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

Erminia Florio*

Abstract

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, 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) after the information treatment more than they do after the contact treatment, whereas neither treatment affects feelings associated to immigrants. Also, students having received the information treatment strongly adjust their knowledge on immigration. However, students' individual characteristics and school type (i.e. middle vs. high school) affect treatments' effectiveness.

Keywords: Attitudes towards immigration; Information Provision; Contact Theory; Randomized Experiment.

JEL Codes: C93; J15; Z1; Z13.

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1 Introduction

In 2017, most of 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 immigrants¹. There is a larger consensus on the overall positive economic benefits from immigration (see Figure B.3 of the online appendix), though in many European countries more than half of the individuals interviewed did not agree with the statement 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, Allport et al. (1954) and Pettigrew (1998) postulate optimal conditions under which inter-group contact effectively improves majority group's attitudes towards the minority group. The latter author argues that increasing knowledge about the out-group members is effective in reducing prejudice towards them only if there were pre-existing relationships with the out-group. Moreover, contact produces changes in the categories set by the majority group as long as it is repeated over time.

This paper analyzes how information provision shapes attitudes towards immigration against 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 Rome². We randomly select classes to participate either to a two-hour session on the numbers and the figures on immigration in Italy and in the world (information treatment) or on a two-hour meeting with the same political refugee from Mauritania³ (contact treatment). Thus, keeping constant the length of the intervention, we compare which treatment between information provision on immigration and contact with an immigrant is more effective in shaping attitudes towards immigrants. We find that information is more effective in changing attitudes towards immigration (e.g. the perceived number of immigrants in the country, receiving against repatriating refugees arrived through the Mediterranean route). However, coherent with Pettigrew (1998)'s view, 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. In addition, overall feelings towards immigrants and interest towards the topic do not seem to change after either treatment (though the information treatment positively shapes the former ones among middle-school students). This study relates to the vast literature analyzing the determinants of attitudes towards immi-

¹Interviews for the Eurobarometer Survey 88.2 were conducted on October 2017 and focused on Integration of immigrants in the European Union and Corruption.

²This experiment is part of the *Confini* project, which is implemented by the *Sophia Cooperative* in schools in Rome and Lazio region.

³In 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.

gration, 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 relation 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 towards minority groups (Dustmann & Preston 2001).

The second approach used in recent literature (and closest to this research) investigates on 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, Miano & Stantcheva (2018), which, exploiting 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 et al. (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 et al. (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 inter-group contact on the perception the majority group has about minority group members through the random assignment of peers. Among recent works, Corno et al. (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 classes formation data in Nigeria, finds that mixed classrooms lead to reduced discrimination against out-group members with respect to homogeneous classes. Carrell et al. (2019) and Finseraas et al. (2019) report analogous results in the military field. Therefore, this strand of literature generally finds positive effects of contact on attitudes towards the minority group. Finally, this paper links to the psychological literature using experimental data to assess the impact of narrative in reducing prejudice towards minorities, usually finding evidence that narrative (through empathy and perspective-taking) positively affects attitudes towards the out-group. The closest paper in this field is Vezzali et al. (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. 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 (repeated) exposure to an immigrant on attitudes towards immigration. As aforementioned, we will exploit the randomized assignment of classes to either treatment to evaluate their differential impact. 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 Goals⁴ and included in the Council recommendation of 22 May 2018 on key competences for lifelong learning (Council of the European Union, 2018). 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 project 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. Section 5 concludes.

2 The project

The Sophia Cooperative has implemented the Confini project⁵ 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. All classes are first-time participants to the project and teachers are contacted and decide whether to participate with their class. The aim of the project is to make students aware of the phenomenon of immigration, in order to better form their own opinion on immigrants. The project is composed by two parts. All the students, first, meet in class the same political refugee and read about his story, and how and why he left his country to emigrate to Italy. Due to political reasons, he left his country, Mauritania, in 2010 and emigrated to France. In 2011, he emigrated to Italy, where he has lived since then under the status of political refugee. The meeting in class lasts for two hours, whereas they are given the book telling the story of the refugee roughly three weeks before the meeting. Secondly, an expert informs the students about the numbers and figures on immigration in Italy and in the world. In particular, in a two-hour session, he provides them 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

⁴Target 4.7 of the SDGs states that: "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development" (UN General Assembly, 2015).

⁵https://www.sophiacoop.it/web/content/progetto_confini_it.php.

deriving from immigrants resident in Italy. In the 2019 edition, all these statistics are referred to year 2018. Students are administered a questionnaire before the first phase (*baseline*) and after the second phase (*endline*).

| 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 | 1.86 | 1 02 | 0.08 | 0.19 |
| in Italy | 1.00 | 1.95 | 0.08 | 0.10 |
| Neither too many nor too few | 1 22 | 1.20 | 0.04 | 0.19 |
| in Italy | 1.55 | 1.29 | -0.04 | 0.12 |
| Too few immigrants | 0.40 | 0.55 | 0.05 | 0.19 |
| in Italy | 0.49 | 0.55 | 0.05 | 0.12 |
| Too many immigrants | 1.07 | 1.09 | 0.02 | 0.14 |
| in neighborhood | 1.07 | 1.05 | 0.02 | 0.14 |
| Too few immigrants | 1.47 | 1 58 | 0.11 | 0.19 |
| in neighborhood | 1.47 | 1.00 | 0.11 | 0.15 |
| Source of information: | 1.61 | 1 36 | -0.24 | 0.35 |
| School | 1.01 | 1.50 | -0.24 | 0.00 |
| Source of information: | 1 49 | 1 47 | 0.05 | 0.17 |
| Home | 1.42 | 1.11 | 0.00 | 0.17 |
| Source of information: | 1 59 | 1 57 | -0.03 | 0.18 |
| Social networks | 1.05 | 1.07 | -0.05 | 0.10 |
| Source of information: | 2.69 | 2.57 | -0.12^{\dagger} | 0.06 |
| TV | 2.05 | 2.01 | 0.12 | 0.00 |
| 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 | 0.26 | 0.24 | -0.02 | 0.06 |
| for the economy | 0.20 | 0.21 | 0.02 | 0.00 |
| Anti immigration attitudes | 2.28 | 259 | 0.31^{\dagger} | 0.15 |
| in neighborhood | 2.20 | 2.00 | 0.01 | 0.10 |
| Interest in immigration | 1.72 | 1.84 | 0.12 | 0.18 |
| Number of students | 21.22 | 19.00 | -2.22 | 2.22 |

Table 1: Balance tests for Groups 1 and 2

[†] 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.

2.1 Experimental sample

A sub-group of classes was invited to participate to 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 middle-school classes and up to third-year high-school classes in the experimental sample. Therefore, students taking part to the experiment are aged between 13 and 17 years old. Unfortunately, 2 high-school classes did not start the project and other 2 high-school classes did not fill-in the endline questionnaires, so that the final experimental sample is composed by 18 classes, 11 middle-school and 7 high-school. These classes were randomized over the two phases, namely half of them attended first 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 (referred to as the contact treament group). All the experimental classes answered the questionnaire at the baseline, after the first phase and after the second phase of the project (see Figure B.5 of the online appendix). We use answers to the *midline* questionnaires (administered after the first phase) to evaluate the effectiveness of the two treatments in shaping students' attitudes towards immigration. The questionnaires included questions on the perceived number of immigrants in Italy and in neighborhood, the main sources of information on immigration, feelings associated with migrants, policy preferences, as well as questions on knowledge about immigration (see Appendix A).

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 information on immigration, which is slightly higher for the contact treatment group, and anti-immigration attitudes in 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 16% of students in the information treatment group and 10% in the contact treatment group answer correctly on the share of immigrants 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?*).

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 to feel *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.

3 Results

To assess the effects of information provision about immigration vs. contact with an immigrant, we estimate the following model:

$$y_{ijs} = \beta_0 T_j + \beta_1 T_j \times Post_{ij} + \beta_2 Post_{ij} + x'_{ij}\beta_3 + \delta_s + \epsilon_{ijs} \tag{1}$$

| Index | Questions |
|----------|---|
| | Which is, in your opinion, the share of migrants in the world? |
| S:1 | Which is the continent of origin of the majority of migrants |
| 511 | Do you think an irregular migrant (extra-EU) can apply for a permit? |
| | Does Italy gain or lose out of immigration? |
| | Do you feel indifferent about this topic? |
| <u> </u> | Do you feel annoyed about this topic? |
| 512 | Do you feel frightened about this topic? Do you feel affectionate about this topic? |
| | Do you feel compassionate about this topic? |
| | Do you agree with the following sentence: In Italy there are too many immigrants ? |
| S-0 | In your opinion, what does it mean to be an Italian? Born in Italy |
| 513 | How would you face the phenomenon of immigrants' landings in the Mediterranean Sea? |
| | Do you feel interested in the topic of immigration? |

Table 2: Indices and survey questions

Table 3: Distribution of indices

| Variable | Obs. | Mean | Std. Dev. | Min | Max | P25 | P50 | P75 |
|----------|------|------|-----------|-------|------|-----|------|------|
| s_{i1} | 669 | .054 | .127 | 128 | .476 | 004 | 002 | .121 |
| s_{i2} | 692 | 01 | .39 | -1.36 | .889 | 28 | .005 | .241 |
| s_{i3} | 698 | .04 | .31 | 639 | .786 | 193 | .038 | .275 |

Table 4: Correlations between the indices

| | s_{i1} | s_{i2} | s_{i3} |
|----------|-----------------------|-----------------------|----------|
| s_{i1} | 1.00 | | |
| s_{i2} | 0.09^{*} (0.02) | 1.00 | |
| s_{i3} | 0.29^{**} (0.00) | 0.46^{**} (0.00) | 1.00 |

p < 0.10, * p < 0.05, ** p < 0.01

where y_{ijs} is outcome y for individual i in class j of school s, T_j is the information treatment dummy, $Post_{ij}$ is the dummy for endline answer, x_{ij} are student characteristics, δ_s are school fixed effects, which are meant to capture neighborhood effects. In all specifications, we include gender and baseline relation with immigrants as student characteristics. The main outcome variables considered in the analysis are three indices which have been constructed following Grigorieff et al. (2020) and Anderson (2008). The indices are constructed, first, by switching signs' outcomes so as 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' perception of immigrants. It includes questions about 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. Tables 3 and 4 report the distribution and correlations between the indices, respectively. The indices are positively and significantly correlated between them, so that information on immigration, feelings towards immigrants, and attitudes towards immigration move to the same direction.

3.1 Effects on knowledge about immigration

Table 5 shows estimation results on model (1) using the indices as outcome variables. As aforementioned, s_{i1} (first row of Table 5) 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 6, it emerges that, on average, 21% and 35% more students immediately correct their information on the share and the continent of origin of the majority of immigrants, and more than 51% more students answer correctly to the question on the net benefits Italy has out of immigration. On the other hand, students are not informed during the two-hour session about the asylum application procedures in Italy, as it is also revealed by the coefficient of the third row of Table 6. This is a further check that the increase in knowledge about the immigration topic is solely driven by the information session provided through the considered program.

| Dependent variable | Treatment*Post | Treatment | Post | Relation with immigrants | Female | Observations |
|-----------------------|------------------------|------------------|-------------------|-----------------------------|------------------------------|--------------|
| s_{i1} | 0.210^{*} (0.032) | -0.014 (0.013) | -0.005 (0.017) | -0.004 (0.004) | 0.003 (0.006) | 669 |
| S_{i2} | 0.030 (0.055) | -0.062 (0.038) | -0.001 (0.025) | 0.056^{*} (0.017) | 0.046 (0.038) | 691 |
| s_{i3} | 0.128^{*} (0.032) | -0.049 (0.043) | -0.021 (0.020) | 0.022† (0.011) | 0.048^{\dagger} (0.024) | 698 |

[†] p < 0.10, ^{**} p < 0.05, ^{**} p < 0.01. Results from panel regressions using school fixed effects. s_{i1} , s_{i2} , s_{i3} are, respectively, 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. Standard errors clustered at class level in parentheses.

Table 6: Effects on information about immigration

| Dependent variable | Treatment*Post | Treatment | Post | Relation with immigrants | Female | Observations |
|--------------------------------------|----------------|-----------|---------|-----------------------------|---------------------|--------------|
| Share of migrants | 0.209** | -0.023 | -0.001 | -0.004 | -0.010 | 669 |
| | (0.046) | (0.018) | (0.026) | (0.004) | (0.008) | |
| Continent of origin | 0.353** | 0.011 | -0.013 | 0.008 | 0.016 | 669 |
| | (0.034) | (0.016) | (0.025) | (0.006) | (0.011) | |
| Asylum application | 0.031 | -0.020 | -0.020 | 0.015 | 0.009 | 690 |
| | (0.040) | (0.029) | (0.030) | (0.016) | (0.028) | |
| Immigration positive for the economy | 0.514** | -0.0692 | -0.0720 | 0.0409^{\dagger} | -0.0907^{\dagger} | 669 |
| | (0.098) | (0.044) | (0.060) | (0.022) | (0.050) | |

[†] p < 0.10, * p < 0.05, ** p < 0.01. Results from panel regressions using school fixed effects. Dependent variables are, respectively, dummies for right responses on 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?. Standard errors clustered at class level in parentheses.

3.2 Effects on feelings towards immigrants

The second row of Table 5 shows results from the estimation of model (1) defining s_{i2} as dependent variable. The table unveils an overall positive but not statistically significant impact

of information provision vs. contact with an immigrant in shaping students' feelings towards immigrants. This is further confirmed when analyzing their effects on each index component in Table 7. It is worth to mention that previous relations with immigrants strongly affect feelings towards immigrants. This explains the negative coefficients found for the variable *Treatment*, which are driven by the slightly higher (though, on average, not statistically significant) initial relationships with immigrants in the contact treatment group.

| Dependent variable | Treatment*Post | Treatment | Post | Relation with immigrants | Female | Observations |
|-------------------------|----------------|-----------|---------|-----------------------------|---------|--------------|
| Feelings: Indifferent | 0.058 | -0.061 | -0.041 | -0.009 | 0.283** | 691 |
| | (0.065) | (0.086) | (0.032) | (0.034) | (0.072) | |
| Feelings: Annoyed | 0.104 | 0.005 | 0.006 | 0.124** | 0.335** | 691 |
| | (0.085) | (0.092) | (0.035) | (0.028) | (0.076) | |
| Feelings: Frightened | -0.091 | 0.089 | 0.005 | 0.093^{*} | -0.198* | 691 |
| | (0.127) | (0.063) | (0.092) | (0.037) | (0.086) | |
| Feelings: Affectionate | 0.086 | -0.094* | -0.015 | 0.082** | 0.022 | 691 |
| | (0.059) | (0.041) | (0.033) | (0.021) | (0.047) | |
| Feelings: Compassionate | 0.041 | -0.120† | 0.034 | 0.036† | 0.122* | 691 |
| | (0.080) | (0.069) | (0.056) | (0.021) | (0.062) | |

Table 7: Effects on feelings towards immigrants

[†] p < 0.10, * p < 0.05, ** p < 0.01. Results from panel regressions using school fixed effects. Dependent variables are, respectively, 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 rows 1-4 have been switched, so that the higher the (positive) value the higher the share of students displaying more positive feelings after the treatment. Standard errors clustered at class level in parentheses.

3.3 Effects on attitudes towards immigration

Finally, results from Table 5 suggest that information provision plays a positive rolen against contact on attitudes towards immigration (third row). This is further confirmed when considering their effects on each component of the index (Table 8). Overall, more than 10% of students in both groups change their opinion on the perceived number of immigrants in their country. However, students in the information treatment group, on average, more radically change their views on the perceived number of immigrants in Italy. This may be due to the additional information they receive on the share of immigrants in the country. Also, they express more favorable policy preferences over the reception of refugees arriving through the Mediterranean route after the information provision (third row of Table 7). On the other hand, they do not differently change their ideas about the meaning of *being Italian* nor their interest in the immigration topic.

| Dependent variable | Treatment*Post | Treatment | Post | Relation with immigrants | Female | Observations |
|---|------------------------|-------------------|-------------------|-----------------------------|------------------------|--------------|
| Too many immigrants in Italy | 0.424** | -0.153 | 0.108* | 0.090** | 0.196** | 698 |
| v | (0.102) | (0.115) | (0.051) | (0.030) | (0.064) | |
| Definition of <i>Italian</i> : Born in Italy | -0.139 | 0.065 | -0.014 | 0.031 | -0.090^{\dagger} | 698 |
| | (0.100) | (0.061) | (0.079) | (0.026) | (0.055) | |
| Policy preferences: Receive | 0.276^{*} (0.115) | -0.106 (0.124) | -0.064 (0.093) | 0.115^{**} (0.038) | 0.187^{*} (0.074) | 698 |
| Interest in the topic | 0.147 (0.098) | -0.125 (0.148) | -0.037 (0.051) | 0.069^{**} (0.023) | 0.095 (0.071) | 698 |

Table 8: Effects on attitudes towards immigration

[†] p < 0.10, * p < 0.05, ** p < 0.01. Results from panel regressions using school fixed effects. Dependent variables are, respectively, dummy equal to 1 for response born in Italy on question What is, in your opinion, the definition of being an Italian?, response to 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). Standard errors clustered at class level in parentheses.

4 Heterogeneous Treatment Effects

The previous section revealed how students respond to information provision with respect to the contact with an immigrant. Nevertheless, it is worth investigating on how baseline characteristics or attitudes determine students' response to the different treatments. The econometric framework used for analyzing heterogeneous treatment effects is the following:

$$y_{ijs} = \gamma_0 T_j \times I_{ij} \times Post_{ij} + \gamma_1 T_j \times Post_{ij} + \gamma_2 T_j \times I_{ij} + \gamma_3 Post_{ij} \times I_{ij} + \gamma_4 T_j + \gamma_5 I_{ij} + \gamma_6 Post_{ij} + x'_{ij} \gamma_7 + \zeta_s + \eta_{ijs}$$

$$\tag{2}$$

where I_{ij} is a dummy for the pre-specified baseline students characteristic 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 play a key role in determining answers to indices s_{i2} and s_{i3} , but not on the knowledge index (s_{i1}) . As Figure 1 suggests, the intersection of treatment and post dummies

displays analogous coefficients in terms of magnitude and standard deviation on all the indices with respect to the main regressions. Also, the coefficients are not significantly different for sudents who reported having initial strong relations with immigrants. Thus, contact and information have the same effect in shaping attitudes towards immigration when the individual has initial strong relations with immigrants.

On the contrary, when analyzing results based on the number of immigrants in neighborhood (Figure B.6), students declaring to have many immigrants in neighborhood show a lower *adjustment* of their information about immigration and attitudes towards immigrants (indices s_{i1} and s_{i3}) after the treatment. Also, in line with findings from Dustmann & Preston (2001), we find that more immigrants in neighborhood are associated with a significantly lower perception index. Therefore, they may have prejudices towards immigrants and be less prone to change their opinion on immigration even after (correct) information provision on the topic.

Figure 1: Heterogeneous treatment effects: Prior relationship with immigrants



Notes: The figure shows regression coefficients from equation (2). 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).

Baseline attitudes towards immigration Additionally, following Grigorieff et al. (2020), we consider how prior attitudes towards immigration influence findings from the main regressions. Figure 2 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 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 vs. contact with an immigrant. This is further confirmed when replacing initial attitudes towards immigration with initial (*little*) interest towards immigration (Figure B.7 of the appendix).

Figure 2: Heterogeneous treatment effects: Prior attitudes towards immigration



Notes: The figure shows regression coefficients from equation (2). 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.

Prior knowledge about immigration Also, we consider the heterogeneous effects of initial information about immigration (measured as a dummy equal to 1 if answering correctly to the question *Do you think that Italy gains or loses from immigration*?) on the perception of and attitudes towards immigrants. Results from this heterogeneous tretament effect test are displayed in Figure 3. There is evidence that those who are better informed about immigration respond differently to either treatment than those who have prior poorer knowledge about immigration. Specifically, information is more effective than contact in changing students' feeling towards immigrants (index s_{i2}). Moreover, coherent with Alesina, Miano & Stantcheva (2018), higher initial information about immigration is associated with more positive attitudes towards immigrants.

Middle- vs. High-school classes We repeat the analysis of the differential effect of the information provision vs. contact by school type and report results from this heterogeneous treatment effects analysis in Table 9. The main effect on indices s_{i1} and s_{i3} is comparable across school types. On the contrary, results on s_{i2} are different. The information treatment is more effective than contact for middle-school classes. Also, significant coefficients for the *Treatment* variable are completely driven by students with strong relations with immigrants, but when excluding them from the sample, results on s_{i2} do not vary (see Table B.3 of the appendix). Namely, the information provision is more effective than contact for younger students. On the other hand, contact slightly improves feelings towards migrants for high-school students, though the coefficient is statistically insignificant.

Figure 3: Heterogeneous treatment effects: Prior information about immigration



Notes: The figure shows regression coefficients from equation (2). Well-informed is a dummy equal to 1 if the baseline answer to the question *Does Italy gain or lose out of immigration?* is *It gains*.

5 Robustness checks

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.1 in the appendix illustrates the results, which confirm the main conclusions drawn from the baseline model. Also, in the first row of Table B.2, 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 few immigrants? instead of question Do you agree that ... In Italy there are too few immigrants? instead of question Do you agree that ... In Italy there are too as in the baseline results. The other rows 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 was more effective than the contact treatment.

Finally, we re-estimate the heterogeneous treatment effect test on middle- and high-school students excluding students who reported having strong relations with immigrants (i.e. parents, relatives, close friends). We exclude 12% and 16% of the students from the sample, respectively, for the middle- and the high-schools. Again, in line with results from the main heterogeneous treatment effect, regression results from Table B.3 show that, while students report similar effects on knowledge and attitudes (indices s_{i1} and s_{i3}), the effect on feelings associated with immigrants (s_{i2}) differ substantially. In addition, the *Treatment* variable is no longer significant, so that the difference between treatment and control group previously found at the baseline is

| Dependent variable | Treatment*Post | Treatment | Post | Relation with immigrants | Female | Observations |
|-----------------------|----------------|--------------|---------|--------------------------|-------------------|--------------|
| S_{i1m} | 0.193** | -0.006 | -0.013 | -0.00555 | -0.001 | 335 |
| | (0.040) | (0.012) | (0.016) | (0.007) | (0.008) | |
| s_{i2m} | 0.114^{*} | -0.0979* | 0.0221 | 0.057** | 0.070 | 346 |
| | (0.050) | (0.049) | (0.022) | (0.019) | (0.051) | |
| | | | | | | |
| s_{i3m} | 0.128** | -0.124^{*} | -0.008 | 0.023 | 0.028 | 350 |
| | (0.037) | (0.063) | (0.024) | (0.014) | (0.025) | |
| | | | | | | |
| S_{i1h} | 0.208** | -0.013 | 0.014 | 0.001 | 0.010 | 318 |
| | (0.051) | (0.023) | (0.035) | (0.004) | (0.007) | |
| | | | | | | |
| s_{i2h} | -0.027 | -0.050 | -0.037 | 0.072^{**} | 0.034 | 329 |
| | (0.076) | (0.050) | (0.050) | (0.026) | (0.057) | |
| | | | | | | |
| S_{i3h} | 0.115^{*} | 0.030 | -0.030 | 0.050^{**} | 0.072^{\dagger} | 331 |
| | (0.051) | (0.040) | (0.034) | (0.015) | (0.042) | |
| | | | | | | |

Table 9: Heterogeneous treatment effects: Middle- vs. High-School

[†] p < 0.10, * p < 0.05, ** p < 0.01. Results from panel regressions using school fixed effects. s_{i1m} , s_{i2m} , s_{i3m} are the indices computed on the sample of middle-school classes, s_{i1h} , s_{i2h} , s_{i3h} are 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. Standard errors clustered at class level in parentheses.

entirely driven by students with very strong relations with immigrants (who are slightly more in middle schools).

6 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 (i.e. numbers and figures) vs. repeated contact with a political refugee. We find that, once received the information treatment, students update their knowledge about immigration. Also, information is more effective in shaping students' attitudes towards immigration and, in particular, policy preferences and the perceived number of immigrants in the country. On the other hand, neither treatment is effective in changing feelings associated to migrants. When considering the role played by individual

characteristics in the analysis, we find that the main (positive) differential effects of information vs. contact are driven by students who report living in neighborhoods with few immigrants. This may be due to prejudices students have towards migrants when they live in neighborhoods with high immigration. Furthermore, information is more effective than contact in shaping feelings and opinion towards immigrants when students are initially better informed about immigration. Finally, information is more effective in improving feelings towards immigrants than contact for middle-school students. 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.

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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 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 |

B Additional tables and figures

| Dependent variable | Treatment*Post | Treatment | Post | Relation with immigrants | Female | Observations |
|--------------------|----------------|-----------|----------|--------------------------|-------------------|--------------|
| s_{i1} | 0.225^{**} | -0.013 | -0.008 | -0.001 | -0.002 | 609 |
| | (0.028) | (0.012) | (0.0173) | (0.004) | (0.005) | |
| S_{i2} | 0.023 | -0.055 | 0.003 | 0.066** | 0.048 | 630 |
| | (0.054) | (0.042) | (0.024) | (0.017) | (0.039) | |
| s_{i3} | 0.117^{**} | -0.047 | -0.008 | 0.023^{\dagger} | 0.046^{\dagger} | 637 |
| | (0.031) | (0.044) | (0.017) | (0.014) | (0.024) | |

| Table B.1: | Robustness | checks | excluding | migrant | students |
|------------|------------|--------|-----------|---------|----------|

[†] p < 0.10, * p < 0.05, ** p < 0.01. Results from panel regressions using school fixed effects excluding students who reported to be migrants or have migrant parents. Standard errors clustered at class level in parentheses.

| Dependent variable | Treatment*Post | Treatment | Post | Relation with immigrants | Female | Observations |
|--------------------|-------------------|-----------|---------|--------------------------|-------------------|--------------|
| s_{i3} | 0.091^{\dagger} | -0.038 | -0.011 | 0.037^{**} | 0.018 | 698 |
| | (0.050) | (0.026) | (0.026) | (0.009) | (0.022) | |
| s_{i3all} | 0.086^{**} | -0.036 | -0.017 | 0.039^{*} | 0.064^{**} | 698 |
| | (0.026) | (0.037) | (0.020) | (0.008) | (0.022) | |
| Si3polre f | 0.069^{*} | -0.014 | -0.007 | 0.025^{\dagger} | 0.008 | 698 |
| copert of | (0.025) | (0.030) | (0.016) | (0.010) | (0.017) | |
| $S_{i3repatriate}$ | 0.117^{*} | -0.042 | -0.017 | 0.044^{*} | 0.055^{\dagger} | 698 |
| tor of dor date | (0.033) | (0.045) | (0.024) | (0.011) | (0.023) | |

Table B.2: Robustness checks using alternative index specifications

[†] p < 0.10, * p < 0.05, ** p < 0.01. Results from panel regressions using school fixed effects. Row (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*. Rows (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). Standard errors clustered at class level in parentheses.

| Dependent variable | Treatment*Post | Treatment | Post | Relation with immigrants | Female | Observations |
|-----------------------|----------------|-----------|--------------------|--------------------------|-------------------|--------------|
| ę., | 0.216** | 0.003 | 0.020 | 0.003 | 0.001 | 208 |
| s_{i1m} | (0.032) | (0.011) | (0.015) | (0.005) | (0.006) | 230 |
| s_{i2m} | 0.116** | -0.066 | 0.018 | 0.077** | 0.095^{\dagger} | 305 |
| | (0.041) | (0.065) | (0.019) | (0.021) | (0.054) | |
| s_{i3m} | 0.126** | -0.092 | 0.002 | 0.049** | 0.043 | 308 |
| | (0.043) | (0.074) | (0.028) | (0.018) | (0.028) | |
| s_{i1h} | 0.225** | -0.012 | 0.007 | 0.004 | 0.003 | 261 |
| | (0.054) | (0.023) | (0.043) | (0.006) | (0.008) | |
| S_{i2h} | -0.055 | -0.029 | -0.019 | 0.071** | 0.039 | 273 |
| | (0.091) | (0.053) | (0.054) | (0.021) | (0.066) | |
| s_{i3h} | 0.101* | 0.028 | -0.014^{\dagger} | 0.058** | 0.082 | 275 |
| | (0.046) | (0.036) | (0.007) | (0.022) | (0.051) | |

Table B.3: Robustness checks: Middle- vs. High-School excluding students with strong relations with immigrants

[†] p < 0.10,^{**} p < 0.05, ^{***} p < 0.01. Results from panel regressions using school fixed effects and excluding students who reported having very strong relations with immigrants. s_{i1m} , s_{i2m} , s_{i3m} are the indices computed on the sample of middle-school classes, s_{i1h} , s_{i2h} , s_{i3h} are 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. Standard errors clustered at class level in parentheses.

| Dependent variable | Treatment*Post | Treatment | Post | Relation with immigrants | Female | Observations |
|-----------------------|-------------------------------|-------------------|-------------------|------------------------------|-------------------|--------------|
| School | -0.220^{\dagger} (0.113) | 0.200 (0.150) | -0.002 (0.091) | 0.081^{\dagger} (0.044) | 0.021 (0.094) | 681 |
| Home | 0.081 (0.071) | -0.128 (0.089) | -0.014 (0.040) | 0.077^{*} (0.028) | -0.078 (0.081) | 681 |
| Social Networks | 0.079 (0.131) | -0.118 (0.131) | 0.023 (0.079) | 0.122^{*} (0.045) | -0.128 (0.126) | 681 |
| TV | -0.027 (0.158) | 0.030 (0.092) | 0.070 (0.087) | 0.018 (0.075) | 0.068 (0.242) | 681 |

Table B.4: Additional results: Sources of information on immigration

[†] p < 0.10, * p < 0.05, ** p < 0.01. Results from panel regressions using school fixed effects. Dependent variable is answer to the question *How often do you hear about immigration issues in the following contexts?*, where contexts are, respectively, School, Home, Social Networks and TV. All variables composing each index are de-meaned, standardized and weighted by the inverse variance-covariance matrix. Standard errors clustered at class level in parentheses.

Figure B.1: Immigrants in EU countries (% over population)



Source of the data: Eurostat (2017).

Figure 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).

Figure 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 impact on the (NATIONALITY) economy.* Source of the data: Eurobarometer 88.2 (2017).



Figure 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).

Figure B.5: Project timeline

| | First treatment | Second treatment | | |
|---------------|-----------------|------------------|--|--|
| Baseline | and midline | and endline | | |
| questionnaire | questionnaire | questionnaire | | |
| October 2018 | January 2019 | March 2019 | | |



Figure B.6: Heterogeneous treatment effects: Neighborhood

Notes: The figure shows regression coefficients from equation (2). Many immigrants is a dummy equal to 1 if the baseline answer to the question Do you agree with the following sentence? In my neighborhood there are many immigrants is Strongly agree or Agree.

Figure B.7: Heterogeneous treatment effects: Prior interest in immigration



Notes: The figure shows regression coefficients from equation (2). *Prior interest* is a dummy equal to 1 if the baseline answer to the question *Are you interested in the topic of immigration?* is *Definitely* or *Sufficiently*.

C The questionnaire

Sophia

Confini Project

Socio-Demographic Study on Immigration

The aim of the present anonymous questionnaire is to help *Sophia* develop useful contents for school training on the topic of immigration. **This is not for evaluation.**

Please note that only one answer is allowed for each question.

Questions

Q1. Are you...?

- o Male
- o Female

Q2. Please indicate your date of birth. Do not specify the year of birth.

DD/MM

Q3. Which type of relationship do you have with immigrants?

- Very strong (I am an immigrant/my parents are immigrants)
- Strong (relatives/best friends)
- o Ordinary (friends, distant relatives, classmates, housekeepers)
- Distant (acquaintances)
- o None

Q4. Do you agree with the following sentences?

| | | Strongly agree | Agree | Disagree | Strongly disagree |
|----|--|-------------------|-------|----------|----------------------|
| | | - | | | - |
| 1. | In Italy there are too many immigrants | | | | |
| 2. | In Italy immigrants are not too many nor too few | | | | |
| 3. | In Italy there are too few immigrants | | | | |
| 4. | In my neighborhood there are many immigrants | | | | |
| 5. | In my neighborhood there are few immigrants | | | | |

Sophia

Confini Project

Q5. How often do you hear about immigration issues in the following contexts?

| | Very often (than once a wee | (more ek) | Often once weeks) | (more every | than two | Rarely (at least once a month) | Never (less than once a month) |
|--------------------|---------------------------------|--------------|-------------------------|----------------|-------------|-----------------------------------|-----------------------------------|
| At school | | | | | | | |
| At home | | | | | | | |
| On social networks | | | | | | | |
| On TV | | | | | | | |

Q6. The world population is around 7 billion. Which is, in your opinion, the share of migrants in the world?

- o Less than 5%
- o 10%
- o Between 20% and 50%
- o More than 50%

Q7. Which is the continent of origin of the majority of migrants?

- o Africa
- o America
- o Asia
- o Europe

Q8. Do you feel ... about this topic?

| | Strongly agree | Agree | Disagree | Strongly disagree |
|----------------------|----------------|-------|----------|-------------------|
| Indifferent | | | | |
| Annoyed | | | | |
| Frightened | | | | |
| Affectionate, Friend | | | | |
| Compassionate, | | | | |
| Merciful | | | | |

Q9. In Italy, the reception of migrants has become a concern. Do you think an irregular migrant (extra-EU) can apply for

a permit?

o Yes

o No o Do not know

Sophia

Confini Project

Q10. Could you please indicate the name of a famous immigrant in Italy you esteem?

Q11. In your opinion, what is the meaning of Italian?

o Born in Italy

.....

- o Born from Italian parents
- o Having been in Italy for a long time
- o All the preceding answers
- o Other

Q12. How would you face the phenomenon of immigrants' landings in the Mediterranean Sea?

- o By hosting all migrants
- By hosting only political refugees
 By repatriating

Q13. Do you think Italy gains or loses from immigration?

- o It loses
- o It gains

Q14. "Repatriations are the only way to save human lives and avoid an invasion".

In your opinion, how many of your neighbors would agree with this sentence?

- o Almost everyone
- o More than a half
- o Less than a half o Very few

Q15. Can you please indicate the name of your neighborhood?

.....

Q16. Are you interested in the topic of immigration?

- o Definitely
- o Sufficiently
- o Not much
- o Not at all

Thank you for your attention!! ©