. As before, we estimate the model in equation 8 using a multilevel mixed-effects specification. Table 10 reports the results for Part 2: Columns 1–2 present estimates for the full sample (390 participants \times 10 rounds), Columns 3–4 for immigrants, and Columns 5–6 for natives. As in Part 1, immigrants continue to contribute more at baseline—by roughly 3 points—even when punishment opportunities are available, as shown by the positive and significant coefficient on the *Immigrant* dummy in Columns 1–2. Among natives, the *Multicultural* treatment has a small positive effect on contributions, but it is neither statistically significant nor meaningful in magnitude. Thus, unlike in Part 1, the effect of multicultural priming on cooperation is weaker once punishment is introduced, consistent with the finding that priming mainly operates through punishment behavior in this phase. As before, neither priming intervention affects immigrants’ contributions, while immigrants in larger groups contribute about 4 points more than those in smaller groups. Female participants remain more cooperative in this second part of the game. We then re-estimate equation 8 using contribution decisions from all 20 rounds. Table 11 summarizes these results. Both priming dummies—*Common* and *Multicultural*—are positive and significant in the full sample, as is the *Immigrant* dummy. In the immigrant subsample (Columns 3–4), contributions remain unaffected by priming but increase in larger groups. Among natives (Columns 5–6), the *Multicultural* prime again raises cooperative behavior, and female participants remain more cooperative on average.

Result 3 (Overall cooperation). *Across all 20 rounds of the Public Good Game, multicultural identity priming increases cooperation relative to both common-identity and neutral priming. This effect is driven entirely by native participants, while immigrants remain more cooperative than natives at baseline.*

Appendix Tables A.21–A.22 report ordinary least squares specifications with classroom fixed effects and clustered standard errors, confirming that the results are robust to alternative inference strategies.

7 Mechanisms

In this section, we examine the mechanisms underlying our two main findings: (i) immigrants display higher baseline cooperation, and (ii) natives increase their contributions under the *Multicultural Identity* priming. We draw on data from the experiment, the post-experimental

questionnaire, and additional incentivized tasks. As detailed in Section 8, these results are not driven by concerns about internal validity: controlling for errors in the comprehension questions—or excluding participants who failed both—does not change the results, nor do we observe evidence of experimenter-demand effects. Reported strategies align closely with observed behavior.

7.1 Why are immigrants more cooperative at baseline?

We begin by testing whether migrants and natives differ along observable characteristics typically associated with cooperative behavior. Table 12 shows that the two groups are similar on most dimensions, except for socio-economic background (mother’s education, mother’s employment status, number of siblings). Prior work suggests that socio-economic background can shape voluntary cooperation (e.g., Andreoni et al., 2021; Angerer et al., 2015; Bauer et al., 2014; Falk et al., 2018; Gächter et al., 2004; Kosse et al., 2020; Smeets et al., 2015). To test whether these differences account for the cooperation gap, we re-estimate equation 8 including these variables individually, jointly, and via their first principal component. As shown in Table A.16, the coefficient on the *Immigrant* dummy remains large and significant across all specifications. Socio-economic background, therefore, does not explain the higher baseline cooperation of immigrant students.

A second possibility is that migrants and natives differ in unconditional generosity or norm-based prosociality. Using behavior in the Dictator Game (Kahneman et al., 1986)—a standard measure of generosity and social norms (List, 2007)—we find that controlling for the share of the endowment transferred does not reduce the immigrant–native gap in Public Good contributions (Column 6 of Table A.16). Thus, differences in unconditional generosity or social norms also cannot account for migrants’ higher baseline cooperation.

7.2 Why does Multicultural priming increase native cooperation?

We next explore whether classroom contextual factors shape the effectiveness of the priming treatments. Classrooms constitute a natural environment for daily cross-group interaction, which can foster both cooperation and tension (Allport et al., 1954; Lowe, 2021; Mousa, 2020). Because students are quasi-randomly assigned to classes within schools, variation in peer composition offers a useful source of between-class diversity.

We first examine how contributions and treatment effects vary with the share of immigrant students in the class. Then, using the friendship-network data described in Section 4.2.3 and in Section A.3 of the Appendix, we construct measures of intra- and inter-cultural links, widely

interpreted as indicators of socialization and cross-cultural assimilation (Facchini et al., 2015; Landini et al., 2016; Patacchini and Zenou, 2016). Results are reported in Table 14. Column 1 shows that baseline contributions are higher in classes with a larger share of immigrant students: a 10% increase in immigrant share is associated with roughly 10 additional points contributed. The Multicultural treatment, however, is most effective in classes with a *lower* proportion of immigrants, as indicated by the positive and significant coefficient on *Multicultural* (about 4 points). Column 2 shows that this pattern is strongest in classes with a high proportion of first-generation immigrants. Column 3 indicates that the effect is also larger in classrooms with sparser friendship networks. Columns 4 and 5 confirm that the treatment effect is amplified when immigrant students occupy more peripheral network positions or have fewer friendship links with native classmates.¹⁵

These findings suggest that the Multicultural priming is especially powerful in environments where the multicultural nature of the classroom is less salient to natives -either because immigrants are numerically few, or socially disconnected from native peers. When natural exposure to diversity is limited, priming appears to make ethnic heterogeneity more visible and cognitively accessible. This interpretation is consistent with the “contact hypothesis,” which posits that intergroup contact can reduce prejudice and foster cooperation when supported by cooperative interaction and shared goals (Allport et al., 1954; Williams Jr, 1947). This aligns with recent field evidence that local exposure to refugees improves natives’ attitudes toward ethnic minorities through interethnic contact (Achard et al., 2025), suggesting that our priming intervention effectively substitutes for or amplifies naturally occurring contact in school settings. Importantly, these patterns suggest that multicultural priming operates by increasing the salience of existing cooperative norms, rather than by generating new preferences or altering material incentives.

8 Robustness

This section presents a set of robustness checks supporting the internal validity of our findings.

We first assess whether the treatment effects could be driven by emotional reactions or experimenter-demand concerns. Following Benjamin et al. (2016), at the end of the Public Good Game, we administered a shortened version of the Spielberger State-Trait Anxiety Inventory (Marteanu and Bekker, 1992) and asked: “While you were making your choices, were you thinking about what we wanted you to do?” If participants inferred the experimenters’ intentions, treatment effects might reflect compliance rather than priming. Table 12 shows no

¹⁵For more details on how we construct these network measures, see Section A.3 of the Appendix.

baseline differences between natives and immigrants in any emotional dimension. Table A.19 further indicates that neither priming treatment affected reported emotions (Columns 1–6) or the probability of reporting demand-driven reasoning (Column 7). Thus, the results are not explained by emotional responses or experimenter-demand effects.

Second, we consider whether differential comprehension could explain the treatment effects. Table 12 shows that natives and immigrants performed similarly on the two control questions embedded in the instructions. In Table A.20, Columns 1–2 confirm that comprehension is uncorrelated with treatment assignment, as expected under randomization. Column 3 adds the number of mistakes directly to equation 8; treatment coefficients remain stable, indicating that comprehension does not drive the main results.

We also examine the alignment between stated and observed strategies. At the end of the experiment, participants indicated agreement with the statement: “During the game, I tried to maximize my own payoff rather than the group payoff.” While not incentivized, this provides an additional behavioral signal. Table 12 shows that natives are more likely to endorse this self-interested strategy, consistent with their lower baseline contributions documented earlier.

9 Conclusion

The integration of immigrant-origin students and the preservation of cooperation in increasingly diverse societies are pressing policy challenges at both national and supranational levels. A central question is whether institutions can make particular dimensions of social identity salient in ways that foster cooperation between natives and immigrants.

Schools provide a natural context to explore this question: they are environments where diverse identities coexist, where students interact daily, and where norms of cooperation take shape. Leveraging this setting, we experimentally primed distinct identity dimensions and studied their causal effects on cooperative behavior in ethnically mixed classrooms.

Our results show that making a multicultural identity salient increases cooperation among native students, whereas priming a common school-based identity does not produce any behavioral change relative to the control. Immigrant-origin students, by contrast, display consistently higher cooperative behavior across all priming conditions, suggesting that they already contribute more to the public good at baseline and do not respond differentially to identity cues. Taken together, these findings highlight that integration is a two-sided process: sustaining cooperation in diverse settings requires not only supporting immigrant students (who already exhibit cooperative behavior) but also shaping how native students perceive and engage with diversity, rather than relying solely on policies that target immigrant adaptation.

This pattern has direct implications for policymakers designing institutions that aim to foster cohesion in multicultural societies.

A noteworthy feature of our findings is the null effect of the Common Identity priming, despite clear evidence that the prime successfully activated the intended identity dimension in the “Who am I?” task. One plausible interpretation is that middle-school identity is not a sufficiently meaningful or voluntary layer of identity for adolescents. School choice at this stage is typically constrained by residential boundaries and parental decisions, potentially limiting students’ identification with their school community. Future work should investigate which identity layers are most salient for adolescents, and under what conditions shared identities foster cooperative behavior.

Overall, our findings suggest that emphasizing multicultural belonging—rather than relying solely on generic common identities—may be a productive way to strengthen cooperative norms in diverse societies. Low-cost, scalable interventions that increase the visibility and legitimacy of multicultural identities can help native-born individuals engage more cooperatively with peers from different backgrounds, particularly in institutional settings where diversity is present but not always salient.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used ChatGPT 4 to improve language and readability, with caution. After using this tool, the authors reviewed and edited the content as needed and took full responsibility for the content of the publication.

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Figures and Tables

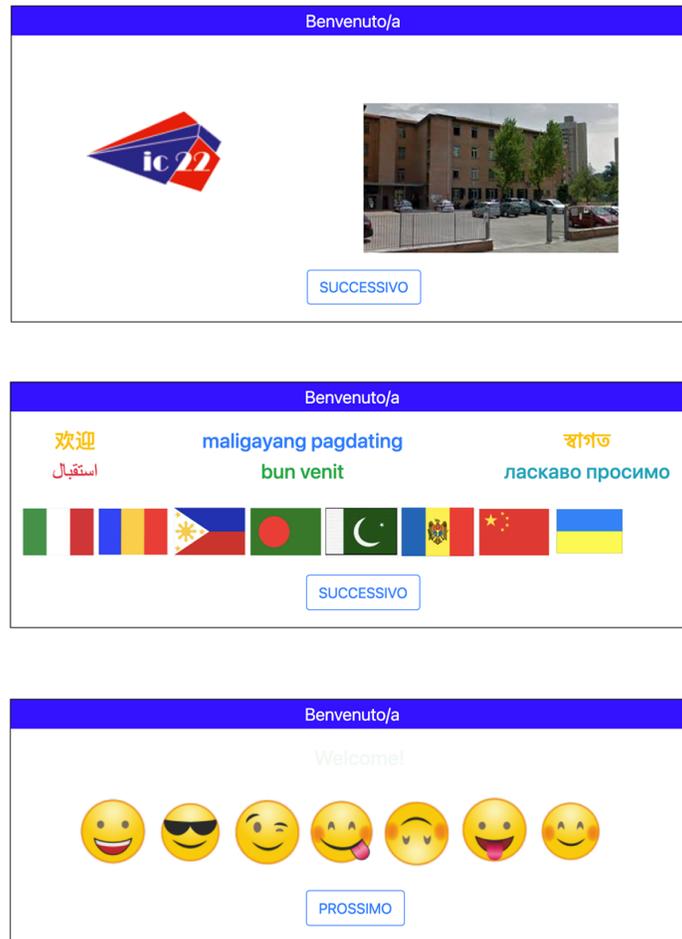


Figure 1: Welcome screens displayed at the beginning of the session and during all transition phases between tasks, by treatment.

(a) *Common Identity*: a screen emphasizing shared school belonging through the school's name and visual elements. (b) *Multicultural Identity*: a multilingual welcome screen showing the flags of the largest migrant communities in Bologna, highlighting local linguistic and cultural diversity. (c) *Control*: a neutral screen without identity-related content.

#	Punti presi dal progetto comune	Guadagni	Punti sottratti (costo)
Tu	0	25	
1	50	75	0 (0) 15 (2) 30 (5) 45 (9)
2	50	75	0 (0) 15 (2) 30 (5) 45 (9)
3	50	75	0 (0) 15 (2) 30 (5) 45 (9)
		Costi totali	0

Figure 2: Screenshot of the punishment stage.

The table shows, for each group member and each round: *Punti presi dal progetto comune* (points taken from the common pool), *Guadagni* (earnings), and *Punti sottratti (costo)* (punishment points assigned, i.e. costly deductions). Rows are labeled “TU” (the participant) followed by the numbers assigned to the other group members. Participants are informed that, to preserve anonymity, player numbers are randomly reassigned and re-ordered in every round, so participants cannot track the same peer across rounds.

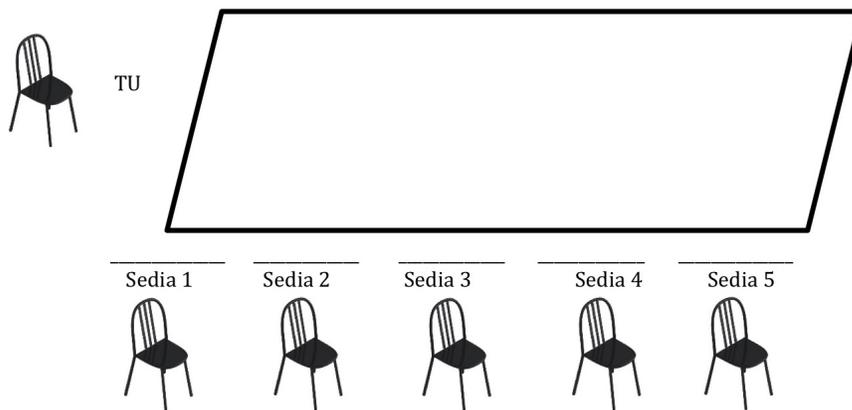
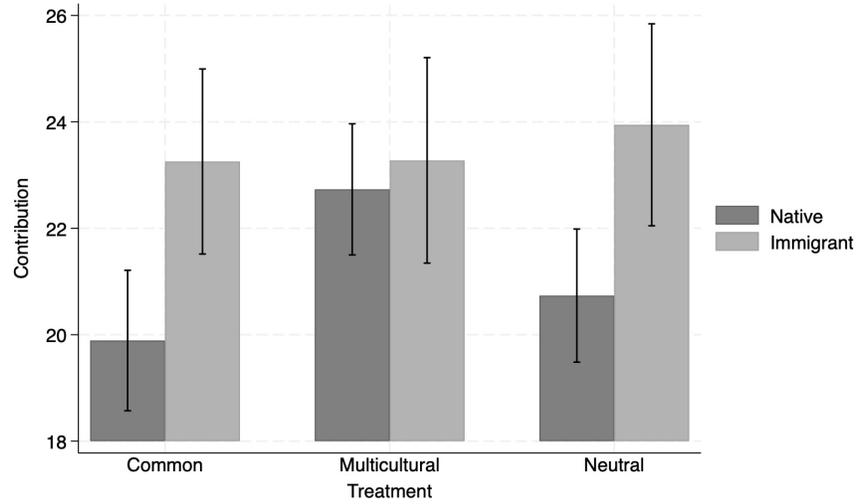
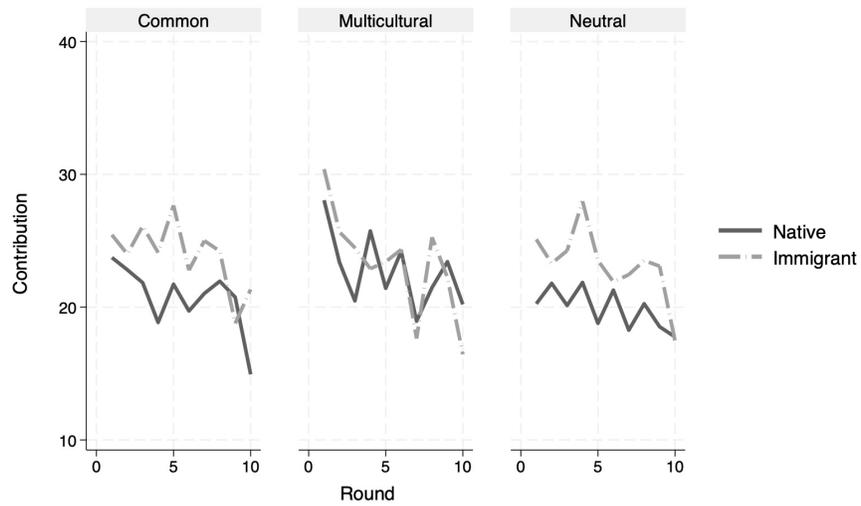


Figure 3: Friendship elicitation task.

Each student received a sheet depicting a table with five chairs. They were instructed to write their own ID number on the chair at the head of the table (“TU”) and then list up to five classmates—one per remaining chair (Sedia 1-.- Sedia 5)—whom they would most like to sit next to, ordered from closest to farthest. These entries are used to construct directed friendship links within each classroom.



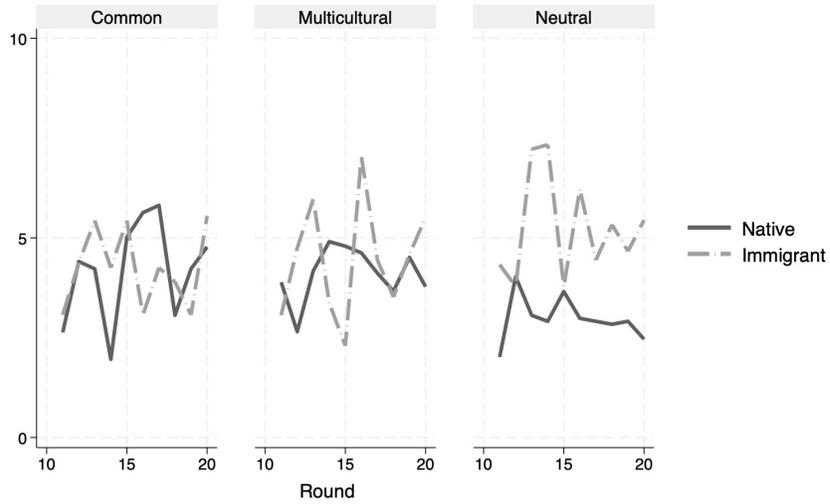
(a) Overall



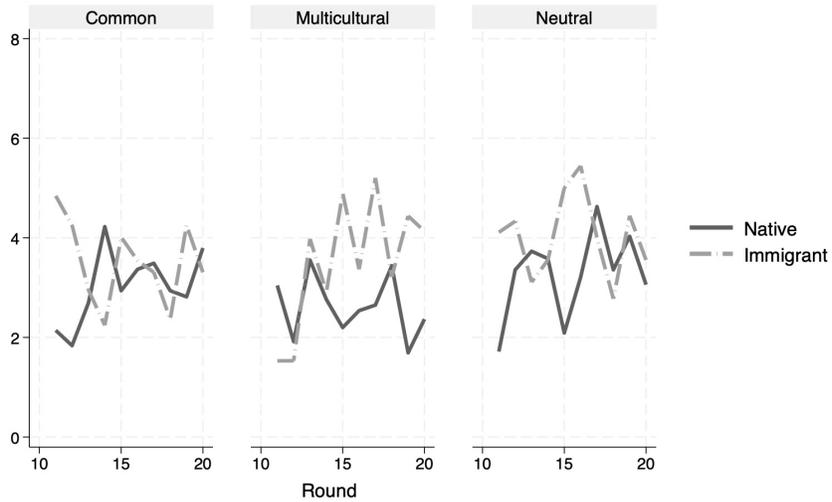
(b) Over rounds

Figure 4: Contribution to the PGG by treatment and status

Notes: Panel (a) shows average contributions over the ten rounds of the Public Good Game by treatment and immigration status. Immigrant students contribute more than natives in the Neutral and Common Identity conditions. Under the Multicultural Identity priming, natives' contributions shift upward, narrowing the baseline gap. Panel (b) displays round-by-round contributions, confirming that the Multicultural prime raises natives' cooperation across all rounds, while immigrants' behavior remains stable across treatments.



(a) Social punishment



(b) Anti-social punishment

Figure 5: Punishment by treatment and status

Notes: Panel (a) reports average social punishment—points subtracted from free-riders—by treatment and immigration status. Immigrant students punish more at baseline than natives, especially socially. Both identity treatments increase social punishment among natives, with the Multicultural Identity prime generating the largest rise. Panel (b) displays anti-social punishment—points subtracted from peers who contributed more than the punisher. Native students reduce anti-social punishment under the Multicultural Identity priming, whereas immigrants show stable patterns across treatments.

Treatment	Questions
All	Date of Birth: DD/MM/YYYY; Gender: M F; Grade: I, II, III.
Common Identity	1) Name of the School: 2) When choosing the school you are attending, did you consider any other schools?: YES, NO. If yes, what other schools? ... (Please specify). 3) Why did you decide to choose your specific school? 4) List three things you like about your school and make it special.
Multicultural Identity	1) Where were you born?: Italy; in a different country than Italy, that is... (Please specify). 2) Where was your mother born?: Italy; in a different country than Italy, that is... (Please specify). 3) Where was your father born?: Italy; in a different country than Italy, that is... (Please specify). (Displayed <i>only</i> if one parent was not Italian) 4) Which country is the one you feel closer to? the one where my mother is born; the one where my father is born. 5) What languages do you speak at home?
Control	1) How often do you watch television? a) every day; b) 4/5 times a week; c) 2/3 times a week; d) a few times a month; e) a few times a year; f) rarely if ever; g) never. 2) How often do you surf the web? a) never; b) about 15 minutes per day; c) about 1 hour per day; d) about 1 hour per day; e) about 1.5 hours per day; f) about 2 hours per day; g) more than 2 hours per day. 3) How often do you watch TV series? a) every day; b) 4/5 times a week; c) 2/3 times a week; d) a few times a month; e) a few times a year; f) rarely if ever; g) never.

Table 1: Priming questionnaires.

Participants first answered the general questions listed under “All,” and then completed the questionnaire corresponding to their randomly assigned priming treatment. These items constituted the identity–salience manipulation: students in the *Common Identity* treatment answered questions highlighting school belonging; those in the *Multicultural Identity* treatment answered questions emphasizing family origins and linguistic–cultural diversity; and those in the *Control* group answered questions about media habits unrelated to identity. At the end of the session, all participants also completed the questionnaires from the two priming treatments they had not been assigned to, which allows us to compare responses across treatments for validation and robustness.

Table 2: Effectiveness of the Priming Treatments.

	Full		Natives		Immigrant	
	(1) P(Cultural)	(2) P(School)	(3) P(Cultural)	(4) P(School)	(5) P(Cultural)	(6) P(School)
Common	0.111 (0.087)	0.301*** (0.022)	0.111* (0.058)	0.207*** (0.014)	0.194* (0.100)	0.518*** (0.009)
Multicultural	0.165** (0.075)	0.216 (0.227)	0.199*** (0.062)	0.201 (0.203)	0.133*** (0.047)	0.182 (0.213)
Constant	0.413*** (0.109)	0.436*** (0.028)	0.406*** (0.096)	0.465*** (0.042)	0.385*** (0.094)	0.315*** (0.003)
N Obs.	160	160	113	113	47	47
Clustering	Yes	Yes	Yes	Yes	Yes	Yes
Class nesting	Yes	Yes	Yes	Yes	Yes	Yes
Group nesting	Yes	Yes	Yes	Yes	Yes	Yes

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: This table examines whether the priming interventions increased the salience of the targeted identity dimensions. The dependent variable in Column (1) is the share of words in the open-ended self-description referring to cultural or origin-related identity. The dependent variable in Column (2) is the share of words referring to the school-based identity. Key independent variables are indicators for assignment to the *Multicultural Identity* or *Common Identity* treatments; the *Neutral* treatment is the omitted category. All models include student-level controls and class fixed effects. Standard errors are clustered at the class level.

Words classified under each identity are listed in Italian, with English translations provided in parentheses. School-identity words include: scuol- (school), studente (student), studio (study), Rita Levi Montalcini, Dozza, medie / media (middle school). Cultural-identity words include: origin- (origin), Italia (Italy), African-, Rumeno- (Romanian), vengo da (I come from), Perù, bengalese (Bengali), Filippine (Philippines), ghanese (Ghanaian), Pakistan, moldav- (Moldovan), svizzero (Swiss), Nigeria, Colombia, Algeria, Cina / cinese (China / Chinese), nat- (born), vivo / abito (I live), paese (country/town), spagnolo (Spanish), Svezia (Sweden).

Table 3: Attrition by Treatment – Completion between February 2020 and June 2020

	(1) P(Description)	(2) P(Dictator)	(3) P(Fairness)	(4) P(Friends)
Common	0.038 (0.027)	0.018 (0.018)	0.029 (0.022)	0.013 (0.028)
Multicultural	0.038 (0.026)	0.012 (0.020)	0.038 (0.030)	0.020 (0.024)
Constant	0.179* (0.098)	0.705*** (0.122)	0.613*** (0.131)	0.101 (0.068)
N Obs.	390	390	390	390
Clustering	Yes	Yes	Yes	Yes
School fixed effects	Yes	Yes	Yes	Yes

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: The Table show how the probability of having completed each activity before the COVID-19 first wave, rather than in June 2020, changes across treatments.

Table 4: Attrition by Treatment – Completion at end-line

	(1) P(Description)	(2) P(Dictator)	(3) P(Fairness)	(4) P(Friends)
Common	-0.068 (0.048)	-0.030 (0.031)	-0.042 (0.033)	-0.060 (0.050)
Multicultural	-0.025 (0.032)	-0.008 (0.022)	-0.027 (0.030)	-0.009 (0.031)
Constant	0.208*** (0.051)	0.100** (0.046)	0.125** (0.047)	0.227*** (0.047)
N Obs.	390	390	390	390
Clustering	Yes	Yes	Yes	Yes
School fixed effects	Yes	Yes	Yes	Yes

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: The Table show how the probability of having completed each activity at the end-line of the study changes across treatments.

Table 5: Observable characteristics and Mid-line sample attrition

	Full	Sample 1	Sample 2	Diff.
Immigrant	0.333 (0.472)	0.333 (0.472)	0.273 (0.449)	0.061
Born in Italy	0.913 (0.282)	0.917 (0.277)	0.927 (0.262)	-0.011
Speak only Italian at home	0.697 (0.460)	0.696 (0.461)	0.764 (0.429)	-0.068
Female	0.413 (0.493)	0.417 (0.494)	0.382 (0.490)	0.035
How often I practice sport	3.854 (1.307)	3.808 (1.313)	4.018 (1.298)	-0.210
How often I surf the web	3.036 (1.522)	3.003 (1.525)	3.273 (1.484)	-0.270
How often I watch TV	4.700 (1.654)	4.657 (1.692)	5.000 (1.414)	-0.343
Contribution	25.103 (19.476)	25.192 (19.191)	24.364 (21.039)	0.829
I tried to maximize joint payoff in PGG	0.569 (0.496)	0.567 (0.496)	0.564 (0.501)	0.004
I did what I think you wanted me to do	0.419 (0.494)	0.421 (0.495)	0.436 (0.501)	-0.015
Calm	0.615 (0.487)	0.606 (0.489)	0.636 (0.485)	-0.031
Tense	0.651 (0.477)	0.660 (0.474)	0.600 (0.494)	0.060
Upset	0.679 (0.467)	0.679 (0.467)	0.618 (0.490)	0.061
Relaxed	0.505 (0.501)	0.484 (0.501)	0.545 (0.503)	-0.061
Happy	0.682 (0.466)	0.663 (0.473)	0.709 (0.458)	-0.046
Worried	0.759 (0.428)	0.756 (0.430)	0.745 (0.440)	0.011

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: The Table show how the observable characteristics measured at the first meeting change between students who completed at least one activity among the open-ended description of themselves, the dictator game, the elicitation of fairness views, and of the network of friends – before the COVID-19 first wave (Sample 1), and those who completed everything in June 2020 (Sample 2). Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Table 6: Observable characteristics and End-line sample attrition

	Full	Sample 1	Sample 2	Diff.
Immigrant	0.333 (0.472)	0.324 (0.469)	0.478 (0.511)	-0.154
Born in Italy	0.913 (0.282)	0.918 (0.274)	0.826 (0.388)	0.092
Speak only Italian at home	0.697 (0.460)	0.706 (0.456)	0.565 (0.507)	0.141
Female	0.413 (0.493)	0.411 (0.493)	0.435 (0.507)	-0.023
How often I practice sport	3.854 (1.307)	3.839 (1.311)	4.087 (1.240)	-0.248
How often I surf the web	3.036 (1.522)	3.044 (1.520)	2.913 (1.593)	0.131
How often I watch TV	4.700 (1.654)	4.708 (1.656)	4.565 (1.647)	0.143
Contribution	25.103 (19.476)	25.068 (19.451)	25.652 (20.299)	-0.584
I tried to maximize joint payoff in PGG	0.569 (0.496)	0.567 (0.496)	0.609 (0.499)	-0.042
I did what I think you wanted me to do	0.419 (0.494)	0.423 (0.495)	0.348 (0.487)	0.076
Calm	0.615 (0.487)	0.610 (0.488)	0.696 (0.470)	-0.085
Tense	0.651 (0.477)	0.651 (0.477)	0.652 (0.487)	-0.001
Upset	0.679 (0.467)	0.670 (0.471)	0.826 (0.388)	-0.156
Relaxed	0.505 (0.501)	0.493 (0.501)	0.696 (0.470)	-0.202
Happy	0.682 (0.466)	0.670 (0.471)	0.870 (0.344)	-0.199*
Worried	0.759 (0.428)	0.755 (0.431)	0.826 (0.388)	-0.071

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: The Table show how the observable characteristics measured at the first meeting change between students who completed at least one activity among the other measures we collected (Sample 1), and those who never completed them (Sample 2). Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Table 7: Contribution to the Public Good - Part I

	(1)	(2)	(3)	(4)	(5)	(6)
	Full	Full	Immigrants	Immigrants	Natives	Natives
Contribution						
Common	1.152*** (0.364)	1.172*** (0.397)	0.352 (3.608)	0.352 (3.608)	0.961 (0.632)	0.636 (1.082)
Multicultural	2.991*** (0.773)	3.076*** (0.793)	0.878 (3.148)	0.878 (3.148)	2.820*** (0.954)	2.938** (1.209)
Immigrant	3.475** (1.544)	3.740** (1.509)				
Common x Immigrant	-0.593 (4.861)	-0.864 (5.093)				
Multicultural x Immigrant	-2.558 (3.868)	-2.616 (3.950)				
Female	1.016 (1.057)	1.020 (1.076)	-1.849 (1.193)	-1.849 (1.193)	2.264* (1.345)	2.497** (1.062)
Group of 4	-0.151 (1.683)	-0.164 (1.681)	5.566*** (1.130)	5.566*** (1.130)	-2.596 (2.146)	-2.550 (2.190)
Group of 5	0.471*** (0.131)	0.639*** (0.079)	4.148*** (0.393)	4.148*** (0.393)	-0.294 (0.369)	0.505 (0.349)
Constant	22.476*** (2.670)	22.350*** (2.722)	23.985*** (1.003)	23.985*** (1.003)	23.101*** (4.169)	22.851*** (4.432)
N Obs.	3,900	3,900	1,300	1,300	2,600	2,600
Round fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Yes	Yes	Yes	Yes	Yes	Yes
Random Slopes	Yes	Yes	Yes	Yes	Yes	Yes
Individual correlation	Yes	Yes	Yes	Yes	Yes	Yes
Class nesting	Yes	Yes	Yes	Yes	Yes	Yes
Group nesting	No	Yes	No	Yes	No	Yes

Column 2: Post estimation tests for Common = [Common x Immigrant - Common]: p=0.4554.

Column 2: Post estimation tests for Multicultural = [Multicultural x Immigrant - Multicultural]: p=0.0002.

Column 4: Post estimation tests for Common = Multicultural: p=0.2525.

Column 6: Post estimation tests for Common = Multicultural: p=0.0000.

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: Linear mixed-effects models, to account for the hierarchical structure of the data, i.e. observations are nested in groups, and the correlation over rounds of individual observations. In particular, the four-level model uses random intercepts and slopes for individual choices observed over rounds, and it account for dependence in the observations among the individuals belonging to the same group, class and school. Columns 1-2 looks at the full sample. Columns 3 and 4 at immigrants only. Columns 5-6 at natives only.

Table 8: Social Punishment Cost in Public Good - Part I

	(1) Full	(2) Full	(3) Immigrants	(4) Immigrants	(5) Natives	(6) Natives
Common	3.881* (2.235)	4.011* (2.137)	-0.755 (4.870)	-0.755 (4.869)	3.509 (3.498)	3.795 (2.985)
Multicultural	9.618*** (0.144)	9.669*** (0.193)	-3.384 (8.464)	-3.384 (8.464)	9.831*** (1.845)	9.787*** (1.693)
Immigrant	12.094*** (1.283)	12.207*** (1.411)				
Common x Immigrant	-4.976 (3.869)	-5.114 (4.061)				
Multicultural x Immigrant	-11.409 (7.600)	-11.564 (7.701)				
Contribution	0.516*** (0.053)	0.515*** (0.054)	0.483*** (0.003)	0.483*** (0.003)	0.541*** (0.101)	0.540*** (0.103)
Punished subject contrib.	-0.060 (0.196)	-0.056 (0.195)	-0.117 (0.213)	-0.117 (0.213)	-0.026 (0.219)	-0.018 (0.219)
Average contrib. others	-0.410*** (0.033)	-0.409*** (0.032)	-0.442*** (0.048)	-0.442*** (0.048)	-0.403*** (0.080)	-0.399*** (0.077)
Lagged p. received	0.062 (0.080)	0.059 (0.081)	-0.005 (0.137)	-0.005 (0.137)	0.089* (0.049)	0.082* (0.049)
Female	-9.922** (4.352)	-9.840** (4.395)	-11.667*** (0.153)	-11.667*** (0.154)	-9.435* (5.687)	-9.280 (5.754)
Group of 4	14.345*** (2.963)	14.417*** (2.976)	8.223*** (1.055)	8.223*** (1.055)	16.086*** (5.006)	16.782*** (4.752)
Group of 5	25.388*** (2.049)	25.549*** (2.049)	17.391*** (3.351)	17.391*** (3.351)	28.807*** (0.423)	29.318*** (0.003)
Constant	27.250*** (0.367)	27.078*** (0.290)	45.320*** (2.590)	45.320*** (2.590)	25.541*** (3.445)	24.907*** (3.301)
N Obs.	909	909	312	312	597	597
Round fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Random Slopes	Yes	Yes	Yes	Yes	Yes	Yes
Individual correlation	Yes	Yes	Yes	Yes	Yes	Yes
Class nesting	Yes	Yes	Yes	Yes	Yes	Yes
Group nesting	No	Yes	No	Yes	No	Yes

Column 2: Post estimation tests for Common = [Common x Immigrant - Common]: $p=0.0000$.

Column 4: Post estimation tests for Multicultural = [Multicultural x Immigrant - Multicultural]: $p=0.0000$.

Column 4: Post estimation tests for Common = Multicultural: $p=0.4646$.

Column 6: Post estimation tests for Common = Multicultural: $p=0.0000$.

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: Linear mixed-effects models, to account for the hierarchical structure of the data, i.e. observations are nested in groups, and the correlation over rounds of individual observations. In particular, the four-level model uses random intercepts and slopes for individual choices observed over rounds, and it account for dependence in the observations among the individuals belonging to the same group, class and school. Columns 1-2 looks at the full sample. Columns 3 and 4 at immigrants only. Columns 5-6 at natives only.

Table 9: Anti-Social Punishment in Public Good - Part II

	(1) Full	(2) Full	(3) Immigrants	(4) Immigrants	(5) Natives	(6) Natives
Common	-3.635*** (1.059)	-3.635*** (1.059)	7.171*** (2.044)	7.170*** (2.044)	-2.968*** (0.545)	-2.968*** (0.545)
Multicultural	-5.160** (2.323)	-5.160** (2.324)	1.056 (3.529)	1.056 (3.528)	-6.332* (3.716)	-6.332* (3.716)
Immigrant	0.853 (0.878)	0.853 (0.878)				
Common x Immigrant	8.334 (5.714)	8.334 (5.714)				
Multicultural x Immigrant	6.025*** (0.549)	6.025*** (0.549)				
Contribution	-0.622*** (0.049)	-0.622*** (0.049)	-0.654*** (0.029)	-0.654*** (0.029)	-0.573*** (0.025)	-0.573*** (0.025)
Punished subject contrib.	0.212*** (0.001)	0.212*** (0.001)	0.310*** (0.118)	0.310*** (0.118)	0.195*** (0.036)	0.195*** (0.036)
Average contrib. others	-0.013 (0.049)	-0.013 (0.049)	0.076*** (0.000)	0.076*** (0.000)	-0.070 (0.067)	-0.070 (0.067)
Lagged p. received	0.030** (0.013)	0.030** (0.013)	0.059 (0.063)	0.059 (0.063)	0.019*** (0.002)	0.019*** (0.002)
Female	-5.301*** (1.555)	-5.301*** (1.555)	-4.906 (4.157)	-4.905 (4.157)	-3.481 (3.630)	-3.481 (3.630)
Group of 4	5.268** (2.260)	5.268** (2.260)	-0.828 (4.650)	-0.828 (4.650)	10.680*** (0.112)	10.680*** (0.112)
Group of 5	8.050*** (0.244)	8.050*** (0.244)	-4.514 (6.202)	-4.513 (6.202)	13.380*** (2.162)	13.381*** (2.162)
Constant	31.182*** (2.073)	31.182*** (2.073)	34.499*** (4.334)	34.500*** (4.334)	27.053*** (0.657)	27.054*** (0.657)
N Obs.	751	751	267	267	484	484
Round fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Random Slopes	Yes	Yes	Yes	Yes	Yes	Yes
Individual correlation	Yes	Yes	Yes	Yes	Yes	Yes
Class nesting	Yes	Yes	Yes	Yes	Yes	Yes
Group nesting	No	Yes	No	Yes	No	Yes

Column 2: Post estimation tests for Common = [Common x Immigrant - Common]: p=0.0463.

Column 2: Post estimation tests for Multicultural = [Multicultural x Immigrant - Multicultural]: p=0.0017.

Column 4: Post estimation tests for Common = Multicultural: p=0.0000.

Column 6: Post estimation tests for Common = Multicultural: p=0.2888.

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: Linear mixed-effects models, to account for the hierarchical structure of the data, i.e. observations are nested in groups, and the correlation over rounds of individual observations. In particular, the four-level model uses random intercepts and slopes for individual choices observed over rounds, and it account for dependence in the observations among the individuals belonging to the same group, class and school. Columns 1-2 looks at the full sample. Columns 3 and 4 at immigrants only. Columns 5-6 at natives only.

Table 10: Contribution to the Public Good - Part II

	(1)	(2)	(3)	(4)	(5)	(6)
	Full	Full	Immigrants	Immigrants	Natives	Natives
Contribution						
Common	-2.254 (2.153)	-2.050 (2.132)	-4.772 (3.940)	-4.772 (3.940)	-2.179 (2.128)	-2.536 (2.508)
Multicultural	-0.206 (2.537)	0.075 (2.627)	-1.609 (2.465)	-1.609 (2.465)	-0.018 (2.381)	0.244 (2.469)
Immigrant	2.397*** (0.494)	3.193*** (0.392)				
Common x Immigrant	-1.904 (2.384)	-2.878 (3.529)				
Multicultural x Immigrant	-2.489*** (0.060)	-2.748*** (0.179)				
Female	1.776*** (0.319)	2.170*** (0.673)	-1.949 (1.982)	-1.949 (1.982)	3.118*** (0.998)	3.926*** (0.333)
Group of 4	-2.416 (4.070)	-2.334 (4.056)	2.321 (2.665)	2.320 (2.665)	-3.876 (4.766)	-3.464 (4.473)
Group of 5	-1.760 (2.828)	-1.557 (2.560)	4.562*** (1.367)	4.561*** (1.367)	-3.750 (2.592)	-2.727 (2.562)
Constant	23.242*** (6.629)	22.718*** (6.567)	24.301*** (3.723)	24.301*** (3.723)	23.362*** (7.878)	22.484*** (7.593)
N Obs.	3,900	3,900	1,300	1,300	2,600	2,600
Round fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Yes	Yes	Yes	Yes	Yes	Yes
Random Slopes	Yes	Yes	Yes	Yes	Yes	Yes
Individual correlation	Yes	Yes	Yes	Yes	Yes	Yes
Class nesting	Yes	Yes	Yes	Yes	Yes	Yes
Group nesting	No	Yes	No	Yes	No	Yes

Column 2: Post estimation tests for Common = [Common x Immigrant - Common]: p=0.0962.

Column 2: Post estimation tests for Multicultural = [Multicultural x Immigrant - Multicultural]: p=0.5679.

Column 4: Post estimation tests for Common = Multicultural: p=0.0320.

Column 6: Post estimation tests for Common = Multicultural: p=0.0000.

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes:

Notes: Linear mixed-effects models, to account for the hierarchical structure of the data, i.e. observations are nested in groups, and the correlation over rounds of individual observations. In particular, the four-level model uses random intercepts and slopes for individual choices observed over rounds, and it account for dependence in the observations among the individuals belonging to the same group, class and school. Columns 1-2 looks at the full sample. Columns 3 and 4 at immigrants only. Columns 5-6 at natives only.

Table 11: Contribution to the Public Good - Part I + II

	(1)	(2)	(3)	(4)	(5)	(6)
	Full	Full	Immigrants	Immigrants	Natives	Natives
Contribution						
Common	0.768*** (0.082)	0.777*** (0.112)	-0.264 (3.731)	-0.264 (3.731)	0.502 (0.342)	0.115 (0.844)
Multicultural	2.776*** (0.646)	2.852*** (0.666)	0.539 (3.158)	0.539 (3.158)	2.534*** (0.858)	2.640** (1.128)
Immigrant	3.581** (1.554)	3.834** (1.512)				
Common x Immigrant	-0.920 (5.329)	-1.192 (5.542)				
Multicultural x Immigrant	-2.763 (4.060)	-2.810 (4.116)				
Female	0.895 (0.900)	0.881 (0.911)	-2.007* (1.124)	-2.007* (1.124)	2.108* (1.253)	2.360*** (0.893)
Group of 4	-0.258 (1.648)	-0.280 (1.659)	5.770*** (1.096)	5.770*** (1.096)	-2.809 (2.173)	-2.757 (2.267)
Group of 5	0.443*** (0.128)	0.575*** (0.093)	4.217*** (0.751)	4.217*** (0.751)	-0.520 (0.586)	0.192 (0.615)
Constant	22.790*** (2.508)	22.694*** (2.561)	24.256*** (0.967)	24.256*** (0.967)	23.542*** (4.028)	23.325*** (4.330)
N Obs.	7,800	7,800	2,600	2,600	5,200	5,200
Round fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Yes	Yes	Yes	Yes	Yes	Yes
Random Slopes	Yes	Yes	Yes	Yes	Yes	Yes
Individual correlation	Yes	Yes	Yes	Yes	Yes	Yes
Class nesting	Yes	Yes	Yes	Yes	Yes	Yes
Group nesting	No	Yes	No	Yes	No	Yes

Column 2: Post estimation tests for Common = [Common x Immigrant - Common]: p=0.6055.

Column 2: Post estimation tests for Multicultural = [Multicultural x Immigrant - Multicultural]: p=0.0022.

Column 4: Post estimation tests for Common = Multicultural: p=0.1610.

Column 6: Post estimation tests for Common = Multicultural: p=0.0000.

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: Linear mixed-effects models, to account for the hierarchical structure of the data, i.e. observations are nested in groups, and the correlation over rounds of individual observations. In particular, the four-level model uses random intercepts and slopes for individual choices observed over rounds, and it account for dependence in the observations among the individuals belonging to the same group, class and school. Columns 1-2 looks at the full sample. Columns 3 and 4 at immigrants only. Columns 5-6 at natives only.

Table 12: Individual characteristics - Immigrants and Natives

	Full	Natives	Immigrants	Diff.
Female	0.413 (0.493)	0.408 (0.492)	0.423 (0.496)	-0.015
How often I practice sport	3.854 (1.307)	3.935 (1.252)	3.692 (1.402)	0.242
How often I surf the web	3.036 (1.522)	2.904 (1.497)	3.300 (1.543)	-0.396*
How often I watch TV	4.700 (1.654)	4.812 (1.637)	4.477 (1.672)	0.335
Number of siblings	1.152 (0.905)	1.000 (0.820)	1.495 (0.994)	-0.495***
Mother has a job	0.787 (0.410)	0.842 (0.365)	0.677 (0.469)	0.165***
Mother has a degree	0.536 (0.499)	0.573 (0.496)	0.462 (0.500)	0.112*
Father has a degree	0.482 (0.500)	0.481 (0.501)	0.485 (0.502)	-0.004
Father has a job	0.795 (0.404)	0.823 (0.382)	0.738 (0.441)	0.085
I maximized my own payoff	0.782 (0.413)	0.819 (0.386)	0.708 (0.457)	0.112*
I did what I think you wanted me to do	0.419 (0.494)	0.412 (0.493)	0.434 (0.498)	-0.023
Mistakes in control question 1	0.846 (2.339)	0.735 (2.300)	1.069 (2.409)	-0.335
Mistakes in control question 2	1.044 (3.171)	0.846 (2.636)	1.438 (4.017)	-0.592
Calm	0.615 (0.487)	0.627 (0.485)	0.592 (0.493)	0.035
Tense	0.651 (0.477)	0.662 (0.474)	0.631 (0.484)	0.031
Upset	0.679 (0.467)	0.688 (0.464)	0.662 (0.475)	0.027
Relaxed	0.505 (0.501)	0.500 (0.501)	0.515 (0.502)	-0.015
Happy	0.682 (0.466)	0.708 (0.456)	0.631 (0.484)	0.077
Worried	0.759 (0.428)	0.781 (0.415)	0.715 (0.453)	0.065

Notes: The Table show how the observable characteristics differ between natives (Column 2) and immigrants (Column 3) at the baseline. Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Table 13: Contribution to the Public Good - Mechanisms

	(1)	(2)	(3)	(4)	(5)	(6)
	Contribution	Contribution	Contribution	Contribution	Contribution	Contribution
Contribution						
Common	0.672** (0.296)	0.830*** (0.302)	0.640*** (0.077)	0.627 (0.436)	-0.224 (0.800)	0.213 (0.551)
Multicultural	2.923*** (0.662)	2.842*** (0.662)	2.766*** (0.710)	2.797*** (0.708)	2.779*** (0.662)	2.838*** (0.686)
Immigrant	3.771*** (1.274)	3.808*** (1.475)	3.300*** (0.899)	3.334*** (0.705)	3.060** (1.524)	3.749** (1.780)
Common x Immigrant	-0.917 (5.103)	-0.972 (5.982)	-0.694 (5.008)	-0.630 (5.577)	2.064 (4.795)	0.932 (5.191)
Multicultural x Immigrant	-2.796 (4.023)	-2.749 (4.222)	-2.798 (3.819)	-2.786 (4.067)	-2.635 (6.323)	-2.138 (5.024)
Not having siblings	1.363 (1.211)			0.443 (0.377)		
Mother has a degree=1		0.681 (1.869)		0.088 (2.895)		
Mother has a job=1			-2.152 (1.389)	-1.918 (2.353)		
1st PCA (SES)					-0.208 (0.728)	
Share sent in Dictator Game						4.429 (4.498)
Female	0.840 (0.984)	0.918 (0.996)	0.914 (0.856)	0.901 (1.024)	1.589* (0.883)	0.296 (1.262)
Group of 4	-0.304 (1.710)	-0.252 (1.739)	-0.346 (1.739)	-0.343 (1.896)	0.064 (1.561)	0.801 (1.301)
Group of 5	0.573*** (0.124)	0.642** (0.300)	0.581** (0.271)	0.587 (0.540)	0.243 (0.554)	0.220 (0.668)
Constant	22.411*** (2.292)	22.253*** (3.805)	24.587*** (3.716)	24.233*** (6.365)	22.920*** (6.597)	21.739*** (4.330)
N Obs.	7,800	7,800	7,800	7,800	6,460	6,220
Round fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Yes	Yes	Yes	Yes	Yes	Yes
Random Slopes	Yes	Yes	Yes	Yes	Yes	Yes
Individual correlation	Yes	Yes	Yes	Yes	Yes	Yes
Class nesting	Yes	Yes	Yes	Yes	Yes	Yes
Group nesting	Yes	Yes	Yes	Yes	Yes	Yes

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: Linear mixed-effects models, to account for the hierarchical structure of the data, i.e. observations are nested in groups, and the correlation over rounds of individual observations. In particular, the four-level model uses random intercepts and slopes for individual choices observed over rounds, and it account for dependence in the observations among the individuals belonging to the same group, class and school. Columns 1 include the number of siblings, Column 2 control for the level of education of the mother, in Column 3 we add the working status of the mother, Column 4 include all the proxies of the socio-economic background jointly, Column 5 include the principal component of the socio-economic background, while Column 6 controls for the unconditional "generosity" as measures by the share of endowment kept in the Dictator Game.

Table 14: Contribution to the Public Good - Context Mechanisms

	(1)	(2)	(3)	(4)	(5)
	Contribution	Contribution	Contribution	Contribution	Contribution
Common	2.387 (4.788)	1.813 (2.126)	5.858 (10.569)	4.407 (6.350)	1.061 (1.819)
Multicultural	4.500*** (0.295)	3.387*** (1.038)	10.122** (4.912)	5.330*** (0.051)	1.742*** (0.351)
Common × Immigrants in the class	-5.616 (10.544)				
Multicultural × Immigrants in the class	-5.792 (4.723)				
Common × High share of immigrants born in Italy=1		-2.472 (2.404)			
Multicultural × High share of immigrants born in Italy=1		-1.576*** (0.137)			
Common × Network Density			-22.446 (52.123)		
Multicultural × Network Density			-31.329 (30.869)		
Common × Centrality-in among Immigrants				-1.091 (2.350)	
Multicultural × Centrality-in among Immigrants				-0.798 (0.620)	
Common × Mentioned as friends immigrants					-0.751 (2.969)
Multicultural × Mentioned as friends immigrants					0.444 (1.055)
Immigrants in the class	10.222** (4.561)				9.644** (3.896)
High share of immigrants born in Italy=1		0.744 (1.044)			
Network Density			12.910 (39.701)		
Centrality-in among Immigrants				0.541 (1.639)	
Mentioned as friends immigrants					-0.895 (1.668)
Female	-0.475** (0.216)	-0.038*** (0.006)	-0.529*** (0.144)	-0.342 (0.506)	-0.415 (1.043)
Constant	20.468*** (3.075)	23.257*** (2.189)	20.931*** (7.268)	22.007*** (3.410)	21.878*** (1.618)
N Obs.	2,160	2,160	2,160	2,160	2,140
Round fixed effects	Yes	Yes	Yes	Yes	Yes
Clustering	Yes	Yes	Yes	Yes	Yes
Random Slopes	Yes	Yes	Yes	Yes	Yes
Individual correlation	Yes	Yes	Yes	Yes	Yes
Class nesting	Yes	Yes	Yes	Yes	Yes
Group nesting	Yes	Yes	Yes	Yes	Yes

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: Linear mixed-effects models, to account for the hierarchical structure of the data, i.e. observations are nested in groups, and the correlation over rounds of individual observations. In particular, the four-level model uses random intercepts and slopes for individual choices observed over rounds, and it account for dependence in the observations among the individuals belonging to the same group, class and school. Columns 1 interact the treatment with the share of immigrants in the classroom, Column 2 control for the share of first generation immigrants, in Column 3 we add the network density, Column 4, 5 and 6 include the interaction with a measure of classroom-network density, the centrality of immigrants in the network, and the number of mentions as immigrant friend (while controlling for the share of immigrants in the classroom).

Appendix

A.1 Institutional Background

In this appendix, we provide additional detail on the institutional and demographic setting of our study, focusing on immigration trends in Italy and the organization of the Italian school system.

A.1.1 Immigration in Italy

The enrollment of students without Italian citizenship (non-Italian) has steadily increased in Italy since the early 1990s. However, the overall share of non-Italian students remained below 1.5% until the academic year 1999/2000. Over the following decade, this share grew significantly, reaching 7.52% in 2009/2010—rising from 119,679 to 673,800 students. By 2019/2020, the academic year during which our experiment took place, non-Italian students accounted for 10.3% of the total student population—an increase of less than three percentage points compared to ten years earlier. Notably, around 62.2% of students with a migrant background were born in Italy (MIUR, 2021).¹⁶

In the region of Emilia-Romagna—where this study was conducted—the share of enrolled students without Italian citizenship is 17.1%, the highest among all Italian regions. In the municipality of Bologna, this figure is 16.4% among middle school students, 62.6% of whom were born in Italy. The majority of students of migrant origin in Bologna come from Europe (38%), including 18.5% from European Union member states, followed by students from Asia (29.0%) and Africa (28.7%) (MIUR, 2021).¹⁷ In this study, we identify immigrant students based on their parents' citizenship status. This definition encompasses both first-generation immigrants (students born outside of Italy) and second-generation immigrants (students born in Italy to non-Italian parents). As in many European countries—unlike the United States—Italy adopts the *jus sanguinis* principle, which does not automatically confer citizenship to children born

¹⁶Italian citizenship is acquired primarily through the principle of *jus sanguinis* (right of blood), meaning that citizenship is granted to those born to Italian parents or adopted by Italian citizens. There are limited cases in which citizenship is acquired by *jus soli* (right of soil)—for instance, when a child is born in Italy to stateless parents or parents whose nationality is unknown or cannot be transmitted. Foreign nationals may apply for citizenship after at least ten years of legal residence in Italy, provided they meet specific requirements, including stable income, a clean criminal record, and no threats to national security. Additionally, Italian citizenship can be obtained through marriage: a non-Italian spouse may apply for citizenship after two years of legal residence in Italy post-marriage, assuming there has been no dissolution or separation of the union.

¹⁷The most represented countries of origin among non-Italian students in Bologna include: Pakistan (8.7%), Bangladesh (6.1%), Moldova (5.0%), the Philippines (4.1%), Morocco (3.6%), China (2.4%), Romania (2.4%), Albania (1.7%), India (1.1%), and Egypt (0.9%) (MIUR, 2021).

on Italian soil unless certain conditions are met. Non-Italian students born in Italy may apply for citizenship upon reaching the age of 18, provided they can demonstrate uninterrupted legal residency since birth.

Thus, throughout the paper, we refer to any student whose parents were not born in Italy as an immigrant. Table A.15 presents the distribution of citizenship among immigrant students in our sample. When considering the place of birth, 75.4% of immigrant students were born in Italy (thus within the European Union), 11.5% were born elsewhere in Europe, 8.5% in Asia, 1.5% in Africa, and 0.8% in Central or South America.

Table A.17 describes the socio-economic characteristics of the municipality of Bologna and the two city districts involved in our study. On average, foreign residents constitute about 15% of Bologna’s total population. The two districts we focus on—“Borgo Panigale - Reno” and “Savena”—mirror this trend, with foreign resident shares of 16% and 14%, respectively. In terms of average income and educational attainment, both districts fall slightly below the citywide average, particularly in “Borgo Panigale - Reno”.

A.1.2 The Educational System in Italy

In Italy, education is publicly funded and provided free of charge to all children. Schooling is compulsory from ages 6 to 16 and is structured into three main stages: five years of primary school (*scuola primaria*), three years of middle school (*scuola secondaria di primo grado*), and five years of high school (*scuola secondaria di secondo grado*). Upon completing middle school, students must choose one of three high school tracks: academic (*liceo*), technical, or vocational.

Italian schools enjoy a high degree of autonomy: each institution defines its own curriculum, expands its educational offerings, and organizes teaching methods, including school hours and the composition of student groups. At all school levels—primary, middle, and high—students follow all subjects within the same class and with the same cohort of peers. In both primary and middle school, it is common for students to have the same teacher for a given subject throughout the full educational cycle. For example, a student’s mathematics and science teacher typically remains the same for all three years of middle school.

In recent years, the Italian Ministry of Education has faced increasing challenges in managing the integration and placement of students with non-Italian citizenship. In response, since 2006 the Ministry has issued several sets of guidelines aimed at promoting inclusion, enhancing intercultural dialogue, and addressing the growing ethnic and cultural diversity in classrooms.¹⁸

¹⁸These guidelines include: *Linee guida per l'accoglienza e l'integrazione degli alunni stranieri* (2006); *La via italiana per la scuola interculturale* (2007); *Linee guida per l'accoglienza e l'integrazione degli alunni stranieri*

According to ministerial guidelines introduced in the 2010/2011 academic year, the proportion of students with non-Italian citizenship and limited Italian language proficiency should not, as a rule, exceed 30% of enrolled students per class.¹⁹ Nationally, Emilia-Romagna—the region where our study was conducted—has the highest percentage of classes that meet or exceed this 30% limit (16.2%) (MIUR, 2021).

Table A.18 reports a few descriptive statistics of our study population across the two participating schools. In both institutions, the average share of immigrant students per class exceeds the national threshold, standing at approximately 33%. Similarly, the average proportion of immigrant students per experimental group is also around 33%.

(2014); *Diversi da chi?* (2015); and *Orientamenti Interculturali. Idee e proposte per l'integrazione di alunne e alunni provenienti da contesti migratori* (2022).

¹⁹This threshold may be exceeded if students with non-Italian citizenship already possess adequate language skills, or reduced in cases where many students lack basic Italian proficiency. Importantly, schools are not permitted to refuse enrollment based on surpassing this threshold.

A.2 Tables and Figures

Table A.15: Summary Statistics - Immigrants origins

	Where born	Mother born	Father born	Grandmother born	Grandfather born
Afghanistan	0.023	0.031	0.069	0.062	0.046
Albania	0.008	0.085	0.062	0.077	0.069
Algeria	0.000	0.008	0.015	0.008	0.008
Argentina	0.000	0.000	0.000	0.000	0.008
Bangladesh	0.008	0.085	0.077	0.077	0.077
Cabo Verde	0.000	0.008	0.008	0.008	0.008
China	0.000	0.054	0.054	0.054	0.054
Colombia	0.000	0.008	0.000	0.000	0.000
Cuba	0.000	0.008	0.008	0.008	0.008
Dominican Republic	0.008	0.008	0.008	0.008	0.008
Eritrea	0.000	0.038	0.015	0.038	0.015
Ethiopia	0.000	0.000	0.023	0.000	0.023
France	0.000	0.000	0.000	0.008	0.000
Germany	0.000	0.008	0.015	0.000	0.000
Ghana	0.000	0.008	0.015	0.000	0.008
Gibraltar	0.000	0.000	0.000	0.008	0.000
Greece	0.000	0.000	0.000	0.008	0.000
India	0.000	0.015	0.023	0.015	0.015
Italy	0.754	0.000	0.000	0.023	0.038
Lebanon	0.000	0.000	0.008	0.000	0.008
Moldova	0.085	0.138	0.123	0.123	0.131
Monaco	0.000	0.000	0.000	0.008	0.000
Morocco	0.015	0.146	0.131	0.146	0.131
Mozambique	0.000	0.000	0.000	0.000	0.008
Nigeria	0.000	0.038	0.031	0.038	0.038
Oman	0.000	0.000	0.000	0.000	0.008
Pakistan	0.046	0.046	0.046	0.038	0.038
Peru	0.008	0.015	0.023	0.008	0.015
Philippines	0.008	0.038	0.038	0.038	0.038
Republic of North Macedonia	0.000	0.008	0.000	0.000	0.000
Romania	0.000	0.085	0.077	0.085	0.069
Russian Federation	0.000	0.000	0.000	0.008	0.000
Senegal	0.000	0.008	0.008	0.008	0.008
Serbia	0.008	0.015	0.031	0.015	0.038
Slovakia	0.000	0.008	0.000	0.000	0.000
Sudan	0.000	0.000	0.008	0.000	0.008
Tunisia	0.000	0.015	0.015	0.015	0.015
Turkey	0.000	0.008	0.008	0.008	0.008
Ukraine	0.015	0.054	0.046	0.038	0.038
Venezuela	0.000	0.000	0.000	0.008	0.000
Europe Union	0.754	0.100	0.092	0.138	0.108
Other Europe	0.115	0.308	0.269	0.269	0.285
Asia	0.085	0.269	0.315	0.285	0.285
Africa	0.015	0.269	0.269	0.262	0.269
Central America	0.008	0.015	0.015	0.015	0.015
South America	0.008	0.023	0.023	0.015	0.023

Notes: The table reports the nationality distribution of the immigrant students, considering the place where the subject is born (Column 1), the place where the mother (Column 2), the father (Column 3), the grandmother (Column 4), and the grandfather (Column 5) are born. The different nationalities are grouped into “European Union” which groups together Austria, Croatia, France, Germany, Greece, Italy, Monaco, Poland, Romania, Slovakia, Spain, Switzerland, United Kingdom; “Other Europe” grouping together Albania, Belarus, Moldova, Republic of North Macedonia, Russian Federation, Serbia, Turkey, Ukraine; “Asia” groups together Afghanistan, Bangladesh, China, India, Lebanon, Oman, Pakistan, Philippines; “Africa” groups together Cabo Verde, Egypt, Eritrea, Ethiopia, Ghana, Mozambique, Niger, Nigeria, Senegal, Sudan, Algeria, Morocco, Tunisia; “Central America” groups together Cuba, Dominican Republic; “South America” groups together American Samoa, Argentina, Brazil, Chile, Colombia, Peru, Venezuela.

Table A.16: Contribution to the Public Good - Mechanisms

	(1)	(2)	(3)	(4)	(5)	(6)
	Contribution	Contribution	Contribution	Contribution	Contribution	Contribution
Contribution						
Common	0.672** (0.296)	0.830*** (0.302)	0.640*** (0.077)	0.627 (0.436)	-0.224 (0.800)	0.213 (0.551)
Multicultural	2.923*** (0.662)	2.842*** (0.662)	2.766*** (0.710)	2.797*** (0.708)	2.779*** (0.662)	2.838*** (0.686)
Immigrant	3.771*** (1.274)	3.808*** (1.475)	3.300*** (0.899)	3.334*** (0.705)	3.060** (1.524)	3.749** (1.780)
Common x Immigrant	-0.917 (5.103)	-0.972 (5.982)	-0.694 (5.008)	-0.630 (5.577)	2.064 (4.795)	0.932 (5.191)
Multicultural x Immigrant	-2.796 (4.023)	-2.749 (4.222)	-2.798 (3.819)	-2.786 (4.067)	-2.635 (6.323)	-2.138 (5.024)
Not having siblings	1.363 (1.211)			0.443 (0.377)		
Mother has a degree=1		0.681 (1.869)		0.088 (2.895)		
Mother has a job=1			-2.152 (1.389)	-1.918 (2.353)		
1st PCA (SES)					-0.208 (0.728)	
Share sent in Dictator Game						4.429 (4.498)
Female	0.840 (0.984)	0.918 (0.996)	0.914 (0.856)	0.901 (1.024)	1.589* (0.883)	0.296 (1.262)
Group of 4	-0.304 (1.710)	-0.252 (1.739)	-0.346 (1.739)	-0.343 (1.896)	0.064 (1.561)	0.801 (1.301)
Group of 5	0.573*** (0.124)	0.642** (0.300)	0.581** (0.271)	0.587 (0.540)	0.243 (0.554)	0.220 (0.668)
Constant	22.411*** (2.292)	22.253*** (3.805)	24.587*** (3.716)	24.233*** (6.365)	22.920*** (6.597)	21.739*** (4.330)
N Obs.	7,800	7,800	7,800	7,800	6,460	6,220
Round fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Yes	Yes	Yes	Yes	Yes	Yes
Random Slopes	Yes	Yes	Yes	Yes	Yes	Yes
Individual correlation	Yes	Yes	Yes	Yes	Yes	Yes
Class nesting	Yes	Yes	Yes	Yes	Yes	Yes
Group nesting	Yes	Yes	Yes	Yes	Yes	Yes

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: Linear mixed-effects models, to account for the hierarchical structure of the data, i.e. observations are nested in groups, and the correlation over rounds of individual observations. In particular, the four-level model uses random intercepts and slopes for individual choices observed over rounds, and it account for dependence in the observations among the individuals belonging to the same group, class and school. Columns 1 include the number of siblings, Column 2 control for the level of education of the mother, in Column 3 we add the working status of the mother, Column 4 include all the proxies of the socio-economic background jointly, Column 5 include the principal component of the socio-economic background, while Column 6 controls for the unconditional "generosity" as measures by the share of endowment kept in the Dictator Game.

Table A.17: Summary Statistics - Bologna and Districts

	Bologna	Borgo Panigale - Reno	Navile	Porto Saragozza	San Donato - San Vitale	Santo Stefano	Savena
Average income 2017	25839	22097	21277	29060	22365	35794	24474
Population 2019	391984	61359	69525	69595	66320	64510	60142
Foreign residents 2019	60698	10018	15132	8287	11414	7276	8402
Share of pop with High School	0.54	0.44	0.47	0.64	0.54	0.68	0.52
Share of home-owners (households)	0.61	0.67	0.60	0.57	0.58	0.61	0.69
Share Foreign residents 2019	0.15	0.16	0.22	0.12	0.17	0.11	0.14
Share of immigrants from EU	0.23	0.25	0.19	0.24	0.21	0.25	0.26
Share of immigrants from other EU	0.19	0.23	0.16	0.19	0.19	0.19	0.23
Share of immigrants from west Asia	0.013	0.011	0.0061	0.016	0.013	0.021	0.016
Share of immigrants from Asia	0.36	0.32	0.41	0.36	0.35	0.35	0.32
Share of immigrants from North Africa	0.093	0.086	0.12	0.076	0.12	0.049	0.071
Share of immigrants from Africa	0.065	0.065	0.074	0.053	0.074	0.062	0.049
Share of immigrants from North America	0.0048	0.00090	0.00099	0.0091	0.0032	0.018	0.0030
Share of immigrants from Central America	0.0080	0.0077	0.0065	0.011	0.0091	0.0093	0.0061
Share of immigrants from South America	0.038	0.033	0.029	0.043	0.037	0.050	0.047

Notes: The data are provided by the Statistical Office of the Municipality of Bologna. Income is the average income in 2017 expressed in Euro. The population statistics and the related percentage shares are all taken from the 2019 census.

Table A.18: Summary Statistics by School

	School 1	School 2	Diff.
Common	0.328 (0.471)	0.362 (0.483)	-0.034
Multicultural	0.332 (0.472)	0.362 (0.483)	-0.030
Neutral	0.339 (0.474)	0.276 (0.449)	0.064
Class size	18.650 (2.595)	19.517 (1.853)	-0.868***
Percent Immigrants per class	0.336 (0.116)	0.328 (0.068)	0.008
Percent immigrants per group	0.336 (0.271)	0.328 (0.235)	0.008
Immigrants per class	6.372 (2.572)	6.457 (1.701)	-0.085
Immigrants in School	92	38	54
School district	Borgo Panigale - Reno	Savena	
Observations	274	116	390

Notes: The table shows the summary statistics by school. *Common*, *Multicultural* and *Neutral* measures the share of students assigned to each treatment within each school. *Class size* measures the average number of students present in the class during the experiment. *Percent Immigrants per class* and *Percent immigrants per group* show the average share of immigrants students over the total number of student in each class and in each group, respectively. *Immigrants per class* and *Immigrants per school* show the average absolute number of students in the class and the total number of students in the school. *School District* is the name of district of the municipality of Bologna where the school is located.

Table A.19: Feelings by Treatment and Immigration Status

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Calm	Tense	Upset	Relaxed	Happy	Worried	Demand
Common	0.149 (0.084)	0.200 (0.149)	-0.084 (0.180)	0.034 (0.015)	-0.200 (0.167)	-0.147 (0.142)	-0.162* (0.01)
Multicultural	-0.109 (0.082)	0.066 (0.122)	-0.063 (0.031)	0.013 (0.024)	-0.104 (0.046)	-0.160 (0.103)	-0.023 (0.050)
Immigrant	-0.091 (0.240)	0.196 (0.182)	-0.017 (0.066)	0.143 (0.230)	-0.391 (0.229)	0.011 (0.061)	-0.025 (0.068)
Common x Immigrant	-0.128 (0.222)	-0.573 (0.411)	-0.278 (0.115)	-0.293 (0.284)	0.244 (0.084)	-0.573 (0.244)	0.104 (0.035)
Multicultural x Immigrant	-0.051 (0.134)	-0.183 (0.249)	-0.202 (0.207)	-0.184 (0.386)	0.260 (0.062)	-0.233 (0.278)	0.015 (0.144)
Female	-0.002 (0.088)	0.162 (0.027)	0.210 (0.093)	-0.053 (0.077)	-0.038 (0.115)	0.039 (0.056)	-0.018 (0.095)
Constant	2.701*** (0.021)	2.780*** (0.008)	3.044*** (0.041)	2.458*** (0.025)	3.016** (0.097)	3.367** (0.086)	0.484* (0.052)
N Obs.	389	389	389	389	389	389	389
Clustering	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Random Slopes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Class nesting	Yes	Yes	Yes	Yes	Yes	Yes	Yes

OLS regression. Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: The feelings are reported as answer to the question “I feel ...” as in the short 6-items Spielberger State-Trait Anxiety Inventory ([Marteanu and Bekker, 1992](#)).

Table A.20: Mistakes by Treatment and Immigration Status

	(1)	(2)	(3)
	Mistakes in control question 1	Mistakes in control question 2	Contribution
Common	-0.422 (0.151)	-0.259 (0.205)	0.664*** (0.006)
Multicultural	-0.121 (0.069)	-0.135 (0.262)	2.853*** (0.413)
Immigrant	0.188 (0.052)	0.588 (1.260)	3.921*** (1.218)
Common x Immigrant	0.033 (0.459)	-0.352 (1.613)	-1.164 (4.945)
Multicultural x Immigrant	0.881 (0.558)	0.706** (0.039)	-2.402 (3.972)
Female	-0.372 (0.182)	-0.202 (0.386)	0.709 (0.822)
Mistakes in control question 1			-0.375*** (0.037)
Mistakes in control question 2			-0.128 (0.223)
Constant	1.032** (0.063)	1.036 (0.237)	23.178*** (2.027)
N Obs.	390	390	7,800
Round fixed effects			
Clustering	Yes	Yes	Yes
Random Slopes	Yes	Yes	Yes
Individual correlation	No	No	Yes
Class nesting	Yes	Yes	Yes
Group nesting	No	No	Yes

Symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Notes: The mistake output variables count the number of times the subjects has reported a wrong answer to the control question 1 and 2 we asked before the main experiment to check if the instructions were clear. Column 3 estimate equation 8 directly controlling for the level of understanding by including the number of mistakes in the control questions.

Table A.21: OLS: Contribution - Part I

	(1) Full	(2) Full	(3) Immigrants	(4) Natives
Common	1.017 (0.748)	1.328 (0.925)	-0.290 (1.289)	1.124 (0.925)
Multicultural	2.092*** (0.747)	3.103*** (0.913)	0.116 (1.408)	2.933*** (0.914)
Immigrant	2.245*** (0.659)	3.484*** (1.102)		
Common x Immigrant		-0.744 (1.574)		
Multicultural x Immigrant		-3.135* (1.617)		
Female	1.505** (0.621)	1.561** (0.620)	-0.678 (1.202)	2.883*** (0.748)
Constant	19.547*** (0.640)	19.052*** (0.722)	23.853*** (0.985)	18.588*** (0.730)
N Obs.	3,900	3,900	1,300	2,600
Round Fixed effects	Yes	Yes	Yes	Yes
Classroom fixed effect	Yes	Yes	Yes	Yes
Robust standard errors	Yes	Yes	Yes	Yes

Column 2: Post estimation tests for Common = [Common x Immigrant - Common]: $p=0.2654$.

Column 2: Post estimation tests for Multicultural = [Multicultural x Immigrant - Multicultural]: $p=0.0022$.

Column 3: Post estimation tests for Common = Multicultural: $p=0.7719$.

Column 4: Post estimation tests for Common = Multicultural: $p=0.0390$.

OLS regression, symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Table A.22: OLS: Contribution - Part I + Part II

	(1) Full	(2) Full	(3) Immigrants	(4) Natives
Common	-0.668 (0.513)	-0.198 (0.634)	-2.044** (0.893)	-0.241 (0.632)
Multicultural	0.664 (0.517)	1.515** (0.632)	0.055 (0.971)	1.570** (0.630)
Immigrant	1.550*** (0.452)	2.779*** (0.780)		
Common x Immigrant		-1.215 (1.084)		
Multicultural x Immigrant		-2.577** (1.121)		
Female	1.811*** (0.426)	1.837*** (0.426)	-1.275 (0.831)	3.242*** (0.516)
Constant	17.682*** (0.444)	17.203*** (0.502)	21.425*** (0.712)	16.508*** (0.504)
N Obs.	7,800	7,800	2,600	5,200
Round Fixed effects	Yes	Yes	Yes	Yes
Classroom fixed effect	Yes	Yes	Yes	Yes
Robust standard errors	Yes	Yes	Yes	Yes

Column 2: Post estimation tests for Common = [Common x Immigrant - Common]: p=0.6963.

Column 2: Post estimation tests for Multicultural = [Multicultural x Immigrant - Multicultural]: p=0.0081.

Column 3: Post estimation tests for Common = Multicultural: p=0.0251.

Column 4: Post estimation tests for Common = Multicultural: p=0.0022.

OLS regression, symbols ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

A.3 Classroom Social Networks

This Appendix offers a detailed overview of friendship patterns and classroom networks. Each student was asked to nominate up to five classmates as friends, identified by unique IDs using the methodology applied by Landini et al. (2016) and Chen et al. (2016). We first analyze the distribution of mentions by friends, distinguishing between immigrant and native statuses, using the same definition for immigrant status as in the main paper (both parents not born in Italy). Next, we construct directed classroom networks and calculate centrality and density measures, which are also employed in the regression analysis.

A.3.1 Friendship

We measure friendship as mentions by classmates. Table A.23 below provides a few summary statistics of the share of mentions in the classroom for each member of the classroom, divided by immigrant status.

Table A.23: Friend Status Statistics

Own status	Friend status	Mean	Median	SD	N
Immigrant	Native	69.5	75	28.3	94
Native	Native	75.4	80	22.1	216

The table shows that Natives attract a significantly larger share of mentions compared to Immigrants, both from Natives and Immigrants (on average, 75.4% and 69.5%, respectively). The Natives have a higher likelihood of mentioning Natives as friends relative to Immigrants, but the difference is small and not statistically significant (Wilcoxon rank sum test, p-value=0.108).

A.3.2 Classroom Networks

In this section, we examine the structure of classroom social networks in greater detail. Only students who participated in the study are included. Each classroom network is represented as a directed graph, where nodes correspond to students and edges indicate friendship nominations. Since nominations are limited to classmates, all connections occur within the classroom. The visualizations below illustrate these networks (Figure A.6): arrows show the direction of each friendship nomination, with reciprocal ties indicated by arrows in both directions. Node color reflects the immigrant status of each student, and node size indicates the number of incoming

nominations (i.e., how many classmates mentioned the student as a friend).

Overall, the structure of classroom networks seems to differ from classroom to classroom. In general, classmates seem to be connected to each other either directly or indirectly, but the structure of connections differs from classroom to classroom. No clear clustering in terms of immigrant status seems to emerge from the graphical representation, even though Natives seem to occupy more central positions in many classrooms.

To gain a better understanding of network structures, a few conventional network measures, adopted also in the regression analysis, are illustrated in the next section.

A.3.2.1 Density

Network density quantifies the overall connectedness within a classroom network. It is calculated as the ratio of actual connections to all possible connections among students. A density of 1 means every student is connected to every other student, while values near 0 reflect sparse networks with few ties. Figure A.7 displays the distribution of density values for each classroom (dots), highlights quartile ranges with a boxplot, and marks the average density with a diamond symbol.

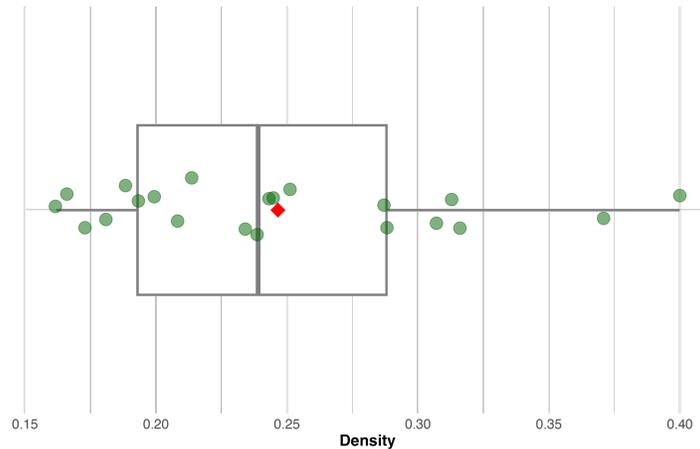


Figure A.7: Classroom Network Density

Overall, classroom networks exhibit low to moderate density, with many classrooms having density values below 0.25. This indicates that while some students are well-connected, many others have fewer connections, leading to a generally sparse network structure across classrooms.

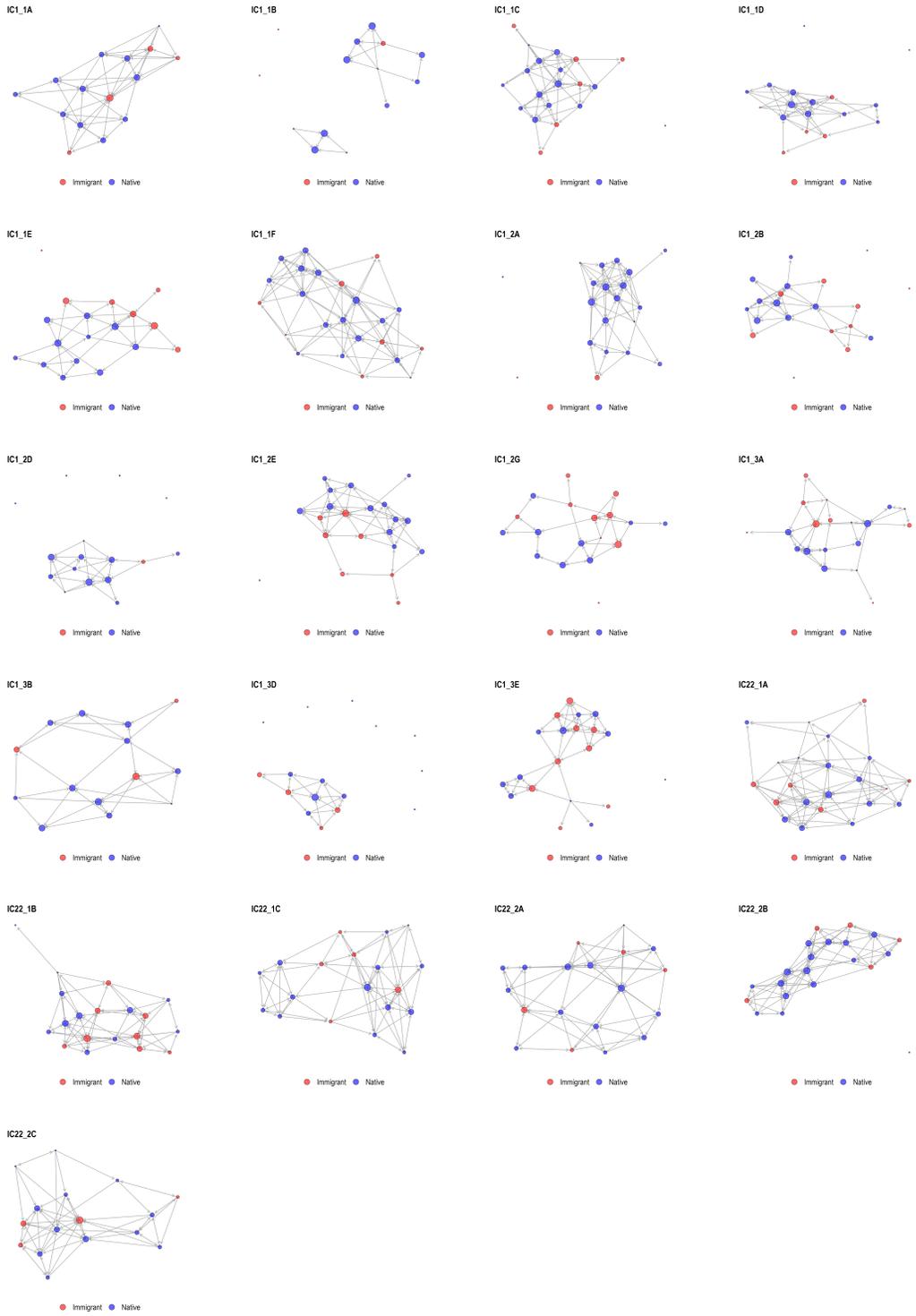


Figure A.6: Classroom Social Networks

A.3.2.2 Degree Centrality: In-ties

The centrality measure we examine is degree centrality, which reflects the number of connections each student receives. In our directed classroom networks, we focus on incoming ties—representing how many classmates mention a student as a friend.

Figure A.8 below summarizes the distribution of degree centrality for each classroom, separately for immigrants and natives.

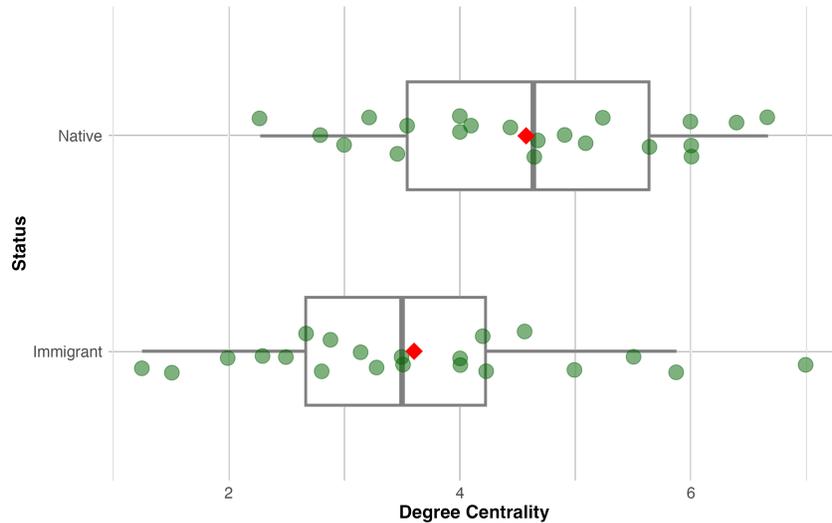


Figure A.8: Network Degree Centrality (In-ties) by Immigrant Status

As the figure shows, Natives generally have more incoming connections than Immigrants: in 17 classrooms out of 21 (80.9%), the natives display a higher value than the immigrants. This reflects the overall higher popularity of Natives observed in the friendship nominations.

The evidence from the friendship nominations and the network measures points to a consistent pattern: classroom social structures are heterogeneous across classes, but native students generally occupy more central and visible positions. Descriptive statistics and degree-centrality measures show that natives receive more incoming nominations in the majority of classrooms, yet the graphical layouts and class-level diagnostics do not reveal strong, uniform clustering by immigrant status. Differences in popularity and centrality are often modest and vary with classroom composition and density. These findings suggest a recurring native advantage in social visibility within classrooms, but the magnitude and robustness of this advantage depend on local classroom structure.

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