Contact vs. information: What shapes attitudes towards immigration? Evidence from an experiment in schools

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A B S T R A C T

We analyze whether (correct) information provision on immigration is more effective than contact in shaping attitudes towards immigration. We collect data from a randomized experiment in 18 middle- and high-school classes in the city of Rome. Half of the classes meet a refugee from Mauritania and read a book about his story, whereas the rest of them attend a lecture on figures and numbers on immigration in Italy and the world. On average, students develop better attitudes towards immigration (especially in the case of policy preferences and the perceived number of immigrants in their country) and somewhat improve their feelings associated with immigrants after the information treatment more than they do after the contact treatment. Also, students having received the information treatment strongly adjust their knowledge on immigration. However, students' individual characteristics (sex and, to a lesser extent, age) affect treatments' relative effectiveness.

1. Introduction

In 2017, many European countries registered a share of non-EU residents below 6% of the total population (Eurostat, 2017). However, the vast majority of the individuals interviewed in the Eurobarometer Survey 88.2 (2017) overestimated the share of extra-EU residents in their countries. Interestingly, countries with the highest share of non-EU residents were more likely to make mistakes on the fraction of resident immigrants[1], and the negative correlation between the share of foreign-born population and salience of immigration has been recently highlighted by Hatton (2021). There is a larger consensus on the overall positive economic benefits from immigration (see Fig. B.3 of the Appendix), though in many European countries more than half of the individuals interviewed do not think that overall immigration has positive effects on their home countries. Finally, except for Denmark and Sweden, the majority of respondents admitted that they were not very well informed about immigration. Indeed, one of the questions which are raising more and more interest in the literature on attitudes towards immigration is to what extent providing correct information on immigration affects individuals' changes in attitudes towards immigrants.

On the other hand, inspired by the book *The nature of Prejudice* (Allport, Clark, & Pettigrew, 1954), numerous studies have shown that intergroup contact effectively improves majority group's attitudes towards the minority group under optimal conditions[2]. As Pettigrew (2016) and Pettigrew & Tropp (2006) summarize, though, these conditions were too stringent, and even extended - e.g., through a friend who has an out-group member as a friend - or vicarious contacts - e.g., through television, books - are effective measures for prejudice reduction (see Vezzali, Hewstone, Capozza, Giovannini, & Wölfer 2014 for a review).

This paper analyzes how information provision shapes attitudes towards immigration against contact (under the broad category of extended contact) in short-length interventions by assessing the effect of a randomized experiment run in 18 middle- and high-school classes in the city of Rome[3] We randomly select classes to take part either in a two-hour session on the numbers and the figures on immigration in Italy and the world (information treatment) or on a two-hour meeting with the

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Table 1
Balance tests for Groups 1 and 2.

Variable	Mean (G1)	Mean (G2)	Diff.	Std. Error
Female	0.42	0.50	0.08	0.09
Relation with immigrants	1.31	1.45	0.14	0.27
Too many immigrants in Italy	1.86	1.93	0.08	0.18
Neither too many nor too few in Italy	1.33	1.29	-0.04	0.12
Too few immigrants in Italy	0.49	0.55	0.05	0.12
Too many immigrants in neighborhood	1.07	1.09	0.02	0.14
Too few immigrants in neighborhood	1.47	1.58	0.11	0.19
Source of information: School	1.61	1.36	-0.24	0.35
Source of information: Home	1.42	1.47	0.05	0.17
Source of information: Social networks	1.59	1.57	-0.03	0.18
Source of information: TV	2.69	2.57	-0.12[†]	0.06
Share of migrants	0.15	0.09	-0.06	0.11
Continent of origin	0.14	0.12	-0.02	0.12
Feelings: Indifferent	1.24	1.14	-0.10	0.17
Feelings: Annoyed	0.81	0.80	-0.01	0.13
Feelings: Frightened	0.75	0.88	0.13	0.13
Feelings: Affectionate	1.21	1.42	0.22	0.16
Feelings: Compassionate	1.65	1.76	0.11	0.11
Irregular can apply	-0.09	-0.12	-0.03	0.14
Meaning of Italian	1.85	1.89	0.04	0.26
Policy preferences: Receive	0.83	0.83	0.01	0.20
Immigration positive for the economy	0.26	0.24	-0.02	0.06
Anti immigration attitudes in neighborhood	2.28	2.59	0.31[†]	0.15
Interest in immigration	1.72	1.84	0.12	0.18
Number of students	21.22	19.00	-2.22	2.22

[†] $p < 0.1$; * $p < 0.05$; ** $p < 0.01$. Balance tests from difference in means between classes in the information treatment group (G1) and classes in the contact treatment group (G2) at the baseline. All values refer to means collapsed at class level.

same political refugee from Mauritania[4] (contact treatment). Thus, keeping constant the length of the intervention, we compare the differential effect between information provision on immigration and contact with an immigrant on attitudes towards immigrants. It is worth noting that we have two treatment groups and no control groups: the research, thus, analyzes the differential impact of one treatment over the other, but we cannot provide the causal effect of each treatment. We will provide, though, the before and after comparisons of the two treatments separately, as suggestive evidence of the effect of the treatments. These comparisons show that students in both treatment groups display better attitudes than baseline, suggesting a potential positive impact of the interventions. We find that information is more effective than contact in shaping attitudes towards immigration (e.g., the perceived number of immigrants in the country, receiving against repatriating refugees arrived through the Mediterranean route). In addition, the information treatment is more effective than the contact treatment in positively shaping some types of feelings towards immigrants. However, the heterogeneous treatment effects analysis suggests that certain initial conditions strongly affect the results from the two alternative treatments, though not all initial conditions imposed by Pettigrew (1998) are relevant in shaping students' attitudes towards immigration. I also find that the order of the two interventions (in particular, the order: information first, contact second) is associated with better policy preferences towards immigrants over the opposite order.

The literature in developmental social psychology generally finds positive effects of extended contact on racial attitudes among school

children (e.g., Cameron & Rutland, 2006; Cameron, Rutland, Brown, & Douch, 2006; Katz & Zalk, 1978), which are comparable to the effect found among adults. Prejudice begins in children of 2, increases until the age of 7 years, it slightly decreases between 8 and 10 years of age, and it remains stable during the adolescence (Raabe & Beelmann, 2011). Therefore, it is plausible that the results from this study might be generalized to even younger children, who already began being prejudiced. However, to the best of my knowledge, no study has analyzed the impact of information provision on prejudice reduction among school children yet, which opens the door for future research paths.

This study relates to the vast literature analyzing the determinants of attitudes towards immigration, which has been tackled using two main approaches (as Alesina, Miano, & Stantcheva 2018 highlights). The first approach (and the most popular in the literature) uses pre-existing survey data, often implementing instrumental variables estimation to establish a causal relationship between economic, social, or individual characteristics and attitudes towards immigration (see Hainmueller & Hopkins 2014 for a review). Among economic factors, welfare concerns seem to play a fundamental role in shaping opinion towards immigrants in the U.K. more than labor market concerns, as Dustmann & Preston (2007) shows. At the same time, they find that ethnic concerns are relevant in determining attitudes towards more culturally distant minorities. Similarly, Mayda (2006), using data from a large cross-country survey, demonstrates that both economic and non-economic factors are key in explaining individual attitudes towards immigration. In addition, neighborhood plays an important role in shaping attitudes towards immigration, as a higher local concentration of ethnic minorities increases hostile attitudes towards minority groups (Dustmann & Preston 2001).

The second approach used in recent literature (and closest to this research) investigates the determinants of attitudes towards minorities through experimental data. One set of experiments analyzes the effects of correct information provision on attitudes towards immigration. In particular, three papers are close to this study. The first is Alesina et al. (2018), which, exploiting survey data from some EU countries and the U.S., finds that individuals are, on average, poorly informed about the share and the origin of immigrants in home countries and that, after the information treatment, there is higher support for pro-immigrant policies but not for redistributive policies. The second paper is Grigorieff, Roth, & Ubfal (2020), which finds that, after correct information provision to a representative sample of U.S. individuals, views about immigration improve, especially for right-winged individuals and for those who initially had worse attitudes towards immigrants. On the other hand, there is no significant change in policy preferences after the information treatment. Finally, Hopkins, Sides, & Citrin (2019) shows that information provision about immigration does not affect attitudes towards immigrants. Therefore, there is mixed evidence on the effects of information provision on opinion towards immigrants, though, in general, the literature finds no effect on policy preferences. On the other hand, a set of papers analyze the effect of intergroup contact on the perception the majority group has about minority group members through the random assignment of peers. Among recent works, Corno, La Ferrara, & Burns (2019) exploits the randomized assignment of white and black roommates in a South African college and shows that exposure to blacks reduces prejudices whites have on blacks. Additionally, Scacco & Warren (2018), using randomized school class formation data in Nigeria, finds that mixed classrooms lead to reduced discrimination against out-group members. Carrell, Hoekstra, & West (2019) and Finseraas, Hanson, Johnsen, Kotsadam, & Torsvik (2019) report analogous results in the military field. However, recent studies find negative effects of exposure to immigrants and refugees (minority groups) on natives'

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[4] In this case, students receive a book telling the story of the immigrant three weeks before the meeting, so that the contact, though initially indirect, might be considered as repeated.
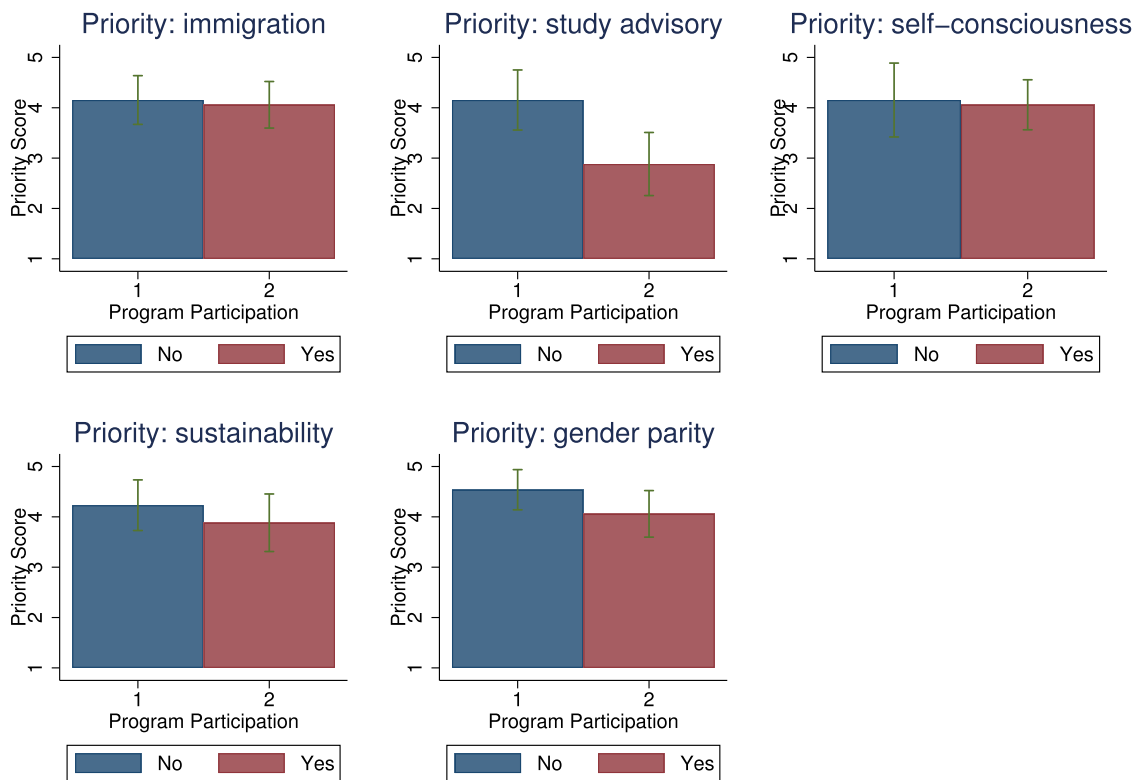
Fig. 1. Notes: The Figure illustrates the average school priority scores that the group of teachers who did not participate (in blue) and the group who participated in the program (in red) attached to five different issues. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)
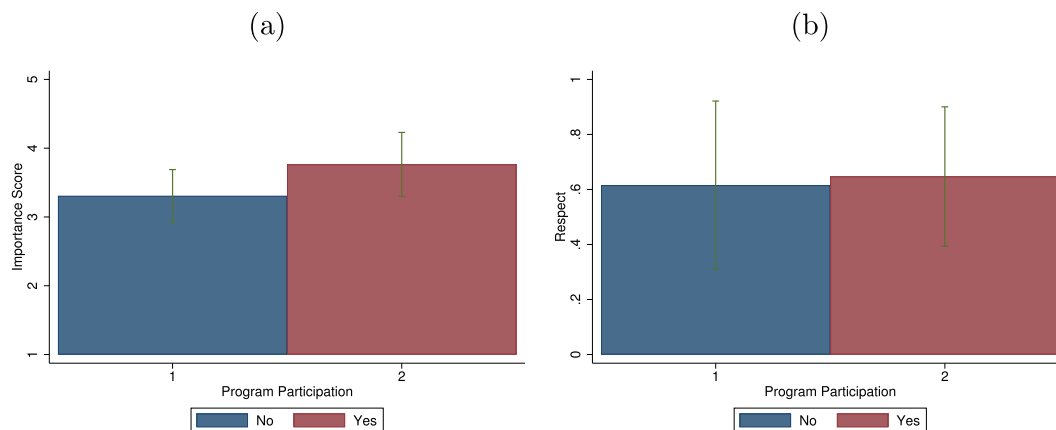
Fig. 2. Additional teachers' attitudes and priorities. Notes: Panel (a) depicts the mean of answers to the question "How important was the recent intensification of migrant inflows for schools?" on a scale from 1 (Not at all) to 5 (Very important). Panel (b) depicts the mean of the dummy variable *Respect* equal to 1 if the teacher included "Respect towards other cultures" as a value schools should pursue and 0 otherwise.

attitudes towards these groups. Adida, Laitin, & Valfort (2016) Dinas, Matakos, Xefteris, & Hangartner (2019), Hangartner, Dinas, Marbach, Matakos, & Xefteris (2019), and Steinmayr (2020) all show that mere exposure to a refugee (i.e., an out-group member) increases natives' anti-immigrant sentiment and support for Far-Right parties. There are two reasons why we do not expect this mechanism to be in place in our study, and both borrow from the field of social psychology. First, the intervention mimics the extended contact hypothesis (under the form of vicarious contact) through the proposed book, which includes the narrative of the refugee's migration experience and his friendship with a young Italian, with whom he started a business. Research in the psychological literature using experimental data to assess the impact of

narrative in reducing prejudice towards minorities has found evidence that narrative (through empathy and perspective-taking) positively affects attitudes towards the out-group. The closest paper in this field is Vezzali, Stathi, & Giovannini (2012), which exploits randomized assignment of different books to high-school students and finds that narrative enhances willingness to further contact with minority-group members[5]. Second, using a dataset of more than 515 studies,

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[5] Other papers which exploit experimental data to assess the effect of vicarious contact on attitudes towards minority groups are Gómez & Huici (2008) and Turner, Crisp, & Lambert (2007), both finding support for the extended contact theory hypothesis.

Table 2

Indices and survey questions.

| Index	Questions
s_{i1}	Which is, in your opinion, the share of migrants in the world? Which is the continent of origin of the majority of migrants Do you think an irregular migrant (extra-EU) can apply for a permit? Does Italy gain or lose out of immigration?
s_{i2}	Do you feel indifferent about this topic? Do you feel annoyed about this topic? Do you feel frightened about this topic? Do you feel affectionate about this topic? Do you feel compassionate about this topic?
s_{i3}	Do you agree with the following sentence: "In Italy, there are too many immigrants"? In your opinion, what does it mean to be an Italian? Born in Italy How would you face the phenomenon of immigrants landings in the Mediterranean Sea? Do you feel interested in the topic of immigration?

Table 3

Correlations between the indices.

	s_{i1}	s_{i2}	s_{i3}
s_{i1}	1.00		
s_{i2}	0.09*	1.00	
	(0.02)		
s_{i3}	0.28**	0.46**	1.00
	(0.00)	(0.00)	

$^{\dagger}\, p < 0.10,\, ^{*}\, p < 0.05,\, ^{**}\, p < 0.01.$
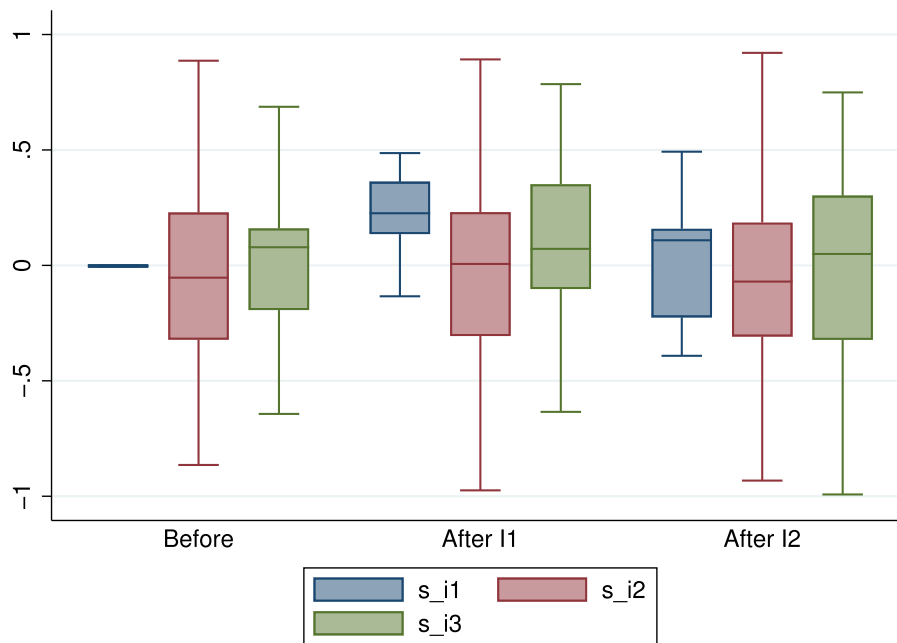
Fig. 3. Distributions of the indices. Notes: The Figure illustrates the distributions of indices s_{i1}, s_{i2}, and s_{i3} before and after each intervention for classes having received first the information treatment relative to classes having received first the contact treatment.
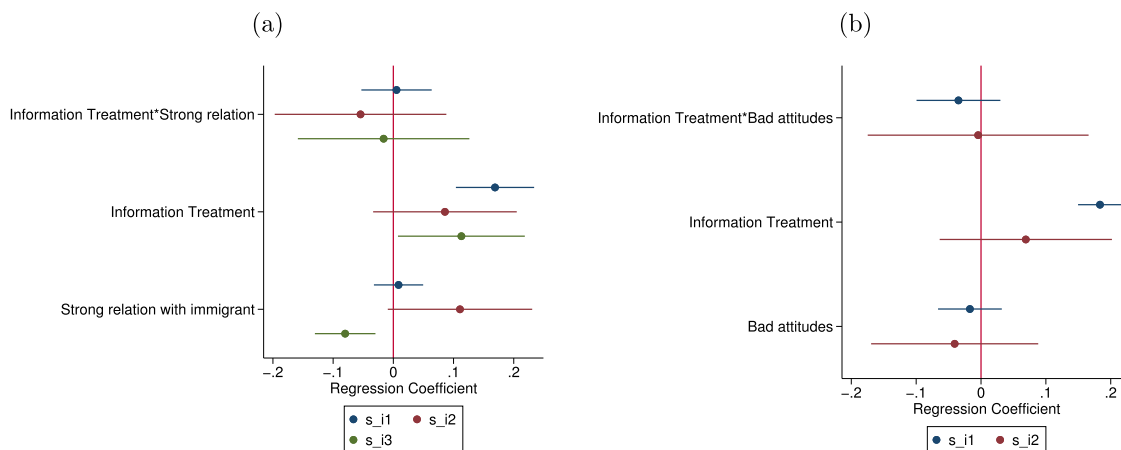
Fig. 4. Notes: The figure shows regression coefficients from Eq. (2). (a) Prior relationship with immigrants; (b) Prior attitudes towards immigration. *Strong relation* is a dummy equal to 1 if the baseline answer to the question *Which type of relationship do you have with immigrants?* is *Very strong (I am an immigrant/my parents are immigrants), Strong (relatives/best friends)*, or *Ordinary (friends, distant relatives, classmates, housekeepers). Bad attitudes* is a dummy equal to 1 if the baseline answer to the question *How would you face the phenomenon of ships' landings in the Mediterranean Sea?* is *By repatriating.*

Table 4

Effects on Indices.

Dependent variable:	(1) s_{i1}	(2) s_{i2}	(3) s_{i3}
Information Treatment	0.176**	0.074	0.103**
	(0.020)	(0.047)	(0.028)
Relation with immigrants	-0.007	-0.035**	-0.018
	(0.007)	(0.011)	(0.012)
Female	0.015	-0.016	-0.001
	(0.011)	(0.024)	(0.045)
Controls	Yes	Yes	Yes
Observations	286	307	314

† $p < 0.10$,* $p < 0.05$, ** $p < 0.01$. Results from three-level mixed models with random intercepts at the school and at the class-within-school levels. s_{i1}, s_{i2}, s_{i3} measure changes, respectively, in the indices for knowledge about, perception of, and attitudes towards immigration, calculated following Anderson (2008) and Grigorieff et al. (2020). All variables composing each index are de-meaned, standardized and weighted by the inverse variance-covariance matrix. Controls include: log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. Standard errors clustered at school level in parentheses.

Table 5

Effects on information about immigration.

Dependent variable:	(1) Share of migrants	(2) Continent of origin	(3) Asylum application	(4) Immigration positive for the economy
Information Treatment	0.155**	0.347**	0.022	0.378**
	(0.026)	(0.043)	(0.020)	(0.073)
Relation with immigrants	-0.008	-0.007	-0.052**	-0.001
	(0.008)	(0.008)	(0.017)	(0.031)
Female	-0.008	0.038†	0.012	-0.068
	(0.018)	(0.023)	(0.055)	(0.071)
Controls	Yes	Yes	Yes	Yes
Observations	299	296	298	305

† $p < 0.10$,* $p < 0.05$, ** $p < 0.01$. Results from three-level mixed models with random intercepts at the school and at the class-within-school levels. Dependent variables are, respectively, the changes in answers to the questions "Which is the share of migrants in the world?", "Which is the continent of origin of the majority of migrants?", "Do you think an irregular migrant (extra-EU) in Italy can apply for a permit?", "Do you think Italy gains or loses from immigration?", where the right answer is coded as 1 and the wrong answers are coded as 0. Controls include: log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. Standard errors clustered at school level in parentheses.

Pettigrew & Tropp (2006) shows that authority sanction (in place here, as represented by the teacher's consensus and participation in the program) has the same effect in reducing prejudice as all the other three conditions taken together.

This paper adds to the literature exploiting experimental data to analyze the determinants of attitudes towards immigration. The major contribution is that it is, to the best of our knowledge, the first paper comparing the two different treatments used in literature, namely investigating the differential effect of information provision against the contact with an immigrant on attitudes towards immigration. As aforementioned, we will exploit the randomized assignment of classes to either treatment to evaluate their differential impact of a treatment over the other. However, due to the lack of a control group, we cannot assess the causal effect of each treatment.

In terms of relevance, the paper contributes to the analysis of

education policies promoting cultural diversity and global citizenship, which are among the Sustainable Development Goals[6] and included in the Council recommendation of 22 May 2018 on key competences for lifelong learning (Council of the European Union, 2018). As proof of its policy relevance, the program has been included among the UN SDG Good Practices[7] The results suggest that, when considering short-length interventions aimed at promoting cultural diversity among students, information provision might be a better treatment than a meeting with an immigrant. One limitation of this study is that it cannot give policy recommendations on longer-length interventions.

The paper is organized as follows. Section 2 describes the program and the experimental sample. Section 3 presents results from the main econometric specification. Section 4 includes some heterogeneous treatment effects implemented to analyze whether specific individual characteristics affect the differential results from the treatments. In Section 5, we describe some robustness checks performed to validate the main results. Section 6 presents the final results after both interventions. Section 7 concludes.

2. The program

The *Sophia Cooperative* has implemented the *Confini* program[8] in Rome since 2016. In 2019 (its fourth edition), it was run in 79 classes from 22 different institutes (40 middle-school classes and 39 high-school classes) on students aged between 11 and 18 years old. The program aims to make students aware of the phenomenon of immigration through different activities to better form their own opinion on this topic. The first activity is the book reading of the story of the same political refugee from Mauritania. Due to political reasons, he left his country in 2010 and emigrated to France. In 2011, he emigrated to Italy, where he has lived since then under the status of political refugee. In Italy, he became a friend of a young Italian, and the two started a business together with other young Italians. After the book reading, students meet the refugee for a two-hour session and have the opportunity to comment on his experience and ask him questions about his journey and immigration experience. The second activity is a two-hour lecture on the numbers and the figures on immigration in Italy and the world. A college student trained by the Sophia Cooperative provides classes with notions about how many people emigrate in the world, the origin countries from which the majority of migrants leave and the main destination countries, and expenditures and revenues deriving from immigrants resident in Italy. In the 2019 edition, all these statistics refer to the year 2018. Teachers are contacted to participate in the program and decide whether to participate with their class and the students carry out all their activities throughout the same scholastic year. Students are administered a questionnaire before the program implementation (*baseline*) and after both interventions (*endline*).

2.1. Experimental sample

We invited a sub-group of classes to be part of an experiment, which was run in 22 out of the 79 classes, 11 middle-school classes, and 11 high-school classes. To guarantee comparability across classes, we include only last year's middle-school classes and up to third-year high-school classes in the experimental sample. Therefore, students taking

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Table 6

Effects on feelings towards immigrants.

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	Feelings: Indifferent	Feelings: Annoyed	Feelings: Frightened	Feelings: Affectionate	Feelings: Compassionate
Information Treatment	0.075	0.093*	0.068	0.125**	0.081†
	(0.079)	(0.044)	(0.114)	(0.045)	(0.045)
Relation with immigrants	-0.019	0.009	-0.027	-0.036†	-0.028
	(0.032)	(0.049)	(0.052)	(0.020)	(0.028)
Female	-0.058	-0.003	-0.024	0.069†	0.011
	(0.076)	(0.109)	(0.078)	(0.037)	(0.056)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	314	312	313	316	316

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Results from three-level mixed models with random intercepts at the school and at the class-within-school levels. Dependent variables are, respectively, the changes in values going from 0 (strongly disagree) to 3 (strongly agree) for responses at questions "Do you feel...about this topic?", considering the following: *Indifferent, Annoyed, Frightened, Affectionate/Friend, Compassionate/Merciful*. The signs for variables in columns 2–4 have been switched, so that the higher the (positive) value the higher the share of students displaying more positive feelings after the treatment. Controls include: log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. Standard errors clustered at the school level in parentheses.

Table 7

Effects on attitudes towards immigration.

	(1)	(2)	(3)	(4)
Dependent variable:	Too many immigrants	Definition of *Italian*:	Policy preferences:	Interest in the topic
	in Italy	Born in Italy	Receive	
Information Treatment	0.165**	-0.140	0.195**	0.184
	(0.056)	(0.110)	(0.067)	(0.172)
Relation with immigrants	-0.014	-0.015	-0.066	-0.055†
	(0.014)	(0.031)	(0.044)	(0.031)
Female	-0.005	-0.038	-0.003	-0.013
	(0.051)	(0.093)	(0.168)	(0.062)
Controls	Yes	Yes	Yes	Yes
Observations	314	317	317	317

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Results from three-level mixed models with random intercepts at the school and at the class-within-school levels. Dependent variables are, respectively, the change in answer *born in Italy* to the question "What is, in your opinion, the definition of being an Italian?, answer to the question "How would you react to immigrant ships' landings through the Mediterranean route? (potential answers were *receiving all immigrants, receiving only political refugees, repatriating all immigrants*, which were assigned, respectively, values from 2 to 0), and answer to the question "Are you interested in the immigration topic? (potential answers were *Definitely, Sufficiently, Not much, Not at all*, with associated values ranging from 3 to 0, respectively). Controls include: log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. Standard errors clustered at the school level in parentheses.

Table 8

Heterogeneous treatment effects: Middle- vs. High-School.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	s_{i1m}	s_{i2m}	s_{i3m}	s_{i1h}	s_{i2h}	s_{i3h}
Information Treatment	0.188**	0.103	0.088*	0.190**	0.043**	0.137**
	(0.012)	(0.085)	(0.041)	(0.023)	(0.010)	(0.011)
Relation with immigrants	-0.010	-0.017	-0.006	-0.003	-0.046**	-0.023
	(0.012)	(0.011)	(0.011)	(0.006)	(0.009)	(0.024)
Female	0.001	0.019	-0.003	0.041	-0.044*	0.016
	(0.013)	(0.041)	(0.071)	(0.026)	(0.021)	(0.063)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	146	157	161	140	150	153

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Results from three-level mixed models with random intercepts at the school and at the class-within-school levels. s_{i1m}, s_{i2m}, s_{i3m} are the (changes in the) indices computed on the sample of middle-school classes, s_{i1h}, s_{i2h}, s_{i3h} are the (changes in the) indices computed on the sample of high-school classes. All variables composing each index are de-meaned, standardized and weighted by the inverse variance-covariance matrix. Controls include: log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. Standard errors clustered at the school level in parentheses.

part in the experiment are aged between 13 and 17 years old. Unfortunately, two high-school classes did not start the project and other two high-school classes did not fill in the endline questionnaires so that the final experimental sample is composed of 18 classes, 11 from 4 middle schools and 7 from 3 high schools. All the schools are located in southern Rome (one school is in a small municipality at the border of the city province), and Appendix Table B.1 shows the distribution of students across districts (both in terms of school and house). We randomized these classes over the order of the two interventions, namely half of them first attended the information session on numbers and figures on immigration (which we will refer to as the information treatment group) and the rest of them first read the book and met the political refugee (contact treatment group). Overall, we included nine classes (for a total

of 370 students) in the information treatment and nine classes (for a total of 334 students) in the contact treatment group. All the experimental classes answered the questionnaire at the baseline, after the first intervention, and after the second intervention of the project (see Fig. B.5 of the Appendix). We use the change in answers between the *midline* (administered between the two interventions) and the baseline questionnaires to evaluate the differential effect of the two treatments in shaping students' attitudes towards immigration. The questionnaire included three sets of questions (for the complete questionnaire, see Appendix C): *a)* knowledge on statistical, legal, and economic aspects of migration; *b)* feelings associated to migrants; *c)* attitudes towards immigration (e.g., the definition of "Italian", policy preferences towards irregular migrants). These sets of questions are important, as we used them to build three thematic indices.

Table 1 presents balance tests for the difference in means between information and contact treatment groups. All the differences result to be negligible except for the answer on the TV frequency as a source of

Table 9
Heterogeneous treatment effects: Sex.

Dependent variable:	(1) s_{i1f}	(2) s_{i2f}	(3) s_{i3f}	(4) s_{i1m}	(5) s_{i2m}	(6) s_{i3m}
Information Treatment	0.179**	0.063	0.060	0.180**	0.078†	0.152*
	(0.023)	(0.057)	(0.057)	(0.017)	(0.045)	(0.066)
Relation with immigrants	0.002	-0.042	0.025	-0.020**	-0.021	-0.039**
	(0.010)	(0.031)	(0.025)	(0.007)	(0.015)	(0.013)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	128	136	142	158	171	172

† $p < 0.10$,* $p < 0.05$, ** $p < 0.01$. Results from three-level mixed models with random intercepts at the school and at the class-within-school levels. s_{i1f}, s_{i2f}, s_{i3f} are the (changes in the) indices computed on the sample of females, s_{i1m}, s_{i2m}, s_{i3m} are the (changes in the) indices computed on the sample of males. All variables composing each index are de-meaned, standardized and weighted by the inverse variance-covariance matrix. Controls include: log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. Standard errors clustered at the school level in parentheses.

Table 10
Final results after both interventions: Information about immigration.

Dependent variable:	(1) s_{i1}	(2) Share of migrants	(3) Continent of origin	(4) Asylum application	(5) Immigration positive
Information Treatment first	0.029	0.064	0.271	-0.057	0.036
	(0.057)	(0.128)	(0.183)	(0.042)	(0.138)
Relation with immigrants	0.012	-0.004	-0.003	-0.022†	-0.003
	(0.010)	(0.022)	(0.024)	(0.012)	(0.032)
Female	0.047**	0.007	0.151**	0.044	0.004
	(0.012)	(0.051)	(0.055)	(0.078)	(0.067)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	252	263	260	261	267

† $p < 0.10$,* $p < 0.05$, ** $p < 0.01$. Results from three-level mixed models with random intercepts at the school and at the class-within-school levels. s_{i1} measures changes in the index for knowledge about immigration after both interventions, calculated following Anderson (2008) and Grigorieff et al. (2020). All variables composing the index are de-meaned, standardized and weighted by the inverse variance-covariance matrix. Controls include: log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. Standard errors clustered at school level in parentheses.

information on immigration, which is slightly higher for the contact treatment group, and anti-immigration attitudes in the neighborhood, which is slightly higher for the information treatment group, though both coefficients are significant only at 10% level. On average, at the baseline only 15% of the students in the information treatment group and 9% in the contact treatment group answer correctly on the share of migrants in the world, around 14 and 12%, respectively, provide a correct answer on the major continent of origin of migrants in the world, and 26 and 24%, respectively, answer correctly to the question about the economic consequences of immigration in Italy (*Does Italy gain or lose out of immigration?*, to be intended in terms of national GDP).

When considering baseline perception of immigrants, we find that students mainly show positive feelings towards immigrants (in particular, more than 50% in both groups admit feeling *compassion* towards immigrants) against negative feelings as fear or annoyance. On the other hand, only one-third of the students would receive all immigrants arriving through the Mediterranean route, while one-third of the students would repatriate all of them.

2.2. Teachers' Selection

One potential threat to the generalizability of the results comes from teachers' selection into the program. Did teachers who participated in the program have different attitudes and priorities from those who did not participate? After two years from the end of the intervention, we re-contacted teachers who participated in the experiment (17) and teachers who declined to participate in the program (13). We administered all the teachers a questionnaire on school priorities, values to encourage, and attitudes. First, we asked teachers to assign a score between 1 (lowest) and 5 (highest) to five different topics to express the priority each topic should have on the others as the object of teachers' programs, lectures, debates in class. Fig. 1 depicts results from the means for the two groups on the five proposed topics. There is a small negative difference in the salience of the immigration issue between teachers who participated and those who did not, with the latter group perceiving immigration as more salient than the former group, but this difference is not significant. Also, there is no significant difference in self-consciousness and sustainability issues. However, teachers who did not participate perceive study advisory on university and career choice and gender parity as slightly more salient than teachers who participated. In addition, we asked teachers if they perceive it as an opportunity for students and schools the intensification of migration inflows and proposed ten values schools should encourage students to pursue among which teachers could choose up to three. As Fig. 2 shows, there is a small difference in the perceived importance of the increase in migrants' inflows for schools but not in the likelihood to mention "Respect towards other cultures" among the values schools should encourage students to pursue. Therefore, it seems that teachers who decline to participate in the program do so not because of different values they would like to diffuse among their students, but because they prefer to give priority to other issues (as school advisory or gender parity) which they perceive as more salient than immigration.

Also, it can be that teachers who were proposed to participate in the program had on average better attitudes than other teachers. If teachers with negative attitudes towards immigration diffuse these attitudes among students, then their students will have worse baseline attitudes towards immigration. However, as we will show in Section 4 (Heterogeneous Treatment Effects), baseline attitudes towards immigration do not affect the results from the main model specification.

3. Results

To assess the effectiveness of information provision about immigration relative to contact with an immigrant, we estimate the following model:

$$y_{ijs} = \beta_0 InformationTreatment_{js} + x'_{ijs}\beta_1 + u_{js} + u_s + \epsilon_{ijs} \quad (1)$$

where y_{ijs} is measured as the change in outcome y for individual i in class j of school s, $InformationTreatment_{js}$ is the information treatment dummy, x_{ijs} are student characteristics, u_{js} and u_s are random effects, respectively, at class-within-school and school levels. The coefficient β_0 measures, therefore, the effect of the information treatment as compared to the contact treatment on the change in the outcome y_{ijs} after the inter-

Table 11
Final results after both interventions: Feelings towards immigrants.

Dependent variable:	(1) s_{i2}	(2) Indifferent	(3) Annoyed	(4) Frightened	(5) Affectionate	(6) Compassionate
Information Treatment first	0.027	0.202	-0.021	-0.164	0.079	0.143†
	(0.079)	(0.202)	(0.140)	(0.114)	(0.077)	(0.078)
Relation with immigrants	-0.035	0.016	-0.035	-0.061	-0.018	-0.049†
	(0.026)	(0.063)	(0.070)	(0.088)	(0.018)	(0.029)
Female	0.001	0.056	-0.129	-0.082	0.076†	0.078
	(0.021)	(0.074)	(0.097)	(0.107)	(0.042)	(0.059)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	264	269	268	269	271	271

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Results from three-level mixed models with random intercepts at the school and at the class-within-school levels. s_{i2} measures changes in the index for feelings towards immigrants after both interventions, calculated following Anderson (2008) and Grigorieff et al. (2020). All variables composing the index are de-meaned, standardized and weighted by the inverse variance-covariance matrix. Controls include: log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. Standard errors clustered at school level in parentheses.

Table 12
Final results after both interventions: Attitudes towards immigration.

Dependent variable:	(1) s_{i3}	(2) Too many immigrants in Italy	(3) Definition of *Italian*: Born in Italy	(4) Policy preferences: Receive	(5) Interest in the topic
Information Treatment first	-0.028	-0.087	-0.093	0.247**	0.172
	(0.091)	(0.257)	(0.185)	(0.083)	(0.217)
Relation with immigrants	-0.003	0.009	-0.034	-0.074	-0.035
	(0.012)	(0.035)	(0.022)	(0.054)	(0.041)
Female	-0.009	-0.100	0.006	-0.022	-0.010
	(0.028)	(0.109)	(0.062)	(0.118)	(0.045)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	274	274	276	276	276

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Results from three-level mixed models with random intercepts at the school and at the class-within-school levels. s_{i3} measures changes in the index for knowledge about immigration after both interventions, calculated following Anderson (2008) and Grigorieff et al. (2020). All variables composing the index are de-meaned, standardized and weighted by the inverse variance-covariance matrix. Controls include: log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. Standard errors clustered at school level in parentheses.

vention. If, for instance, we find that when the outcome variable is s_{i1} the coefficient β_0 is 0.10, it means that the information treatment changes s_{i1} by 10% more than the contact treatment does. In all specifications, we include gender, baseline relation with immigrants, student's house district characteristics (log mean income, population, population density, the share of foreigners), a dummy for inclusive school[9], and the share of votes for the *League* party (anti-immigration and Far-Right party) at 2018 Parliamentary elections in school district[10]. The main outcome variables considered in the analysis are the changes in three thematic indices which have been constructed following Grigorieff et al. (2020) and Anderson (2008). The indices are constructed, first, by switching signs' outcomes to have coherence across answers, then normalizing outcomes (i.e. demeaning and dividing by control groups' standard deviations), lastly by building a weighted average of outcomes for each index, using as weights the variance-covariance matrix. Table 2 summarizes the questions used to construct each index. The first index (s_{i1}) measures information on immigration and it can be considered as an *attention check* for the information treatment group (see Grigorieff et al.

2020). In addition, it is a check for endline knowledge about immigration of the information treatment group. It includes questions on the share and the continent of origin of migrants in the world, the process of asylum application for illegal migrants, and the net benefits the country receives from immigration. The second index (s_{i2}) measures students' feelings towards immigrants (considered feelings are: Indifference, Annoyance, Fear, Affection/Friendship, Compassion/Mercy). The third index (s_{i3}) measures attitudes towards immigration, and it covers the question "Are the immigrants in Italy too many?" and questions about the definition of *being an Italian*, policy preferences towards immigrants' landings through the Mediterranean Sea and interest in the topic of immigration. When administering the questionnaires, enumerators specified that the question "Does Italy gain or lose out of immigration?" should be intended in terms of GDP (Overall total benefits - Overall total costs). Fig. 3 shows the distribution of the indices before, after the first, and after the second interventions for the group of classes having received the information treatment first relative to classes having received the contact treatment first and Table 3 reports the correlations between the indices before the interventions. The indices are positively and significantly correlated between them, so that information on immigration, feelings towards immigrants, and attitudes towards immigration move in the same direction. Additionally, Appendix Tables B.2–B.4 show the correlations between each index component, which are always positive for all indices.

As the experiment lacks a pure control group, we cannot assess the causal impact of each treatment. Nevertheless, it is worth analyzing the outcomes before and after each intervention to have suggestive evidence

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[9] We define a school "inclusive" if its Auto-Evaluation Report (a report which all Italian schools must compile over a set of pre-defined indicators) mentions at least two of the following indicators: a) Inclusion of disadvantaged people, disabled, foreign citizens, people with Specific Learning Disorders as priority project; b) Activities to raise awareness on the topics of diversity, inclusion, acknowledgment of stereotypes and prejudice; c) Projects aimed at including students with foreign citizenship.

[10] The data sources are the Italian Ministry of the Interior and Roma Capitale.

of the impacts of the interventions. Appendix Tables B.5–B.7 show the comparisons between the outcomes before and after the first and the second interventions, separately by order of treatments. We will comment on these comparisons in the next sections.

3.1. Effects on knowledge about immigration

Table 4 shows estimation results of model (1) using the indices as outcome variables. As aforementioned, s_{i1} (first column of Table 4) is the index measuring students' knowledge about the immigration topic, and it is mainly used as an attention check for students in the information treatment group vs. students in the contact treatment group. Regression results reveal a positive effect of the information provision treatment over the contact with an immigrant on s_{i1}. When analyzing each component of s_{i1} in Table 5, it emerges that, on average, 15.5% and 34.7% more students immediately correct their information on the share and the continent of origin of the majority of immigrants, and almost 38% more students answer correctly to the question on the net benefits Italy has out of immigration. On the other hand, the coefficient of the third column of Table 5 is not significant. Appendix Table B.5 shows that, while students in the contact treatment group do not update their information on the share, the continent of origin of migrants, and the net benefits from immigration, they update their information on the asylum application process, on which they have learned through the book reading and the meeting with the immigrant.

3.2. Effects on feelings towards immigrants

The second column of Table 4 shows results from the estimation of model (1) defining s_{i2} as dependent variable. The table unveils a not

meaning of *being Italian* nor their interest in the immigration topic. Appendix Table B.7 shows that both groups immediately perceive a lower share of immigrants in Italy and improve their attitudes towards the reception of irregular immigrants, but the updates are higher for the information treatment group (coefficient of the variable *After I1* columns (1) and (3), respectively). In addition, only students in the information treatment group show a higher interest in the immigration topic (column (4)).

4. Heterogeneous treatment effects

The previous section revealed how students respond to information provision relative to contact with an immigrant. Though not initially included in the pre-analysis plan, previous literature drove us to investigate how baseline characteristics or attitudes determine students' response to the different treatments. First, Pettigrew (1998) argues that contact is more effective if in-group members already have relationships with out-group members. Thus, we investigate the differential impact of the interventions on students with (and without) strong relations with immigrants. Second, Alesina et al. (2018) and Grigorieff et al. (2020) find that individuals with worse initial attitudes towards immigration are likely to update their beliefs on immigrants more than others after the information provision treatment. Therefore, we study the differential impact of the two interventions on students with worse (and better) initial attitudes towards immigration. Third, age and sex do not seem to influence the effects of intergroup contact (Pettigrew & Tropp, 2006). We assess whether these two individual characteristics influence the differential effect of the interventions. The econometric framework used for analyzing heterogeneous treatment effects is the following:

$$y_{ijs} = \gamma_0 InformationTreatment_{js} + \gamma_1 InformationTreatment_{js} \times I_{ijs} + \gamma_2 I_{ijs} + x'_{ijs}\gamma_3 + u_{js} + u_s + \eta_{ijs} \qquad (2)$$

statistically significant difference of information provision relative to the contact with an immigrant in shaping students' feelings towards immigrants. When analyzing their differential effect on each index component in Table 6, however, we find that the information treatment shapes specific components of this index differently from contact. As already mentioned, the signs of some answers are switched to have coherence across answers. In the case of index s_{i2}, the signs of components 1 (Indifferent), 2 (Annoyed), and 3 (Frightened) are switched to measure more positive (and less negative) feelings towards immigrants. After the treatment, students in the information treatment group results to be significantly less annoyed, more affectionate, and more compassionate towards migrants as compared to students in the contact treatment group. Appendix Table B.6 shows that the students in the contact treatment group are less frightened by immigrants after the meeting with the immigrant while keeping the other feelings unchanged.

3.3. Effects on attitudes towards immigration

Finally, results from Table 4 suggest that information provision shapes the attitudes towards immigration (third column) more than contact. This is further confirmed when considering their differential effects on each component of the index (Table 7). Overall, 16.5% more students in the information treatment group change their opinion on the perceived number of immigrants in their country as compared to the contact treatment group. Also, 19.5% more students in the information treatment group express favorable policy preferences over the reception of refugees arriving through the Mediterranean route than the contact treatment group (significant at 1% level, third column of Table 6). On the other hand, they do not differently change their ideas about the

where I_{ij} is a dummy for the pre-specified baseline students' characteristics or attitude, whereas y_{ijs} is measured as one of the indices s_{ik}. We estimate this equation separately for each group of interest. As in Grigorieff et al. (2020), the overall effect on each group of interest is given by $\gamma_0 + \gamma_1$. *Prior relations with immigrants* The first heterogeneous treatment effect considered includes prior relations with immigrants, measured as *strong* if the student has family members, friends, or classmates who emigrated from other countries and *weak* if the student has distant or no relations with immigrants. Results from regressions in Section 3 show that initial relations with immigrants are negatively correlated with the changes in all the indices. As Fig. 4 panel *a)* suggests, the coefficients are not different for students who reported having initial strong relations with immigrants for indices s_{i1} and s_{i3}. A small difference is reported in the change in index s_{i2}, with the difference between treatments being smaller (and almost disappearing) for students with strong initial relationships with immigrants, but it is not statistically significant. Thus, contact and information have the same effect in shaping attitudes towards immigration when the individual has initial strong relations with immigrants.

In addition, we investigate whether the are differences in responses to the two interventions based on the number of immigrants in the neighborhood. Pettigrew (1998) argued that neighborhoods with a higher number of out-group members positively shape in-group members' responses to intergroup contact. Dustmann & Preston (2001), instead, find that a higher number of immigrants in the neighborhood has negative consequences on natives' attitudes towards immigration. Fig. B.6 reveals that students living in high-immigration neighborhoods (which are defined as a dummy equal to 1 if the share of resident foreigners is larger than the average share of resident foreigners in Rome)

do not respond differently to the interventions in terms of indices.

Baseline attitudes towards immigration Additionally, following Grigorieff et al. (2020), we consider how prior attitudes towards immigration influence findings from the main regressions. Fig. 4 panel *b)* presents coefficients from model 2 when measuring I_{ij} as 1 if initially the student had *negative* attitudes towards immigrants (i.e. responding *By repatriating* to the question *How would you face the phenomenon of ships' landings in the Mediterranean Sea?*). Dependent variables are the changes in indices s_{i1} and s_{i2}. As the figure illustrates, initial attitudes towards immigrants do not significantly affect how students respond to the information provision relative to contact with an immigrant.

Age and sex We repeat the analysis of the differential effect of the information provision vs. contact by age. Since we do not have students' age, we adopt the school type (high- vs. middle-school) as a proxy of the age. We report results from this heterogeneous treatment effects analysis in Table 8. The main effect on indices s_{i1} and s_{i3} is comparable across school types in terms of significance. However, the coefficients on these two indices are larger for high-school (older) students. On the contrary, results on s_{i2} are different. The information treatment is more effective than contact only for high-school students. Namely, information is more effective than contact in shaping not only knowledge on and attitudes towards immigration, but also feelings associated with immigrants for older students. On the other hand, the differences in the change of indices s_{i2} and s_{i3} between the two interventions are less pronounced for younger students. I analyze heterogeneous treatment effects by sex in Table 9. Interestingly, the main results on changes in indices s_{i2} and s_{i3} hold only for males. Instead, I do not find differences between the two interventions in shaping feelings and attitudes towards immigrants for females. These results suggest that sex and age make one intervention more effective than the other in shaping students' opinions towards immigration.

5. Robustness checks

One concern arising from the intervention is that the *immigrant-specific* treatment considered in the paper might drive the results. If this is the case, then the results from the paper cannot be generalized to other migrants. To test for this possibility, I use data from endline questionnaires administered to students who took part in alternative (non-experimental) versions of the intervention. Some classes, in particular, after having read and met the considered political refugee from Mauritania, read a book on the immigration experience of another migrant[11] and met him for two hours. Other classes, instead, after having read and met the refugee from Mauritania, met another migrant[12] for a two-hour testimony about personal migration experience and Q&A session. As the endline questionnaires administered to these classes asked for the students' satisfaction in each part of the program[13], I use these data to recover the difference in satisfaction between the book reading on (or meeting with) the considered immigrant vs. the book reading on (or meeting with) the other migrant. Table B.8 includes one-sample t-tests on the differences in satisfaction levels. As the t-statistics and the p-values show, we cannot reject the hypothesis that the difference is significantly different from zero at all conventional levels in both cases so that the considered immigrant is likely to do at least no worse than the other immigrant.

To validate the main effects found in Section 3, we repeat the

estimation of model (1) by computing the indices excluding students who reported to have a migratory background (we exclude from the sample 6% of students, who declared to be immigrant or to have a parent who is an immigrant). Table B.9 in the Appendix illustrates the results, which confirm the main conclusions drawn from the baseline model. Also, in the first column of Table B.10, we compute the index s_{i3} by including answers to the questions "Do you agree that...In Italy there are neither too many nor too few immigrants?" and "Do you agree that...In Italy there are too few immigrants?" instead of question "Do you agree that...In Italy there are too many immigrants?" (inverted so as to compute the index following Anderson, 2008). The sample of students is the same as in the baseline results. The other columns report results from substituting the values assigned to answers from question on how to face immigrants' landings with dummies equal to 1 if the answer was, respectively, *By hosting all migrants, By hosting only political refugees, By repatriating* (in this latter case the variable has been inverted following Anderson 2008). In all cases (and, most notably, in the case of $s_{i3polref}$), the differential effect of the information treatment is positive relative to the contact treatment.

Finally, we re-estimate Eq. (1) using a Least Squares regression with class fixed effects as an alternative model specification on all the outcomes (see Tables B.11–B.14) and we find similar results like the ones from the preferred model specification.

6. Final results after both interventions

As aforementioned, Appendix Tables B.5–B.7 show the comparisons of the outcomes before, after the first, and after the second intervention. Therefore, the coefficients for the variable *After I2* provide suggestive evidence[14] of the effect of the program after both the interventions compared to the baseline results. We also report the results from t-tests (and relative p-values) on the difference in means between the two interventions for each outcome. Students in both groups update their information on immigration after the two interventions (coefficient of the variable *After I2* in Appendix Table B.5), and the information update remains even two months after the information treatment (for the group having received the information treatment first). Students report only slight differences in their feelings towards immigrants after the program: students having received the information treatment first show more affection towards migrants after the interventions, whereas students having received the contact treatment first show less fear, more affection, and less compassion towards migrants. Students in both groups reveal some change in their attitudes towards immigration after the two interventions (coefficient of the variable *After I2* in Appendix Table B.7): they perceive a lower number of immigrants in their country and are more interested in the topic after both interventions. Also, students who received the information treatment first show improved policy preferences towards irregular immigrants' reception after the two interventions.

It is important, thus, to analyze whether one order of the interventions is better than the other. To assess whether the order of the interventions has a differential impact on the final outcomes, we consider the change in all outcomes after both interventions compared to the initial outcomes. Tables 10–12 present the results. The order of the interventions does not seem to matter for the index s_{i1}. Both groups do not present statistically significant differences in the index s_{i1} and its components (Table 10). As Table 11 shows, the order of the two interventions seems to (weakly) matter only for one component of index s_{i2}, as students who first received the information treatment and then the contact treatment report a positive and significant coefficient over the other order of interventions. As previously mentioned, this is due to a decrease in compassion felt by students who received the contact

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[11] This time the migrant is from Bangladesh and emigrated to Italy for economic reasons.

[12] These classes could meet one out of four migrants, one of them from Albania, one from Senegal, one from Somalia, and the migrant from Bangladesh.

[13] The questionnaires included the questions "Did you like the book on *(the considered immigrant)*'s experience? and "Did you like the meeting with *(the considered immigrant)*? Answers ranged from 0 (Not at all) to 3 (Very much).

[14] Due to the lack of a control group, we cannot assess the causal impact of the program.

treatment first. There are no other systematic differences in index s_{i2} and its components. Finally, students who received the information treatment first display better policy preferences towards migrants than the other group of students (significant at 1% level), whereas the two groups do not differ in the other components of index s_{i3} (Table 12). Therefore, these results suggest that the order of the interventions has some effects on the change in compassion and policy preferences towards immigrants (with the order information treatment first-contact treatment second prevailing on the other), but it does not impact the indices overall.

7. Conclusion

Using data from a randomized experiment in schools in Rome, we provide evidence of the differential effect of information provision on the immigration topic vs. repeated contact with a political refugee. We find that once received the information treatment, students update their knowledge about immigration. Information is more effective relative to contact in shaping students' attitudes towards immigration and, in particular, policy preferences and the perceived number of immigrants in the country. Also, the information treatment shapes feelings associated with migrants more than the contact treatment does. When considering the role played by individual characteristics in the analysis, we find that the main differential effects of information vs. contact are driven by males. The effect is slightly larger for high-school (i.e., older) students, whereas initial relations with immigrants and initial attitudes towards immigration do not matter. These results shed light on the initial conditions that might make one treatment more effective than the other in shaping attitudes and feelings towards immigrants. Finally, the order of the interventions has some effects on policy preferences and feelings of compassion towards immigrants, with the order information first-contact second prevailing on the opposite order.

Acknowledgments

Appendix A. Definition of variables

Variable	Question	Description
Female	Gender	Coded as 1 for female and 0 for male
Relation with immigrants	Which type of relationship do you have with immigrants?	Coded as 4 for very strong (if the student or her parents are immigrants), 3 for strong (relatives or best friends), 2 for ordinary (friends, distant relatives, classmates, housekeepers), 1 for distant (acquaintances), 0 for no relation with immigrants
Too many\Too few\Nor too many neither too few in Italy	Do you agree with the following sentences?	Coded as 3 for strongly agree, 2 for agree, 1 for disagree, 0 for strongly disagree
Too many\Too few\Nor too many neither too few in neighborhood	Do you agree with the following sentences?	Coded as 3 for strongly agree, 2 for agree, 1 for disagree, 0 for strongly disagree
Source of information: School\Home\ Social networks\TV	How often do you hear about immigration issues in the following contexts?	Coded as 3 for strongly agree, 2 for agree, 1 for disagree, 0 for strongly disagree
Share of migrants	Which is, in your opinion, the share of migrants in the world?	Coded as 1 for less than 5% and 0 for 10%\ between 20% and 50%\more than 50%
Continent of origin	Which is the continent of origin of the majority of migrants?	Coded as 1 for Asia and 0 for Africa\America\Europe
Feelings: Indifferent\Annoyed\Frightened\ Affectionate\Compassionate	Do you feel Q about this topic?	Coded as 3 for strongly agree, 2 for agree, 1 for disagree, 0 for strongly disagree
Policy preferences: Receive	How would you face the phenomenon of immigrants landings in the Mediterranean Sea?	Coded as 2 for By hosting all migrants, 1 for By hosting only political refugees, 0 for By repatriating
Immigration positive for the economy	Do you think Italy wins or loses from immigration?	Coded as 1 for wins and 0 for loses
Anti-immigration attitudes in neighborhood	Repatriations are the only way to save human lives and avoid an invasion.How many of your neighbors would agree with this sentence?	Coded as 4 for Almost everyone, 3 for More than a half, 2 for Less than a half, 0 for Very few
Interested	Are you interested in the topic of immigration?	Coded as 3 for Definitely, 2 for Sufficiently, 1 for Not much, 0 for Not at all

Appendix B. Additional tables and figures

Table B.1

Distribution of students across districts.

School District	Number of students
I	76
IX	283
VII	156
XI	67
XIII	51
Albano Laziale	71
Total	704
House District	Number of students
I	41
II	11
IX	236
VI	21
VII	127
VIII	18
X	18
XI	57
XII	14
XIII	13
XIV	12
Albano Laziale	58
Other	23
Total	649

The table shows the distribution of students in terms of both school (first panel) and house district. Roman numbers stand for the district within the municipality of Rome, whereas *Albano Laziale* is a small municipality at the southern border of the city province.

Table B.2

Correlations between index components: s_{i1}.

	Share of migrants	Continent of origin	Asylum application	Immigration positive
Share of migrants	1.00			
Continent of origin	0.52**	1.00		
	(0.00)			
Asylum application	0.09*	0.03	1.00	
	(0.02)	(0.47)		
Immigration positive	0.31**	0.27**	0.17**	1.00
	(0.00)	(0.00)	(0.00)	

[†] $p < 0.10$, [*] $p < 0.05$, [**] $p < 0.01$.

Table B.3

Correlations between index components: s_{i2}.

	Feelings: Indifferent	Feelings: Annoyed	Feelings: Frightened	Feelings: Affectionate	Feelings: Compassionate
Feelings: Indifferent	1.00				
Feelings: Annoyed	0.20**	1.00			
	(0.00)				
Feelings: Frightened	0.03	0.27**	1.00		
	(0.45)	(0.00)			
Feelings: Affectionate	0.23**	0.38**	0.17**	1.00	
	(0.00)	(0.00)	(0.00)		
Feelings: Compassionate	0.26**	0.34**	0.02	0.37**	1.00
	(0.00)	(0.00)	(0.52)	(0.00)	

[†] $p < 0.10$, [*] $p < 0.05$, [**] $p < 0.01$.

Table B.4

Correlations between index components: s_{i3}.

	Too many immigrants in Italy	Definition of *Italian*: Born in Italy	Policy preferences: Receive	Interest in the topic
Too many immigrants in Italy	1.00			
Definition of *Italian*: Born in Italy	0.05	1.00		
	(0.22)			
Policy preferences: Receive	0.37**	0.06†	1.00	
	(0.00)	(0.11)		
Interest in the topic	0.16**	0.06†	0.23**	1.00
	(0.00)	(0.12)	(0.00)	

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table B.5

Comparison before-after: Components of index s_{i1}.

	Information Treatment first			
	(1)	(2)	(3)	(4)
	Share of migrants	Continent of origin	Asylum application	Immigration positive for the economy
After I1	0.647**	0.783**	0.071*	0.482**
	(0.128)	(0.060)	(0.032)	(0.054)
After I2	0.537**	0.711**	0.043	0.408**
	(0.083)	(0.068)	(0.031)	(0.062)
Controls	Yes	Yes	Yes	Yes
Observations	504	500	505	505
Difference between interventions	-0.1051	-0.0694	-0.0355	-0.089
p-value of the difference	0.0469	0.0509	0.5022	0.0625
Avg. outcome at baseline	0.033	0.1292	0.3169	0.2896
Avg. outcome after I1	0.6706	0.9128	0.3931	0.7836
Avg. outcome after I2	0.5655	0.8434	0.3576	0.6946
	Contact Treatment first			
	(1)	(2)	(3)	(4)
	Share of migrants	Continent of origin	Asylum application	Immigration positive for the economy
After I1	0.106	0.042	0.062*	0.060
	(0.066)	(0.043)	(0.025)	(0.042)
After I2	0.360**	0.505**	0.099**	0.277**
	(0.095)	(0.075)	(0.026)	(0.064)
Controls	Yes	Yes	Yes	Yes
Observations	455	447	447	440
Difference between interventions	0.264	0.4665	0.0435	0.1927
p-value of the difference	0	0	0.4252	0.0006
Avg. outcome at baseline	0.0182	0.1159	0.2883	0.3086
Avg. outcome after I1	0.1313	0.1859	0.359	0.4133
Avg. outcome after I2	0.3952	0.6524	0.4024	0.6061

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Results from mixed models with random intercepts at the individual, at the school, and at the class-within-school levels. *After I1* is a dummy equal to 1 if the observation is registered after the first intervention but before the second intervention. *After I2* is a dummy equal to 1 if the observation is registered after both interventions. Controls include: relation with immigrants and sex at the individual level, log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. *Difference between interventions* shows the results from t-tests for the difference in mean for the outcome between the interventions. Standard errors clustered at school level in parentheses.

Table B.6

Comparison before-after: Components of index s_{i2}.

	Information Treatment first				
	(1)	(2)	(3)	(4)	(5)
	Feelings: Indifferent	Feelings: Annoyed	Feelings: Frightened	Feelings: Affectionate	Feelings: Compassionate
After I1	0.064	0.147*	0.138	0.181**	0.142†
	(0.085)	(0.073)	(0.094)	(0.043)	(0.073)
After I2	0.068	0.059	-0.013	0.138*	-0.011
	(0.194)	(0.095)	(0.058)	(0.061)	(0.102)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	511	509	508	506	511
Difference between interventions	0.0168	-0.1238	-0.1432	-0.0319	-0.1852
p-value of the difference	0.8657	0.1829	0.0913	0.7074	0.0347
Avg. outcome at baseline	1.8108	2.2011	2.2131	1.2912	1.672
Avg. outcome after I1	1.8514	2.3333	2.2989	1.4451	1.8057
Avg. outcome after I2	1.8683	2.2096	2.1557	1.4132	1.6205
			Contact Treatment first		
	(1)	(2)	(3)	(4)	(5)
	Feelings: Indifferent	Feelings: Annoyed	Feelings: Frightened	Feelings: Affectionate	Feelings: Compassionate
After I1	0.004	0.046	0.164*	0.059	0.041
	(0.042)	(0.043)	(0.078)	(0.078)	(0.055)
After I2	0.015	0.083	0.196*	0.128†	-0.140*
	(0.063)	(0.054)	(0.082)	(0.077)	(0.058)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	455	453	452	452	454
Difference between interventions	0.0128	0.0669	0.0348	0.0742	-0.139
p-value of the difference	0.9012	0.4666	0.6567	0.4371	0.1507
Avg. outcome at baseline	1.7952	2.1758	2.1796	1.3952	1.7892
Avg. outcome after I1	1.8125	2.1938	2.3333	1.478	1.7875
Avg. outcome after I2	1.8253	2.2606	2.3681	1.5521	1.6485

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Results from mixed models with random intercepts at the individual, at the school, and at the class-within-school levels. *After I1* is a dummy equal to 1 if the observation is registered after the first intervention but before the second intervention. *After I2* is a dummy equal to 1 if the observation is registered after both interventions. The signs for variables in columns 2–4 have been switched, so that the higher the (positive) value the higher the share of students displaying more positive feelings after the treatment. Controls include: relation with immigrants and sex at the individual level, log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. *Difference between interventions* shows the results from t-tests for the difference in mean for the outcome between the interventions. Standard errors clustered at school level in parentheses.

Table B.7

Comparison before-after: Components of index s_{i3}.

	Information Treatment first			
	(1)	(2)	(3)	(4)
	Too many immigrants	Definition of *Italian*:	Policy preferences:	Interest in the topic
	in Italy	Born in Italy	Receive	
After I1	0.547**	-0.022	0.194**	0.482**
	(0.087)	(0.025)	(0.035)	(0.054)
After I2	0.385**	-0.003	0.134*	0.408**
	(0.062)	(0.036)	(0.054)	(0.062)
Controls	Yes	Yes	Yes	Yes
Observations	508	513	487	505
Difference between interventions	-.1646	0.0148	-0.0511	-0.2294
p-value of the difference	0.0822	0.7757	0.5247	0.0022
Avg. outcome at baseline	1.1148	0.6667	1.0872	1.7946
Avg. outcome after I1	1.6437	0.6400	1.2573	1.9825
Avg. outcome after I2	1.479	0.6548	1.2063	1.753
	Contact Treatment first			
	(1)	(2)	(3)	(4)
	Too many immigrants	Definition of *Italian*:	Policy preferences:	Interest in the topic
	in Italy	Born in Italy	Receive	
After I1	0.128**	0.072	0.092†	0.060
	(0.042)	(0.048)	(0.052)	(0.042)
After I2	0.494**	0.026	0.078	0.277**
	(0.130)	(0.063)	(0.106)	(0.064)
Controls	Yes	Yes	Yes	Yes
Observations	455	457	433	440
Difference between interventions	0.3607	-0.071	0.0109	-.0574
p-value of the difference	0.0001	0.1773	0.9024	0.5324
Avg. outcome at baseline	1.0783	0.6108	1.0385	1.8957
Avg. outcome after I1	1.2201	0.6937	1.1391	1.8165
Avg. outcome after I2	1.5808	0.6228	1.15	1.759

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Results from mixed models with random intercepts at the individual, at the school, and at the class-within-school levels. *After I1* is a dummy equal to 1 if the observation is registered after the first intervention but before the second intervention. *After I2* is a dummy equal to 1 if the observation is registered after both interventions. The sign of the variable in column 1 has been switched for consistency. Controls include: relation with immigrants and sex at the individual level, log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. *Difference between interventions* shows the results from t-tests for the difference in mean for the outcome between the interventions. Standard errors clustered at school level in parentheses.

Table B.8

Robustness check: Difference in satisfaction (T-tests).

	Difference between students'				
	satisfaction: Book				
	Obs	Mean	SE	t	p
Difference	153	− 0.0589	0.059	− 0.988	0.325
	Difference between students'				
	satisfaction: Meeting				
	Obs	Mean	SE	t	p
Difference	110	0.136	0.085	1.601	0.112

Results from T-tests. The variable *Difference between students' satisfaction: Book* is the difference between answers to the questions "Did you like the book on Mor's experience?" and "Did you like the book on the other migrant's experience?", which ranged from 0 (Not at all) to 3 (Definitely). The variable *Difference between students' satisfaction: Meeting* is the difference between answers to the questions "Did you like the meeting with Mor?" and "Did you like the meeting with another migrant?", which ranged from 0 (Not at all) to 3 (Definitely).

Table B.9
Robustness checks excluding migrant students.

Dependent variable	(1) s_{i1}	(2) s_{i2}	(3) s_{i3}
Information Treatment	0.194**	0.053	0.091**
	(0.017)	(0.047)	(0.031)
Relation with immigrants	-0.002	-0.042**	-0.006
	(0.006)	(0.008)	(0.015)
Female	0.008	-0.003	0.022
	(0.008)	(0.021)	(0.047)
Controls	Yes	Yes	Yes
Observations	269	288	297

† $p < 0.10$,* $p < 0.05$, ** $p < 0.01$. Results from three-level mixed models with random intercepts at the school and at the class-within-school levels excluding students who reported to be migrants or have migrant parents. All variables composing each index are de-meaned, standardized and weighted by the inverse variance-covariance matrix. Controls include: log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. Standard errors clustered at school level in parentheses.

Table B.10
Robustness checks using alternative index specifications.

Dependent variable	(1) s_{i3}	(2) s_{i3all}	(3) $s_{i3polref}$	(4) $s_{i3repatriate}$
Information Treatment	0.094*	0.062**	0.073**	0.101**
	(0.042)	(0.009)	(0.025)	(0.023)
Relation with immigrants	-0.000	-0.010	-0.016	-0.016
	(0.016)	(0.007)	(0.013)	(0.011)
Female	0.038	0.014	0.025	0.019
	(0.032)	(0.019)	(0.037)	(0.039)
Controls	Yes	Yes	Yes	Yes
Observations	317	314	314	314

† $p < 0.10$,* $p < 0.05$, ** $p < 0.01$. Results from three-level mixed models with random intercepts at the school and at the class-within-school levels. Column (1) displays regression results by substituting the answer *In Italy there are too many immigrants* with answers *In Italy immigrants are neither too many nor too few* and *In Italy immigrants are too few*. Columns (2), (3), and (4) display regression results by substituting the values associated to the question *How would you face the phenomenon of immigrants' landings in the Mediterranean Sea?* with dummy variables equal to 1 if answers were, respectively, *By hosting all migrants, By hosting only political refugees* and *By repatriating* (in this latter case, the answer has been inverted so as to compute the index according to Anderson 2008). Controls include: log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. Standard errors clustered at school level in parentheses.

Table B.11
Robustness checks using alternative model specifications: Indices.

Dependent variable	(1) s_{i1}	(2) s_{i2}	(3) s_{i3}
Information Treatment	0.188**	0.085*	0.113**
	(0.018)	(0.039)	(0.025)
Relation with immigrants	-0.005	-0.032†	-0.012
	(0.008)	(0.017)	(0.012)
Female	0.022*	-0.017	0.008
	(0.010)	(0.030)	(0.052)
Controls	Yes	Yes	Yes
School FE	Yes	Yes	Yes
Observations	286	307	314

† $p < 0.10$,** $p < 0.05$, *** $p < 0.01$. Results from panel regressions using school fixed effects.s_{i1}, s_{i2}, s_{i3} measure changes, respectively, in the indices for knowledge about, perception of, and attitudes towards immigration, calculated following Anderson (2008) and Grigorieff et al. (2020). All variables composing each index are de-meaned, standardized and weighted by the inverse variance-covariance matrix. Controls include: log mean income, population, population density, share of foreigners in student's house district. Standard errors clustered at class level in parentheses.

Table B.12

Robustness checks using alternative model specifications: Information about immigration.

Dependent variable:	(1) Share of migrants	(2) Continent of origin	(3) Asylum application	(4) Immigration positive for the economy
Information Treatment	0.166**	0.364**	0.014	0.435**
	(0.027)	(0.030)	(0.028)	(0.086)
Relation with immigrants	-0.009	-0.002	-0.052**	-0.011
	(0.008)	(0.010)	(0.012)	(0.026)
Female	-0.003	0.047†	0.024	-0.048
	(0.018)	(0.023)	(0.043)	(0.104)
Controls	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes
Observations	299	296	298	305

† $p < 0.10$,** $p < 0.05$, *** $p < 0.01$. Results from panel regressions using school fixed effects. Dependent variables are, respectively, the changes in answers to the questions *Which is the share of migrants in the world?, Which is the continent of origin of the majority of migrants?, Do you think an irregular migrant (extra-EU) in Italy can apply for a permit?, Do you think Italy gains or loses from immigration?*, where the right answer is coded as 1 and the wrong answers are coded as 0. Controls include: log mean income, population, population density, share of foreigners in student's house district. Standard errors clustered at class level in parentheses.

Table B.13

Robustness checks using alternative model specifications: Feelings towards immigrants.

Dependent variable:	(1) Feelings: Indifferent	(2) Feelings: Annoyed	(3) Feelings: Frightened	(4) Feelings: Affectionate	(5) Feelings: Compassionate
Information Treatment	0.094	0.086	0.088	0.140**	0.087†
	(0.062)	(0.069)	(0.122)	(0.035)	(0.046)
Relation with immigrants	-0.022	0.016	-0.027	-0.026	-0.021
	(0.040)	(0.042)	(0.036)	(0.022)	(0.026)
Female	-0.087	0.011	-0.022	0.061	0.022
	(0.093)	(0.105)	(0.121)	(0.043)	(0.054)
Controls	Yes	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes	Yes
Observations	314	312	313	316	316

† $p < 0.10$,** $p < 0.05$, *** $p < 0.01$. Results from panel regressions using school fixed effects. Dependent variables are, respectively, the changes in values going from 0 (strongly disagree) to 3 (strongly agree) for responses at questions *Do you feel...about this topic?*, considering the following: *Indifferent, Annoyed, Frightened, Affectionate/Friend, Compassionate/Merciful*. The signs for variables in columns 2–4 have been switched, so that the higher the (positive) value the higher the share of students displaying more positive feelings after the treatment. Controls include: log mean income, population, population density, share of foreigners in student's house district. Standard errors clustered at class level in parentheses.

Table B.14

Robustness checks using alternative model specifications: Attitudes towards immigration.

Dependent variable:	(1) Too many immigrants in Italy	(2) Definition of *Italian*: Born in Italy	(3) Policy preferences: Receive	(4) Interest in the topic
Information Treatment	0.176**	-0.111	0.208*	0.185
	(0.048)	(0.101)	(0.091)	(0.108)
Relation with immigrants	-0.008	-0.002	-0.075	-0.066
	(0.016)	(0.032)	(0.055)	(0.038)
Female	0.011	-0.020	-0.028	-0.031
	(0.054)	(0.099)	(0.164)	(0.075)
Controls	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes
Observations	314	317	317	317

† $p < 0.10$,** $p < 0.05$, *** $p < 0.01$. Results from panel regressions using school fixed effects. Dependent variables are, respectively, the change in answer *born in Italy* to the question *What is, in your opinion, the definition of being an Italian?*, answer to the question *How would you react to immigrant ships' landings through the Mediterranean route?* (potential answers were *receiving all immigrants, receiving only political refugees, repatriating all immigrants*, which were assigned, respectively, values from 2 to 0), and answer to the question *Are you interested in the immigration topic?* (potential answers were *Definitely, Sufficiently, Not much, Not at all*, with associated values ranging from 3 to 0, respectively). Controls include: log mean income, population, population density, share of foreigners in student's house district and dummy for inclusive school and share of votes for the *League* (anti-immigration party) at the 2018 Parliamentary elections in school district. Standard errors clustered at class level in parentheses.
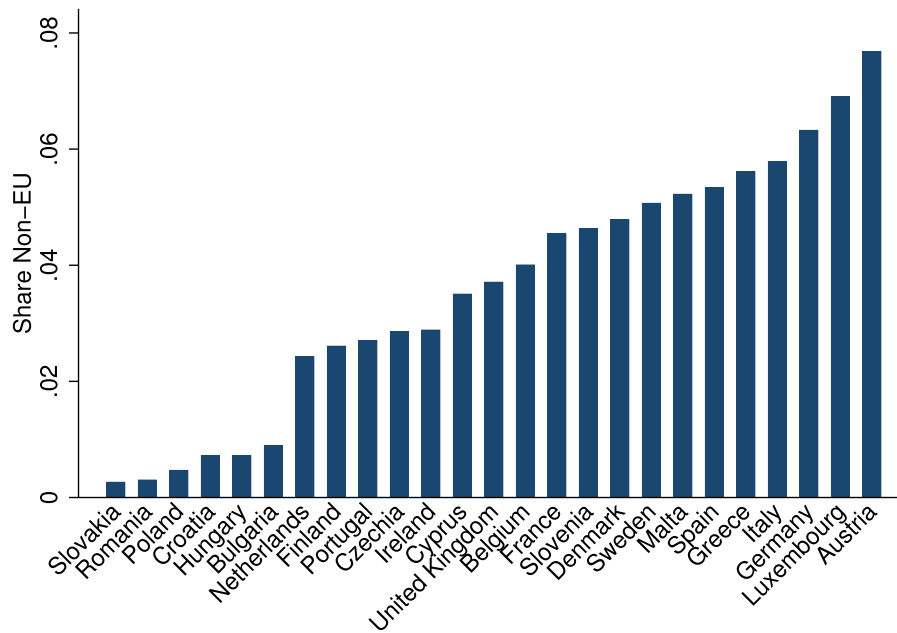
Fig. B.1. Immigrants in EU countries (% over population). Source of the data: Eurostat (2017).
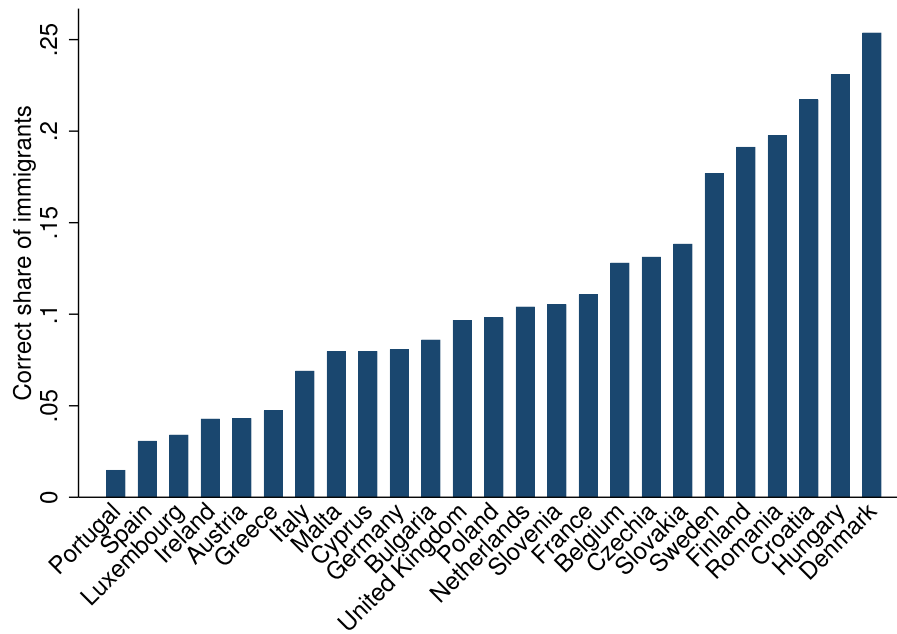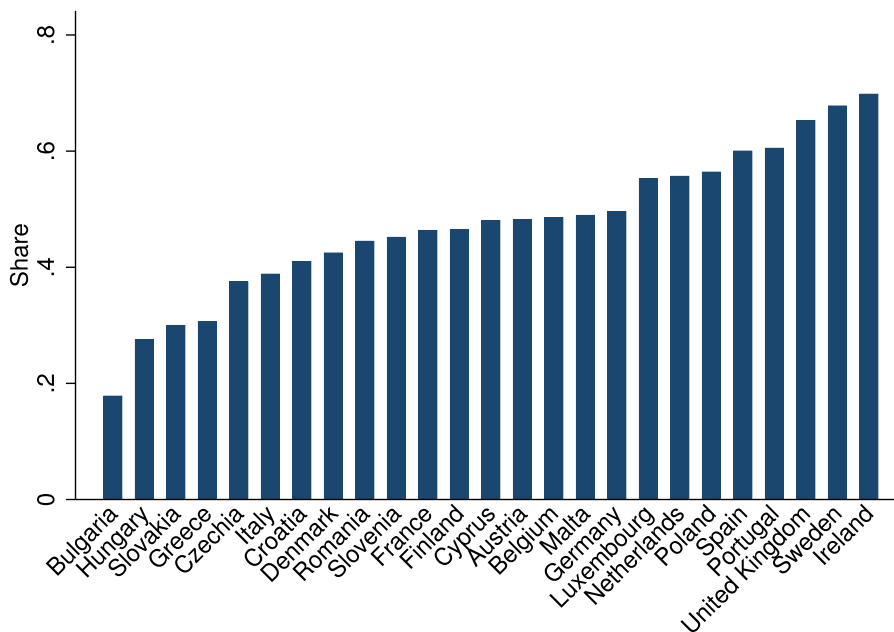
Fig. B.2. Share of correct answers (fraction of non-EU residents). Note: Share of correct answers to the question *To your knowledge, what is the proportion of immigrants in the total population in (OUR COUNTRY)?*. Source of the data: Eurobarometer 88.2 (2017).

Fig. B.3. Immigration positive for economy (% of total respondents). Note: Share of *Totally agree* or *Tend to agree* responses to the question *Immigrants have an overall positive mpact on the (NATIONALITY) economy*. Source of the data: Eurobarometer 88.2 (2017).
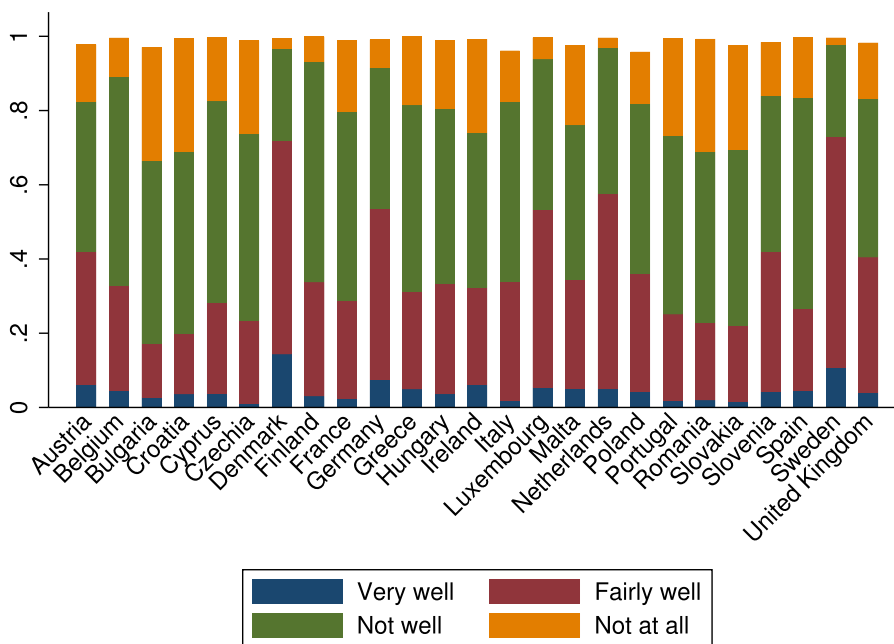
Fig. B.4. Share informed about immigration. Note: Share of responses to the question *Overall, to what extent do you think that you are well informed or not about immigration and integration related matters?*. Source of the data: Eurobarometer 88.2 (2017).
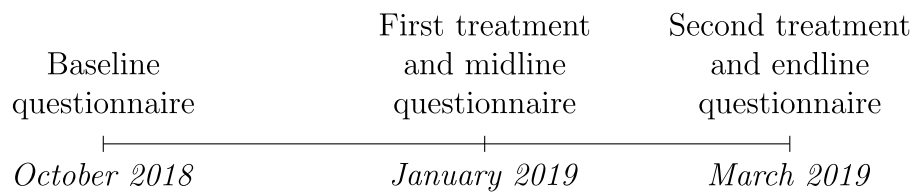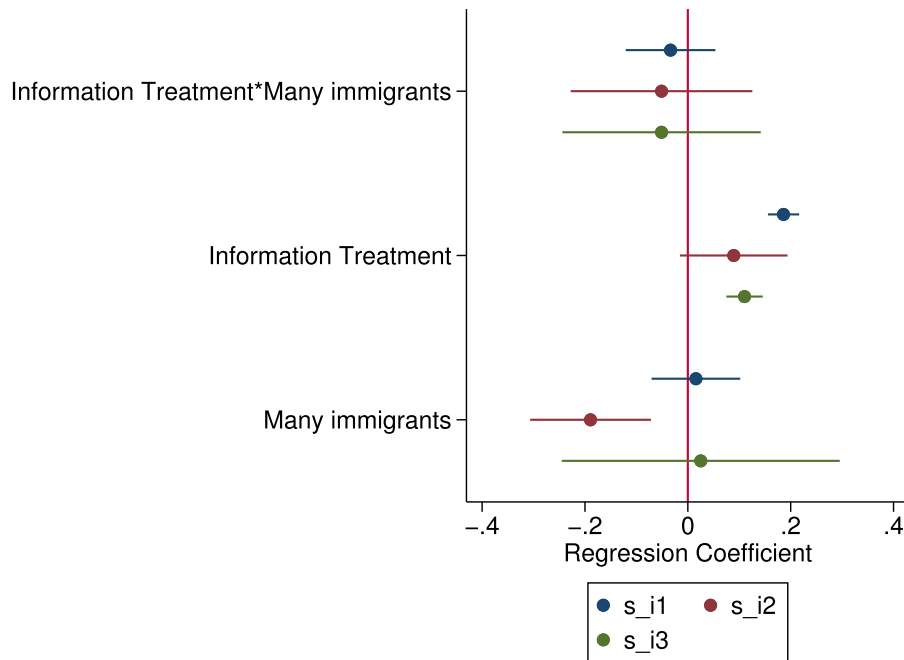
Fig. B.5. Project timeline.

Fig. B.6. Heterogeneous treatment effects: Neighborhood. Notes: The figure shows regression coefficients from Eq. (2). *Many immigrants* is a dummy equal to 1 if the share of resident foreigners in student's neighborhood is larger than the average share of resident foreigners in Rome.

Supplementary material

Supplementary material associated with this article can be found, in the online version, at 10.1016/j.socec.2021.101790

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