Social Mobility and Teachers' Expectations*

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March 20, 2025

Abstract

Using a unique combination of administrative data, surveys, and experiments, we provide evidence of discrimination in teachers' career advice based on students' family backgrounds. Keeping students' capabilities and interests constant, teachers hold lower expectations for the academic and labor market achievements of students from economically disadvantaged families. We conducted a field experiment to address this discrimination in a scalable and cost-effective way: we provided teachers with personalized information about the gaps in their past recommendations by the socioeconomic background of students and corrected their misperceptions about the success probabilities of high-ability, low-SES students in competitive tracks. The intervention reduced the SES gap in top-track recommendations for high-ability students, illustrating how teachers' biased expectations can create a self-fulfilling prophecy of low intergenerational mobility.

JEL: I24, I21

*We thank seminar participants at Harvard and Bocconi University for helpful comments. Francesca Rinaldi, Giorgia Cascone, Sara Chiuri, Michele Herrera, Domenico Maddio, Michelle Palayill, and Alvise Scabrosio provided excellent research assistance. We thank Annarita Marzullo and Lucia De Fabrizio from MIUR and Patrizia Falzetti and Paola Giangiacomo from INVALSI for giving us access to the administrative data used in this paper. We are grateful to the teachers that took part in the survey for their collaboration. Carlana acknowledges support from the Unicredit Foundation that provided the financial resources to implement this project. AER RCT Registry ID: AEARCTR-0010758. The project has obtained IRB approval from Bocconi University and Harvard University.

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1 Introduction

Teachers, as trusted educators, are often asked to provide formal or informal recommendations for students' career paths and further educational choices. Yet, students may be treated differently based on generalizations and stereotypes associated with their group, rather than being assessed on their individual merits. While there are studies showing the extent and impact of exposure to gender, racial, and ethnic stereotypes in school (Carlana, 2019; Lavy and Sand, 2018; Hanna and Linden, 2012; Alan et al., 2021), little is known about how teachers form expectations about students based on their socio-economic status (SES) and whether "expectations gaps" reflect bias or accurate differences in students' potential. Making progress along this avenue using administrative data is challenging since family background may be related to factors unobservable in the data, e.g. students' interests. Yet, it is crucial to identify the potential biases within educational systems and scalable interventions to ensure equal opportunities for all.

In this paper, we take a first step in this direction by exploiting a vignette experiment done with actual teachers to identify discrimination and a field experiment to attempt to mitigate its negative impact on the students. We use a unique combination of administrative and survey data from the Italian context, which is particularly suited to the analysis for two features of the schooling system. First, while education in Italy is free for all students up to high school, there is a variety of options for high school tracks with substantial differences in terms of educational outcomes and labor market opportunities: top-tier academic tracks (scientific or classical), other academic tracks (human sciences, languages, or arts), technical track (economic or technology) or vocational tracks. Second, at the end of grade 8, teachers formally recommend the track they believe better fits students' potential, which is recorded in administrative archives. This recommendation is not binding but is passed on to students and their families[1].

Our analysis includes two main parts. First, using administrative information on the universe of Italian middle school students, we study the teachers' track recommendations by student's SES background and ability measured by standardized test scores in math. For all test score levels, high-SES students are more likely to be recommended to top-tier academic tracks, while low-SES students are more likely to be recommended to technical or

[1] In 2016-17, almost 80% of 8th-grade students recommended to the top-tier tracks followed their teachers' recommendation.

vocational tracks. The SES gap in track recommendations is extremely robust to controlling for a large set of characteristics including gender, immigration status, school behavior and absences, and school fixed effects. By leveraging the longitudinal dimension of our data, we further show that the costs of these choices in terms of educational outcomes manifest as early as after two years: low-SES students recommended to lower high-school tracks perform substantially worse in the standardized test score in grade 10, even if they were at the top of the ability distribution in grade 8.

To further our understanding beyond these correlations, we implement an incentivized vignette experiment where we expose teachers to exactly the same information set on students' abilities and interests and we randomize the SES status of the child. Using responses from more than 1,100 teachers, we find evidence unambiguously indicating the presence of bias in their recommendations. Teachers recommend tracks on average consistent with the profile of ability and interests described but, for both scenarios, we do observe that conditional on the same information set low SES students are less likely to be recommended to a top-tier track. High-SES students have an average probability of being recommended to a top-tier track of 37.1%, which is reduced by 6.2 percentage points (or 17%) for low-SES students. The gap is robust to a set of controls including profile fixed effects, teachers' controls, and teachers' fixed effects. The result is symmetric for the low-tier tracks (technical and vocational) with low-SES students around 7 percentage points more likely to be encouraged to attend those schools by their teachers.

To provide a first investigation of the mechanisms, we asked teachers to explain why they made specific recommendations through open questions. By analyzing their responses, we find evidence that students' socioeconomic status influenced teachers' expectations about students' future careers, beyond the objective observable information they have on students' performance and interests. If teachers observe the profile of an excellent student with college-educated parents, they think she will likely attend college. In contrast, if the same excellent student comes from a family with low-educated parents, they believe that she may be more inclined to seek employment right after high school despite the information on academic excellence and interests of the student. Teachers have unrealistic expectations of the academic success of low-SES students. We document that gaps in teachers' expectations are an important pathway of gaps in track recommendations, generating a self-fulfilling prophecy that limits intergenerational mobility.

The second part of the paper is based on a field experiment implemented with 1,096 teachers teaching in 217 schools over two school years (2022-23 and 2023-24). We invited

middle schools to join a project aimed at providing aggregate information on the career trajectories of their former students during high school using data from the Italian Ministry of Education and National Evaluation Center (INVALSI). Teachers were randomized at the school level to receive additional details in the reports. Teachers in the *Treatment Gaps* were informed about their own SES gaps in previous track recommendations to increase their awareness in a data-driven and scalable way. Teachers in the *Treatment Gaps and Beliefs* were shown the disparity between teachers' estimates on the probability of failure during high school of low-SES students and the truth derived from administrative data. Indeed, according to our baseline survey, teachers believed that the likelihood of high-ability, low-SES students failing in the top tracks was 3.5 times higher than it is in reality. All treatment reports included specific information on high-ability students, the main target of our interventions to decrease the SES gap in track recommendations.

We find that the additional information on the treatment reports was effective in closing part of the SES gaps in track recommendations of current students with high GPAs at baseline (above 8 in grade 7). The effect is driven by teachers who had a past SES gap in track recommendations higher than the median for whom the information provides valuable insight to correct their behavior. For these teachers, in the control group, they had an SES gap in track recommendations of 19 percentage points, reduced to 11 percentage points by the *Treatment Gaps* and to 5 percentage points by the *Treatment Gaps and Beliefs*, statistically indistinguishable from zero in the latter case. Next, we find that our result is driven by an increase in top-tier track recommendations for low-SES students with excellent grades (above 8/10) and a corresponding shift of high-SES students with lower grades to lower track recommendations. Although there is no official cap on the number of students who can be recommended for each track, teachers typically recommend about 20% of students from all classes to top-tier tracks every year. Consequently, our interventions reshaped the allocation of track recommendations. Furthermore, when using as an outcome the track recommendations to hypothetical students in the endline survey instead of the real students, we observe that teachers increase their track recommendations to low-SES students when they receive the information from *Treatment Gaps and Beliefs*, but do not change their track recommendations to high-SES students, further supporting our interpretation of the results.

Finally, we further investigate the role of teachers' misperceptions on the probability of failing a school year for low-SES students. We exploit heterogeneity in our treatment effects based on beliefs collected at baseline and find that most of the effect from the *Treatment Gaps and Beliefs* is driven by teachers who had high expectations on the failure rate of

low-SES students. For these teachers, the treatment provided valuable information leading to a reduction of the SES gaps in track recommendations.

Our work is related to several strands of literature. First, the persistence of inequality by socio-economic status in educational attainments is well-documented across different contexts (Bailey and Dynarski, 2011; Bound and Turner, 2011; Falk et al., 2021). Sub-optimal investment choices may emerge as a consequence of economic barriers that could be attenuated by financial aid or "free college" policies, as in the case of several European countries (Dynarski, 2003; Burland et al., 2023). However, this is not the only constraint faced by students with low SES: Educational careers are also shaped by limited information, distorted beliefs, and biased expectations (Hoxby et al., 2013; Wiswall and Zafar, 2015; Brouwer et al., 2023; Zumbuehl et al., 2021). We add to this literature by investigating in an incentivized experiment how teachers' expectations are shaped by students' socio-economic background, keeping constant all other observables. If teachers' expectations are biased, this is likely to contribute to the persistence of SES gaps in educational and occupational careers by shaping both the information set available to students and their self-concept (Burgess and Greaves, 2013). We provide clean evidence that teachers send biased information signals to students and their parents regarding important investments in human capital as in the case of track choice, suggesting less profitable career paths to low-SES students compared to their equally achieving peers.

We also contribute to the literature that investigates the mechanism through which teachers affect the long-term outcomes of students. Teachers have deep influence on educational achievements, labor market success, and even criminal activities of students through their impact on cognitive and soft skills (Chetty et al., 2014; Jackson, 2012). One potential mechanism through which teachers may exert long-lasting influence on students' outcomes is shaping the information set that students and parents use to make decision regarding investments in human capital. While previous literature exploits elicited subjective expectations on each student's educational achievement to proxy for that (Papageorge et al., 2020; Gershenson et al., 2016), in our context we collect a unique dataset and observe directly — from administrative data — teachers' track recommendation, an important signal in the information set that each student and parent receive right before choosing the educational path. Low SES students are less likely to receive a recommendation toward a top-tier track, leading to exacerbated inequalities in performance on test scores two years later.

More broadly, our paper also contributes to the multi-disciplinary literature that investigates the power of expectations in shaping future outcomes through a self-fulfilling prophecy

(Glover et al., 2017). This is the key idea of the Pygmalion Effect, the psychological phenomenon according to which increasing the leader's expectation of the follower's performance will result in better follower performance. Rosenthal (1973) provides the first evidence of the pygmalion effect in the classroom with deep influence of teachers' expectations on students' future achievements. Negative impacts of low expectations from relevant adults in the schooling context may induce a self-fulfilling prophecy (Loury and Loury, 2009), that occurs more clearly for stigmatized groups (Jussim and Harber, 2005). As a consequence, "stereotype threat" may be exacerbated inducing students to internalize teachers' expectations and perform worse (Steele and Aronson, 1995; Ferguson, 2003; Dee, 2015). We contribute to this literature by providing evidence that the channel driving the results on SES gaps in track recommendation is due to the formation of lower expectation toward the educational and occupation career path of students. Even without information on the desire to attend university or the parental support in such a decision in the incentivized experiment, teachers apply statistical discrimination by generalizing the belief that low-SES parents would not be supportive of their children's further education.

2 Institutional Background and SES gaps

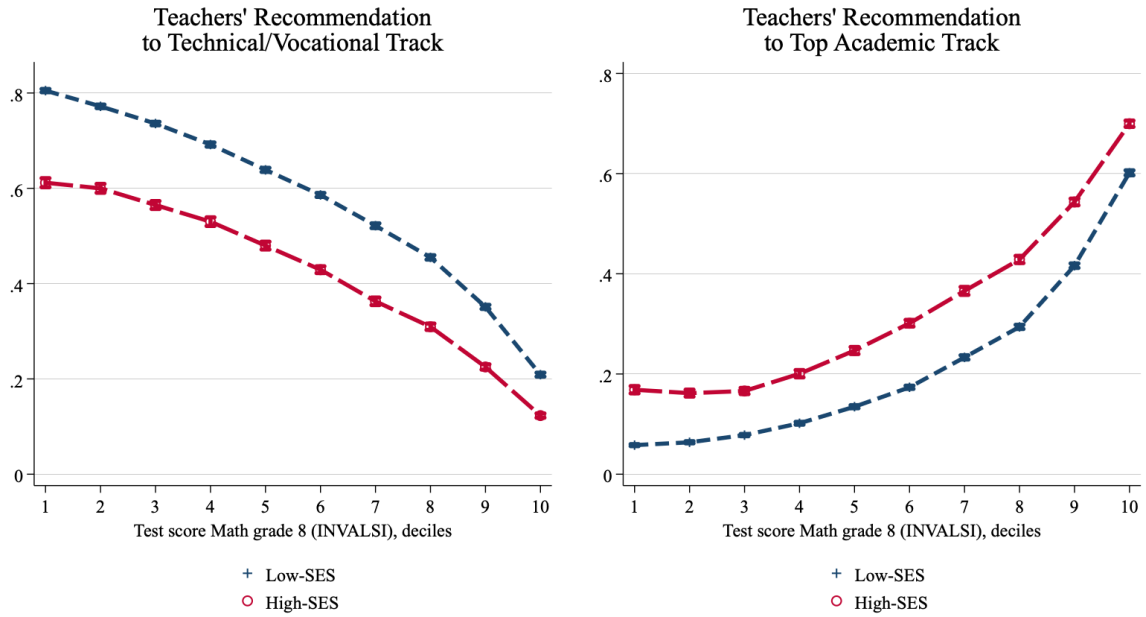
The Italian education system divides high school into three main tracks: academic (*liceo*), technical, and vocational. Within the academic track, two sub-tracks are considered top-tier: the scientific and classic academic tracks. The high school track is highly correlated with university attendance and major choice, with a share of students enrolling in tertiary education that is 66.4% for the academic track, 38.6% for the technical track, and 19.2% for the vocational track students (Ministry of Education, 2022). Tertiary education in public universities in Italy is free for students with low income and the average contribution is around 1.000 euro per year.[2]

Each family receives a high school track recommendation that the teachers of their child jointly decide. Although students and their families can select the high school track they prefer, their choice is likely to be influenced by the track recommendations given by their teachers. Teachers' recommendations are systematically different for students of equal abilities depending on the socio-economic background of the family. Figure 1 shows the share of students recommended to top-tier (right figure) and vocational tracks (left figure) by stu-

[2]In 2020/21, only 64% of public university students paid the enrollment fee and the average contribution was 918 euro. Source: Ministry of Education http://ustat.miur.it/media/1224/focus-la-contribuzione-studentesca-negli-atenei-e-negli-istituti-afam-nellanno-accademico-2020-2021.pdf

dents' ability and family background for the universe of Italian students graduating from middle school in 2017. We measure students' abilities using standardized test scores (INVALSI) in math in grade 8 and the socioeconomic status (SES) using information on the occupation of fathers.[3]

Figure 1: Track Recommendations by Student Ability and Family Background - Administrative data-



Notes: This figure shows the share of students recommended to the technical or vocational tracks (left graph) and the share of students recommended to the top-tier academic tracks (right graph), by students' standardized test scores and parents' occupation. The sample includes Italian students in 8th grade in the 2016-17 academic year. Family background is computed with the students' fathers' occupations: high-wage occupations are white-collar occupations.

The results are striking. For all ability levels, students from high SES are more likely to

[3]Students are classified as low-SES if their father is not in a high-wage occupation. High-wage occupations are categorized as follows: (1) Employed professionals, military personnel, or freelancers, which include occupations such as doctors, lawyers, psychologists, and researchers, (2) Entrepreneurs or agricultural owners, and (3) Managers, university teaching staff, civil servants, or military officers. Non-high-wage jobs encompass the remaining categories, which include blue-collar jobs or other classifications such as unemployed. These categories consist of: (1) Workers or service workers/cooperative members, (2) Teachers, clerks, or military personnel with a graduation rank, (3) Self-employed individuals such as merchants, direct growers, artisans, and mechanics, (4) Unemployed individuals, (5) Homemakers, and (6) Retirees. Results remain qualitatively unchanged if the socioeconomic status is measured using parental education or a composite index of economic, cultural, and social status as defined by INVALSI including measures of parental occupation, parental education, and availability of assets useful for a background favorable to learning (books, computer, internet, desk to study, quiet place to study, own bedroom).

be recommended to top-tier academic tracks, whereas students from low SES are more likely to be recommended to vocational tracks. The gaps are large in magnitude. Appendix Table A.1 quantifies the SES gap in the track recommendations. While the raw SES gap in top-tier recommendations is 17.1 percentage points, differences in students' objective ability explain 39% of this gap. Including school fixed effects and student controls brings the gap down to 7.2 percentage points.

In the last column, we study whether this remaining gap can be attributed to teachers' differing perceptions of students' abilities—or to aspects of ability that teachers observe but are not captured in our econometric model—by incorporating teacher-assigned grades. The findings suggest that teacher-assigned grades play a significant role in explaining this gap. One possible explanation is that high-SES parents may engage more actively with teachers or advocate more persistently for their children, potentially leading to more favorable grading compared to equally performing low-SES students. When accounting for teacher-assigned grades, the gap further decreases to 4.4 percentage points, but it remains both statistically and economically significant.

Overall, these results highlight that even after considering these factors, a substantial SES gap persists in teachers' track recommendations, which has important implications for students' future educational and career opportunities.

Appendix Figure A.1 shows that the track choice of students is highly correlated with the track recommendation of their teachers: for each level of ability, students follow their teachers' recommendations for top tracks more than 70% of the times. By leveraging the longitudinal aspect of our data, we further demonstrate that the consequences of these choices, in terms of educational outcomes, become apparent as early as two years later. Panel B of Figure A.2 reveals that low-SES students who are recommended for lower high-school tracks perform substantially worse on standardized tests in grade 10 compared to their peers who were recommended for top tracks, even if they were among the highest performers in grade 8.

3 Experimental Design

3.1 Sample

We invited middle school teachers to participate in a project aimed at providing aggregate information on the career trajectories during high school of their former students using data from the Italian Ministry of Education and National Evaluation Center (INVALSI). Teachers

do not have access to this personalized information that is valuable to them. We recruited two waves of 8th grade teachers. We sent an email to all Italian middle schools in September 2022 and followed up with a phone call to a randomly selected sample of 600 schools in the following two months. We repeated the same recruitment process in 2023, calling a random sample of 800 schools among those that did not participate in the previous year. Teachers of 8th graders and their students constitute our experimental sample as the main outcome is the track recommendation offered during the last year of middle school. However, all teachers are allowed to participate in the baseline survey that is necessary to signal their desire to receive the report.

The sample for our experiment includes 1,096 teachers assigned to 14,480 8th-graders in the two school years from 217 schools in 77 Italian provinces. We recruited 435 teachers in 2022 and 661 in 2023.[4]

More broadly, 1,549 middle school teachers from 246 schools completed our baseline survey expressing their desire to receive the report with the information on their past students. While we focus only on the teachers of 8th graders for our main experiment, we use the baseline information from all teachers to provide robust evidence on the causal impact of SES on track recommendation using hypothetical scenarios in the baseline survey.

Appendix Figure A.3 compared the characteristics in the sample of teachers who completed our survey with the characteristics of all teachers in participating schools (blue dot) and all Italian teachers in the same school year (red dot). The schools that participate in our survey have overall slightly younger teachers (30% of teachers under 40 compared to 19% in the nation wide) and more teachers with temporary contracts (39% in the sample vs. 17% in the nation wide). Overall, teachers who completed our survey do not systematically differ in their demographics or the subject they teach compared to the national sample.

3.2 The Information Treatments

All teachers who completed the baseline survey received a personalized report detailing the career trajectories during high school of their past students graduating from middle school between 2016 and 2019. The report includes data on the percentage of past students who chose different high school tracks, their academic performance in the first year of high school

[4]If teachers in the first wave participate again in the baseline in the Fall 2023, we consider as part of the sample also their students in grade 8 in the school year 2023-24. The original randomization sample includes 17 additional schools that did not report the track recommendation information to the Ministry of Education. Section 3.4 provides further details on the balance tables, providing clear evidence that it did not affect our experimental design.

by track choice (grades in math, Italian, and English, admission to grade 10, number of failed subjects), and the academic performance of students who followed versus those who did not follow the teachers' track recommendations. A sample report can be found in Appendix B.1.

Teachers were randomly assigned at the school level into a control and two treatment groups. In addition to the information contained in the control report, teachers in the treatment groups received additional details.

Treatment Gaps: Teachers in the *Gaps* treatment received information on the past gaps in their track recommendations by students' socio-economic status.[5] In particular, a graph with the share of their past students recommended to each track by students' SES was provided for all students and the sample of high-ability students (students with GPA higher than or equal to 8 in grade 7). An example of the information can be found in the Appendix B.2.

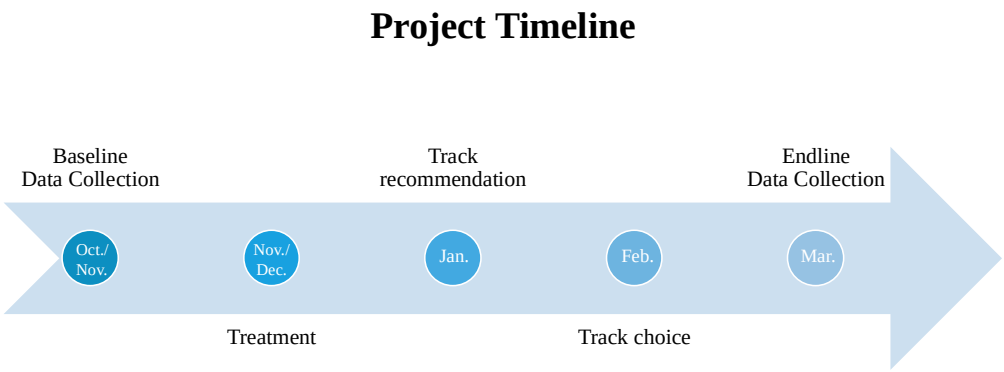
Treatment Gaps and Beliefs: The reports for this group, in addition to the information for the "Treatment Gaps", also included information to address teacher biases on the performance of low-SES students in competitive high schools. Our baseline survey indicated that teachers believed that the likelihood of high-ability, low-SES students failing in the top tracks was 3.5 times higher than it is in reality. Teachers in this group were shown the disparity between their estimates and those derived from administrative data (Figure B.3). This treatment aims to mitigate gaps driven by underestimations of high-ability, low-SES students' potential to succeed in advanced tracks. A sample report for this group is available in Appendix B.3.

The first page of each personalized report provided a summary of the information. The reports for the control group contained only aggregate information about past students. The reports for the *Treatment Gaps* group included an additional section highlighting gaps in past track recommendations by student SES (red box in Figure B.2). The reports for the *Treatment Gaps and Beliefs* group also included a section that addressed teacher misperceptions about high-ability and low-SES students (green box in Figure B.2).

The reports were distributed one week before eighth-grade track recommendation meetings, as reported in Figure 2. In 2022, teachers were assigned only to the *Control* or *Gaps* treatment group. In 2023, teachers were randomly assigned to one of the three groups at the school level. Schools that participated in both years received the same treatment in both years.

[5]Students' SES in the report was measured using the composite index built by INVALSI that includes parental education and occupation.

Figure 2: Timeline of the project



3.3 Data

Our analysis is made possible by a unique merge of administrative data of students with teachers' surveys.

Administrative Data. We merge student-level data from two sources: (i) the National Evaluation Center (INVALSI), including test scores in grades 5, 8, and 10 and family background information, (ii) the Italian Ministry of Education, including detailed data on students' demographic characteristics, teachers' track recommendation in grade 8, and track choice.

Administrative data are used only for the data analysis, but also for the preparation of the reports to teachers with the information on the performance during high school of their students in the previous cohorts. For this scope, we exploit access to detailed individual-level information on the universe of all Italian students in the school years from 2016-17 to 2021-22, with data on around 500,000 students per cohort.

Survey Data. We asked teachers to complete two online surveys, as described in Figure 2. The baseline survey was completed in September-October and the endline in February. The baseline survey included information on the assignment of teachers to classes, baseline beliefs on the success of low-SES students in high school unconditional and conditional on baseline ability, teachers' demographic characteristics, and a few other questions on how they

give the track recommendations and on how their students choose the high school. On top of that, the baseline survey also includes an incentivized experiment with two vignettes in which we describe a student profile (academic performance and interests) and randomize the socio-economic status of the student in the hypothetical scenario to investigate whether the SES gaps in track recommendations that we observe in administrative data can be attributed to a discriminatory behavior of teachers or additional information they have on their own students.

The endline survey includes additional vignettes, in which we randomize the socio-economic status of the student in the hypothetical scenario, as well as a few additional questions to get the feedback of teachers on the treatment implemented. The survey questions for both baseline and endline are available in Appendix D.

3.4 Baseline Characteristics and Randomization

Summary statistics for students and teachers in the final experimental sample can be found for the entire sample in Appendix Table A.2 and for students with high GPAs that are the main target of our interventions in Appendix Table A.3. Overall, around 20% of students are recommended to the top-tier tracks (scientific or classical academic track), while around 24% decide to enroll in one of those. Among high-GPA students, the share of recommended to and enrolling in top-tier tracks increases to 46% and 48%, respectively. Approximately 80% of the recruited teachers are female, and 54% teach math or Italian, the two core subjects, making them primarily involved in the track recommendation assignment process as they spend the most hours with students. When asked about the factors influencing their guidance advice, teachers reported that academic performance accounts for 47%, students' attitudes and interests account for 36%, and parents' wealth accounts for only 3%. Despite the substantial SES differences in track recommendations described in Section 2, when asked whether they believe that 'students' SES should affect teachers' track recommendations,' a significant majority (86%) disagreed. However, when examining the SES gap in recommendations for top tracks among past students, there is an average gap of 19 percentage points favoring high-SES students, and a gap of 15 percentage points remains even when focusing on students with high GPAs.

We randomized teachers in groups at the school level to avoid contamination across individuals assigned to different treatments. In 2022, schools have been randomized into control and *Treatment Gaps*. In 2023, schools that already participated in 2022 maintained the same treatment status. The newly recruited schools have been randomized into control, *Treatment*

Gaps, and *Treatment Gaps and Beliefs*.

Table 1 shows balance in observable characteristics for students and teachers across treatment and control groups, pooling the sample for 2022 and 2023. No statistically significant differences emerge beyond what we would expect by random chance. In the Appendix, we provide additional balance separate for each wave (Tables **??** and A.4), restricting to high GPA students that are the main focus of our analysis (Table A.5), and including also the 17 schools initially included in the randomization but that did not report our main outcome – the track recommendations – to the Ministry of Education (Table A.6). As expected by the virtue of randomization, all characteristics are balanced with only minor statistically significant differences.

Table 1: Balance Table

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Full sample	Control	Gaps	Gaps and Beliefs	p-value Gaps vs. Control	p-value Gaps and Beliefs vs. Control	Norm. Diff. Gaps vs. Control	Norm. Diff. Gaps and Beliefs vs. Control
Panel A: Students in the Field Experiment								
Female	0.493	0.502	0.490	0.481	0.197	0.412	-0.017	-0.030
Immigrant	0.117	0.128	0.126	0.076	0.893	0.005	-0.004	-0.122
Grade in math - grade 7	7.242	7.179	7.257	7.335	0.142	0.165	0.040	0.081
Grade in Italian - grade 7	7.380	7.299	7.399	7.503	0.037	0.151	0.063	0.126
Invalsi math - grade 5	202.223	203.814	201.783	200.943	0.467	0.380	-0.037	-0.051
Invalsi Italian - grade 5	209.099	210.911	209.070	206.994	0.292	0.019	-0.037	-0.080
Kindergarten (3-5 years) attendance	0.930	0.922	0.933	0.943	0.659	0.418	0.030	0.059
SES-gaps in past top track rec., all	18.311	17.842	18.572	18.698	0.535	0.772	0.061	0.073
Father: non high-wage occupation	0.778	0.796	0.767	0.766	0.122	0.267	-0.050	-0.051
Mother: non high-wage occupation	0.855	0.862	0.851	0.850	0.432	0.686	-0.022	-0.024
Low SES (index)	0.488	0.503	0.466	0.508	0.196	0.415	-0.052	0.007
SES-gaps in past top track rec., all	18.311	17.842	18.572	18.698	0.535	0.772	0.061	0.073
SES-gaps in past top track rec., high grades	15.080	15.535	15.198	13.896	0.823	0.298	-0.024	-0.139
Students	14480	5,664	6,039	2,777				
Schools	217	81	82	55				
Panel B: Teachers characteristics								
Female	0.833	0.830	0.844	0.842	0.444	0.740	0.038	0.023
Age	47.972	47.779	48.228	48.756	0.635	0.221	0.032	0.073
Father's education: high school	0.355	0.367	0.375	0.333	0.508	0.572	0.047	-0.050
Father's education: university	0.194	0.160	0.179	0.256	0.667	0.071	-0.043	0.168
Teaches core subject (Math or Italian)	0.539	0.535	0.582	0.553	0.026	0.650	0.104	0.026
Permanent teaching contract	0.839	0.830	0.852	0.868	0.525	0.497	0.042	0.075
Factors affecting teachers' guidance: students' academic performance	47.295	47.193	47.604	47.651	0.590	0.596	0.022	0.019
Factors affecting teachers' guidance: students' attitudes/interests	35.491	34.994	35.402	37.215	0.984	0.123	-0.007	0.106
Factors affecting teachers' guidance: parennts' education	2.776	2.829	2.493	2.593	0.198	0.684	-0.061	-0.030
Factors affecting teachers' guidance: parents' wealth	3.923	4.088	4.186	3.349	0.431	0.396	0.049	-0.088
Factors affecting teachers' guidance: parental advice/help	10.514	10.895	10.315	9.191	0.490	0.541	-0.021	-0.103
Teachers	1,096	409	452	235				

Notes: This table presents the balance of baseline characteristics for students and teachers in the experimental sample, combining the 2022 and 2023 cohorts. Standard errors are clustered at the school level, and fixed effects for cohort and for whether a school is a returning school in 2023 are included.

4 Evidence from Vignette Experiment

4.1 Description of the vignettes

The challenge in providing a causal interpretation of the results presented in Section 2 is that part of the effects could be due to differential interests and attitudes of the students or other factors that we do not observe in the administrative data, but the teacher observes from their interaction with students. To make progress in this direction, during the baseline, we presented to teachers two hypothetical scenarios. In each vignette, we describe (1) the academic performance of students, (2) the attitudes and interests of students, and (3) parental background. We generated variation in the SES status of the students in the vignettes by randomizing parental background as either low or high SES. We do not provide any additional information on students or parents, including the potential involvement of parents in their children's education or their aspirations.

More specifically, teachers observed the following students' profiles:

> *"**Profile 1:** Matteo is an excellent student. He loves computer programming and has built a robot for a school competition. [Both of his parents have college degrees.]/[Both of his parents have completed middle school but have not completed high school.]"*

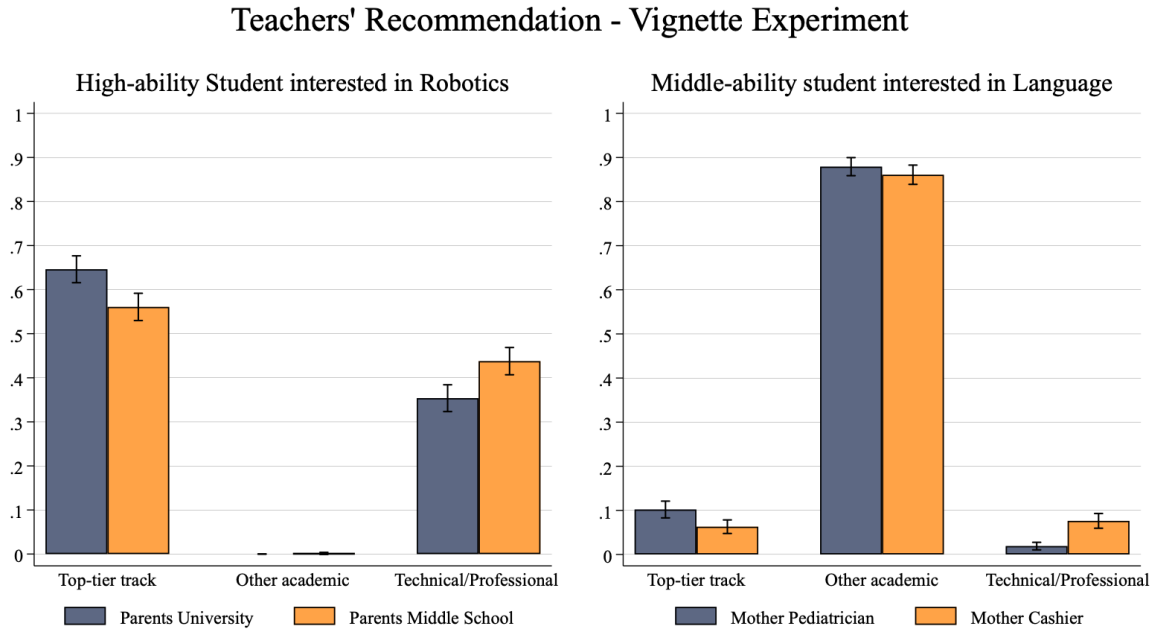
> *"**Profile 2:** Sofia is a good student, although not the best in her class. She loves languages and won a competition with one of her essays. Her parents are divorced, and she lives with her mother, who works as [a cashier]/[a pediatrician]."*

After observing each profile, teachers are asked to provide a track recommendation and explain why they made that decision in an open-ended answer. Teachers are financially incentivized to provide realistic responses through a lottery. Each teacher is randomly assigned to another teacher and the pair participated in the lottery if they provided the same recommendation. We design the financial incentives to induce teachers to provide recommendations that resemble the true process in Italian schools, with a joint decision from all teachers.[6]

[6]Appendix Table A.7 reports the balance table of the teachers' characteristics collected in our survey, including teaching background, attitudes, and recommendations of past students assigned to those teachers from the administrative data. The table reports observations at the unit of randomization, the teacher by profile level. As expected thanks to the randomization, all characteristics are balanced with only two differences statistically significant at 10 percent level among 28 tests.

4.2 The Causal Impact of SES on Track Recommendations

Figure 3: Vignette Experiment: Track Recommendations and Family Background



Notes: This figure shows the fraction of teachers who provided each recommendation by vignette and by treatment status (the student's family background). The left graph shows recommendations for a hypothetical high-ability student interested in robotics with the following characteristics: *"Matteo is an excellent student. He loves computer programming and has built a robot for a school competition. [Both of his parents have college degrees.]/[Both of his parents have completed middle school but have not completed high school.]"*. The right graph shows recommendations for the following student's profile: *"Sofia is a good student, although not the best in her class. She loves languages and won a competition with one of her essays. Her parents are divorced, and she lives with her mother, who works as [a cashier]/[a pediatrician]."* The sample includes 1377 teachers who completed our baseline surveys in 2022 and 2023.

The results of the vignette experiment are shown in Figure3. Teachers recommend tracks on average consistent with the profile of ability and interests described but, for both scenarios, we do observe that conditional on the same information set low SES students are less likely to be recommended to a top-tier track with a gap that is statistically significant and large in magnitude. Appendix Table A.8 quantifies the effect shown in the figure stacking the data from both students' profiles. High-SES students have an average probability of being recommended to a top-tier track of 37.1% and this is reduced by 6.2 percentage points (or 17%) for low-SES students. The gap is robust to a set of controls including profile fixed

effects, teachers' controls, and teachers' fixed effects. The result is symmetric for the low-tier tracks (technical and vocational) with low-SES students around 7 percentage points more likely to be encouraged to attend those schools by their teachers. As a whole, our experimental evidence provides clear evidence that low-SES students are discriminated and treated less favorably than high-SES students with otherwise identical characteristics in similar circumstances.

To further illustrate gaps in teachers' recommendations by family background, Appendix Figure A.4 shows the gaps in teachers' track recommendations by family backgrounds for students with profiles similar to those of the two vignette experiment. A male student with high performance in math (with a teacher-assigned grade of 9 or 10) has a probability of being recommended to a top-tier track close to 75% if he has college-educated parents and 55% if he has parents that attended middle school (left panel, Appendix Figure A.4). A girl with good performance but not top of the class (GPA between 7 and 8.5) has a probability of around 20% of being recommended to a top-tier track if she has parents that attended university and close to 10% in the case of parents with a middle school degree (right panel, Appendix Figure A.4). In the administrative data, the average SES gap is around 15 percentage points, while in the vignette experiment, it is 6.2 percentage points, suggesting that around 60% of the difference may be due to actual information and other unobservables available to teachers and around 40% to disparate treatment of similar students.

4.3 The Role of Teachers' Expectations about Low-SES Students' Academic Success

Next, we explore the determinants of discrimination in track recommendations by students' SES. After the decision on each profile described in the vignettes, we asked teachers why they selected that specific track recommendation.[7] The question was open-ended, without prompting them to any specific answer. Using text analysis, we identify the most frequent words used in teachers' explanations with the highest difference in average frequency between high-SES and low-SES students.[8]

The results of this preliminary analysis are shown in Appendix Figure C.1. It emerges that "job" is more frequently mentioned for disadvantaged students and "parents" for wealthier

[7]Out of the 1337 teacher-by-profile observations in which teachers provided a recommendation, they provided motivation for 86% of these instances (1145 teacher-by-profile observations included a motivation).

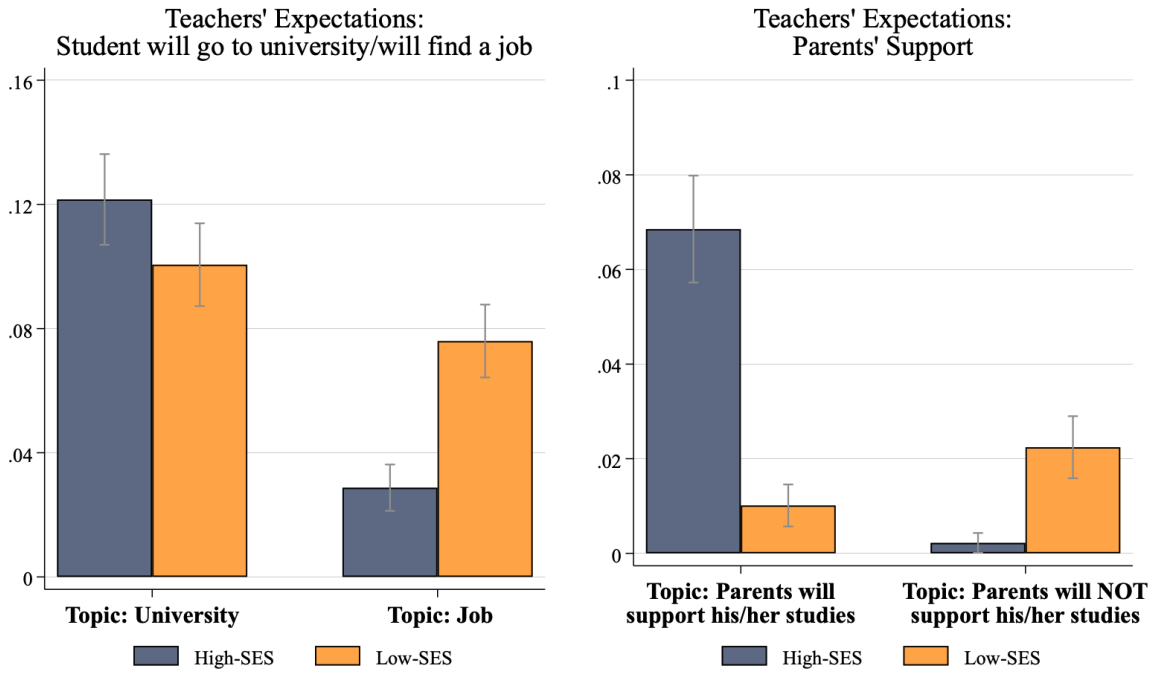
[8]To illustrate teachers' motivations for the recommendations they assigned, Appendix Table C.1 provides example responses of teachers explaining why they choose a top-tier or technical/vocational track recommendation for the same excellent student with high-educated or low-educated parents.

ones. Building on this evidence, we investigate further teachers' expectations on the educational and occupational career of students by classifying their open-ended answers on whether they mention four topics[9]: (i) Job: the student will find a job right after high school, (ii) University: the student will attend college after high school, (iii) High school success: the student will have enough support to successfully complete high school (e.g., from parents), (iv) High school failure: the student will not have enough support to successfully complete high school without failing.

Figure 4 provides the fractions of answers in which each of these four motivations is listed for their recommendation by the SES of the student. These differences are quantified in Appendix Table A.9, using a regression analysis with further controls for robustness. The results show that for low-SES students, teachers are significantly less likely to mention in their comments that they recommend a high-school track that offers higher skills and opportunities to attend university and more likely to mention that they recommend a track that offers opportunities to work right after high school. The probability decreases by 2.2 percentage points, or 18% of the mean for high-SES students, for the topic related to the university and increases by 4.7 percentage points, more than doubling the probability, for the topic related to the labor market. Similarly, teachers expect higher failure rates for low-SES students and less support for successful completion of high school compared to high-SES students with the same profile.

[9]The classification was done by two research assistants independently and the classification is identical in more than 95 percent of the cases. In the main analysis, we use the classification to the specific option coming from at least one of the two research assistants, but results are robust to classifying a certain topic equal to one if both research assistants mention it and the results are unaffected.

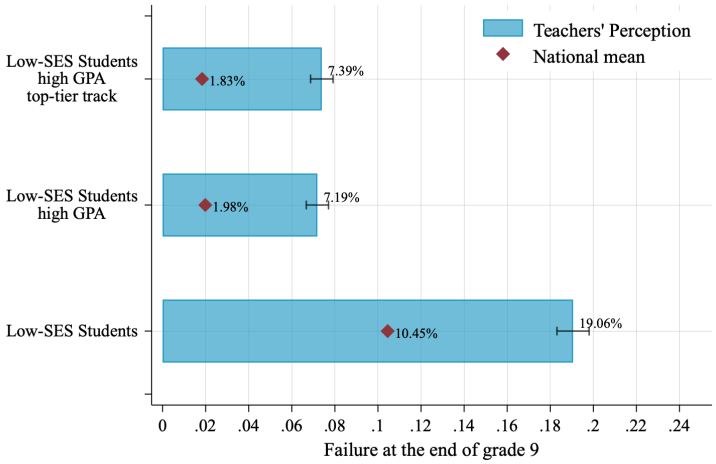
Figure 4: Motivations for Track Recommendations by Family Background



Notes: The figure shows the reasons given by teachers in open-ended questions for making a specific recommendation when the student SES is randomly assigned. We classified the teachers' answers according to whether they mention four reasons: (i) the student will likely pursue his studies and go to college in the future, (ii) the student may need to find a job right after high school, (iii) the student's parents will likely support him in pursuing his studies, (iv) the student's parents will likely not support him in pursuing his studies. The left graph shows the fraction of teachers who mention that "the student will likely go to college" (and will not need to find a job), and that "the student may need to find a job right after high school" among teachers assigned to a low-SES and a high-SES student. The right graph shows the fraction of teachers who mention that "the student's parents will support her in her studies", and that "the student's parents will not support her in her studies" among teachers assigned to a low-SES and a high-SES student. The sample includes 1377 teachers who completed our baseline surveys in 2022 and 2023.

The text analysis of the open-ended answers is consistent with the distorted beliefs on the academic success of low-SES students collected through our baseline survey. Figure 5 reports the summary statistics on teachers' beliefs on the failure rate of all low-SES students, high-GPA low-SES students, and high-GPA low-SES students enrolled in top-tier tracks. Compared to the truth represented by the red dot, teachers substantially overestimate the probability of failure which is between 2 to 4 times smaller compare to their expectations.

Figure 5: Beliefs on Low-SES Failure in High School



Notes: This figure shows teachers' beliefs on the failure rate of low-SES students in high school (blue bars), along with the national means (red dots), separately for all low-SES students, for high-achieving low-SES students, and for high-achieving low-SES students attending a top high school track.

Overall, our analysis provides novel insights on the formation of teachers' advice to students: even in a country with mainly free education for low-SES students, teachers form lower expectations of academic success toward pupils from a disadvantaged background compared to high-SES with the same characteristics. The difference in teachers' expectations about the future for low and high-SES students is based on a *kernel of truth*: on average, students from disadvantaged family backgrounds are less likely to attend university and more likely to go to work right after high-school. However, previous research has shown that inferential judgments that teachers make about probable future achievement and behavior matters for students' educational and occupational career leading to a potential self-fulfilling prophecy (Papageorge et al., 2020). This psychological phenomenon is known as the *Pygmalion effect*, in which high/low expectations lead to over/under-performance (Rosenthal, 1973).

5 Field Experiment

5.1 Empirical Strategy

To assess whether our information reports reduce the SES gap in track recommendations, we estimate the following OLS regression:

$$R_{isc} = \beta_0 + \beta_1 \text{low-SES}_{ics} + \beta_2 \text{Treat_Gaps}_s + \beta_3 \text{Treat_Gaps and Beliefs}_s + \beta_4 \text{low-SES}_{ics} \times \text{Treat_Gaps}_s + \beta_5 \text{low-SES}_{ics} \times \text{Treat_Gaps and Beliefs}_s + \mathbf{X}_{isc}\gamma + \rho_c + \varepsilon_{isc} \quad (1)$$

where R_{ics} is a dummy for whether student i, in school s, cohort c (2022 or 2023) is recommended to a specific high school track, low-SES$_{isc}$ is a dummy for whether the student's father does not work in a high wage job, ρ_c is the cohort fixed effect, $\mathbf{X}_{ics}$ is a vector of students' controls, including standardized test scores in math and Italian, gender, teacher-assigned grades in math and Italian for grade 7, students' GPA in grade 7, whether the school is in the south, whether the school participated in the experiment the previous year. Robust standard errors are clustered at the school level.

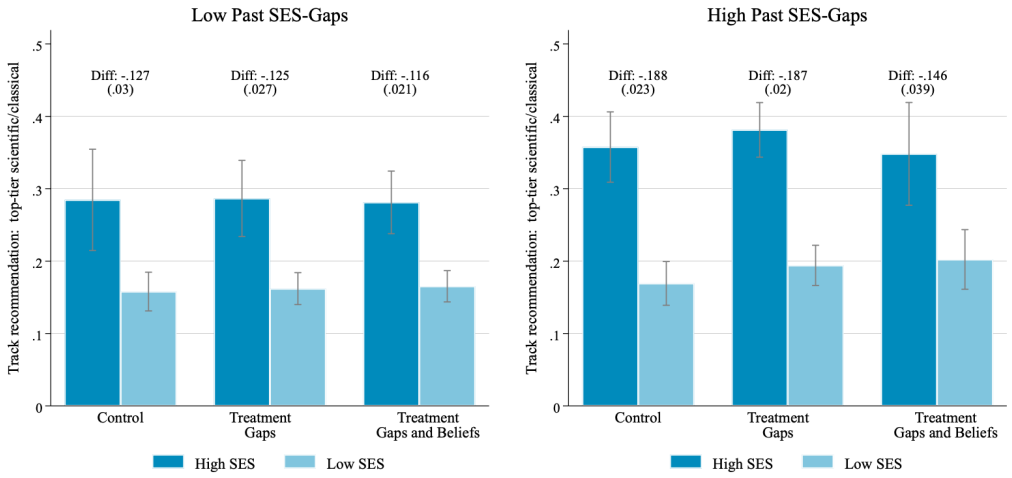
β_2 and β_3 represent the effects of the two treatments on the track recommendations of high-SES students, while β_4 and β_5 are our primary coefficients of interest indicating the effectiveness of the treatments in reducing SES gaps in track recommendations for otherwise comparable students.

Our interventions focus especially on SES gaps for high-ability students, addressing the past SES gaps in teachers' track recommendations in *Treatment Gaps* and the misperception of their probability of failure during high school in *Treatment Gaps and Beliefs*. Hence, we estimate equation 1 for the entire sample of students and high-GPA students only, as we would expect to strongly decrease the SES gap for high-ability students. Furthermore, we present the results separately for those teachers who had high past gaps (above the median) and low past gaps (below the median). The treatment effects are expected to differ based on the information teachers received: teachers with high past SES gaps learned that they had treated high-ability low-SES students less favorably (the average SES gap for this group is 19 percentage points), while teachers with low past gaps learned they had not exhibited such differential treatment (average SES gap for this group is 6 percentage points, statistically indistinguishable from zero).

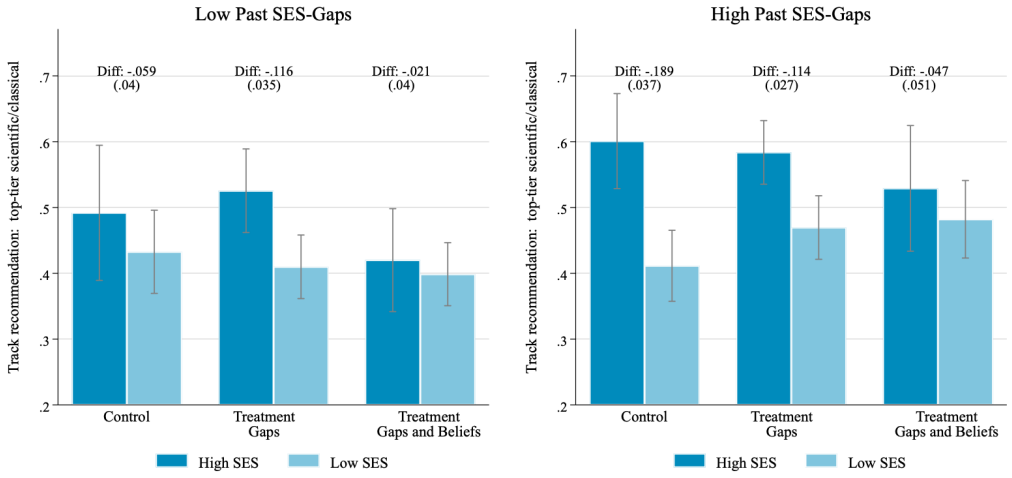
5.2 Main results

Figure 6: Teachers' SES-Gaps in recommendations for the top tracks and treatment status

Panel (a): All Students



Panel (b): High Achievers



Notes: This figure displays the fraction of current high-ability students (those with a grade 7 GPA of 8 or higher) recommended to top tracks, by treatment group and students' socio-economic status. A student is classified as low SES if the student's father is not in a high-wage occupation, indicated by a dummy variable equal to 1. The left graph is for teachers with low past SES gaps, and the right graph is for teachers with high past SES gaps (above the median).

Figure 6 reports the share of students recommended to the top tracks by treatment group and SES of the students: light blue bars are for low-SES students and dark blue bars are

for high-SES students. As discussed at the end of section 5.1, by design, we expect the information treatment on the SES gaps to work mainly on: i) teachers with high past SES gaps in their track recommendation as they learn about their own disparate treatments of students, ii) high-ability students as they are those with the potential to perform well in top-tier tracks but with wrong teachers' beliefs on their success probability in high school, corrected by our second treatment. Hence, Figure 6 shows the results for all students in panel (a) and high-achievers with a GPA higher than 8 in grade 7 in panel (b). The left graph is for teachers with low past SES gaps (below the median), and the right graph is for teachers with high past SES gaps (above the median).[10]

Table 2 quantifies the main results for the entire sample of students in columns 1-3 and for students with high ability in columns 4-6, estimating the coefficients of specification 1. The baseline SES gap in top-track recommendations for all students is approximately 15.5 percentage points, with low-SES students 47% less likely to receive such recommendations than high-SES students. Informing teachers about their own past SES gaps does not have an aggregate effect on their track recommendations while combining that information with the correction of their wrong beliefs on the failure rate of low-SES students reduces – at least in part – the SES gap. Analyzing the data for students assigned to high-gap and low-gap teachers, as presented in columns 2 and 3, we observe that the effect is primarily driven by teachers with high past SES gaps for whom the information provides valuable insight to adjust differentially their track recommendations by SES.

As expected, the pattern discussed above is striking for high-achievers who are the main target of the information treatments. Overall, the baseline SES gap in top-track recommendations for high-ability students is 12.1 percentage points: 5.9 percentage points for teachers with low past gaps and 19 percentage points for teachers with high past gaps, suggesting that there is strong persistency in the SES gaps in track recommendations of teachers that influence the equal access to educational opportunities. Teachers with low past gaps maintain minimal gaps for their current students, even when assigned to treatment reports, with effects that are statistically indistinguishable from zero for both low and high-SES students across treatments (column 5 of Table 2). In contrast, teachers with high past gaps exhibit larger SES gaps for current students, significantly reduced by the intervention: the first treatment reduces this gap by nearly half, while the second treatment reduces it by 75%. The effect is driven by an increase in the probability of being recommended to top tracks for low SES by 6.8 percentage points and 8 percentage points in the two treatments, respec-

[10]For students assigned to multiple teachers, we use the average past SES gaps of their teachers.

tively (column 6 of Table 2). Although the effect is not statistically significant for high SES students, we observe a reduction in their probability of being recommended to top-tier tracks by 0.7 and 8.6 percentage points respectively. As clearly emerges from Figure 6, teachers assigned to the *Treatment Gaps and Beliefs* give similar recommendations to high achievers, independently from their socio-economic background.

Table 2: Dependent variable is teachers' recommendation for top track

	All Students			Students with high GPA		
	(1)	(2)	(3)	(4)	(5)	(6)
	All	Low Past Gaps	High Past Gaps	All	Low Past Gaps	High Past Gaps
Gaps	0.00831	-0.00972	0.00990	0.0234	0.0367	-0.00710
	(0.0291)	(0.0393)	(0.0300)	(0.0428)	(0.0604)	(0.0440)
Gaps and Beliefs	-0.0612*	-0.0605	-0.0561	-0.0833	-0.0827	-0.0864
	(0.0352)	(0.0475)	(0.0393)	(0.0535)	(0.0746)	(0.0579)
Low SES × Gaps	-0.000226	-0.000521	0.0169	0.00388	-0.0522	0.0754*
	(0.0231)	(0.0329)	(0.0252)	(0.0358)	(0.0516)	(0.0429)
Low SES × Gaps and Beliefs	0.0700**	0.0484	0.0931**	0.103**	0.0550	0.166***
	(0.0290)	(0.0353)	(0.0368)	(0.0444)	(0.0570)	(0.0559)
Mean of Y for high-SES Control	0.318	0.285	0.358	0.544	0.492	0.601
Mean of Y for low-SES Control	0.163	0.158	0.169	0.423	0.433	0.411
R^2	0.289	0.270	0.307	0.124	0.113	0.141
N. students	14480	7243	7237	5471	2624	2847
N. schools	217	142	147	217	142	147
Summ Coeff. Gaps ($\beta_3 + \beta_5$) (p-value)	0.552	0.530	0.132	0.350	0.683	0.0464
Summ Coeff. Gaps and Beliefs ($\beta_3 + \beta_5$) (p-value)	0.618	0.587	0.124	0.567	0.538	0.0868

Notes: This table presents estimates of coefficients from specification 1, where the dependent variable is teachers' track recommendations for the top tier tracks. Panel A presents results for the entire sample of 8th-grade students assigned to experimental teachers, while Panel B restricts the sample to high achievers, measured as students with grade 7 GPA greater or equal to 8. The first two columns present results for all teachers in the experimental sample, columns 3 and 4 restrict to teachers with low past SES gaps, and columns 5-6 to teachers with high past SES gaps. Low-ses is a dummy equal to 1 if the student's father is not in a high-wage occupation. Student controls include gender, school location (South), whether teachers received a report in the previous year, standardized test scores in math and Italian, assigned grades in math and Italian, and GPA. Robust standard errors are clustered at the school level.

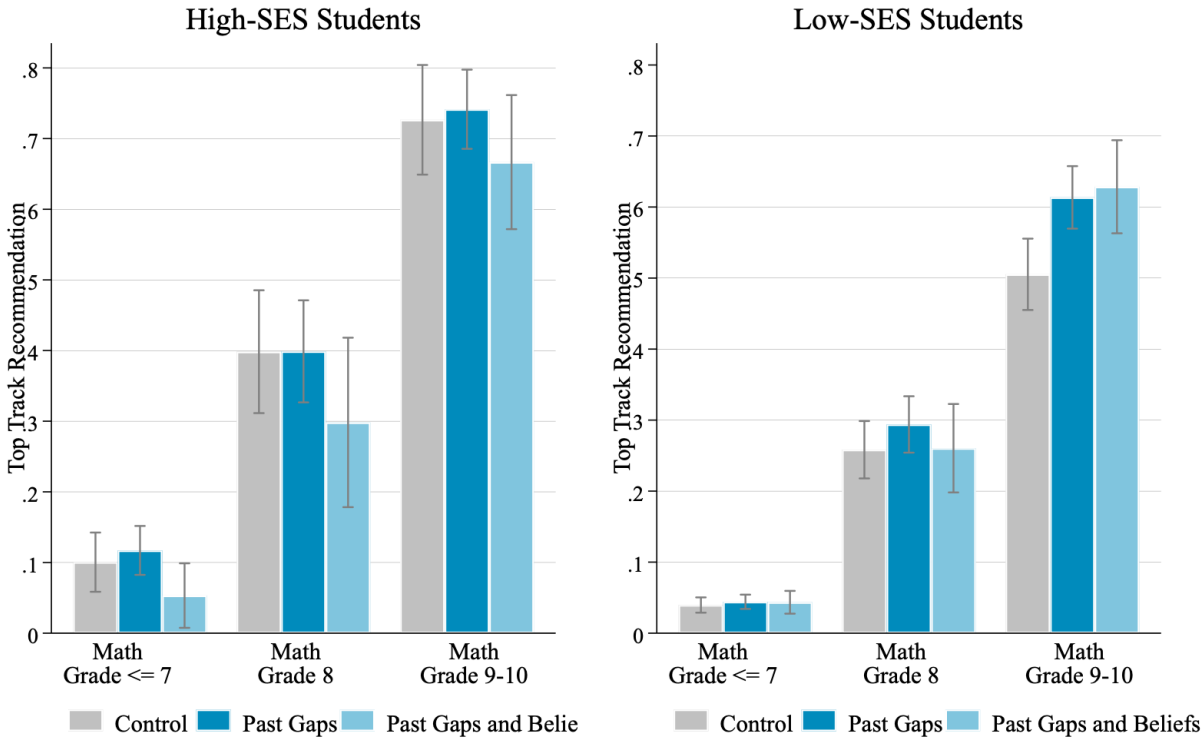
5.3 Reallocation of Students to the Top Tracks: Winners and Losers

The previous section shows that the treatments reduced SES gaps in top-track recommendations for high-ability students and that these effects are primarily driven by teachers with high past SES gaps. Importantly, this gap reduction is not due to an increase in the overall number of high-ability students recommended to top tracks, as the total number of such recommendations remains unchanged, as shown in Table A.10. Instead, it results from the reallocation of low-SES students to top tracks, replacing high-SES students.

Why, then, are high-SES students being reallocated to other tracks and low-SES reallocated to the top tracks? There is no formal limit on the number of students who can be

recommended to or enroll in top tracks. In theory, teachers could have recommended a larger number of students to top tracks. However, it appears that they tend to allocate a fixed percentage of students to these tracks within each class. This adherence to a threshold suggests that the advantages gained by low-SES students may come at the expense of high-SES students. Figure A.5, which analyzes administrative data from the entire student population, shows that teachers consistently recommend approximately 20% of students to top tracks, irrespective of the students' abilities. This 20% threshold remains constant, regardless of the proportion of students with top standardized math scores in the class.

Figure 7: Reallocation by Students' Math Grade



Notes: This figure displays the proportion of high-SES (left) and low-SES (right) students recommended for top tracks, categorized by their grade 7 math grade and treatment status. The sample consists of students taught by teachers with high SES gaps (above the median).

In terms of both equity and efficiency, it is key to investigate which students are allocated to the top-tier tracks based on ability and SES. Figure 7 displays treatment effects for teachers with high past gaps, categorized by students' grade 7 math scores. In the left graph, we observe that under the *Gaps and Beliefs* treatment, a smaller proportion of high-

SES students are recommended to top tracks, and this decrease occurs across the entire grade distribution. Specifically, high-SES students with excellent math grades (9-10) are 7% less likely to be sent to top tracks, high-SES students with good math grades (8) are 25% less likely to be recommended, and those with low math grades (7 or lower) are 50% less likely. Conversely, the right graph shows results for low-SES students: low-SES students with excellent math abilities are those whose track recommendation is increased to top-tier tracks with an increase by 10 percentage points or 20% compared to students assigned to control teachers. Those with lower math grades show no effects.

Appendix Table A.11 quantifies the results presented in Figure 7. Low-SES students with excellent math grades of 9-10 are 11 pp more likely to be recommended to top tracks when assigned to treatment schools and are 7 pp less likely to be recommended to technical tracks, which are less academically oriented.

Table 3: Vignettes from endline survey. The dependent variable is the recommendation for top tracks

	Low-SES Students			High-SES Students		
	(1)	(2)	(3)	(4)	(5)	(6)
Gaps	-0.00356	0.000203	-0.0295	-0.00446	-0.00590	0.00418
	(0.0376)	(0.0355)	(0.0496)	(0.0280)	(0.0285)	(0.0460)
Gaps and Beliefs	0.0768**	0.0778**	0.0178	0.0431	0.0362	0.00317
	(0.0353)	(0.0379)	(0.0426)	(0.0314)	(0.0326)	(0.0450)
Belief on Failure low-SES			-0.00264*			-0.00165
			(0.00136)			(0.00172)
Gaps × Belief on Failure low-SES			0.00298			0.000876
			(0.00187)			(0.00192)
Gaps and Beliefs × Belief on Failure low-SES			0.00515***			0.00191
			(0.00174)			(0.00196)
Mean high-SES control	0.293	0.293	0.291	0.332	0.331	0.316
R^2	0.395	0.400	0.438	0.500	0.499	0.593
Observations	1039	1036	709	1052	1049	694
N. schools	130	130	95	130	130	95
N. teachers	383	382	230	388	387	230
name FE	Yes	Yes	Yes	Yes	Yes	Yes
Stud. teacher$_{c}$*ontrol*	No	Yes	Yes	No	Yes	Yes

Notes: This table presents coefficients from regressions of track recommendations to top tracks on treatment dummies separately for students with high-SES and low-SES, based on hypothetical student profiles from the 2022 and 2023 endline surveys. The 2022 survey features 4 profiles, while the 2023 survey includes 6, with student SES randomized per teacher and student profile. Results focus on teachers from the experimental sample — those with actual 8th-grade students - with high past gaps. Robust standard errors are double-clustered by school and teacher. Controls account for teachers' gender, age, whether they teach core subjects, and whether they have a permanent job contract.

Are boys or girls more likely to be affected by the information treatment to their teachers? Table 4 presents the analysis of heterogeneity by gender. The reallocation

of high-ability, low-SES students from technical and vocational to top tracks is driven entirely by male students, with no observable effects for female students. Notably, high-ability female students in the control schools exhibit much smaller SES gaps, indicating that a disadvantaged parental background is particularly detrimental for boys, even when their academic ability is accounted for. This result is consistent with a growing literature providing evidence on the stronger difficulties faced by boys from lower socio-economic backgrounds (Carlana et al., 2022; Autor et al., 2019).

Table 4: Heterogeneity by students' gender

	Male Students		Female Students	
	(1)	(2)	(3)	(4)
	Top	Technical	Top	Technical
Gaps	-0.105	0.0625	0.0614	-0.0235
	(0.0640)	(0.0623)	(0.0502)	(0.0261)
Gaps and Beliefs	-0.214***	0.164**	0.0169	-0.0177
	(0.0735)	(0.0753)	(0.0643)	(0.0417)
low-SES	-0.216***	0.146***	-0.115***	0.0481
	(0.0439)	(0.0407)	(0.0427)	(0.0306)
low-SES × Gaps	0.175***	-0.114*	0.00208	-0.0298
	(0.0654)	(0.0583)	(0.0571)	(0.0353)
low-SES × Gaps and Beliefs	0.296***	-0.241***	0.0704	-0.0515
	(0.0899)	(0.0727)	(0.0640)	(0.0470)
Mean high-SES control	0.742	0.155	0.496	0.0763
R^2	0.154	0.0890	0.117	0.0545
N. students	1245	1245	1602	1602
N. schools	143	143	146	146
Stud. controls	Yes	Yes	Yes	Yes

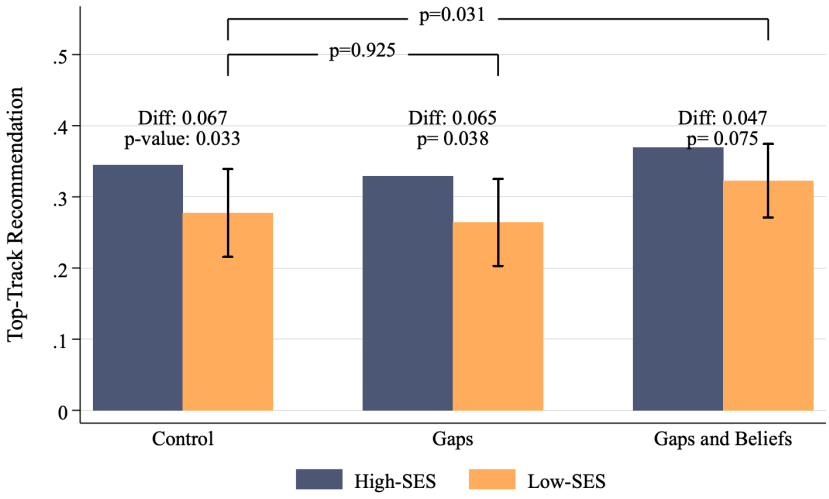
Notes: This figure presents coefficients from the estimation of equation 1 separately for male (columns 1-2) and female students (columns 3-4). The dependent variables are teachers' recommendations for top tracks (columns 1-3) and technical tracks (columns 2-4). Student controls include school location (South), whether teachers received a report in the previous year, standardized test scores in math and Italian, teacher-assigned grades in these subjects, and GPA. The sample is composed of high-achieving students taught by teachers who have exhibited high SES gaps (above the median). Robust standard errors are clustered at the school level.

Finally, we investigate whether the treatment affected teachers' behavior using hypothetical student profiles. These profiles allow us to assess discrimination without constraints on recommendations, as they are not based on collective decision-making and lack implicit limits on the proportion of students recommended for advanced tracks.

Figure 8 shows the proportions of hypothetical students recommended by teachers to top tracks based on student profiles from the 2022 and 2023 endline surveys (accounting for profiles' fixed effects). The 2022 survey included 4 profiles, while the 2023 survey featured 6

profiles with randomized SES statuses (displayed in Appendix D). The analysis is restricted to teachers with above-median past SES gaps who are part of the experimental sample (thus, currently assigned to 8th-grade students) as we have seen that the treatment effect on actual student recommendations is driven by these teachers. In control schools, teachers continued to display significant SES gaps similar to those observed in the baseline survey. Teachers in the *Treatment Gaps*, which informed them about past SES gaps in the track recommendations to their own students alone, did not significantly alter their behavior. In contrast, those in the *Treatment Gaps and beliefs* substantially increased recommendations for low-SES students to top tracks. Table 3 quantifies the results in columns 1-2 and 4-5 for low-SES and high-SES, respectively: teachers in the *Gaps and beliefs* treatment are 7.8 percentage points more likely to recommend low-SES students to top tracks and the effect is not affected by the inclusion of controls. However, contrary to what was observed for actual students, this does not come at the expense of high-SES, who are not replaced, consistently with the fact that there are no implicit recommendation limits with the hypothetical profiles.

Figure 8: Vignettes from endline survey



Notes: This figure shows the fraction of (hypothetical) students recommended to top or other academic tracks based on hypothetical student profiles from the endline surveys of 2022-23. Results are presented separately for teachers in the control group, and in the treatment groups *Past Gaps* and *Past Gaps and Beliefs*. The 2022 survey includes 4 hypothetical student profiles, while the 2023 survey includes 6, with student SES randomized for each teacher. Results are provided for teachers within the experimental sample (those with actual 8th-grade students) who have shown high past SES gaps (above the median).

5.4 Mechanism: the role of teachers' misperceptions

The *Treatment Gaps and Beliefs* was designed based on the widespread misperception on the probability of failing a school year for low-SES students during high school, as reported in Figure 5. These misperceptions were assessed in the 2023 baseline survey with the question: 'Out of 100 low-SES students, how many fail in grade 9?' Teachers in the *Gaps and Beliefs* treatment group were informed that their perceived failure rates for low-SES students—both unconditional and conditional on high ability—were substantially higher than the actual rates.

To further explore this mechanism, we analyze the heterogeneity of treatment effects based on teachers' prior beliefs about the success of low-SES students in high school. If the second treatment is especially effective due to its correction of misperceptions about low-SES students' success, we anticipate a stronger treatment effect among teachers with more significant initial misperceptions, who thus received a substantial informational update.

Figure A.7 illustrates the impact of the information reports for students by teachers' misperceptions on the success of low-SES students in high school. Teachers with higher initial misperceptions exhibited larger treatment effects when part of the *Gaps and Beliefs* intervention. This is also reflected in Table 5, where teachers' track recommendations are regressed on low SES status, treatment dummies, teachers' prior beliefs, and all their interactions.

The same pattern can be observed using as an outcome the track recommendations to the hypothetical profiles in the vignette experiment instead of the track recommendation to actual students. The increase in the probability of recommendation of low-SES students to top-tier tracks observed in columns 1-2 of Table 3 is fully driven by teachers with stronger misperception at baseline on the low-SES students' potential to succeed in high school (column 3, Table 3).

Table 5: Treatment effects and baseline beliefs on share of low-SES students who fail in high school

	DV: Top Track Recommendation	
	(1)	(2)
Low SES	-0.153***	-0.0785
	(0.0450)	(0.0689)
Gaps	0.0242	0.0455
	(0.0542)	(0.0752)
Gaps and Beliefs	-0.0930	-0.0574
	(0.0627)	(0.0883)
Low SES × Gaps	0.0648	-0.0128
	(0.0579)	(0.0843)
Low SES × Gaps and Beliefs	0.178***	0.0315
	(0.0641)	(0.0945)
Low SES × Gaps × Belief on Failure		0.00392
		(0.00319)
Low SES × Gaps and Beliefs × Belief on Failure		0.00780**
		(0.00365)
Mean high-SES control	0.583	0.583
R^2	0.160	0.164
N. students	1892	1892
N. schools	114	114
Stud. controls	Yes	Yes

Notes: This table presents coefficients from regressions of teachers' recommendations on students' SES, treatment dummies, and baseline priors about low-SES students' success in high school, including all interaction terms. Student controls include gender, school location (South), whether teachers received a report in the previous year, standardized test scores in math and Italian, assigned grades in math and Italian, and GPA. Prior beliefs were elicited in the 2023 baseline survey with the question: 'Out of 100 low-SES students, how many failed at the end of grade 9?' Since prior beliefs were collected only in 2023, the sample is limited to the 2023 cohort, which includes high-achieving students assigned to teachers with historically significant SES gaps (above the median).

5.5 Robustness

We assess the robustness of the main results using different measures of students' socio-economic status (SES). Specifically, we consider alternative measures that teachers might use as proxies for their students' SES, such as whether both the mother and father are not in high-wage occupations (68% of high-ability students fall into this category), whether the father did not complete high school (36% of high-ability students), and whether either parent did not complete high school (42% of high-ability students). Figure A.6 illustrates the proportion of high-ability students recommended to the tracks by treatment group, taking into account baseline controls and using these different SES measures. The results demonstrate that similar effects hold for different SES measures. Results using different SES

measures are also reported in Table A.12.

6 Conclusion

We offer insights into the existence of discrimination on the basis of family background in the education system and how a simple and scalable intervention can mitigate it. The SES discrimination manifests in the form of biased teachers' recommendations that steer low-SES students towards less profitable educational and occupational paths. Our analysis exploits a unique context where teachers' recommendations for high school choices are officially provided to students and recorded in administrative data. First, results from a vignette experiment indicate that teachers who give track recommendations to students strongly factor in parental background, despite reporting in a survey that socio-economic status should not affect teachers' track recommendations. Disadvantaged family background includes a bundle of potential factors that may affect the success probability during high school, such as financial resources, exposure to after-school activities and interests, and lower parental encouragement to achieve higher education. Teachers generalize low expectations toward disadvantaged students, even in cases where they do not have any information on the actual financial constraints of families. Second, we implement a field experiment to investigate how simple information treatments could be effective to mitigate SES discrimination for high-ability students. We provide evidence that informing teachers about their own SES gaps in past track recommendations is effective in closing around 35% of the actual gap for teachers that had a gap higher than the median and it does not affect the behavior for the other teachers. Combining this treatment with additional information that corrects their misperception on the probability of failing high-school, the information reports can close up to 42% of the SES gaps in track recommendations. Our results suggest that low-SES face an additional barrier in their education introduced by teachers themselves as they do not receive the same information signal as high-SES students. Increasing awareness of teachers on their own SES gaps can help ensuring equal opportunities for all children.

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A Additional Tables and Figures

Table A.1: Track Recommendations and Family Background -Administrative data-

	(1)	(2)	(3)	(4)	(5)
Panel A: Top-Tier Recommendation					
Low-SES	-0.171***	-0.105***	-0.0732***	-0.0716***	-0.0439***
	(0.00145)	(0.00134)	(0.00177)	(0.00175)	(0.00149)
Mean of Y for High-SES	0.364	0.364	0.364	0.364	0.364
Observations	456987	456987	456974	456974	456974
R^2	0.0298	0.194	0.279	0.281	0.386
Panel B: Technical/Vocational Recommendation					
Low-SES	0.216***	0.130***	0.0851***	0.0849***	0.0482***
	(0.00170)	(0.00154)	(0.00181)	(0.00171)	(0.00145)
Mean of Y for High-SES	0.390	0.390	0.390	0.390	0.390
Observations	456987	456987	456974	456974	456974
R^2	0.0341	0.229	0.322	0.371	0.484
Ability	No	Yes	Yes	Yes	Yes
School fixed effect	No	No	Yes	Yes	Yes
Controls	No	No	No	Yes	Yes
Teacher grade	No	No	No	No	Yes

Notes: This table presents coefficients from a regression of teachers' track recommendations on students' low-SES status, using data from the universe of 8th-grade Italian students in the 2016-17 academic year. Students are classified as having low socio-economic status if their father is not employed in a high-wage occupation. Controls for ability include standardized math test scores (INVALSI) from grade 8. Additional controls include students' gender, whether they were born in Italy, and the number of hours they were absent from school in grade 7 across math, Italian, and English. Controls for teachers' grades include teacher-assigned grades in math, Italian, and English, as well as students' GPA in grade 7.

Table A.2: Summary statistics of students and teachers in the experimental sample

Variable	Mean	SD	Min	p25	p75	Max	N
Students: Track Recommendation:							
Track recommendation: top-tier scientific/classical	0.203	0.402	0.000	0.000	0.000	1.000	14,480
Track recommendation: technical	0.264	0.441	0.000	0.000	1.000	1.000	14,480
Track recommendation: medium humanities (linguistic/artistic/humanities)	0.250	0.433	0.000	0.000	1.000	1.000	14,480
Track recommendation: vocational	0.277	0.448	0.000	0.000	1.000	1.000	14,480
Students: Track Choice:							
Track choice: top-tier scientific/classical	0.235	0.424	0.000	0.000	0.000	1.000	5,214
Track choice: technical	0.309	0.462	0.000	0.000	1.000	1.000	5,214
Track choice: medium humanities (linguistic/artistic/humanities)	0.228	0.419	0.000	0.000	0.000	1.000	5,214
Track choice: vocational	0.129	0.335	0.000	0.000	0.000	1.000	5,214
Students: Other Characteristics:							
Grade in math - grade 7	7.242	1.378	4.000	6.000	8.000	10.000	14,302
Grade in Italian - grade 7	7.380	1.132	4.000	7.000	8.000	10.000	14,304
Grade in English - grade 7	7.499	1.297	4.000	7.000	8.000	10.000	14,296
Grade point average in grade 7 - first	7.680	0.957	4.000	7.000	8.385	10.000	14,306
Kindergarten (3-5 years) attendance	0.930	0.255	0.000	1.000	1.000	1.000	12,499
Absence hours in Mathematics - Grade 7 - first	6.572	7.133	0.000	1.000	10.000	20.000	9,747
Absence hours in Italian - Grade 7 - first	8.892	7.915	0.000	1.000	20.000	20.000	9,683
Father's education: no high school	0.508	0.500	0.000	0.000	1.000	1.000	14,480
Father's education: no university	0.854	0.353	0.000	1.000	1.000	1.000	14,480
Mother's education: no high school	0.410	0.492	0.000	0.000	1.000	1.000	14,480
Mother's education: no university	0.795	0.403	0.000	1.000	1.000	1.000	14,480
Father's occupation: non high wage	0.812	0.391	0.000	1.000	1.000	1.000	14,480
Mother's occupation: non high wage	0.874	0.331	0.000	1.000	1.000	1.000	14,480
Teachers: Characteristics:							
Female	0.832	0.374	0.000	1.000	1.000	1.000	1,092
Age	47.979	9.512	22.000	41.000	56.000	77.000	998
Father's education: high school	0.356	0.479	0.000	0.000	1.000	1.000	593
Father's education: university	0.192	0.394	0.000	0.000	0.000	1.000	593
Teaches core subject (Math or Italian)	0.540	0.499	0.000	0.000	1.000	1.000	1,095
Permanent teaching contract	0.839	0.368	0.000	1.000	1.000	1.000	1,004
How much does GPA influence guidance?	47.287	16.806	0.000	37.000	60.000	91.000	934
How much do attitude and interests influence guidance?	35.502	14.595	0.000	25.000	48.000	100.000	934
How much does parental education influence guidance?	2.779	5.639	0.000	0.000	5.000	50.000	934
How much does SES influence guidance?	3.922	6.287	0.000	0.000	5.000	50.000	934
How much does parental advice/help influence guidance?	10.510	11.442	0.000	0.000	18.000	100.000	934
True SES-gap recomm. top-tier (high-low SES)	18.739	9.567	-19.005	13.122	23.244	73.485	1,095
True SES-gap recomm. top-tier (high-low SES), HIGH GPA	15.373	11.712	-43.333	9.662	18.986	56.938	1,095

Table A.3: Summary statistics of students with high GPA and teachers in the experimental sample

Variable	Mean	SD	Min	p25	p75	Max	N
Students: Track Recommendation:							
Track recommendation: top-tier scientific/classical	0.462	0.499	0.000	0.000	1.000	1.000	5,471
Track recommendation: technical	0.182	0.386	0.000	0.000	0.000	1.000	5,471
Track recommendation: medium humanities (linguistic/artistic/humanities)	0.317	0.465	0.000	0.000	1.000	1.000	5,471
Track recommendation: vocational	0.025	0.157	0.000	0.000	0.000	1.000	5,471
Students: Track Choice:							
Track choice: top-tier scientific/classical	0.481	0.500	0.000	0.000	1.000	1.000	1,902
Track choice: technical	0.210	0.408	0.000	0.000	0.000	1.000	1,902
Track choice: medium humanities (linguistic/artistic/humanities)	0.263	0.441	0.000	0.000	1.000	1.000	1,902
Track choice: vocational	0.030	0.172	0.000	0.000	0.000	1.000	1,902
Students: Other Characteristics:							
Grade in math - grade 7	8.473	0.955	5.000	8.000	9.000	10.000	5,470
Grade in Italian - grade 7	8.411	0.789	6.000	8.000	9.000	10.000	5,471
Grade in English - grade 7	8.566	0.903	6.000	8.000	9.000	10.000	5,468
Grade point average in grade 7 - first	8.668	0.496	8.000	8.250	9.000	10.000	5,471
Kindergarten (3-5 years) attendance	0.950	0.218	0.000	1.000	1.000	1.000	4,833
Absence hours in Mathematics - Grade 7 - first	4.963	6.158	0.000	1.000	10.000	20.000	3,730
Absence hours in Italian - Grade 7 - first	7.254	7.303	0.000	1.000	10.000	20.000	3,671
Father's education: no high school	0.355	0.479	0.000	0.000	1.000	1.000	5,471
Father's education: no university	0.768	0.422	0.000	1.000	1.000	1.000	5,471
Mother's education: no high school	0.251	0.434	0.000	0.000	1.000	1.000	5,471
Mother's education: no university	0.682	0.466	0.000	0.000	1.000	1.000	5,471
Father's occupation: non high wage	0.736	0.441	0.000	0.000	1.000	1.000	5,471
Mother's occupation: non high wage	0.833	0.373	0.000	1.000	1.000	1.000	5,471
Teachers: Characteristics:							
Female	0.832	0.374	0.000	1.000	1.000	1.000	1,092
Age	47.979	9.512	22.000	41.000	56.000	77.000	998
Father's education: high school	0.356	0.479	0.000	0.000	1.000	1.000	593
Father's education: university	0.192	0.394	0.000	0.000	0.000	1.000	593
Teaches core subject (Math or Italian)	0.540	0.499	0.000	0.000	1.000	1.000	1,095
Permanent teaching contract	0.839	0.368	0.000	1.000	1.000	1.000	1,004
How much does GPA influence guidance?	47.287	16.806	0.000	37.000	60.000	91.000	934
How much do attitude and interests influence guidance?	35.502	14.595	0.000	25.000	48.000	100.000	934
How much does parental education influence guidance?	2.779	5.639	0.000	0.000	5.000	50.000	934
How much does SES influence guidance?	3.922	6.287	0.000	0.000	5.000	50.000	934
How much does parental advice/help influence guidance?	10.510	11.442	0.000	0.000	18.000	100.000	934
True SES-gap recomm. top-tier (high-low SES)	18.739	9.567	-19.005	13.122	23.244	73.485	1,095
True SES-gap recomm. top-tier (high-low SES), HIGH GPA	15.373	11.712	-43.333	9.662	18.986	56.938	1,095

Table A.4: Balance Table, 2023

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Full sample	Control	Gaps	Gaps and Beliefs	p-value Gaps vs. Control	p-value Gaps and Beliefs vs. Control	Norm. Diff. Gaps vs. Control	Norm. Diff. Gaps and Beliefs vs. Control
Panel A: Students in the Field Experiment								
Female	0.493	0.501	0.495	0.481	0.643	0.361	-0.008	-0.028
Immigrant	0.109	0.134	0.115	0.076	0.309	0.005	-0.041	-0.135
Grade in math - grade 7	7.246	7.151	7.261	7.335	0.118	0.169	0.056	0.095
Grade in Italian - grade 7	7.414	7.333	7.417	7.503	0.182	0.166	0.053	0.105
Invalsi math - grade 5	202.223	203.865	201.706	200.943	0.429	0.427	-0.039	-0.052
Invalsi Italian - grade 5	209.099	210.871	209.077	206.994	0.292	0.025	-0.036	-0.079
Kindergarten (3-5 years) attendance	0.936	0.954	0.913	0.943	0.060	0.433	-0.117	-0.035
School in South	0.155	0.118	0.106	0.256	0.782	0.332	-0.027	0.254
SES-gaps in past top track rec., all	18.690	18.036	19.305	18.698	0.377	0.777	0.106	0.055
Mother: less than high school	0.326	0.337	0.317	0.326	0.415	0.781	-0.030	-0.017
Father: non high-wage occupation	0.854	0.864	0.849	0.850	0.391	0.662	-0.030	-0.028
Father: less than high school	0.429	0.455	0.409	0.423	0.148	0.816	-0.066	-0.046
Father: non high-wage occupation	0.780	0.801	0.771	0.766	0.185	0.278	-0.052	-0.060
low SES (index)	0.468	0.480	0.426	0.508	0.092	0.421	-0.077	0.040
SES-gaps in past top track rec., all	18.690	18.036	19.305	18.698	0.377	0.777	0.106	0.055
SES-gaps in past top track rec., high grades	15.872	15.925	17.475	13.896	0.188	0.310	0.140	-0.182
Students	9266	3,171	3,318	2,777				
Schools	184	63	65	55				
Panel B: Teachers characteristics								
Female	0.835	0.831	0.842	0.841	0.705	0.780	0.023	0.019
Age	48.011	47.585	47.962	48.820	0.918	0.188	-0.006	0.093
Father's education: high school	0.360	0.370	0.379	0.342	0.539	0.702	0.044	-0.041
Father's education: university	0.192	0.161	0.178	0.251	0.653	0.089	-0.041	0.158
Teaches core subject (Math or Italian)	0.550	0.549	0.587	0.551	0.146	0.790	0.085	0.003
Permanent teaching contract	0.844	0.830	0.864	0.863	0.571	0.532	0.063	0.065
How much does GPA influence guidance?	48.255	48.708	47.000	47.582	0.385	0.611	-0.081	-0.046
How much do attitude and interests influence guidance?	36.038	35.235	35.950	37.229	0.929	0.141	-0.006	0.093
How much does parental education influence guidance?	2.475	2.359	2.398	2.647	0.817	0.641	-0.017	0.040
How much does SES influence guidance?	3.647	3.842	4.414	3.358	0.077	0.382	0.128	-0.056
How much does parental advice/help influence guidance?	9.585	9.856	10.238	9.184	0.415	0.574	0.065	-0.042
Teachers	645	173	242	227				

Table A.5: Balance Table, only high-GPA students

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Full sample	Control	Gaps	Gaps and Beliefs	p-value Gaps vs. Control	p-value Gaps and Beliefs vs. Control	Norm. Diff. Gaps vs. Control	Norm. Diff. Gaps and Beliefs vs. Control
Panel A: Students in the Field Experiment								
Female	0.570	0.590	0.575	0.522	0.450	0.421	-0.022	-0.097
Immigrant	0.048	0.054	0.048	0.036	0.573	0.172	-0.019	-0.061
Grade in math - grade 7	8.473	8.442	8.474	8.528	0.436	0.046	0.024	0.064
Grade in Italian - grade 7	8.411	8.360	8.394	8.542	0.408	0.004	0.031	0.161
Invalsi math - grade 5	220.033	222.630	219.305	218.168	0.343	0.422	-0.064	-0.083
Invalsi Italian - grade 5	226.582	229.416	227.003	222.944	0.182	0.017	-0.053	-0.140
Kindergarten (3-5 years) attendance	0.950	0.937	0.955	0.965	0.482	0.487	0.056	0.092
School in South	0.140	0.119	0.085	0.293	0.500	0.290	-0.080	0.312
SES-gaps in past top track rec., all	18.614	18.042	19.059	18.719	0.380	0.955	0.086	0.055
Mother: less than high school	0.171	0.171	0.170	0.174	0.967	0.939	-0.002	0.006
Father: non high-wage occupation	0.813	0.827	0.804	0.808	0.174	0.141	-0.042	-0.035
Father: less than high school	0.281	0.291	0.272	0.281	0.468	0.622	-0.030	-0.016
Father: non high-wage occupation	0.703	0.730	0.689	0.680	0.095	0.042	-0.064	-0.078
low SES (index)	0.354	0.366	0.334	0.379	0.294	0.476	-0.047	0.019
SES-gaps in past top track rec., all	18.614	18.042	19.059	18.719	0.380	0.955	0.086	0.055
SES-gaps in past top track rec., high grades	15.205	15.264	15.765	13.916	0.725	0.318	0.036	-0.119
Students	5471	2,030	2,334	1,107				
Schools	217	81	81	55				
Panel B: Teachers characteristics								
Female	0.821	0.814	0.830	0.847	0.663	0.273	0.029	0.062
Age	48.282	48.186	48.665	48.708	0.591	0.379	0.053	0.039
Father's education: high school	0.394	0.408	0.472	0.366	0.112	0.895	0.189	-0.061
Father's education: university	0.188	0.150	0.157	0.268	0.469	0.123	-0.095	0.206
Teaches core subject (Math or Italian)	0.525	0.530	0.560	0.506	0.193	0.741	0.092	-0.034
Permanent teaching contract	0.841	0.836	0.832	0.859	0.850	0.942	-0.031	0.045
How much does GPA influence guidance?	46.539	46.830	48.026	45.408	0.212	0.487	0.113	-0.059
How much do attitude and interests influence guidance?	35.378	34.895	34.955	37.254	0.709	0.209	-0.035	0.106
How much does parental education influence guidance?	3.014	2.862	2.449	3.606	0.115	0.351	-0.128	0.086
How much does SES influence guidance?	4.401	4.580	4.731	3.704	0.524	0.515	0.059	-0.093
How much does parental advice/help influence guidance?	10.669	10.833	9.840	10.028	0.191	0.794	-0.090	-0.043
Teachers	403	135	182	85				

Table A.6: Balance Table, without restricting to schools sending data to ministry

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Full sample	Control	Gaps	Gaps and Beliefs	p-value Gaps vs. Control	p-value Gaps and Beliefs vs. Control	Norm. Diff. Gaps vs. Control	Norm. Diff. Gaps and Beliefs vs. Control
Panel A: Students in the Field Experiment								
Female	0.491	0.499	0.488	0.481	0.205	0.737	-0.016	-0.025
Immigrant	0.120	0.126	0.129	0.085	0.807	0.023	0.006	-0.095
Grade in math - grade 7	7.251	7.198	7.269	7.323	0.190	0.209	0.037	0.065
Grade in Italian - grade 7	7.386	7.329	7.393	7.492	0.218	0.235	0.040	0.100
Invalsi math - grade 5	201.982	202.787	201.972	200.953	0.738	0.520	-0.015	-0.033
Invalsi Italian - grade 5	208.825	209.950	209.140	206.908	0.615	0.083	-0.016	-0.062
Kindergarten (3-5 years) attendance	0.928	0.915	0.935	0.941	0.412	0.759	0.054	0.071
School in South	0.140	0.152	0.082	0.242	0.163	0.770	-0.155	0.161
SES-gaps in past top track rec., all	18.209	17.713	18.464	18.707	0.500	0.969	0.063	0.086
Mother: less than high school	0.324	0.334	0.312	0.330	0.300	0.890	-0.033	-0.006
Father: non high-wage occupation	0.854	0.859	0.850	0.853	0.528	0.615	-0.018	-0.012
Father: less than high school	0.426	0.450	0.405	0.424	0.093	0.632	-0.064	-0.037
Father: non high-wage occupation	0.777	0.791	0.766	0.769	0.164	0.160	-0.043	-0.038
low SES (index)	0.487	0.500	0.466	0.506	0.228	0.855	-0.048	0.008
SES-gaps in past top track rec., all	18.209	17.713	18.464	18.707	0.500	0.969	0.063	0.086
SES-gaps in past top track rec., high grades	14.824	15.189	14.788	14.125	0.751	0.609	-0.029	-0.091
Students	16238	6,483	6,722	3,033				
Schools	234	86	88	61				
Panel B: Teachers characteristics								
Female	0.832	0.829	0.840	0.845	0.581	0.632	0.025	0.031
Age	48.049	47.967	48.251	48.387	0.704	0.535	0.026	0.031
Father's education: high school	0.360	0.370	0.370	0.338	0.736	0.674	0.026	-0.047
Father's education: university	0.196	0.166	0.185	0.257	0.747	0.083	-0.032	0.158
Teaches core subject (Math or Italian)	0.547	0.545	0.586	0.556	0.044	0.892	0.095	0.016
Permanent teaching contract	0.840	0.834	0.853	0.861	0.525	0.661	0.041	0.053
How much does GPA influence guidance?	47.476	47.254	47.629	48.249	0.731	0.814	0.011	0.041
How much do attitude and interests influence guidance?	35.448	35.226	35.672	36.222	0.656	0.644	0.018	0.047
How much does parental education influence guidance?	2.730	2.769	2.380	2.596	0.100	0.482	-0.077	-0.022
How much does SES influence guidance?	3.833	3.978	4.021	3.329	0.549	0.566	0.037	-0.078
How much does parental advice/help influence guidance?	10.512	10.773	10.297	9.604	0.510	0.809	-0.023	-0.067
Teachers	1,195	392	502	252				

Table A.7: Balance table: baseline vignette incentivized experiment

Variable	(1) High SES	(2) SD	(3) Low SES	(4) SD	(5) Diff.	(6) P-val.
Teachers background						
Female	0.829	(0.377)	0.832	(0.374)	0.003	(0.840)
Age	45.721	(12.954)	45.855	(13.004)	0.134	(0.782)
Permanent teaching contract	0.821	(0.383)	0.814	(0.389)	-0.007	(0.627)
Teaches core subject (math/Ita)	0.560	(0.497)	0.545	(0.498)	-0.015	(0.409)
Importance of These Factors for Teachers' Recommendation						
Importance of Grades	46.981	(16.768)	47.484	(16.912)	0.503	(0.431)
Importance of Attitudes	35.457	(14.523)	35.583	(14.722)	0.125	(0.823)
Importance of Parents	17.562	(18.829)	16.934	(18.017)	-0.628	(0.359)
Past track recommendations						
True Share low-SES recommended to top-tier (REPORT)	0.137	(0.079)	0.137	(0.080)	-0.000	(0.996)
True Share low-SES recommended to other (REPORT)	0.175	(0.086)	0.177	(0.092)	0.003	(0.440)
True Share low-SES recommended to technical (REPORT)	0.265	(0.081)	0.265	(0.083)	0.000	(0.975)
True Share low-SES recommended to vocational (REPORT)	0.423	(0.125)	0.420	(0.128)	-0.003	(0.561)
True Share high-SES recommended to top-tier (REPORT)	0.321	(0.100)	0.322	(0.104)	0.001	(0.733)
True Share high-SES recommended to other (REPORT)	0.237	(0.085)	0.234	(0.082)	-0.003	(0.413)
True Share high-SES recommended to technical (REPORT)	0.257	(0.090)	0.256	(0.091)	-0.001	(0.753)
True Share high-SES recommended to vocational (REPORT)	0.185	(0.086)	0.188	(0.091)	0.002	(0.463)
Observations	1,382		1,357		2,739	

Notes: The table shows the balance of the characteristics of teachers between those assigned to the "High SES status" and "Low SES status" student profiles. The balance table considers two observations for each teacher as the randomization was done at the teacher by profile level, and includes student profiles from data collection 2022 and 2023.

Table A.8: Vignette Experiment: Socio-Economic Status and Track Recommendations

	Top-Tier			Med-Hum.			Tech./Vocational		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low SES	-0.062***	-0.061***	-0.070***	-0.008	-0.009	-0.017	0.071***	0.070***	0.087***
	(0.015)	(0.015)	(0.021)	(0.009)	(0.009)	(0.013)	(0.014)	(0.014)	(0.020)
Mean high-SES	0.371	0.371	0.371	0.445	0.445	0.445	0.184	0.184	0.184
Observations	2739	2725	2710	2739	2725	2710	2739	2725	2710
N. teachers	1377	1370	1355	1377	1370	1355	1377	1370	1355
R^2	0.305	0.312	0.658	0.769	0.768	0.885	0.184	0.192	0.598
Profile fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Teacher fixed effect	No	No	Yes	No	No	Yes	No	No	Yes

Notes: This table shows the impact of students' low socioeconomic status on track recommendations in the vignette experiment. One observation is a teacher-by-profile pair (each teacher evaluates two profiles). "Top-tier" is a dummy equal to one if the student is recommended to top-tier tracks (scientific or classical tracks), "Med-Hum." indicates recommendations to medium-humanities tracks (medium humanities, linguistic, artistic tracks), "Tech/Vocational" indicates recommendations to technical or vocational tracks. Controls include teachers' subject studied and subject taught (scientific, humanistic, other), gender, teachers' birth year, father's education, teaching contract (fixed term or permanent), whether the teacher is born in the North, and whether the school is in the North.

Table A.9: Self Fulfilling Prophecy: will go to University/will find a job

	Topic: University			Topic: Job		
	(1)	(2)	(3)	(4)	(5)	(6)
Low SES	-0.022*	-0.024**	-0.015	0.047***	0.047***	0.062***
	(0.012)	(0.012)	(0.016)	(0.009)	(0.008)	(0.012)
Mean control	0.122	0.122	0.122	0.029	0.029	0.029
Observations	2739	2725	2710	2739	2725	2710
N. teachers	1377	1370	1355	1377	1370	1355
R^2	0.033	0.040	0.566	0.011	0.016	0.564
Profile fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	No	Yes	Yes
Teacher fixed effect	No	No	Yes	No	No	Yes

	Topic: Parents Support			Topic: Parents do not Support		
	(1)	(2)	(3)	(4)	(5)	(6)
Low SES	-0.058***	-0.058***	-0.064***	0.020***	0.020***	0.024***
	(0.008)	(0.008)	(0.010)	(0.004)	(0.004)	(0.007)
Mean control	0.039	0.039	0.039	0.012	0.012	0.012
Observations	2739	2725	2710	2739	2725	2710
N. teachers	1377	1370	1355	1377	1370	1355
R^2	0.027	0.034	0.585	0.008	0.013	0.530
Profile fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	No	Yes	Yes
Teacher fixed effect	No	No	Yes	No	No	Yes

Notes: This table shows the impact of students' low socioeconomic status on teachers' expectations about students' future careers. One observation is a teacher-by-profile pair (each teacher evaluates two profiles). "Topic: University" is a dummy equal to one if the teacher mentions that she provided a recommendation because she thinks that the student will go to university. "Topic: Job" is a dummy equal to one if the teacher mentions that she provided a recommendation because she thinks that the student may choose to find a job right after high school. "Topic: Parents Support" is a dummy equal to one if the teacher mentions that the parents will support the student in his studies. "Topic: Parents do not Support" is a dummy equal to one if the teacher mentions that the parents will not support the student in his studies. Controls include teachers' subject studied and subject taught (scientific, humanistic, other), gender, teachers' birth year, father's education, teaching contract (fixed term or permanent), whether the teacher is born in the North, and whether the school is in the North.

Table A.10: All high GPA students, the dependent variable is the recommendation for top track

	All students		Low Gaps		High Gaps	
	(1)	(2)	(3)	(4)	(5)	(6)
Gaps	0.0257	0.0311	-0.00889	-0.00229	0.0518	0.0564*
	(0.0298)	(0.0294)	(0.0401)	(0.0388)	(0.0329)	(0.0320)
Gaps and Beliefs	-0.00401	-0.00183	-0.0442	-0.0381	0.0480	0.0441
	(0.0353)	(0.0351)	(0.0497)	(0.0481)	(0.0404)	(0.0428)
Mean high-SES control	0.527	0.527	0.478	0.478	0.581	0.581
R^2	0.000997	0.118	0.00111	0.109	0.00394	0.132
N. students	5471	5471	2624	2624	2847	2847
N. schools	217	217	142	142	147	147
Stud. controls	No	Yes	No	Yes	No	Yes
Teacher controls	No	No	No	No	No	No

Notes: This table presents coefficients on the overall impact of the treatments. The dependent variables are teachers' recommendations for top tracks. Student controls include gender, school location (South), whether teachers received a report in the previous year, and standardized test scores in math and Italian. The sample is composed of students of all teachers in columns 1-2, students taught by teachers who have exhibited low SES gaps (below the median) in columns 3-4, and students taught by teachers who have exhibited high SES gaps (above the median) in columns 5-6. Robust standard errors are clustered at the school level.

Table A.11: Results by Students' Math Grade (for High Past Gaps)

	Top-Track Recommendation		Technical Track Recommendation	
	(1)	(2)	(3)	(4)
	High-SES	Low-SES	High-SES	Low-SES
Math Grade $\leq$7 $\times$ Gaps	0.0135	0.00616	0.00134	-0.000191
	(0.0356)	(0.0120)	(0.0566)	(0.0218)
Math Grade $\leq$7 $\times$ Gaps and Beliefs	-0.0353	0.0128	-0.0893	0.0539
	(0.0397)	(0.0142)	(0.0623)	(0.0339)
Math Grade 8 $\times$ Gaps	-0.0138	0.0340	0.0428	-0.0518
	(0.0636)	(0.0410)	(0.0537)	(0.0398)
Math Grade 8 $\times$ Gaps and Beliefs	-0.113	-0.00196	0.0761	-0.0447
	(0.0682)	(0.0553)	(0.0669)	(0.0463)
Math Grade 9-10 $\times$ Gaps	0.00227	0.107**	0.0123	-0.0749**
	(0.0539)	(0.0479)	(0.0327)	(0.0298)
Math Grade 9-10 $\times$ Gaps and Beliefs	-0.0942	0.113*	0.0166	-0.0718**
	(0.0792)	(0.0585)	(0.0587)	(0.0351)
Mean DV Control	0.360	0.172	0.229	0.277
R^2	0.336	0.296	0.143	0.0589
N. students	1444	5706	1444	5706
N. schools	140	147	140	147
Stud. controls	Yes	Yes	Yes	Yes

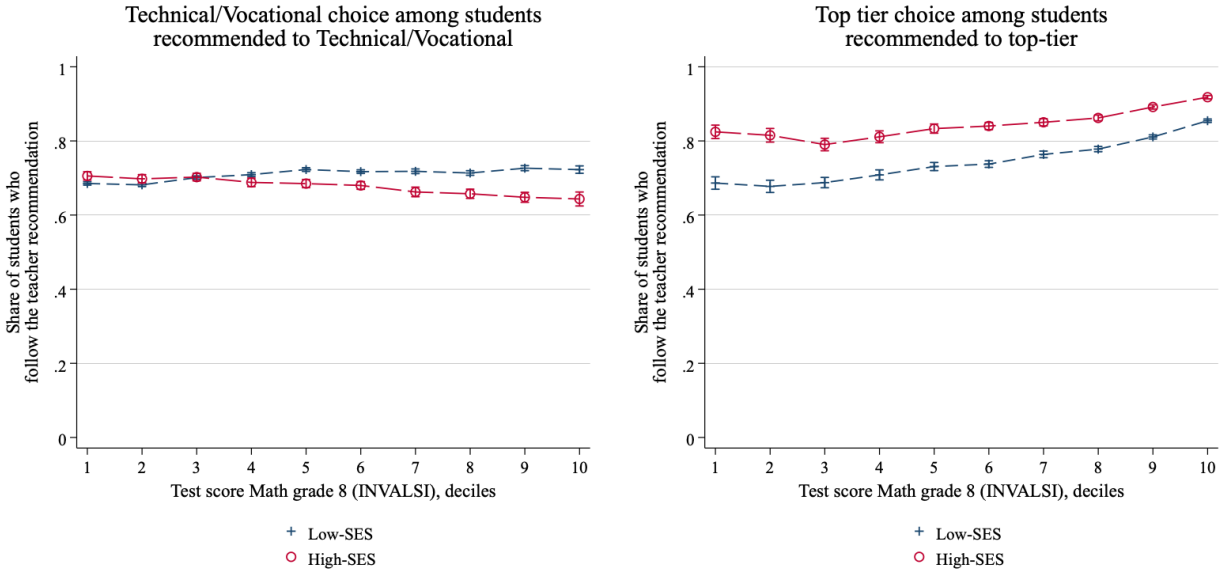
Notes: This figure presents coefficients from the estimation of equation **??** on high-SES students (columns 1 and 3) and low-SES students (columns 2 and 4). The dependent variables are teachers' recommendations for top tracks (columns 1-2) and technical tracks (columns 3-4). Student controls include gender, school location (South), whether teachers received a report in the previous year, and standardized test scores in math and Italian. The sample is composed of students taught by teachers who have exhibited high SES gaps (above the median). Robust standard errors are clustered at the school level.

Table A.12: Robustness: Other measures of socio-economic status

	Top-Track Recommendation					
	(1)	(2)	(3)	(4)	(5)	(6)
	All	High-GPA	All	High-GPA	All	High-GPA
Gaps	0.0267	0.0210	0.0218	0.0507	0.0184	0.0515
	(0.0287)	(0.0402)	(0.0266)	(0.0366)	(0.0280)	(0.0355)
Gaps and Beliefs	-0.0435	-0.0553	-0.0164	-0.00624	-0.0255	-0.00617
	(0.0368)	(0.0581)	(0.0335)	(0.0517)	(0.0381)	(0.0545)
mother and father no High Wage	-0.0966***	-0.143***				
	(0.0197)	(0.0329)				
mother and father no High Wage × Gaps	-0.00435	0.0403				
	(0.0236)	(0.0409)				
mother and father no High Wage × Gaps and Beliefs	0.0823**	0.135**				
	(0.0325)	(0.0547)				
father no HS			-0.0905***	-0.136***		
			(0.0192)	(0.0371)		
father no HS × Gaps			0.000311	-0.0101		
			(0.0247)	(0.0493)		
father no HS × Gaps and Beliefs			0.0687**	0.119*		
			(0.0292)	(0.0617)		
mother or father no HS					-0.108***	-0.146***
					(0.0205)	(0.0350)
mother or father no HS × Gaps					0.00310	-0.0150
					(0.0261)	(0.0472)
mother or father no HS × Gaps and Beliefs					0.0733**	0.0973
					(0.0365)	(0.0683)
Mean high-SES control	0.338	0.573	0.305	0.520	0.338	0.536
R^2	0.309	0.142	0.309	0.145	0.312	0.150
N. students	7237	2847	7237	2847	7237	2847
N. schools	147	147	147	147	147	147
Stud. controls	Yes	Yes	Yes	Yes	Yes	Yes

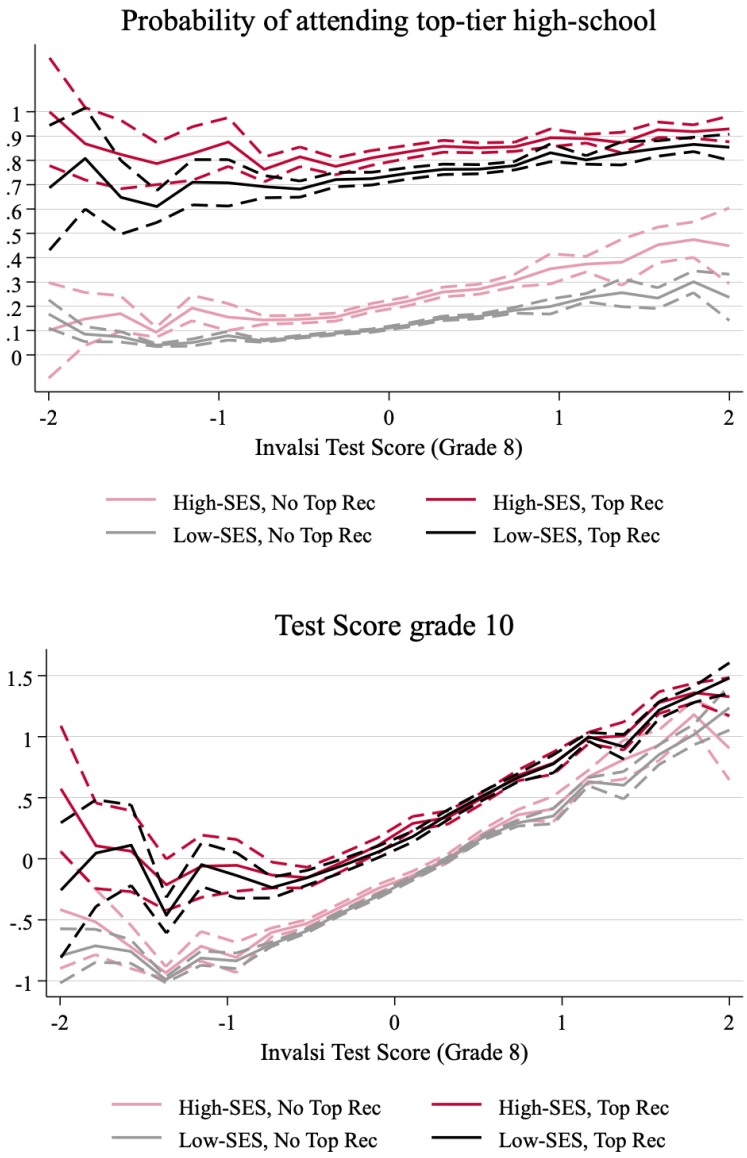
Notes: This table presents coefficients from estimating equation 1 using three alternative measures of students' low-socioeconomic status (SES). Column 1 utilizes the primary measure: father not in a high-wage occupation. Column 2 uses a dummy variable equal to 1 if both parents are not in high-wage occupations. Column 3 uses a dummy equal to 1 if the father did not complete high school, and Column 4 uses a dummy if either parent did not complete high school. Student controls include school location (South), whether teachers received a report in the prior year, standardized test scores in math and Italian, teacher-assigned grades in these subjects, and GPA. The sample comprises high-achieving students taught by teachers with significant SES gaps (above median). Robust standard errors are clustered at the school level.

Figure A.1: Percentage of students following top-tier and technical/vocational recommendations by family background



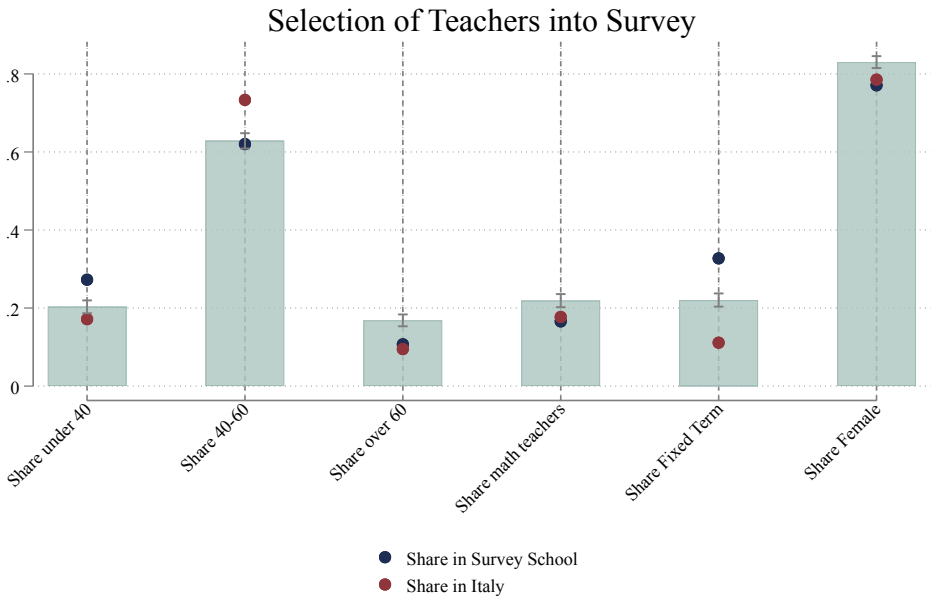
Notes: This figure shows the percentage of students that attend technical or vocational track among students recommended to either technical or vocational path (left panel) by students' socio-economic status and the percentage of students who attend a top-tier track among students recommended to classic or scientific tracks (right panel) by students' SES. Students are classified as low-SES if their father is not in a high-wage occupation. Sample: 8th-grade Italian students in 2016-17.

Figure A.2: Potential cost of track recommendation



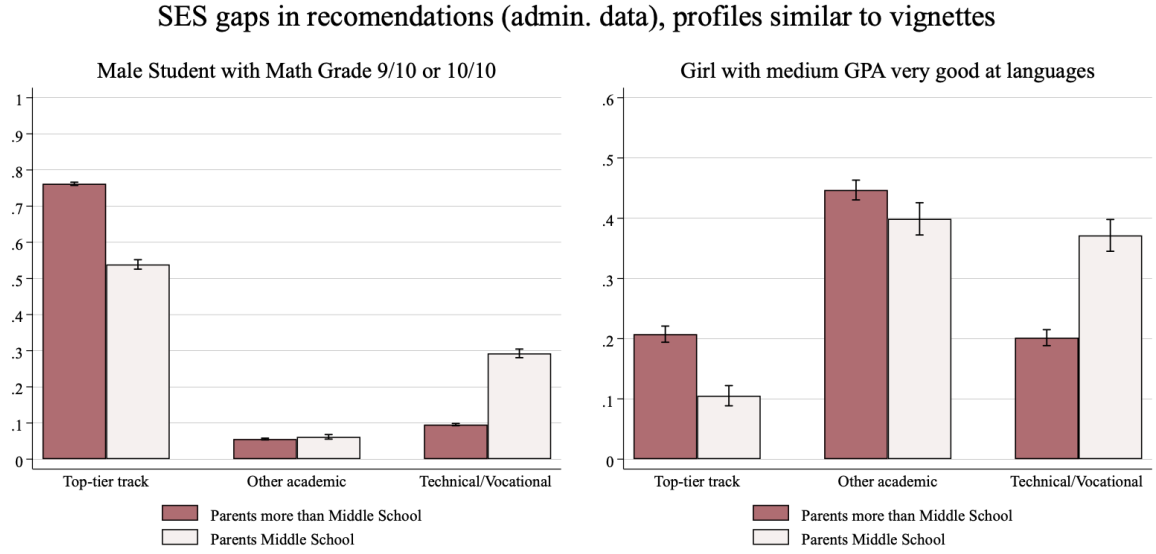
Notes: This Figure shows in the top panel the probability of attending a top-tier high-school track by standardized test score in grade 8, whether the student received the top-tier as track recommendation, and mothers' education level. The bottom panel shows the impact on test score two years after starting high-school. We restrict the sample to students two standard deviations above and below the mean value in grade 8 and focus on math performance. Students are classified as low-SES if their father is not in a high-wage occupation. Sample: 8th grade Italian students in 2016-17.

Figure A.3: Teachers who completed survey, teachers in their schools and teachers in Italy



Notes: This figure shows the average values of the variables listed on the x-axis for teachers who participated in the baseline survey in 2022 and 2023 (represented by light blue bars), all teachers in the surveyed schools (represented by blue dots), and teachers in Italy overall (represented by red dots).

Figure A.4: Profiles similar to Matteo/Sofia in Administrative Data (Baseline Vignettes)



Notes: The figure shows the probability of being recommended to a top-tier track in the administrative data for two profiles of students similar to our vignette experiments. On the left panel, it shows the average track recommendation of boys with a teacher-assigned grade of 9 or 10 in math, similar to Matteo in our vignette experiment. On the right panel, it shows the average track recommendation of girls in our vignette experiment with an average GPA between 7 and 8 and a grade in English above 8, similar to Sofia in our vignette experiment.

Figure A.5: Share of top-invalsi and share recommended to top tracks, full sample administrative data

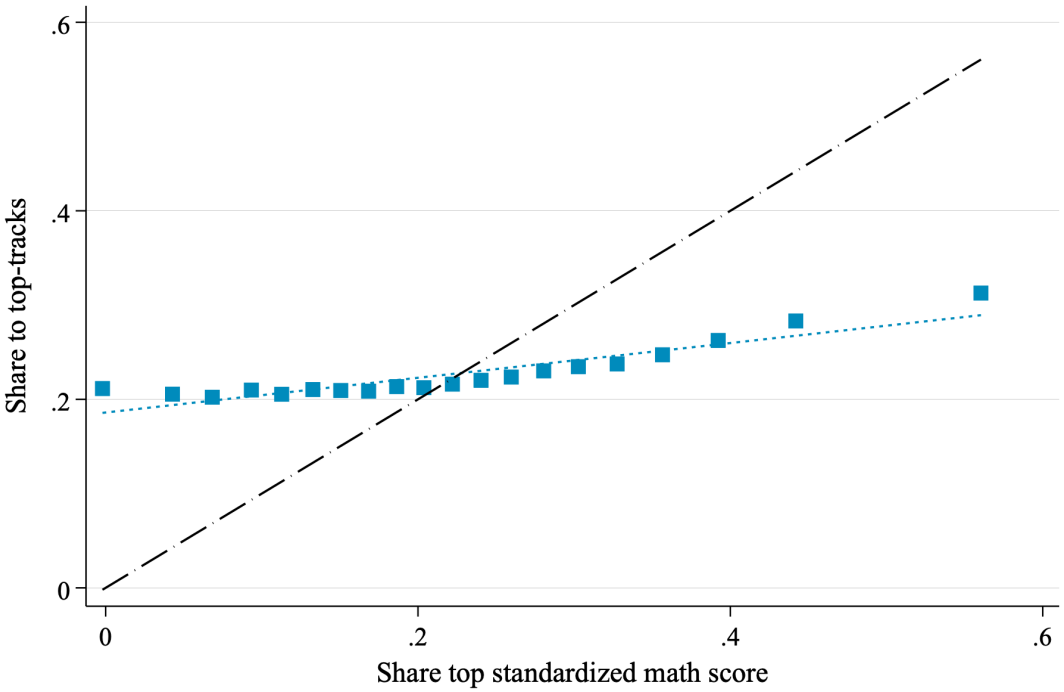
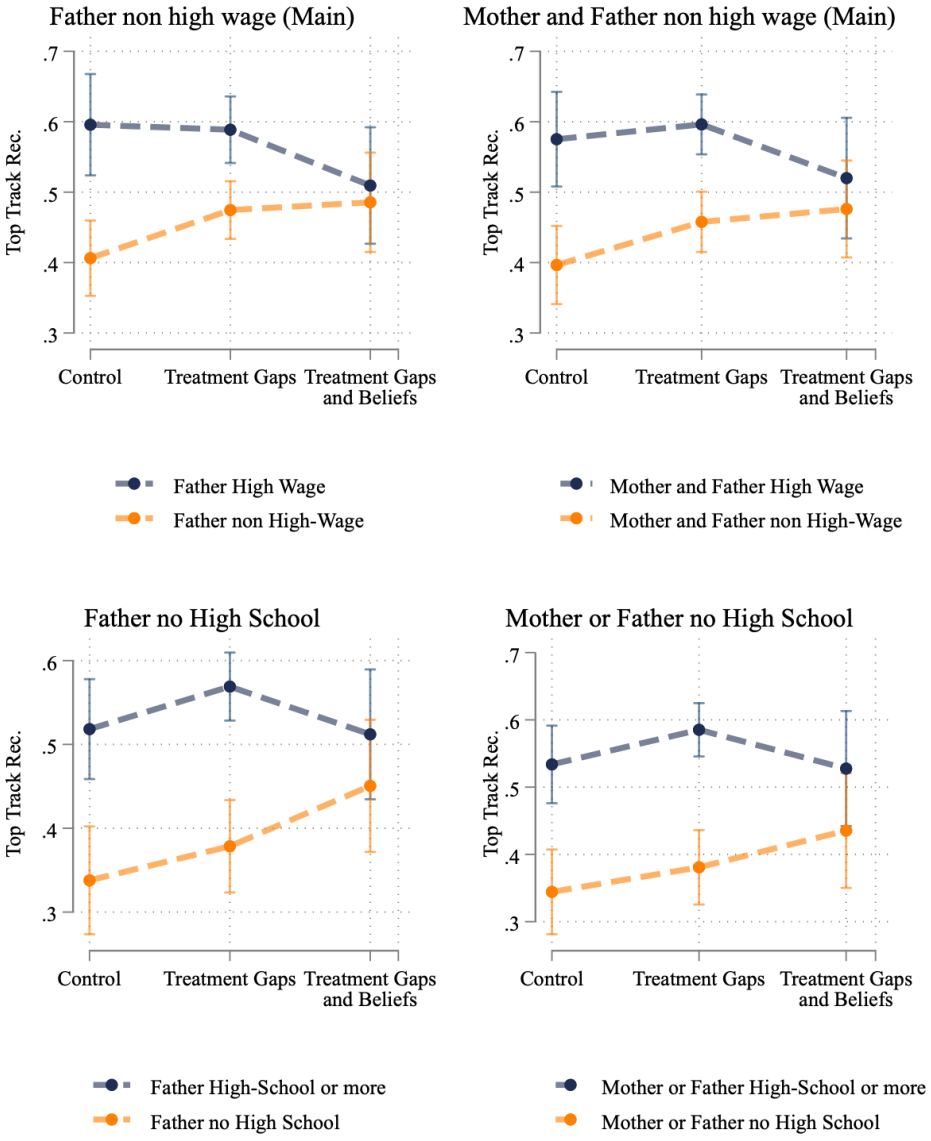
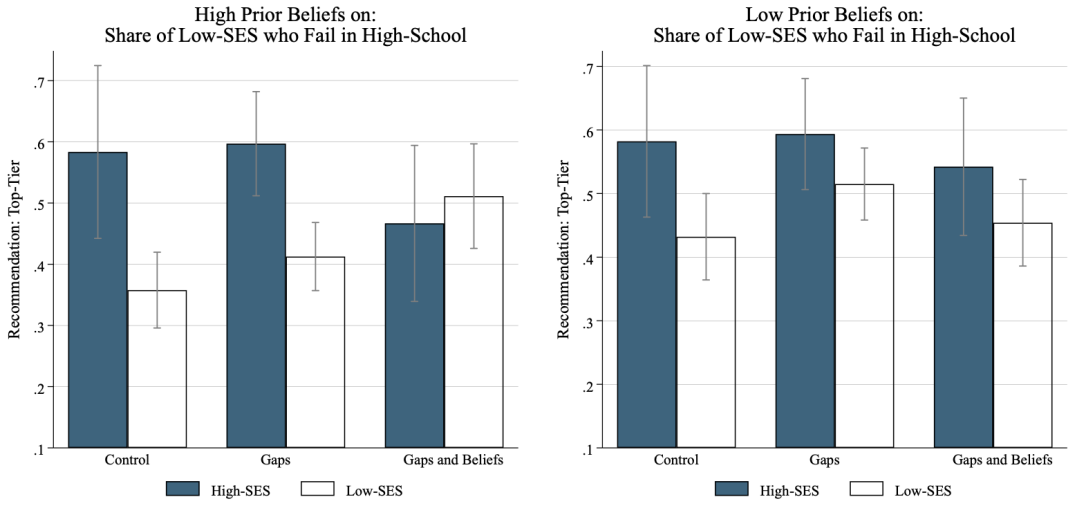


Figure A.6: Robustness: Different measures of socio-economic status



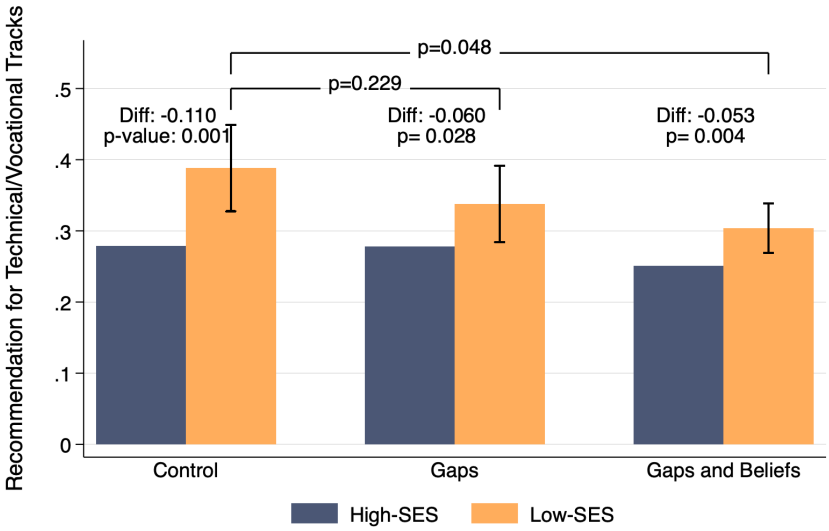
Notes: This figure presents coefficients for the conditional share of students recommended to top tracks, adjusted for baseline student controls, by treatment group and SES status. Three alternative measures of low-socioeconomic status (SES) are used: The upper left graph uses the primary measure of the father not being in a high-wage occupation. The upper right graph uses a dummy variable equal to 1 if both parents are not in high-wage occupations. The lower left graph employs a dummy equal to 1 if the father did not complete high school, while the lower right graph uses a dummy for either parent not completing high school. Student controls include school location (South), whether teachers received a report in the prior year, standardized test scores in math and Italian, teacher-assigned grades in these subjects, and GPA. The sample consists of high-achieving students taught by teachers with high SES gaps (above the median). Robust standard errors are clustered at the school level.

Figure A.7: Heterogeneity by Prior Beliefs on low-SES Students' Success in High-School



Notes: This figure shows the proportion of students recommended for top tracks based on teachers' high and low prior beliefs about the likelihood of low-SES students failing in high school. These prior beliefs were elicited in the 2023 baseline survey with the question: 'Out of 100 low-SES students, how many failed at the end of grade 9?'. Teachers selecting answers above the median value are classified as "High Prior Beliefs", while the ones providing answers below the median are identified as "Low Prior Beliefs". Since prior beliefs were collected only in 2023, the sample consists solely of the 2023 cohort. It includes high-achieving students assigned to teachers who previously exhibited high SES gaps (above the median).

Figure A.8: Vignettes from endline survey



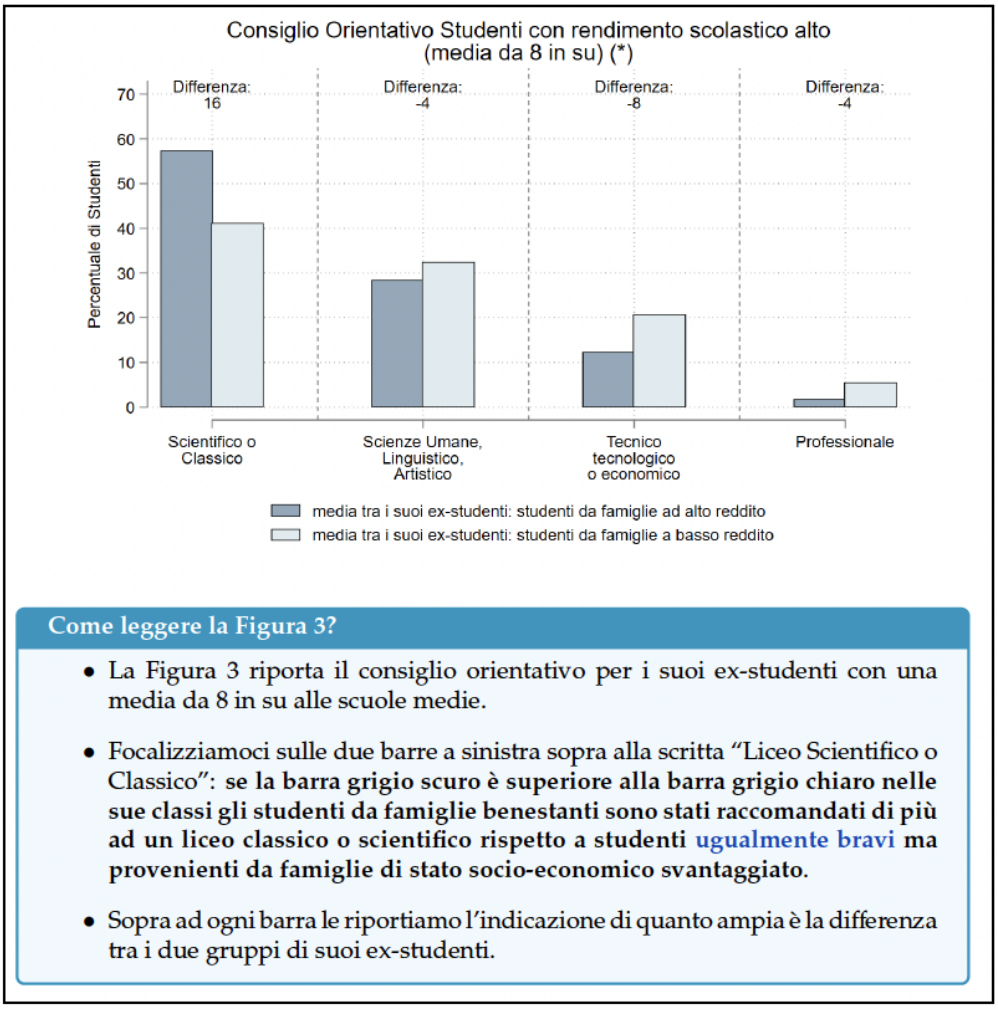
Notes: This figure shows the fraction of (hypothetical) students recommended to technical or vocational tracks based on hypothetical student profiles from the endline surveys of 2022-23. Results are presented separately for teachers in control group, and in the treatment groups *Past Gaps* and *Past Gaps and Beliefs*. The 2022 survey includes 4 hypothetical student profiles, while the 2023 survey includes 6, with student SES randomized for each teacher. Results are provided for teachers within the experimental sample (those with actual 8th-grade students) who have shown high past SES gaps (above the median).

B The intervention

B.1 The control report

B.2 Additional information in the Treatment Gaps

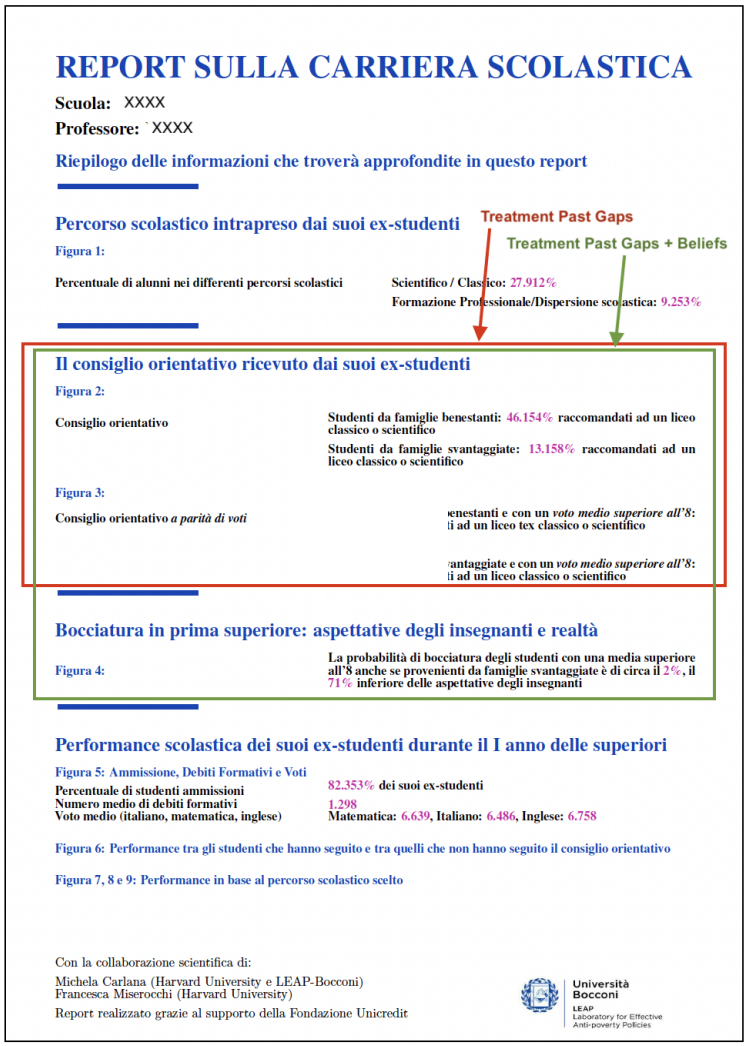
Figure B.1: Example of Graph for Treatment Past Gaps



Notes: This figure shows an example of graph and explanation shown to the treatment groups *Gaps* and *Gaps and Beliefs*.

B.3 Additional information in the Treatment Gaps and Beliefs

Figure B.2: First Page Summary of Personalized Report

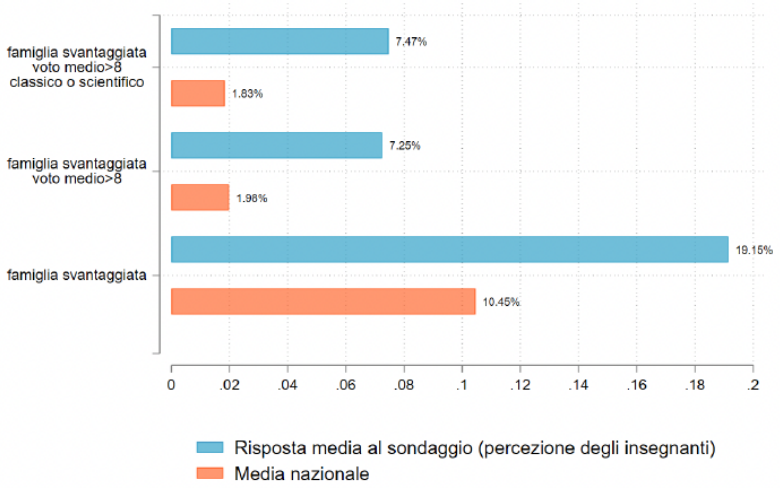


Notes: This figure displays the report's first page, summarizing its key information. Teachers in the *Control* group only see sections outside the red and green boxes, which contain general student information. *Gaps* treatment teachers also view the red box, showing their track recommendations by student SES. *Gaps and Beliefs* treatment teachers additionally access the green box, which includes track recommendations and insights on teachers' biased expectations regarding high-ability, low-SES students' failure. Links to the full reports for the treatment groups can be found in Appendix.

Figure B.3: Example of Graph for Treatment Beliefs

Qual è la probabilità di bocciatura per gli studenti con *alto rendimento scolastico* alle medie ma provenienti da famiglie svantaggiate?

Figure 4: Percezione degli insegnanti nel questionario e frazione effettiva di studenti da famiglie svantaggiate bocciati in prima superiore



Come leggere la Figura 4?

- Gli insegnanti della scuola secondaria di I grado si aspettano una probabilità di bocciatura molto superiore a quella che osserviamo nei dati.
- Gli insegnati che hanno completato il questionario pensano che il 19% degli studenti appartenenti ad un background svantaggiato venga bocciato in prima superiore e l'8% di quelli con un voto medio superiore all'8 (indipendentemente dalla scelta di un liceo classico/scientifico o altro percorso).
- **La probabilità di bocciatura effettiva è di gran lunga inferiore di quanto si aspettino gli insegnanti**: in media l'11% degli studenti da una famiglia svantaggiata viene bocciato e solo il 2% di quelli con una media superiore all'8.
- In generale, i docenti credono che un alto rendimento scolastico possa ridurre la probabilità di bocciatura per gli studenti da famiglie svantaggiate meno dell'effettivo impatto (con 80% di riduzione della bocciatura per gli studenti bravi ma da un background svantaggiato)

Notes: This figure shows the graph and explanation shown only to the treatment group *Gaps and Beliefs*.

C Text analysis: further details

C.1 Examples of Teachers' Motivations

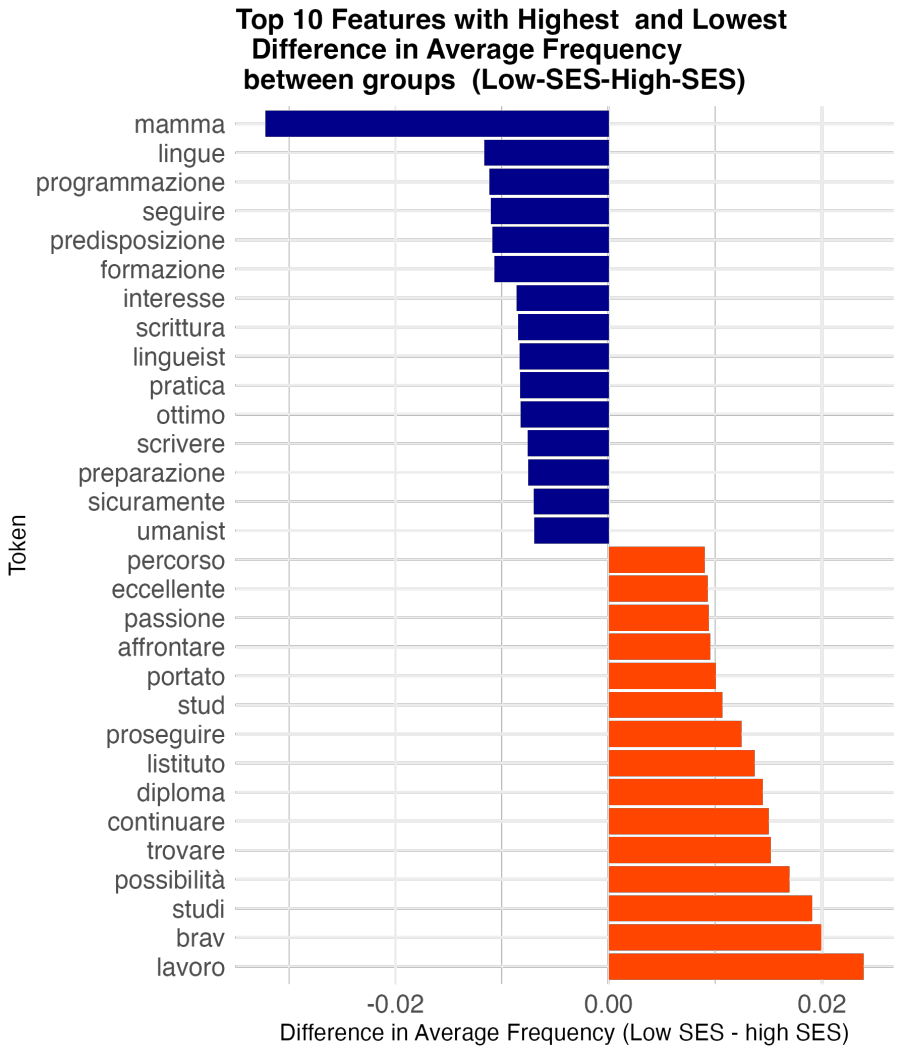
Table C.1: Examples of reasons for assigning a specific recommendation to students with identical academic performance and interests, but different SES

Reasons for top-scientific track recommendation	**Reasons for technical/vocational track recommendation**
"His/her abilities allow for studies in a top-tier high school. Given his/her aptitude for robotics, a scientific high school would provide the right foundation for an engineering university."	"Because it would allow Matteo to possess a diploma that he could immediately use in the labor market, thus enabling him to self-fund his university education. I assume that two parents with only a middle school education might not have a well-paying job that ensures them the certainty of affording university enrollment."
"Because if he/she is an excellent student with outstanding academic performance, it would be a shame for him/her not to continue with a school that can stimulate and consolidate his/her abilities."	"Fosters his/her passion + doesn't force into a university career."
"It's right that he/she receives a strong educational foundation to then enter a field like engineering, considering his/her inclination towards applied subjects."	"Shows an inclination towards hands-on skills coupled with practical knowledge, and may find more satisfaction in hands-on activities. Additionally, his family might not be able to support the potential challenges Matteo faces in a highly theoretical and abstract form of education such as the lyceum, especially since they themselves may not have completed their own studies."
"The Applied Science top scientific High School includes a practical-level computer science teaching as an extension and deepening of mathematics and physics education, which aligns well with Matteo's need to experiment hands-on with his knowledge, in order to create an artificial intelligence product. The presence of two parents with university degrees in the family encourages a long-term study path."	"Matteo will probably want to start getting hands-on as soon as possible and acquire practical skills to turn his passion into a profession. Applied science in a scientific high school wouldn't provide Matteo with the practical stimuli he likely needs."

Notes: This table shows examples of open-ended answers provided by teachers when asked to explain why they choose to provide a specific track recommendation. They provided track recommendations for hypothetical students with identical academic ability and interests but different family backgrounds.

C.2 Most Frequent Words by SES Status

Figure C.1: Most distinctive words by SES



Notes: This figure shows the 15 most distinctive words in teachers' explanations for their recommendations concerning students with high SES and low SES backgrounds. The bars indicate the difference in word frequency between comments related to low SES and high SES students. The red bars represent the 15 most distinct words found in comments for low SES students, while the blue bars highlight the most distinctive words for high SES students. Starting from the open-ended answers provided by teachers, we followed these steps to analyze the text: (1) eliminated stopwords and punctuation, stemmed words, (2) excluded words directly mentioning the chosen recommendation (e.g., scientific, technical, linguistic), (3) replaced synonyms, and (4) removed sparse terms. Subsequently, we transformed the text into a document-term matrix and calculated the frequency of each word across teacher comments.

C.3 Keywords used by research assistants to classify teachers' motivations into topics

- **Find a Job after High School:** [...] offre possibilità di impiego/ possibilità di lavorare dopo il diploma; Competenze applicabili al mondo lavorativo; Più chance lavorative; Fare carriera senza laurea; Non limitare le possibilità di impiego; Non costringe a fare l'università; entrare nel mondo del lavoro, ottime opportunità di lavoro, spendibile in ambito lavorativo, utile per lavoro, possibilità di lavorare dopo, trampolino più giusto per una professione, competenze che avvicinano al mondo del lavoro, più chance lavorative, fuibile a scopi lavorativi, iniziare subito a lavorare, futuro lavorativo solido, non constirnge alla carriera universitaria, buone opportunità di lavoro, basi per rendersi indipendente al più presto, indipendenza economica post diploma.

- **University:** Lasciare aperte più possibilità/ strade per il futuro/ può continuare con/ non chiude possibilità; Liceo per avere le competenze per affrontare l'università/ è una formazione più completa; Poter proseguire gli studi/ seguire le proprie ambizioni; Preparazione per superare i test universitari; Presenta attitudini per continuare con l'università; Accedere a percorsi di formazione superiore; Sarà un ingegnere; SCEGLIERE CON MAGGIORE CONSAPEVOLEZZA L'UNIVERSITà, N GRADO DI AFFRONTARE UN PERCORSO UNIVERSITARIO, proseguire gli studi, potrebbe continuare con ingegneria, seguire sviluppo della ricerca scentifica, ottima base per scelte eventuali future, milgior formazione per l'università, basi più solide, studi successivi, preparazione teorica più ampia, attitudine per il proseguimento di studi universitari, lungo percorso di studio, può permettersi di andare all'università, se la mamma è laureata è facile che anche i figli scelgano di laurearsi, raggiungere più alti traguardi.

- **Parents will support student in their studies**: - La mamma è sicuramente laureata, quindi la sosterrà nella scelta di un liceo - percorso di studi vicino al suo contesto familiare - il fatto che la mamma sia una pediatra presuppone una laurea in medicina e quindi l'esempio di una persona che ha sostenuto un certo tipo di percorso di studi [...] e che possa essere quindi di consapevole supporto in questa scelta; - visti i risultati dei genitori; - POSSA ESSERE SOSTENUTO DALLA FAMIGLIA NEGLI STUDI SUCCESSIVI; - La sua esperienza di vita familiare, sia in occasione della separazione dei genitori, sia dalla probabile narrazione delle esperienze lavorative della madre, potrebbe essere un empowerment della sua competenza empatica [...] Il percorso di studi a lungo termine potrebbe essere incoraggiato anche dalla presenza di una

madre laureata, realizzata professionalmente, perfettamente autonoma sia dal punto di vista economico, sia educativo. - mamma è presente come figura di riferimento - ENTRAMBI I GENITORI LAUREATI SUPPORTO PER LA VITA UNIVERSITARIA - con il reddito della mamma - LA FAMIGLIA LO SOSTERRà NEL PERCORSO UNIVERSITARIO - non sembrano esserci alle spalle impedimenti di tipo economico - I GENITORI LAUREATI NON VEDREBBERO IL PROPRIO FIGLIO IN UN ISTITUTO TECNICO - sua madre fa una professione che può permetterle di continuare a studiare dopo liceo - famiglia può permettersi il costo dell'università - modello di donna realizzata dal punto di vista professionale, probabile stimolo per la ragazza - Avendo la madre un lavoro abbastanza renumerativo. - supporto della mamma professionista laureata - PUò PERMETTERSI L'UNIVERSITà. - VISTO IL SUO "RETROTERRA" - almeno uno dei genitori è laureato - DAL MOMENTO CHE I GENITORI HANNO UN LIVELLO DI ISTRUZIONE ALTO. - la mamma è laureata - L'ECCELLENZA ED IL BACKGROUND DEI GENITORI - supportata dalla mamma che ha una certa cultura - madre pediatra terrà al fatto che la figlia segua un percorso che la porti all'università - la mamma è pediatra puo' aiutare Sofia negli studi e offrirle una panoramica a 360 gradi

- **Parents will not support student in their studies**: - FAMILIARI FORSE NON SARANNO IN GRADO DI SOSTENERE NON AVENDO LORO PER PRIMI PORTATO A TERMINE GLI STUDI - IN FAMIGLIA NON HA UN BACKGROUND COSì SOLIDO PER UN LICEO - DUE GENITORI CON UNA LICENZA MEDIA NON ABBIANO UN LAVORO MOLTO BEN RETRIBUITO - famiglia farebbe fatica a sostenerla negli studi - situazione familiare potrebbe non reggere un percorso di studi lungo - FAMIGLIA NON LO SUPPORTA ADEGUATAMENTE

D Survey Questions

D.1 Part I: General teaching experience

1. In which school do you currently teach?
2. Which subject do you teach?
    - Math [1]
    - Science [2]
    - Italian [3]
    - History [4]
    - Geography [5]
    - Other: specify
3. In which year have you started to teach?
4. In which year have you started to teach in the school in which you are currently teaching?
5. In which classes have you taught in the past school years?
6. Which teaching contract do you have?
    - Temporary teacher (one school year contract)
    - Temporary teacher (less than one school year contract)
    - Permanent teacher
7. Do you have some additional specific roles in the school?
    - Vice-principal
    - Collaborator of the principal
    - Responsible for math Olympiad
    - Responsible for career counselling
    - Responsible of disciplinary area
    - Responsible for a lab

- Other:.....

The following statements relate to what you think teachers are able to achieve. Please read the statements carefully and tick the box which shows how you feel about each statement.

1. If I really try hard, I can get through to even the most difficult or unmotivated students
    - Strongly disagree [1]
    - Disagree [2]
    - Agree [3]
    - Strongly agree [4]
2. Even a teacher with good teaching abilities may not make a difference for many students with difficult home environment
    - Strongly disagree [1]
    - Disagree [2]
    - Agree [3]
    - Strongly agree [4]
3. Think about the students in your school in grade 8 in past two years. [USE THE PAST TWO CLASSES THEY HAD]
    - Scale from 1 to 10
4. Think about your students in grade 8. Are there very pushy parents that are trying to influence your track recommendation?
    - No [1]
    - Yes: ..... parents (add number) [2]

D.2 Part II: Vignette Experiment

1. We describe you a profile of some students. We are aware the information provided are limited and we ask your best guess in giving the track. We will match you with another teacher participating in our survey. If you both give the same teacher track recommendation to the same student profile, you will participate in the extraction of a gift card of the value of 100 euro for each of the student profile.

(a) Matteo is another highest achieving student in the school. He loves coding and he created himself a robot for a student competition. *Both her/his parents got a university degree. / Both her/his parents finished middle school.*

(b) Sofia is a good student even if she is not top performer. She loves languages and she won a competition with one of her essays. Her parents are divorced and she lives with her mother, who works as *dentist/cashier*.

open ended questions:

(a) Why have you recommended Matteo to YY?

(b) Why have you recommended Sofia to YY?

D.3 Part III: Explicit and self-reported questions

1. How much do you agree with the following sentences? (Scale 1 to 5)

   (a) Students from low SES do not have enough support from parents to attend the top academic high school (scientific and classic)

   (b) Students from low SES do not follow my track recommendation to top academic high school (scientific and classic), even if they have high performance in middle school

   (c) Students from high SES do not follow my track recommendation to vocational track, even if they have low performance in middle school

   (d) Girls are better off if they are not a gender minority in their highschool track as in applied sciences and technical technological

   (e) Girls do not follow my track recommendation scientific, even if they have high performance in math in middle school

   (f) Low SES parents prefer their students attend technical or vocational track because they want them to go to work asap, even if they are high achievers

2. Think about how teachers assigned recommendation. How much the following factors are weighted in their decision? (Scale 1 to 5)

   (a) Grades and performance

   (b) Attitudes and interests of the students

(c) Education level of parents

(d) Economic resources of the family to support the student with private tutoring

(e) Engagement of the family in the education of the child

3. Do you have career counselor/ psychologist in the school helping students in the choice of high school track?

   - Yes
   - No

4. Which information do you consider when giving the track recommendation?

   - Attitude/Interests of the student [1]
   - Suggestion from parents [2]
   - Suggestion from the school psychologist [3]
   - Grades [4]
   - Academic potential of the track [5]

D.4 Part IV: Background

1. You are:

   - Male [1]
   - Female [2]
   - I prefer not to reveal it [-99]

2. Date of birth

   - Day
   - Month
   - Year

3. Province of birth:

   - Dropdown menu with provinces (include State Outside Italy)

4. Which is your current ZIP code?

5. Which is your civil state?
    - Married [1]
    - Cohabiting [2]
    - Separated/Divorced [3]
    - Widow [4]
    - I prefer not to reveal it [-99]
6. What is the highest level of education you have achieved?
    - Never went to school [1]
    - Completed elementary school [2]
    - Completed middle school [3]
    - Completed high school [4]
    - Bachelor's degree [5]
    - Master's degree or PhD [6]
7. Which is the grade of your final degree?
8. In which major have you graduated? Select only the major related to your current teaching in school
    - *Biology/Natural Sciences*
    - *Math*
    - *History*
    - Engineering
    - Geography/Geology
    - Physics
    - Chemistry
    - Literature
    - Education
    - Psychology
    - Philosophy

9. What is the highest level of education of your mother?

    - Never went to school [1]
    - Completed elementary school [2]
    - Completed middle school [3]
    - Completed high school [4]
    - Bachelor's degree [5]
    - Master's degree or PhD [6]

10. What is the highest level of education of your father?

    - Never went to school [1]
    - Completed elementary school [2]
    - Completed middle school [3]
    - Completed high school [4]
    - Bachelor's degree [5]
    - Master's degree or PhD [6]

Thank you very much again for your time and collaboration!