Tracking Inequality: Teachers and the Allocation of Educational Opportunities*

Michela Carlana†, Francesca Miserocchi‡, Eleonora Patacchini§

August 26, 2026

Abstract

Professionals routinely make consequential decisions for others without systematically observing how those decisions turn out. Whether such decisions reflect accurate forecasting or systematically distorted beliefs has important implications for equality of opportunity. We study this question in the context of teachers' recommendations for high school tracks by combining nationwide administrative data, randomized vignette experiments, belief elicitation, and a field experiment. Holding students' academic performance and interests constant, teachers are significantly less likely to recommend demanding academic tracks when students come from disadvantaged socioeconomic backgrounds. This differential treatment is accompanied by systematically inaccurate beliefs: teachers substantially overestimate the probability that high-achieving disadvantaged students will fail in academically demanding schools. We then provide teachers with personalized feedback on their previous recommendations and objective information on the realized success of disadvantaged students. The intervention substantially reduces socioeconomic gaps in recommendations for high-achieving students. Effects are concentrated among boys assigned to teachers with the largest prior recommendation gaps and the most inaccurate beliefs. Among the high-achieving disadvantaged boys most affected by the intervention, these changes translate into higher enrollment in demanding academic tracks, without detectable adverse effects on short-run academic performance.

*We thank seminar participants at Harvard, LEAP-Bocconi, Sciences Po, Cologne, DIW Berlin, CESifo, Carlos III de Madrid, Tilburg University and the 4th Workshop on Public Policies at the Universitat de Barcelona for helpful comments. Giovanni Paraboschi, Alessandro Fusari, Sara Chiuri, Francesca Rinaldi, Francesco Salerno, Giorgia Cascone, Chiara Broggini, Angela Fiorentino, Michele Herrera, Domenico Maddio, Michelle Palayill and Alvise Scabrosio provided excellent research assistance. We thank Annarita Marzullo and Lucia De Fabrizio from the Italian Ministry of Education (MIM) 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 who took part in the survey for their collaboration. Carlana acknowledges initial support from the UniCredit Foundation that provided the financial resources to implement this project in 2022-2024. The project is funded by the European Union (ERC, SOFIA, 101117537). Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Council. Neither the European Union nor the granting authority can be held responsible for them. AER RCT Registry ID: AEARCTR-0010758. The project has obtained IRB approval from Bocconi University and Harvard University.

†Bocconi University, LEAP-INSPIRE, CEPR, IZA@LISER, CESifo and NBER (email: michela.carlana@unibocconi.it).

‡Tilburg University and LEAP-INSPIRE (email: f.miserocchi@tilburguniversity.edu).

§Cornell University, CEPR, and IZA@LISER (email: ep454@cornell.edu).

1 Introduction

Professionals routinely make high-stakes decisions about other people's futures under uncertainty. Teachers recommend educational tracks, physicians recommend treatments, judges decide bail, loan officers assess creditworthiness, and hiring managers select applicants. These decisions combine individual information with prior beliefs about the groups to which individuals belong (Kleinberg et al., 2018; Carlana, 2019; Dobbie et al., 2021; Kline et al., 2022). In principle, such beliefs may help professionals interpret incomplete information. In practice, they may also lead professionals to underweight individual potential or overstate the constraints faced by disadvantaged groups. Such distortions may persist because professionals often make repeated decisions without observing the longer-run consequences of their earlier choices. Without systematic feedback, professionals may be unable to assess whether their beliefs are well calibrated or whether their decisions differ systematically across groups. As a result, discretionary decisions can reproduce inequality even in institutions designed to allocate opportunities based on merit. Understanding whether such beliefs shape decisions, whether they are accurate, and whether they can be corrected is therefore central to understanding the persistence of inequality in economic opportunity.

Educational tracking provides a particularly important setting to study these questions. In many countries, students sort into high school tracks early in their educational careers, with lasting consequences for university enrollment, field of study, and labor-market outcomes (Brunello and Checchi, 2007; Altonji et al., 2012). Teachers play a central role in this process through the recommendations they provide to students and families (Grewenig, 2021; Geven, 2025; Ichino et al., 2025). These recommendations are made by professionals who observe rich individual information on academic performance, motivation, and classroom behavior, but who also observe family background, a strong predictor of later educational attainment. Recommendations that differ by socioeconomic status may therefore reflect either accurate information about students' future constraints or miscalibrated expectations that understate the potential of disadvantaged students.

This paper studies how teachers form track recommendations, whether their expectations are well calibrated, and whether socioeconomic gaps in recommendations can be reduced through systematic feedback. We do so in the context of Italian middle schools, where teachers issue formal recommendations at the end of grade 8, when students are typically 13 or 14 years old. Although families are free to choose any high school track, teacher recommendations provide an expert assessment at a consequential transition and strongly predict

subsequent enrollment choices. Yet teachers typically receive no systematic information about their former students' outcomes after they leave middle school. They therefore make repeated high-stakes recommendations under substantial uncertainty about how students from different backgrounds fare across high school tracks.

We combine nationwide administrative data, teacher surveys with incentivized vignette experiments and direct belief elicitation, and a large-scale field experiment involving 1,104 teachers in 221 schools. The analysis proceeds in two stages. First, we document socioeconomic gaps in recommendations and examine whether they reflect differential treatment and miscalibrated expectations. Second, motivated by this evidence, we evaluate whether personalized administrative feedback on teachers' past decisions and students' subsequent outcomes reduces SES gaps in later recommendations.

Our descriptive evidence shows that low-SES students are less likely to receive recommendations to top-tier academic tracks than high-SES students with similar prior achievement. This gap persists after controlling for school fixed effects, student characteristics, and teacher-assigned grades. Recommendations are strongly correlated with subsequent track enrollment. Descriptive evidence on later outcomes does not indicate that high-achieving low-SES students who enroll in top-tier tracks are systematically less prepared to succeed there. However, administrative data alone cannot rule out that teachers respond to student characteristics correlated with socioeconomic background but unobserved in administrative records, such as interests, aspirations, or parental involvement.

To address this limitation, we conduct incentivized vignette experiments in which teachers evaluate hypothetical student profiles whose academic performance, interests, and attitudes are held fixed while parental background is randomly varied. Teachers are 6.2 percentage points less likely to recommend low-SES profiles to top-tier tracks, a 17 percent decline relative to the recommendation rate for otherwise identical high-SES profiles. Teachers' open-ended explanations indicate that SES cues also affect the considerations underlying their recommendations. Relative to high-SES profiles, low-SES profiles are more often discussed in terms of immediate labor-market entry, limited parental support, and concerns about successful completion, even though the profiles provide no information about family aspirations or parental involvement.

Direct belief elicitation indicates that these expectations are systematically miscalibrated relative to observed outcomes. Teachers substantially overestimate failure rates in the first year of high school, especially for high-achieving low-SES students in demanding tracks. They also misperceive SES gaps in their own past recommendations. Together, these find-

ings point to a missing-feedback problem: teachers make consequential recommendations repeatedly but lack the systematic information needed to assess whether their expectations are well calibrated and whether their own recommendations differ systematically by student background.

We next implement a school-level field experiment designed to address this missing-feedback problem. All teachers who completed the baseline survey received personalized reports on the high school trajectories of their former students. Teachers in the *Gaps* treatment additionally received information on SES gaps in their own past recommendations, with a focus on high-achieving students. Teachers in the *Gaps and Beliefs* treatment received this information plus objective evidence addressing teachers' overestimation of failure rates among high-achieving low-SES students in competitive tracks.

Relative to the general personalized report received by the control group, the additional information reduces SES gaps in top-track recommendations among high-achieving students. The effects are largest among teachers with large pre-existing SES gaps, for whom the personalized disparity information provided the greatest scope for updating. In this group, the *Gaps* treatment reduces the SES gap in top-track recommendations by approximately half, while the *Gaps and Beliefs* treatment nearly eliminates it. The effects are driven by boys, who display the largest baseline SES gaps in recommendations, consistent with evidence that family disadvantage is particularly consequential for boys' educational outcomes (Autor et al., 2019; Carlana et al., 2022a). The reduction in SES gaps reflects reallocation rather than an overall expansion of top-track recommendations: recommendations increase for high-achieving low-SES boys and decline for high-SES boys.

These recommendation changes matter for educational choices. Among low-SES boys with strong prior mathematics performance assigned to teachers with large past gaps, the treatments increase enrollment in top-tier tracks by 12.9 to 15.9 percentage points. By contrast, high-SES boys' enrollment choices are largely unaffected, even when recommendations become less favorable. This asymmetry is consistent with teacher recommendations being especially influential for low-SES families, while high-SES families may be better able to rely on their own information or offset less favorable advice. We find no detectable adverse effects on short-run high school performance, as measured by admission to grade 10, grade-9 GPA, failed core subjects, and teacher-assigned grades.

Treatment-effect heterogeneity and endline vignette evidence are consistent with the treatments operating through the informational margins they were designed to address. The *Gaps* treatment has its largest effects among teachers whose reports revealed large pre-existing SES

gaps in recommendations, consistent with the information increasing awareness of disparities in their own past decisions. Endline vignette evidence points in the same direction: the *Gaps and Beliefs* treatment increases top-track recommendations for low-SES hypothetical profiles, suggesting that the intervention changed teachers' individual decision rules rather than only their behavior in a particular recommendation meeting.

The paper contributes first to the literature on socioeconomic inequality in educational attainment, tracking, and field choice (Bailey and Dynarski, 2011; Bound and Turner, 2011; Brunello and Checchi, 2007; Altonji et al., 2016; Giustinelli, 2016; Giustinelli and Pavoni, 2017; Falk et al., 2026; Bobba and Frisancho, 2026; Dynarski et al., 2021; Chetty et al., 2022). Existing work emphasizes financial constraints, parental investments, peer effects, and information frictions in shaping educational choices. We identify teachers' recommendations as an additional source of inequality at an early and consequential stage of students' educational careers. In particular, we show that students from disadvantaged backgrounds receive less ambitious recommendations even conditional on detailed measures of prior achievement, and that experimentally varying family background changes recommendations for otherwise identical student profiles.

Second, we contribute to research on teacher expectations, stereotypes, and differential treatment (Hanna and Linden, 2012; Gershenson et al., 2016; Carlana, 2019; Papageorge et al., 2020; Terrier, 2020; Carlana et al., 2022a; Lavy and Megalokonomou, 2024; Alesina et al., 2024; Miserocchi, 2026). This literature shows that teachers' beliefs can differ across demographic groups and influence student outcomes. We add evidence on socioeconomic status in a high-stakes tracking decision and, more importantly, link three objects that are rarely observed together for the same professionals: elicited beliefs, historical recommendation patterns, and the subsequent outcomes of the students affected by those decisions. This allows us to show that teachers' pessimism about high-achieving low-SES students is miscalibrated relative to observed outcomes and that teachers with large historical SES gaps often underestimate those gaps.

Third, the paper contributes to the literature on information interventions and decision-making under uncertainty (Hoxby et al., 2013; Wiswall and Zafar, 2015; Deshpande and Dizon-Ross, 2023; Costa-Ramón et al., 2026; Jäger et al., 2024). Most existing interventions provide information to individuals making choices for themselves, such as students, parents, or workers. We instead study professionals whose decisions shape the opportunities available to others. By linking teachers' past recommendations to subsequent student outcomes and experimentally returning personalized information, we show that administrative data can be

used to create a feedback loop for professional decision-makers. More broadly, the results suggest that missing feedback and miscalibrated beliefs may be important, and potentially correctable, contributors to persistent inequality of opportunity.

2 Context and Data

2.1 Institutional Setting

The Italian education system provides tuition-free public education through elementary school (grades 1–5), middle school (grades 6–8), and upper secondary school (grades 9–13).[1] At the end of grade 8, when students are typically 13 or 14 years old, families choose among three main high school tracks: academic high schools (*licei*), technical schools, and vocational schools. Within the academic track, scientific and classical high schools are generally considered the most academically demanding (Anelli and Peri, 2019) and are the main gateway to selective university fields.

Although families remain free to choose any track, their choice is preceded by a formal recommendation jointly determined by the student's middle-school teachers during a class council meeting. The recommendation is nonbinding and provides families with an expert assessment of the student's academic preparation and perceived fit for alternative tracks. It is therefore a consequential input into a schooling decision with potentially lasting effects on students' educational trajectories (Carlana, 2019; Carlana et al., 2022b).

Track choice is strongly correlated with later educational outcomes, as in most other countries (Brunello and Checchi, 2007; Dustmann et al., 2017). The share of students enrolling in tertiary education is 66.4% among students from academic tracks, 38.6% among students from technical tracks, and 19.2% among students from vocational tracks (Ministry of Education, Statistics Office, 2022). These differences are substantial despite the relatively low direct cost of higher education in Italy: tertiary education in public universities is free for low-income students, and the average annual contribution for fee-paying students is around 1,000 euros.[2]

[1] Most children in Italy attend public schools: in 2021–22, the share of children attending public schools was 93.4% in elementary school, 95.8% in middle school, and 95.5% in high school. Source: Ministry of Education, Statistics Office (2022).

[2] For the 2024/25 academic year, about 67.9% of students enrolled in public degree courses at Italian universities paid at least some tuition fees and the average contribution was 972 euros (Ministero dell'Università e della Ricerca, Servizio Statistico, 2026; Pizzella, 2026).

2.2 Sample

We recruited middle school teachers to participate in a project providing personalized information on the high school trajectories of their former students, using administrative records from the Italian Ministry of Education and INVALSI.[3] This information is not otherwise available to teachers. In the status quo, teachers typically do not receive systematic feedback on their former students' high school outcomes, such as track enrollment, grade retention, or academic performance. As a result, they issue track recommendations under substantial uncertainty about how students with different backgrounds fare across high school tracks.

We conducted two recruitment waves. In September 2022, we sent invitations to all Italian middle schools by email and followed up with phone calls to a randomly selected sample of 600 schools over the following two months. In 2023, we repeated the same process with a random sample of 800 schools that had not participated in the previous wave. All teachers in participating schools were invited to complete the baseline survey, which was required to receive the personalized report.

In total, 1,549 teachers from 246 schools completed the baseline survey. Participating schools are geographically dispersed across the country (Appendix Figure A1). We use this broader survey sample to study SES gaps in track recommendations and teacher beliefs. The experimental sample includes 1,104 eighth-grade teachers linked to 14,854 students across 221 schools in 77 Italian provinces over two school years: 435 teachers in 2022–23 from 74 schools and 669 teachers in 2023–24 from 188 schools, including returning schools.[4]

Appendix Figure A2 compares teachers who completed the survey with all teachers in participating schools and with Italian middle school teachers nationally. Participating schools have a somewhat younger teaching workforce: 30 percent of teachers are under age 40, compared with 19 percent nationally. They also have a higher share of teachers on temporary contracts, 39 percent compared with 17 percent nationally. Teachers in participating schools do not differ systematically from the national teacher population in gender or subject taught.

[3] All teachers teaching classes in participating schools were invited to complete the survey. Survey participation was independent of teachers' involvement in the meetings at which track recommendations were determined and did not affect whether they took part in those meetings.

[4] Teachers from the first wave were asked whether they wanted to participate again in the following school year. Those who did so were included in the Fall 2023 baseline survey with their 2023–24 eighth-grade students and retained their original treatment assignment. The original randomization sample included 15 additional schools that did not report track recommendation data to the Ministry of Education and are therefore excluded from the experimental analysis.

2.3 Data

Administrative data. Our administrative data cover the universe of Italian students enrolled in grade 8 from school year 2016–17 through 2024–25, with approximately 500,000 students per cohort followed longitudinally. We merge student-level records from two administrative sources. The first is INVALSI, the National Evaluation Center, which provides standardized test scores in grades 2, 5, 8, 10, and 13, as well as information on students' family background. The second is the Italian Ministry of Education, which provides information on students' demographic characteristics, teacher-assigned grades, admission to each grade, absences, teachers' track recommendations at the end of grade 8, and subsequent high school enrollment.

Our main measure of socioeconomic status is based on father's occupation. We define low-SES students as those whose father is not employed in a high-wage occupation, where high-wage occupations include managerial, professional, and technical occupations.[5] In robustness checks, we use alternative SES measures based on the INVALSI socioeconomic index, parental education, and both parents' occupations.

For the experimental analysis, the main outcomes are: (i) the track recommendation received by students in grade 8 in school years 2022–23 and 2023–24; (ii) the high school track attended by the same students in grade 9; and (iii) academic performance during the first year of high school, including admission to grade 10, absences and GPA in grade 9. We use earlier cohorts to construct the personalized reports provided to teachers, which summarize the high school trajectories of their former students. We also obtained individual-level information on Italian teachers, including their school assignments and background characteristics such as gender, year of birth, and place of birth.

Teacher surveys. In each wave, we administered a baseline survey in October–November, before teachers received the personalized reports and before track recommendations were issued, and an endline survey in February–March, after the track recommendation and choice period. The baseline survey collected information on teachers' demographic characteristics, class assignments, elicited beliefs about students' academic prospects, perceptions of their own past track recommendations by student SES, and recommendations in an incentivized vignette experiment. The endline survey included additional incentivized vignettes and questions on teachers' feedback about the report. The survey questions are reported in

[5] If the father is missing, retired, or inactive, the low-SES variable assumes value 1. The classification is based on the data reported to INVALSI.

Appendix D.

In the vignette experiment, teachers were presented with hypothetical student profiles describing academic performance, attitudes and interests, and parental background. Within each profile, we randomized parental background between a high-SES and a low-SES version, varying parental education or occupation while holding all other characteristics constant. The profiles did not provide information on parental involvement in the child's education or on family aspirations. This design identifies the effect of experimentally varying family socioeconomic background on teachers' recommendations, conditional on the other information provided in the profiles.

After reading each profile, teachers provided a track recommendation and explained their reasoning in an open-ended response. To elicit realistic responses, recommendations were financially incentivized through a lottery with a prize of 100 euros: each teacher was randomly paired with another unknown participating teacher, and the pair entered the lottery if they provided the same recommendation. The incentive structure introduces a coordination motive intended to reflect the collective nature of track recommendations in Italian middle schools.[6]

3 SES Gaps in Track Recommendations

We begin by documenting that low-SES students are less likely than higher-SES peers with similar measured achievement to receive recommendations for top academic tracks. We then investigate the sources of this conditional gap. We use three complementary sources of evidence.

First, using administrative data on the universe of Italian students, we show that the SES gap in top-track recommendations persists conditional on prior achievement and student characteristics. Second, using incentivized vignette experiments with middle school teachers, we establish a causal SES penalty: holding constant students' academic performance, interests, and attitudes, teachers assign lower track recommendations to otherwise identical profiles from disadvantaged family backgrounds. Teachers' open-ended explanations suggest that the SES manipulation changes the considerations they articulate, particularly expectations about students' future educational trajectories and parental support. Third, using

[6]In 2022, all teachers faced this coordination incentive. In the 2023 baseline survey we randomized teachers between it and a simple participation incentive, under which completing the vignette was sufficient to enter the lottery. The incentive condition had no detectable effect on track recommendations or on the effect of randomized student SES.

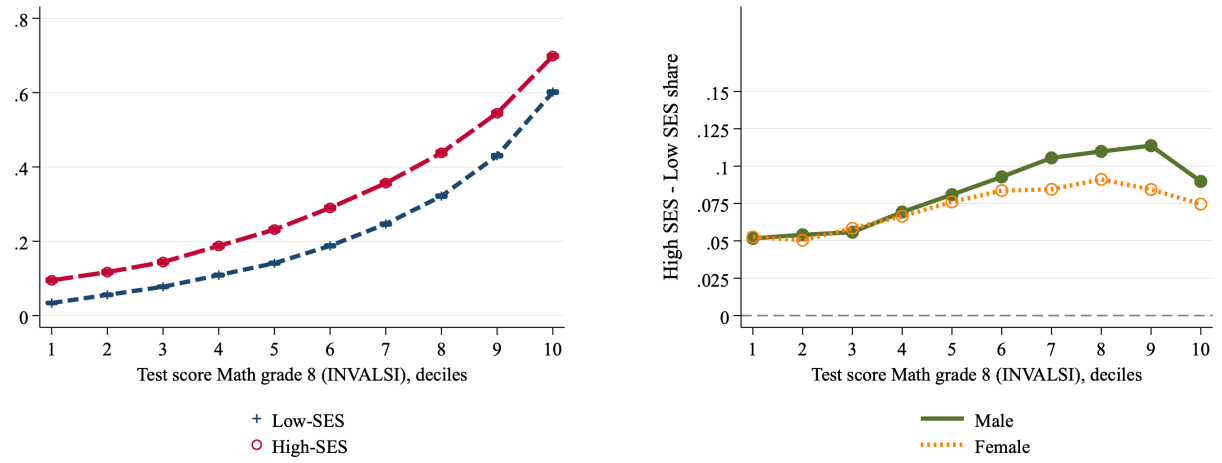
directly elicited beliefs, we show that teachers overestimate first-year high school failure rates, especially for high-achieving low-SES students, and that teachers with large historical recommendation gaps tend to underestimate the magnitude of those gaps. Together, these patterns are consistent with miscalibrated expectations contributing to socioeconomic differences in track recommendations and motivate the information intervention studied below.

3.1 Descriptive Evidence from Administrative Data

Figure 1: Track Recommendations by Student Prior Achievement and Family Background

Panel (a): Top-track recommendation by test-score decile

Panel (b): SES gap in top-track recommendations by gender and decile



Notes: The left panel reports the share of students receiving a top-track recommendation, defined as a recommendation to the scientific or classical lyceum, by decile of grade-8 mathematics test scores. The right panel reports the SES gap in top-track recommendation rates by gender and test-score decile. The SES gap is defined as the recommendation rate for high-SES students minus the recommendation rate for low-SES students within each decile and gender group. SES is measured by father's occupation; high-SES students are those whose father is employed in a managerial, professional, or technical occupation. The sample covers grade-8 cohorts from 2016 to 2021.

Panel (a) of Figure 1 shows the share of students recommended to top-tier academic tracks by prior achievement and family background. Prior achievement is measured by standardized grade-8 mathematics scores from INVALSI, while family background is measured by father's occupation. At every level of prior achievement, students from high-SES families are more likely to receive a top-track recommendation than their low-SES peers. The gap is substantial: among students in the top 20 percent of the mathematics score distribution, 51

percent of low-SES students receive a top-track recommendation, compared with 62 percent of high-SES students in the same achievement group.

To examine whether this gap reflects differences in observable student characteristics, we regress top-track recommendations on SES, progressively adding controls: a SES gap of 7.8 percentage points remains even among students with similar prior achievement, attending the same school, and with comparable observable characteristics (Appendix Table A1).[7] We next ask whether the remaining gap reflects teachers' private information about student performance that is not captured by standardized test scores. When we additionally control for teacher-assigned grades (column 5, Appendix Table A1), the gap falls to 4.8 percentage points, but remains large and statistically significant. This estimate is likely conservative, since teacher-assigned grades may themselves partly reflect socioeconomic differences in teacher perceptions or parental engagement.

Panel (b) of Figure 1 shows the SES gap in top-track recommendations by grade 8 math test score decile and student gender. The gap increases with prior achievement and is larger for boys than for girls. Conditional recommendation gaps are therefore particularly large for high-achieving low-SES boys relative to high-SES boys with similar test scores. This pattern is consistent with a growing literature documenting that family disadvantage disproportionately affects boys' educational outcomes (Autor et al., 2019; Carlana et al., 2022a).

We next document that teacher recommendations are strongly associated with students' subsequent track choices. Appendix Table A2 shows that, for both high- and low-SES students, receiving a top-track recommendation is associated with a substantially higher probability of enrolling in a top-tier track. Depending on the specification, students who receive a top-track recommendation are approximately 46 to 62 percentage points more likely to enroll in one. The association is at least as strong for low-SES students as for high-SES students, suggesting that recommendation gaps may be particularly consequential for disadvantaged students. Appendix Figure A3 provides additional descriptive evidence on students' subsequent high school performance. Among high-achieving students who enroll

[7]The unconditional SES gap is 16.3 percentage points. Controlling for standardized test scores accounts for roughly one-third of this gap. Adding school fixed effects and additional student controls, including immigrant background and school absences, reduces the gap to 7.8 percentage points. Panel B of Appendix Table A1 shows a symmetric pattern for lower tracks: low-SES students are more likely to be recommended to technical or vocational tracks.

in top-tier tracks, we do not observe SES differences in later standardized test performance.[8]

These administrative comparisons nevertheless cannot establish whether SES gaps in recommendations reflect differential treatment rather than unobserved differences in students' preferences, information, aspirations, or family constraints. We address this limitation using the randomized vignette evidence in the next section.

3.2 Evidence from Incentivized Vignettes

The descriptive evidence in Section 3.1 documents a robust SES gap in track recommendations, but cannot rule out that teachers respond to student characteristics correlated with socioeconomic background and unobserved in administrative data, such as interests, attitudes, aspirations, or parental involvement. To address this concern, we implement an incentivized vignette experiment in which teachers assign track recommendations to two hypothetical student profiles. The profiles hold fixed all information provided about students' academic performance, interests, and attitudes, while independently randomizing socioeconomic background. In the baseline survey, the two profiles are as follows:

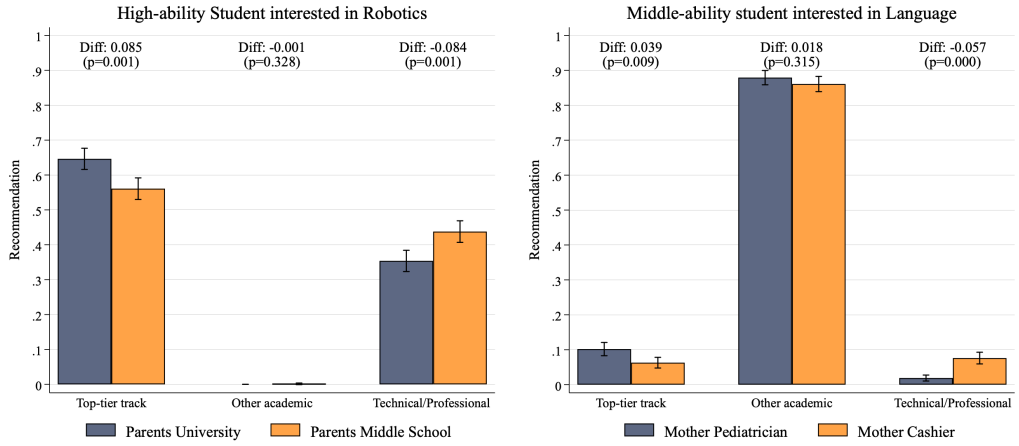
> ***Profile 1:*** *Matteo is an excellent student. He loves computer programming and has built a robot for a school competition. [Both of his parents have university degrees.] / [Both of his parents have completed middle school but have not completed high school.]*

> ***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 pediatrician] / [a cashier].*

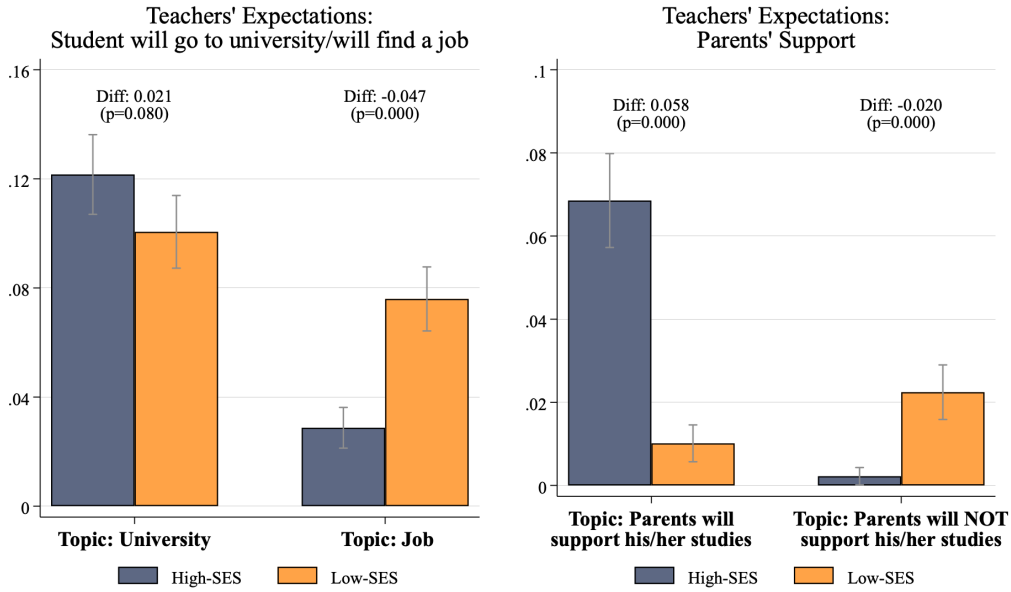
[8] Appendix Figure A3 provides descriptive evidence on subsequent standardized test performance. Among all students, low-SES students score below high-SES students with similar grade-8 mathematics achievement. However, for students in the top half of the grade-8 achievement distribution, the SES difference in later test scores is small and statistically insignificant conditional on attending a top-tier track. This comparison is descriptive, since track enrollment is itself a selected outcome. Panel (b) of Table A2 complements this evidence: comparing students with similar prior achievement attending the same middle school, top-track recommendations are associated with significantly higher standardized test performance in grade 10 for both high- and low-SES students, with stronger associations for low-SES students.

Figure 2: SES Effects in Baseline Vignette Recommendations and Explanations

Panel (a): Track recommendations



Panel (b): Motivations for Track Recommendations by Family Background



Notes: Panel (a) reports the share of teachers assigning each track recommendation, by hypothetical profile and randomized SES condition. The left panel shows recommendations for a high-achieving male profile interested in robotics; the right panel shows recommendations for a female profile interested in languages. Within each profile, parental background is randomized between a high-SES and a low-SES version, holding all other information constant. Panel (b) reports the share of open-ended explanations mentioning each theme. The sample includes teachers who completed the baseline survey in 2022 or 2023.

For each profile, teachers provided a track recommendation. The SES manipulation varies

parental education in the first profile and parental occupation in the second, while holding all other profile characteristics constant. Importantly, the profiles do not provide information on parental involvement in the student's education or on family aspirations, allowing us to study whether teachers infer these dimensions from socioeconomic background.[9]

Panel (a) of Figure 2 shows the distribution of track recommendations by profile and SES treatment. Teachers recommend tracks broadly consistent with each student's academic performance and interests, but for both profiles, low-SES students are less likely to receive a top-track recommendation and more likely to be recommended to technical or vocational tracks. Appendix Table A4 quantifies these effects, stacking observations across the two profiles. Among high-SES profiles, the probability of receiving a top-track recommendation is 37.1 percent. This probability falls by 6.2 percentage points, or 17 percent, for otherwise identical low-SES profiles. The estimate is robust to profile fixed effects, teacher controls, and teacher fixed effects. The pattern is symmetric for lower tracks: low-SES profiles are approximately 7 percentage points more likely to be recommended to technical or vocational tracks.[10]

We next investigate the mechanisms underlying the SES penalty in vignette recommendations, focusing on teachers' expectations about students' future trajectories. After making each recommendation, teachers were asked to explain their decision in an open-ended response that we classify following a procedure described in Appendix C.[11] Because explanations are elicited after the recommendation and naturally depend on the selected track, the observed themes may partly reflect post-decision rationalization rather than pre-decision reasoning. However, panel (b) of Figure 2 shows that teachers are 2.2 percentage points less likely to mention university attendance for low-SES profiles, equal to 18 percent of the high-SES mean, and 4.7 percentage points more likely to mention immediate employment, more than doubling the high-SES mean. Teachers are also more likely to mention lack of parental support and concerns about successful high school completion for low-SES profiles.[12]

[9] Appendix Table A3 reports balance of teacher characteristics across vignette treatment arms; as expected given random assignment, teacher characteristics are balanced, with no statistically significant differences among 15 tests.

[10] As a benchmark, Appendix Figure A4 reports SES gaps in track recommendations in the administrative data for students with characteristics similar to the two vignette profiles. The average SES gap for similar students in the administrative data is approximately 15 percentage points, compared with 6.2 percentage points in the vignette experiment. This comparison suggests that a meaningful share of the administrative gap reflects differential treatment of otherwise similar students. The comparison should be interpreted cautiously: the vignette experiment abstracts from other information teachers may observe in real classrooms and from differences between the survey sample and the full population of teachers.

[11] Of the 2,739 teacher-by-profile observations in which teachers provided a recommendation, 86 percent included a written explanation.

[12] The quantification of these results is reported in Appendix Table A5.

Taken together, the text analysis suggests that the SES penalty in vignette recommendations is closely related to teachers' expectations about students' future educational trajectories and family support. Because academic performance, interests, and attitudes are held constant across SES versions of each profile, these differences in explanations indicate that teachers infer unobserved aspirations, preferences, or parental support from socioeconomic background itself. Such inferences may contribute to teachers recommending different tracks to otherwise similar profiles and, in real settings, could generate self-reinforcing educational trajectories (Rosenthal, 1973).

3.3 Teacher Beliefs and Misperceptions

The text analysis in Section 3.2 shows that randomized SES cues affect the expectations teachers articulate when explaining their recommendations. However, these lower expectations could in principle reflect accurate beliefs about average differences in students' academic prospects across SES groups. We therefore directly elicit teachers' beliefs and compare them to objective benchmarks from administrative data.

Beliefs about students' short-run academic prospects. In the baseline survey, we ask teachers about the probability that their former students failed ninth grade, the first year of high school.[13] Figure 3a compares teachers' average beliefs with actual failure rates from administrative data, separately by student SES and for three groups: all students, high-GPA students, and high-GPA students enrolled in top-tier tracks.[14] Teachers overestimate failure rates for both SES groups, but the overestimation is larger for low-SES students. For all students, teachers overestimate the failure rate of low-SES students by more than 65 percent, with a significantly larger belief-reality gap for low-SES than for high-SES students ($p < 0.001$). The discrepancy is even larger for high-achieving students. Teachers' predicted failure rates for high-GPA low-SES students are 226 percent above the corresponding observed rate; among high-GPA low-SES students enrolled in top-tier tracks, the predicted rate is 225 percent above the observed rate. The overestimation is larger for low-SES than for high-SES students ($p = 0.009$). These findings indicate that teachers are systematically miscalibrated about students' academic prospects, especially for high-achieving low-SES stu-

[13] *"Think of the students you had in the last three school years. Out of 100 students from a disadvantaged/wealthy background, how many do you think failed ninth grade?"* The exact wording of all belief elicitation questions is reported in Appendix D.

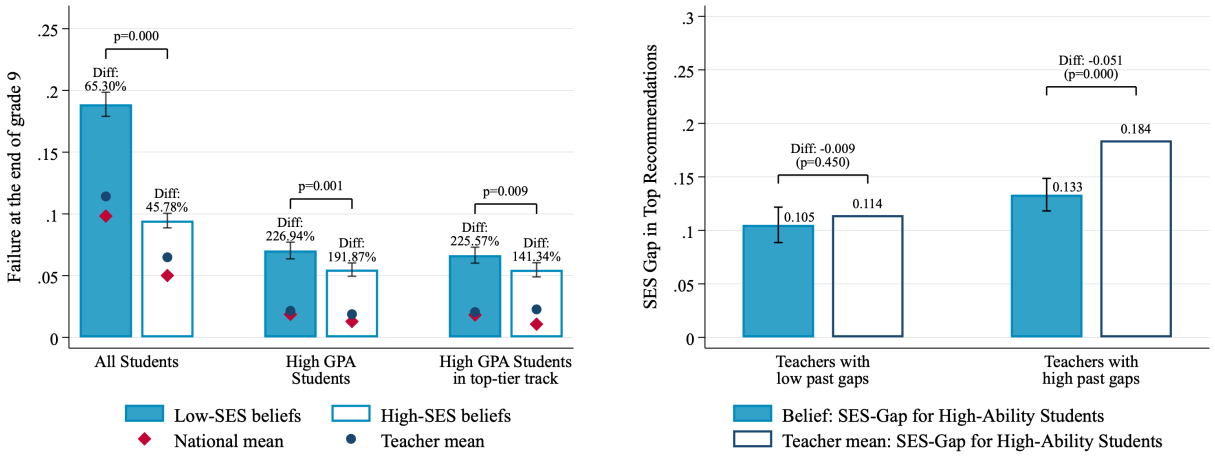
[14] See Appendix Figure A5 for robustness to an alternative cohort restriction for the computation of benchmarks.

dents in competitive tracks.

Figure 3: Teacher Misperceptions about Student Failure Rates and Own SES Recommendation Gaps

(a) Perceived and Actual Failure Rates by Student SES

(b) Perceived and Actual SES Gaps in Recommendations



Notes: Panel (a) compares teachers' elicited beliefs about grade-9 failure rates with observed failure rates from administrative data, separately by student SES and student group. Bars report average beliefs; markers report observed failure rates computed from administrative data. "Diff" labels the percentage by which average teacher beliefs exceed the teacher-specific observed mean. Reported p-values refer to one-sided paired t-tests of the hypothesis that the within-teacher belief-reality gap (in percentage points) is larger for low-SES than for high-SES students. Panel (b) compares teachers' perceived SES gaps in their own past top-track recommendations with actual SES gaps computed from administrative data. Actual gaps correspond to the information shown to teachers in their personalized reports. The sample includes teachers who completed the 2023 baseline survey, in which all belief elicitation questions were administered. SES is measured consistently across belief elicitation and benchmark construction using the same SES index as in the personalized reports. Benchmark statistics are computed using cohorts from 2016 to 2021, as shown in the personalized reports.

Beliefs about own SES gaps in recommendations. Teachers also misperceive SES gaps in their own past track recommendations. We elicit teachers' perceived SES gaps in top-track recommendations and compare them with actual gaps computed from administrative data.[15] Figure 3b shows that teachers with above-median pre-existing SES gaps underestimate the magnitude of their own gaps by 5.1 percentage points, corresponding to an underestimation by 38 percent, while teachers with below-median gaps are approximately correct in their perceptions. The pattern holds when restricting the sample to teachers with

[15]The exact wording of the question is reported in Appendix D.

progressively larger numbers of past students, alleviating concerns that it reflects sampling error in teacher-level gaps (Figure A6).[16]

Taken together, these results show that teachers hold two types of misperceptions that are directly relevant for track recommendations: they overestimate the failure risk of high-achieving low-SES students, and many underestimate the SES gaps in their own past recommending behavior. These findings motivate an intervention that provides teachers with feedback on both their prior recommendation patterns and the subsequent outcomes of disadvantaged students.

4 Field Experiment Design

The evidence in the previous sections shows that teachers issue consequential track recommendations in an environment of substantial uncertainty. In the status quo, teachers observe students during middle school but receive little systematic feedback on how their former students perform after entering different high school tracks. This limited feedback may make it difficult for teachers to learn from past recommendations and may allow misperceptions about students' prospects and their own recommending behavior to persist.

Motivated by this evidence, we designed and implemented a large-scale field experiment that provides teachers with personalized information drawn from administrative data. The intervention aims to increase teachers' awareness of SES gaps in their own past recommendations and to correct teachers' beliefs about the academic prospects of high-achieving low-SES students.

4.1 Treatments

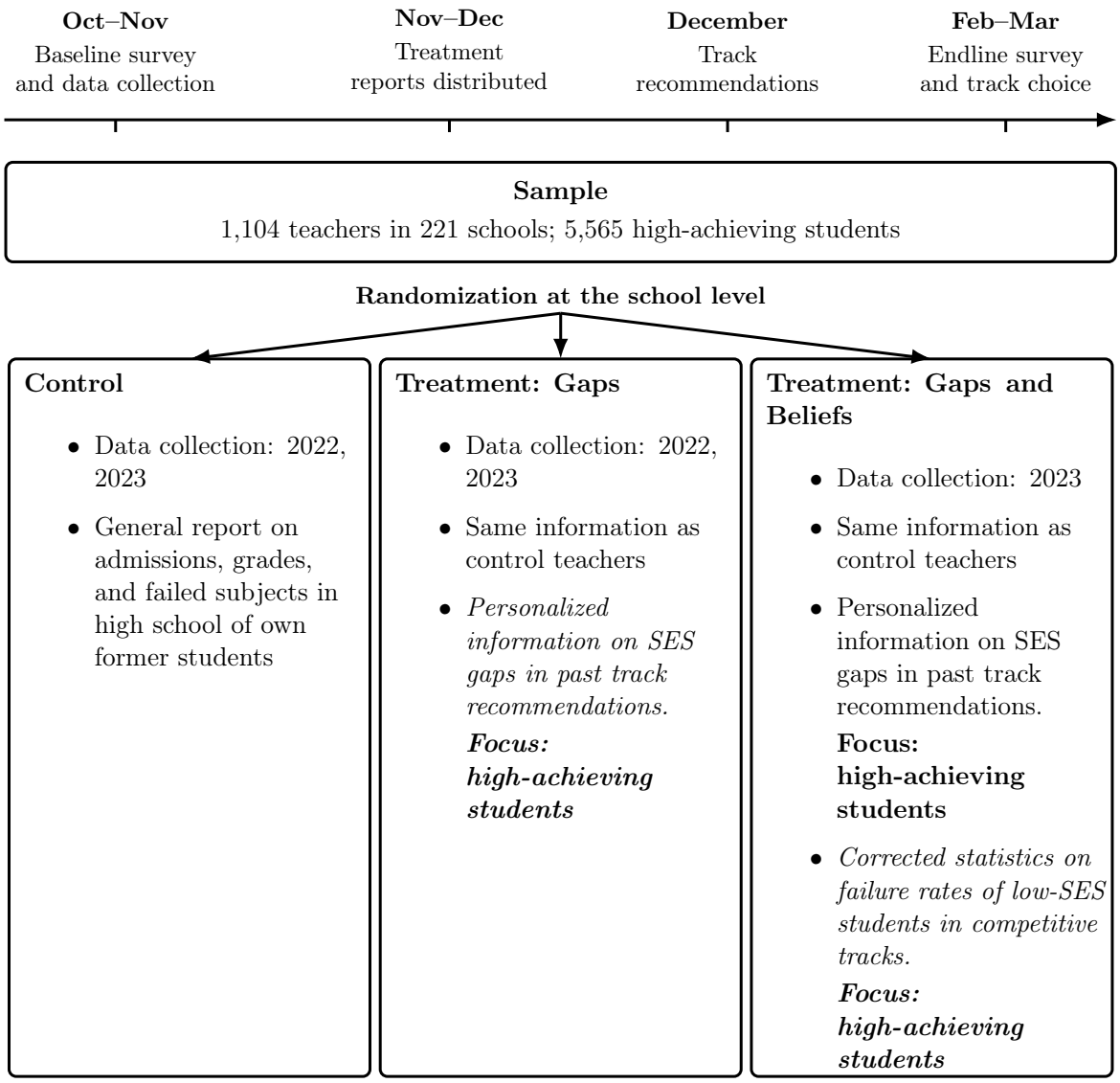
All teachers who completed the baseline survey received a personalized report summarizing the high school trajectories of their former students.[17] These reports addressed a central feature of the status quo: teachers typically do not observe systematic information on what happens to their students after they leave middle school. The report therefore provided feedback on the share of former students choosing each high school track, their first-year

[16]We compute teachers' historical SES gaps by pooling students across multiple cohorts. When fewer than 10 student observations are available for a teacher, we replace the teacher-level estimate with the corresponding school-level average. Pooling cohorts and applying this minimum-sample rule reduce the influence of idiosyncratic sampling variation on measured teacher-level gaps.

[17]For the 2022 implementation, benchmark statistics are computed using students who completed middle school between 2016 and 2019, due to data availability at the time of implementation. For the 2023 implementation, the benchmark period extends from 2016 to 2021.

high school outcomes by track choice, and the outcomes of students who followed versus did not follow the teacher's recommendation. Outcomes included grades in mathematics, Italian, and English, admission to grade 10, and the number of failed subjects. A sample control report is shown in Appendix B.1.

Figure 4: Experimental Design and Timeline



Notes: This figure summarizes the experimental design and timeline. All teachers completed the baseline survey before receiving reports and before track recommendations were issued. Teachers were randomized at the school level. In 2022, schools were assigned to the control group or to the *Gaps* treatment. In 2023, returning schools retained their original assignment, while newly recruited schools were assigned to the control group, the *Gaps* treatment, or the *Gaps and Beliefs* treatment. Reports were distributed before recommendation meetings; the endline survey was administered after the recommendation and track-choice period.

As shown in Figure 4, schools were randomly assigned to an active control group or to one of two augmented-report treatment groups. Teachers in the active control group received the common personalized report described above but no additional information about SES gaps or belief miscalibration. Teachers in the treatment groups received the same common report together with additional information targeting the informational discrepancies documented in Section 3.3.

Gaps treatment. Teachers in the *Gaps* treatment received information on SES gaps in their own past track recommendations.[18] Specifically, the report showed the share of their former students recommended to each track by student SES, both for all students and for high-achieving students, defined as students with grade-7 GPA greater than or equal to 8. An example of this information is shown in Appendix B.2.

Gaps and Beliefs treatment. Teachers in the *Gaps and Beliefs* treatment received all information included in the *Gaps* treatment, as well as additional information designed to correct misperceptions about the academic prospects of high-achieving low-SES students in competitive tracks. In particular, teachers were shown the difference between teachers' baseline beliefs about student failure rates and failure rates observed in administrative data (Figure B.11). This component targets the main overestimation of low-SES students' failure risk documented in Section 3.3. A sample report for this group is shown in Appendix B.3.

The first page of each report summarized the information provided. Control reports contained only aggregate information about former students' high school trajectories. Reports for the *Gaps* treatment included an additional section highlighting SES gaps in past track recommendations. Reports for the *Gaps and Beliefs* treatment also included a section addressing misperceptions about high-achieving low-SES students' academic outcomes. Reports were distributed by email approximately one week before eighth-grade track recommendation meetings in November and December; the timing of these meetings was elicited in the baseline survey.

[18] Student SES in the reports was measured using the composite INVALSI index, which combines information on parental education and occupation.

Table 1: Baseline Covariate Balance: High-GPA Students

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Full sample	Control	Gaps	Gaps and Beliefs	p-value (3)−(2)	p-value (4)−(2)	Norm. Diff. (3)−(2)	Norm. Diff. (4)−(2)
Panel A: Students in the Field Experiment								
Female	0.570	0.587	0.577	0.525	0.614	0.536	-0.014	-0.088
Immigrant	0.047	0.050	0.050	0.034	0.966	0.269	0.000	-0.056
Second generation immigrant	0.035	0.035	0.040	0.024	0.565	0.190	0.019	-0.046
High Grade in Math, grade 7	0.845	0.853	0.837	0.846	0.287	0.904	-0.031	-0.014
High Grade in Italian, grade 7	0.897	0.885	0.897	0.920	0.444	0.074	0.027	0.084
High Grade in English, grade 7	0.885	0.901	0.874	0.879	0.072	0.875	-0.061	-0.050
Absence hours in Math, grade 7	4.985	4.772	4.496	6.205	0.611	0.495	-0.033	0.159
Absence hours in Italian, grade 7	7.264	7.102	6.711	8.644	0.519	0.991	-0.039	0.147
Absence hours in English, grade 7	3.074	2.976	2.840	3.642	0.732	0.351	-0.021	0.097
Kindergarten (3-5 years) attendance	0.951	0.939	0.954	0.965	0.534	0.432	0.047	0.086
Parental occupation: Father not high-wage	0.704	0.730	0.690	0.685	0.099	0.057	-0.062	-0.070
Parental occupation: Mother not high-wage	0.814	0.827	0.805	0.809	0.201	0.143	-0.040	-0.033
Parental education: father without high school diploma	0.281	0.289	0.274	0.284	0.555	0.719	-0.024	-0.008
Parental education: mother without high school diploma	0.171	0.169	0.170	0.176	0.958	0.947	0.002	0.013
Low SES (index)	0.390	0.400	0.383	0.385	0.572	0.652	-0.025	-0.022
Students	5,565	2,030	2,403	1,132				
Schools	221	81	84	56				
Panel B: Teachers characteristics								
Female	0.834	0.814	0.846	0.843	0.314	0.869	0.060	0.054
Age	47.986	47.294	48.242	48.784	0.297	0.173	0.070	0.114
Low-SES: father without high school diploma	0.447	0.473	0.441	0.411	0.350	0.124	-0.045	-0.088
Teaches core subject (mathematics, Italian or English)	0.671	0.626	0.727	0.641	0.012	0.528	0.153	0.022
Permanent teaching contract	0.838	0.805	0.852	0.865	0.374	0.382	0.088	0.115
Track guidance: academic performance	47.308	46.739	47.641	47.626	0.729	0.094	0.038	0.037
Track guidance: student interests and attitudes	35.540	34.545	35.576	37.100	0.383	0.062	0.051	0.125
Track guidance: parental education	2.779	3.200	2.468	2.664	0.200	0.578	-0.090	-0.065
Track guidance: parental wealth	3.922	3.980	4.147	3.412	0.625	0.387	0.018	-0.068
Track guidance: parental advice and involvement	10.452	11.536	10.168	9.199	0.193	0.866	-0.086	-0.140
Past SES gap in top-track recommendations	0.187	0.178	0.195	0.190	0.199	0.879	0.126	0.092
Believed failure rate: high-ability low-SES students	0.074	0.075	0.081	0.064	0.697	0.325	0.033	-0.062
Teachers	1,104	409	458	237				

Notes: This table reports baseline covariate balance for high-GPA students in the experimental sample and their teachers. High-GPA students are those with grade-7 GPA greater than or equal to 8. Columns 1–4 report means for the full sample, control group, *Gaps* treatment, and *Gaps and Beliefs* treatment. Columns 5–6 report p-values from tests of equality between each treatment group and the control group. Columns 7–8 report normalized differences relative to the control group. Panel A reports student characteristics; Panel B reports teacher characteristics. Standard errors for balance tests are clustered at the school level.

4.2 Randomization and Baseline Characteristics

Appendix Table A6 reports summary statistics for students and teachers in the experimental sample, and Appendix Table A7 reports the corresponding statistics for high-GPA students, the primary target group of the intervention. Participating schools are geographically dispersed across most of the country, as shown in Appendix Figure A1. Overall, around 20% of students receive a recommendation to a top-tier academic track, and around 24% enroll in one. Among high-GPA students, these shares increase to 46% and 47%, respectively.

Approximately 80% of participating teachers are female, and 67% teach mathematics, Italian, or English, the core subjects most directly involved in the track recommendation process. When asked to report the factors influencing their guidance advice, teachers assign the largest weight to academic performance, 47%, followed by students' attitudes and interests, 36%, while parents' wealth accounts for only 4%. Moreover, 86% of teachers disagree with the statement that students' SES should affect track recommendations. At the same time, their own past recommendations display sizable SES gaps: the average gap in top-track recommendations is 19 percentage points for all students and remains 15 percentage points among high-GPA students.

We randomized treatment assignment at the school level to limit contamination across teachers within the same school. In 2022, schools were randomized to the control group or to the *Gaps* treatment. In 2023, schools that had already participated in 2022 retained their original treatment assignment, while newly recruited schools were randomized to the control group, the *Gaps* treatment, or the *Gaps and Beliefs* treatment.[19] Table 1 reports balance in observable characteristics for high-GPA students and teachers across treatment and control groups, pooling the 2022 and 2023 cohorts. Baseline characteristics are well balanced across groups, with only a small number of statistically significant differences, consistent with random assignment.[20]

[19] 44 of the 221 schools participated in both years, retaining their original 2022 treatment assignment in 2023. Our main results are robust to excluding returning schools from the second year of treatment and keeping them only in 2022, the year of their original randomization (Table A13). Among teachers in the 2022 experimental sample, the probability of returning in 2023 is similar in the Gaps and Control arms (20.5% vs. 17.8%; p =0.554).

[20] In the Appendix, we report additional balance checks separately by wave (Tables A9 and A8), for the full student sample (Table A10), and including the 15 schools initially randomized but excluded from the experimental analysis because they did not report track recommendations to the Ministry of Education (Table A11).

4.3 Empirical Strategy

To estimate whether the information treatments reduce SES gaps in track recommendations, we estimate the following OLS specification:

$$\begin{aligned} R_{isc} = \beta_0 &+ \beta_1 \,\text{Low-SES}_{isc} + \beta_2 \,\text{Gaps}_s + \beta_3 \,\text{Gaps and Beliefs}_s \\ &+ \beta_4 \,\text{Low-SES}_{isc} \times \text{Gaps}_s + \beta_5 \,\text{Low-SES}_{isc} \times \text{Gaps and Beliefs}_s \\ &+ \mathbf{X}_{isc}\boldsymbol{\gamma} + \rho_c + \varepsilon_{isc}. \end{aligned} \tag{1}$$

The outcome R_{isc} is an indicator for whether student i in school s and cohort c receives a recommendation to a given high school track. In the main analysis, R_{isc} indicates a recommendation to a top-tier academic track. Low-SES$_{isc}$ is an indicator equal to one if the student's father is not employed in a high-wage occupation. The indicators Gaps$_s$ and Gaps and Beliefs$_s$ denote assignment to the two treatment arms, with the control group omitted. The vector $\mathbf{X}_{isc}$ includes student controls: standardized test scores in mathematics and Italian, gender, indicators for high teacher-assigned grades in mathematics, Italian and English in grades 6 and 7, kindergarten attendance, an indicator for schools located in the South, and assignment-wave fixed effects. The term ρ_c denotes cohort fixed effects. Standard errors are clustered at the school level, the level of randomization.[21]

The coefficients β_2 and β_3 capture treatment effects for high-SES students. The primary coefficients of interest are β_4 and β_5, which capture whether each treatment changes the low-SES versus high-SES gap in recommendations. Positive values of these interaction coefficients indicate a reduction in the SES gap in top-track recommendations.

Because both treatments are designed to affect recommendations especially for high-achieving students, our main analysis focuses on students with high prior achievement, defined as grade-7 GPA greater than or equal to 8. We also present results separately for teachers with above- and below-median pre-existing SES gaps in top-track recommendations.[22] This heterogeneity analysis is motivated by variation in the informational content

[21] Because several analyses split the sample by teachers' historical gaps, student gender, and prior achievement, we also report the number of schools in each specification.

[22] Because track recommendations are decided jointly by all of a student's teachers during the class council meeting, this classification is defined at the class level rather than the individual-teacher level: for each student, we average the past SES gap of the experimental teachers assigned to that student's class and classify students as assigned to above- or below-median gap teachers based on the median of this class-average across the experimental sample. Classes include approximately 20 students and share the same set of teachers, so all students in a class receive the same classification. On average, there are 2.3 experimental teachers per class.

of the *Gaps* treatment: teachers with larger observed historical gaps received a stronger signal that their recommendations differed by SES, whereas those with smaller observed gaps received less scope for updating.[23]

5 Main Results

5.1 Effects on Track Recommendations

Figure 5 reports regression-adjusted probabilities of receiving a top-track recommendation for high-achieving students, by treatment group and student SES. Panel (a) presents results separately for teachers with above- and below-median pre-existing SES gaps in top-track recommendations. This split is motivated by heterogeneity in the informational content of the reports: teachers with larger observed historical gaps received a stronger signal that their recommendations differed by student SES, whereas teachers with smaller observed gaps received less scope for updating.

Among teachers with high past gaps, the control group exhibits a baseline SES gap of 15.6 percentage points (pp). The *Gaps* treatment reduces this gap by nearly half, to 7.4 percentage points. The *Gaps and Beliefs* treatment nearly eliminates the gap, reducing it to 1.5 percentage points, statistically indistinguishable from zero. The reduction in the gap reflects changes on both margins. In the *Gaps* treatment, the adjustment comes primarily from an increase in top-track recommendations for low-SES students (+8.0 pp), with little change for high-SES students (- 0.2 pp). In the *Gaps and Beliefs* treatment, low-SES recommendations increase (+6.4 pp) while high-SES recommendations decline (-7.7 pp). As shown in the right graph in panel (a) of Figure 5, among teachers with below-median past gaps, the control-group SES gap is already small, 4.5 percentage points, and neither treatment has a detectable effect.

Panel (b) reports results by student gender, restricting the sample to teachers with above-median past gaps. This heterogeneity is important for two reasons. First, top-tier academic tracks, and especially the scientific track, are closely linked to STEM-oriented educational trajectories, where gender gaps are large (Carlana, 2019). In the control group, around 75 percent of high-SES boys receive a top-track recommendation, compared with less than 50

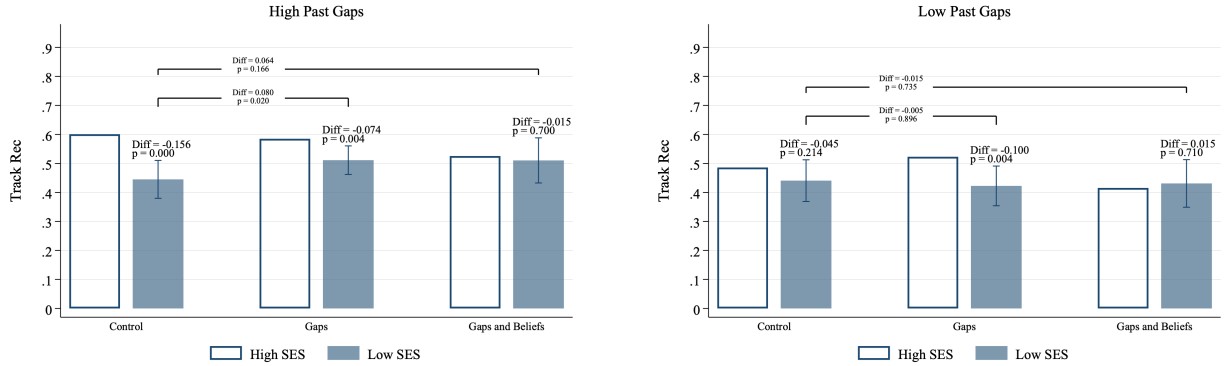
[23]To reduce noise and comply with the data-security protocol of the Ministry of Education, the reports did not display statistics based on fewer than 10 observations for any cell. When a teacher had fewer than 10 former students in a given group, the report displayed the corresponding school-level average and explicitly noted this substitution in the report text. For consistency, our analysis and sample splits use the information shown to teachers in their own reports.

percent of high-SES girls; the recommendation rate for high-SES girls is slightly below that of low-SES boys. Second, as shown in Panel (b) of Figure 1, SES gaps in top-track recommendations are especially large among high-achieving boys. Consistent with this descriptive pattern, treatment effects are concentrated among male students, who exhibit the largest baseline SES gap in the control group: 21.8 percentage points for boys, compared with 11.0 percentage points for girls. For boys, the *Gaps* treatment closes approximately 90 percent of the baseline gap, and the *Gaps and Beliefs* treatment eliminates it. These effects reflect both an increase in top-track recommendations for low-SES boys and a decrease for high-SES boys. For girls, who start from a smaller baseline gap and lower overall recommendation rates to top-tier tracks, neither treatment produces a statistically significant change in the SES gap.

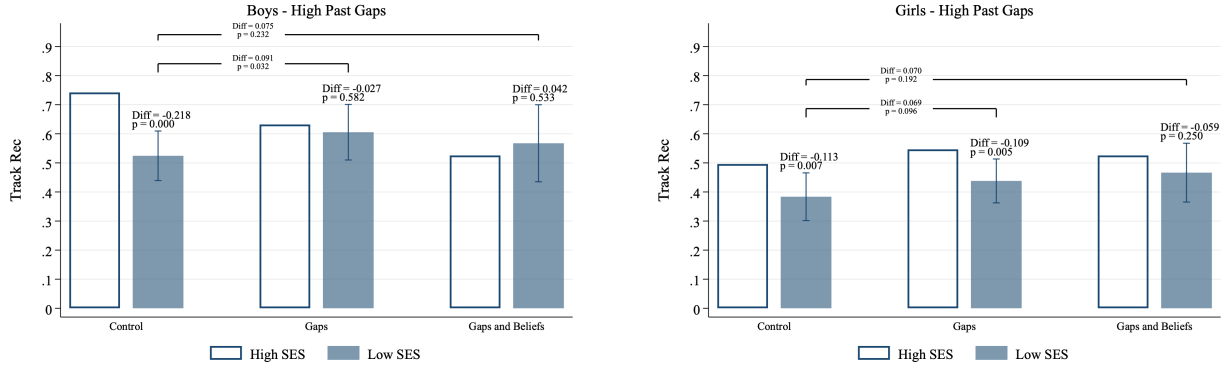
Table 2 reports the corresponding OLS estimates from equation 1 for the full set of high-achieving student subsamples defined by student gender and teachers' pre-existing SES gaps in track recommendations. Columns 1–3 pool all teachers, columns 4–6 restrict the sample to teachers with below-median past gaps, and columns 7–9 restrict the sample to teachers with above-median past gaps; within each group, results are shown for all students, boys, and girls. The regression results confirm the patterns in Figure 5. Pooling across all teachers, the *Gaps and Beliefs* treatment substantially reduces the SES gap in top-track recommendations, while the average effect of the *Gaps* treatment is smaller and imprecisely estimated. This aggregate null masks substantial heterogeneity: among teachers with high past gaps, the *Gaps* treatment reduces the SES gap by approximately half, whereas no effect is detected among teachers with low past gaps. The gender heterogeneity is also confirmed in the table: among boys assigned to teachers with high past gaps, both treatments produce large and statistically significant reductions in the SES gap, while effects for girls are smaller and statistically indistinguishable from zero. We additionally apply the Romano-Wolf stepdown procedure to adjust for multiple hypothesis testing across the nine subgroup comparisons in Table 2 (Romano and Wolf, 2016); the key coefficients discussed above remain significant at the 5% level after this correction (Appendix Table A12).

Figure 5: Treatment Effects on Top-Track Recommendations for High-Achieving Students

Panel (a): Teachers with above- and below-median pre-existing SES recommendation gaps



Panel (b): Teachers with above-median pre-existing SES recommendation gaps, by gender



Notes: This figure reports regression-adjusted probabilities of receiving a top-track recommendation for high-GPA students, by treatment group and student SES. High-GPA students are those with grade-7 GPA greater than or equal to 8. Panel (a) reports results separately for teachers with above- and below-median pre-existing SES gaps in top-track recommendations. Panel (b) restricts the sample to teachers with above-median past gaps and reports results separately by student gender. All specifications include the baseline controls, cohort fixed effects, and randomization-wave fixed effects. Standard errors are clustered at the school level.

Table 2: Treatment Effects on Top-Track Recommendations. Sample: High-Achieving Students (GPA $\geq$ 8)

	DV: Top Track Recommendation								
	Sample: All Students			Sample: Low Past Gaps			Sample: High Past Gaps		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All	Males	Females	All	Males	Females	All	Males	Females
Low SES	-0.098***	-0.122***	-0.082***	-0.045	-0.045	-0.053	-0.156***	-0.218***	-0.113***
	(0.027)	(0.036)	(0.030)	(0.036)	(0.047)	(0.042)	(0.033)	(0.043)	(0.041)
Gaps	0.034	0.021	0.042	0.050	0.140*	-0.014	-0.002	-0.100	0.066
	(0.043)	(0.061)	(0.042)	(0.060)	(0.081)	(0.064)	(0.043)	(0.064)	(0.049)
Gaps and Beliefs	-0.076	-0.148**	-0.022	-0.076	-0.122	-0.050	-0.077	-0.185**	0.016
	(0.053)	(0.064)	(0.055)	(0.073)	(0.087)	(0.079)	(0.055)	(0.073)	(0.064)
Low SES * Gaps	0.006	0.028	-0.008	-0.055	-0.142**	0.011	0.082*	0.191***	0.004
	(0.035)	(0.053)	(0.042)	(0.050)	(0.069)	(0.064)	(0.042)	(0.066)	(0.057)
Low SES * Gaps and Beliefs	0.095**	0.166***	0.044	0.061	0.098	0.044	0.141***	0.260***	0.053
	(0.043)	(0.063)	(0.050)	(0.056)	(0.076)	(0.070)	(0.051)	(0.080)	(0.066)
Mean of Y for high-SES Control	0.541	0.639	0.465	0.486	0.550	0.436	0.601	0.742	0.496
R^2	0.135	0.135	0.112	0.122	0.119	0.107	0.153	0.174	0.126
N. students	5,565	2,393	3,172	2,688	1,142	1,546	2,877	1,251	1,626
N. schools	221	214	217	144	137	140	149	145	148
Summ Coeff. Gaps ($\beta_2 + \beta_4$) (p-value)	0.181	0.255	0.255	0.896	0.975	0.934	0.020	0.032	0.096
Summ Coeff. Gaps and Beliefs ($\beta_3 + \beta_5$) (p-value)	0.581	0.704	0.573	0.735	0.676	0.907	0.166	0.232	0.192

Notes: This table reports OLS estimates of equation 1. The dependent variable is an indicator equal to one if the student receives a recommendation to a top-tier academic track, defined as the scientific or classical lyceum. The sample includes high-GPA eighth-grade students assigned to experimental teachers. Columns 1–3 include all students, columns 4–6 restrict to students assigned to teachers with below-median pre-existing SES gaps in top-track recommendations, and columns 7–9 restrict to students assigned to teachers with above-median pre-existing gaps. Within each group, columns report results for all students, boys, and girls. Low-SES is an indicator equal to one if the student's father is not employed in a managerial, professional, or technical occupation. Student controls include gender, school location in the South, an indicator for whether the teacher received a report in the previous year, standardized test scores in mathematics and Italian, indicators for high teacher-assigned grades in mathematics, Italian, and English in grades 6 and 7, and kindergarten attendance. All specifications include cohort fixed effects and randomization-wave fixed effects. Standard errors are clustered at the school level. The rows labelled "Summ Coeff." report p-values for tests of the total treatment effect for low-SES students, obtained by summing the treatment coefficient and the corresponding Low-SES-by-treatment interaction. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Reallocation of Recommendations. Although there is no formal quota on the share of students who can be recommended to top-tier tracks, the reduction in SES gaps documented above reflects mainly reallocation rather than an overall expansion of top-track recommendations. Table A14 shows that neither treatment has a detectable effect on the overall share of students recommended to top-tier tracks, although there are small increases among teachers with above-median past SES gaps. This pattern indicates that the interventions primarily reshaped the distribution of recommendations across SES groups, rather than substantially changing teachers' overall propensity to recommend top-tier tracks.

We examine this reallocation in more detail for the group most affected by the treatments: boys assigned to teachers with above-median past SES gaps. Figure 6 reports treatment effects on top-track recommendations separately for low- and high-SES students, by prior mathematics grade in grade 7, distinguishing between students with a grade of 9 or above and those with a grade of 8 or below. Among low-SES boys, the positive effects are concentrated among those with the strongest prior mathematics performance: top-track recommendations increase by 13.7 percentage points ($p = 0.012$) in the *Gaps* treatment and by 17.7 percentage points ($p = 0.027$) in the *Gaps and Beliefs* treatment for students with a grade of 9 or above, with no detectable effects for low-SES boys with lower prior mathematics grades.[24]

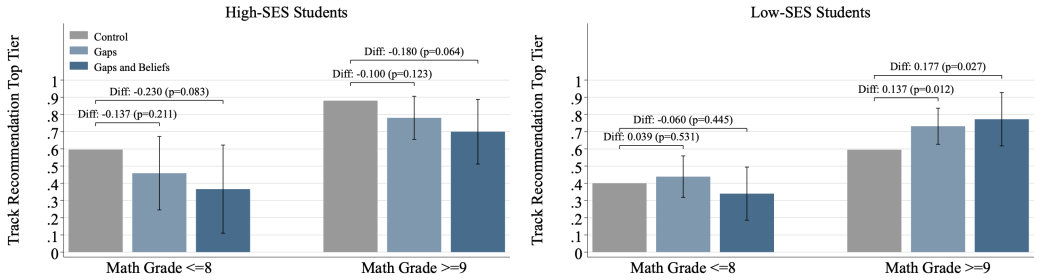
Among high-SES boys, the negative effects are distributed more evenly across the prior mathematics grade distribution. Top-track recommendations decline by 10.0 and 18.0 percentage points for high-SES boys with grades of 9 or above, and by 13.7 and 23 percentage points for those with grades of 8 or below, in the *Gaps* and *Gaps and Beliefs* treatments, respectively. Taken together, these results indicate that the treatments redirected top-track recommendations toward the most academically promising low-SES boys, while reducing recommendations for high-SES boys across the prior achievement distribution.

Appendix Table A15 reports the same heterogeneity analysis for girls and for students assigned to teachers with below-median past SES gaps. Outside the group of boys assigned to high-gap teachers, the estimates are less systematic and do not display the same coherent pattern of upward reallocation toward high-performing low-SES students. This pattern suggests that the main reallocation response is concentrated where baseline SES gaps are largest.

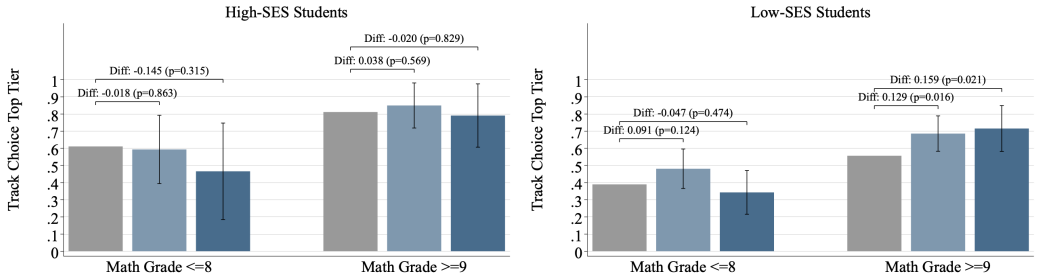
[24]The quantification of the results is reported in Appendix Table A15.

Figure 6: Reallocation of Recommendations, Enrollment, and Grade-10 Admission: High-Achieving Boys Assigned to Teachers with Above-Median Past SES Gaps

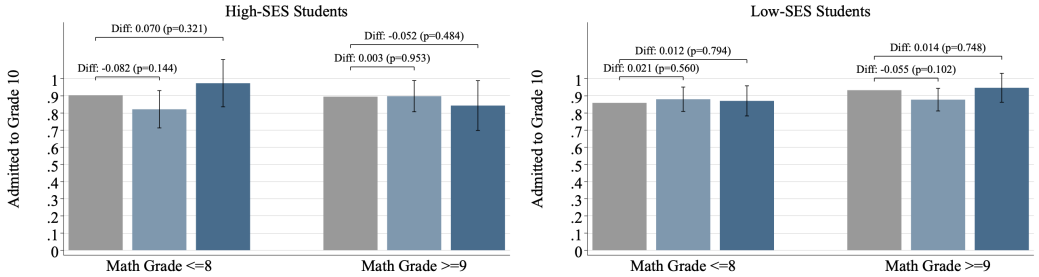
Panel (a): Top-track recommendations



Panel (b): Top-track enrollment



Panel (c): Admission to Grade 10



Notes: This figure reports regression-adjusted outcomes for high-GPA male students assigned to teachers with above-median pre-existing SES gaps in top-track recommendations. Panel (a) reports top-track recommendations, Panel (b) reports top-track enrollment, and Panel (c) reports admission to grade 10. Results are shown separately by student SES and by grade-7 mathematics grade, distinguishing students with grades of 8 or below from those with grades of 9 or above. Bars report the control-group mean and the treatment-group mean implied by regressions of the outcome on treatment assignment, controlling for student characteristics, cohort fixed effects, and randomization wave fixed effects. Standard errors are clustered at the school level. Capped lines report 95 percent confidence intervals for treatment-group means.

Effects on Recommendations for Hypothetical Student Profiles. To further assess whether the treatments changed teachers' individual recommending behavior, we examine recommendations for hypothetical student profiles included in the endline survey.[25] Unlike actual recommendations, each vignette is evaluated separately and does not mechanically require teachers to consider the distribution of recommendations across a class. This distinction may help explain differences between vignette and administrative outcomes.

Figure A7 reports the share of hypothetical profiles recommended to top-tier tracks, by treatment group and profile SES, separately for teachers with above- and below-median past SES gaps in the administrative data. Among teachers with high past gaps, shown in the left panel, control-group teachers continue to display SES gaps for otherwise identical hypothetical profiles, similar to those observed at baseline. Teachers in the *Gaps* treatment do not significantly change their vignette recommendations, while teachers in the *Gaps and Beliefs* treatment substantially increase top-track recommendations for low-SES profiles.

Despite the smaller endline sample and some imbalance in the characteristics of teachers who responded, among teachers with high past gaps, the *Gaps and Beliefs* treatment increases the probability of recommending a low-SES profile to a top-tier track by 7.9 percentage points, and this estimate is robust to the inclusion of controls. This increase does not come at the expense of high-SES profiles, for which estimated effects are small and statistically insignificant. This pattern differs from the reallocation observed for actual students, where increases in top-track recommendations for low-SES students were accompanied by declines for high-SES students. The contrast suggests that implicit limits on the number of top-track recommendations may shape how teachers translate updated beliefs into actual recommendations.

[25]The endline survey was administered in February 2023 and 2024, after the track recommendation period, and included incentivized vignettes in which we randomized the SES status of hypothetical profiles, as well as questions eliciting teachers' feedback on the intervention. Survey questions for both the baseline and endline surveys are reported in Appendix D. The endline completion rate is 62 percent overall: 65.1 percent in the control group, 60.7 percent in the Gaps treatment, and 57.7 percent in the Gaps and Beliefs treatment. In a regression of endline completion on treatment-arm indicators, with standard errors clustered at the school level, neither treatment differs significantly from control ($p = 0.220$ and $p = 0.636$, respectively). However, Appendix Table A16 indicates some statistically significant differences among teachers who completed the endline vignette, although only one normalized difference exceeds 0.25 in absolute value. The 2022 endline survey included 4 profiles; the 2023 survey included 6 profiles. Profile details are reported in Appendix D. Table A17 quantifies the treatment effects on the endline vignette.

5.2 Effects on Track Choice and High School Performance

Track Choice. We next examine whether the reallocation of track recommendations translated into changes in actual track enrollment. Teacher recommendations are strongly associated with track choice: as shown in Section 3.1, a top-track recommendation is associated with a 50–60 percentage point increase in the probability of enrolling in a top-tier track among students with comparable prior achievement. At the same time, recommendations are nonbinding, and families retain the final choice.

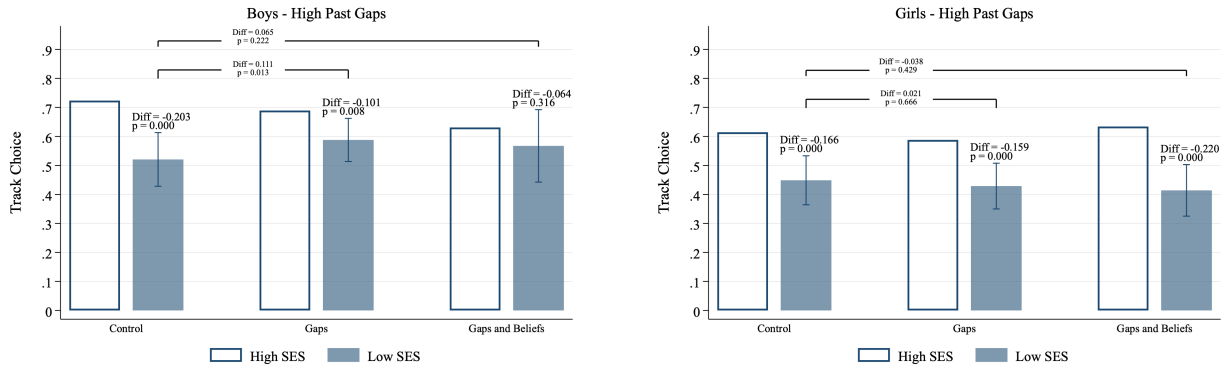
Appendix Table A18 shows that the effects on track choice broadly mirror the effects on track recommendations. Figure 7 shows that for boys assigned to teachers with above-median SES recommendation gaps, the SES gap in track choice is reduced from 20.3 percentage points in the control group to 10.4 percentage points in the *Gaps* treatment and 6.4 percentage points in the *Gaps and Beliefs* treatment. In particular, among low-SES students, enrollment changes are concentrated in the same groups for whom the treatments changed recommendations. By contrast, high-SES students' enrollment decisions are largely unaffected, even in groups where top-track recommendations decline. This pattern suggests that teacher recommendations are consequential for track enrollment, but that their influence is stronger for low-SES students, while high-SES families appear more able to maintain their preferred choices when recommendations become less favorable.

To examine this reallocation channel more directly, Panel (b) of Figure 6 reports treatment effects on top-tier track enrollment, estimated using the same specification as for recommendations, for male students assigned to teachers with above-median past gaps. Among low-SES boys with strong prior mathematics performance, defined as a grade of 9 or above, the group for whom we observe the largest increases in recommendations, the *Gaps* treatment increases top-tier enrollment by 12.9 percentage points ($p = 0.010$) and the *Gaps and Beliefs* treatment by 15.9 percentage points ($p = 0.021$). The enrollment point estimates are approximately 90 percent as large as the corresponding recommendation estimates. Among high-SES boys, by contrast, the downward reallocation in recommendations does not translate into a detectable decline in top-tier enrollment at any point in the prior mathematics grade distribution.

This asymmetry is consistent with differential responses to teacher recommendations by family background. For low-SES students, a top-track recommendation may provide new and credible information about academic fit, shifting enrollment decisions. For high-SES students, families may be more likely to offset less favorable recommendations by relying on

their own information, expectations, or familiarity with academic tracks.[26]

Figure 7: Top-Track Enrollment by Student SES: Students Assigned to Teachers with Above-Median Past SES Gaps by Gender



Notes: This figure reports regression-adjusted probabilities of enrolling in a top-tier academic track for high-GPA male students (left panel) and female students (right panel) assigned to teachers with above-median pre-existing SES gaps in top-track recommendations, by treatment group and student SES. Labels report the SES gap in top-track enrollment within each treatment group. All specifications include the baseline controls, cohort fixed effects, and randomization-wave fixed effects. Standard errors are clustered at the school level.

Academic Performance in High School. We next examine whether the increased enrollment of high-achieving low-SES boys in top-tier tracks came at the cost of lower subsequent academic performance. This is an important concern because the treatments increased top-track recommendations and enrollment for low-SES boys with strong prior mathematics performance, while reducing top-track recommendations for high-SES boys without affecting their enrollment, possibly because high-SES families were more likely to offset less favorable recommendations.

Appendix Table A19 provides a broad check across the same high-achieving student subsamples considered in the recommendation analysis, separately by student gender and teachers' pre-existing SES gaps. Across these specifications, neither treatment has a statistically significant effect on admission to grade 10 for any subgroup. Appendix Table A20 further examines a broader set of grade-9 academic outcomes for the group most affected by the treatments: male students assigned to teachers with above-median past gaps. The table shows no systematic deterioration in grade-9 GPA or in the probability of failing at least

[26]Consistent with this interpretation, Table A2 shows that top-track recommendations are slightly more predictive of top-track enrollment for low-SES students than for high-SES students with comparable prior achievement.

one core subject (mathematics, Italian, or English).[27]

Panel (c) of Figure 6 focuses on this most affected group and reports treatment effects on admission to grade 10, estimated separately by student SES and prior mathematics grade, for boys assigned to teachers with above-median past SES gaps. Low-SES boys with strong prior mathematics performance are the group for whom we observe the largest increases in both top-track recommendations and top-tier enrollment. In the control group, more than 90 percent of these students are admitted to grade 10. Admission rates decline by 5.5 percentage points in the *Gaps* treatment ($p = 0.102$), while they increase by 1.4 percentage points in the *Gaps and Beliefs* treatment, an effect that is not statistically significant. Thus, while the point estimate for the *Gaps* treatment suggests a possible decline in admission, the evidence does not indicate a robust deterioration in short-run academic performance. We also find no detectable effects on admission to grade 10 for high-SES boys across the prior mathematics grade distribution.

Taken together, these results suggest that the reallocation of recommendations toward high-achieving low-SES boys increased access to top-tier tracks without a systematic deterioration in short-run academic performance in high school.

5.3 Robustness to Alternative SES Measures

We assess the robustness of the main results to alternative measures of students' socioeconomic status. Our baseline definition classifies students as low-SES when their father is not employed in a managerial, professional, or technical occupation. However, teachers may observe or infer family background through multiple channels. To test whether the treatment effects are robust to how current students' SES is measured, we consider three alternative definitions: whether neither parent is employed in a high-wage occupation, whether the father did not complete high school, and whether at least one parent did not complete high school.[28] Among high-achieving students, 68%, 36%, and 42% fall into these categories, respectively.

Figure A9 reports regression-adjusted top-track recommendation rates by treatment group and student SES, using each alternative SES definition. The pattern of results is similar across measures: the treatments reduce SES gaps in top-track recommendations among

[27] Admission to grade 10 is measured using the June end-of-year decision. Students with one or more insufficient grades may be required to take remedial exams before a final promotion decision is made. We do not yet observe final grade-retention outcomes for both cohorts.

[28] If information on a parent's occupation is missing, we classify that parent as not employed in a high-wage occupation.

high-achieving students assigned to teachers with above-median past gaps. The estimates need not be identical because the alternative definitions classify different shares of students as disadvantaged and capture distinct dimensions of family background. Nonetheless, the direction and magnitude of the treatment effects remain broadly consistent, indicating that the main results are not driven by the specific SES proxy used in the baseline analysis.

5.4 Heterogeneity by Prior Gaps and Beliefs

The two treatments were designed to address two distinct misperceptions documented in Section 3.3: teachers' perceptions of SES gaps in their own past recommendations, and teachers' beliefs about the probability that high-achieving low-SES students fail in top-tier tracks. If the treatments operate by correcting these misperceptions, we would expect effects to be concentrated among teachers for whom the information provided the largest update.

The results in Section 5.1 are consistent with this interpretation for the *Gaps* treatment. Effects are concentrated among teachers with above-median pre-existing SES gaps, who received information showing large SES disparities in their own past recommendations for high-achieving students. By contrast, teachers with below-median past gaps, for whom the report provided less scope for updating, show no detectable response. This pattern is consistent with the *Gaps* treatment operating through increased awareness of teachers' own past recommendation disparities.

We next assess whether the *Gaps and Beliefs* treatment follows an analogous logic, with effects concentrated among teachers who held more pessimistic baseline beliefs about low-SES students' academic prospects. We use baseline beliefs elicited before the reports were distributed, asking teachers how many out of 100 low-SES students they expected to fail in grade 9. We first measure the potential belief update as the difference between each teacher's baseline perceived failure rate and the administrative benchmark presented in the report and construct an above-mean belief indicator. We then estimate equation 1 augmented with this indicator and its interactions with treatment assignment and student SES, focusing on the group in which the main effects are concentrated: high-achieving male students assigned to teachers with above-median past SES gaps.

Table 3 reports treatment effects by teachers' prior beliefs about low-SES students' failure rates. Consistent with a belief-correction channel, the *Gaps and Beliefs* treatment produces larger reductions in the SES recommendation gap among teachers with above-mean baseline beliefs, who received the largest informational update about actual failure rates. The estimated effect of the *Gaps and Beliefs* treatment is larger among teachers with more pes-

simistic baseline beliefs. We additionally test whether this incremental effect of *Gaps and Beliefs* relative to *Gaps* varies with the size of the baseline belief error. The point estimate of this difference is positive and sizable (30.2 percentage points) but imprecisely estimated (SE = 0.232, p = 0.194), so while directionally consistent with a belief-correction channel, this specific comparison is suggestive rather than conclusive.

Table 3: Treatment Effects on Top-Track Recommendations, by Baseline Beliefs on Low-SES Student Failure

	DV: Top Track Recommendation	
	(1)	(2)
Low SES	-0.218***	-0.084
	(0.043)	(0.069)
Gaps	-0.100	0.031
	(0.064)	(0.094)
Gaps and Beliefs	-0.185**	-0.055
	(0.073)	(0.096)
Low SES * Gaps	0.191***	0.053
	(0.066)	(0.108)
Low SES * Gaps and Beliefs	0.260***	0.101
	(0.080)	(0.113)
Low SES * Gaps * High Belief Low SES Failure		0.232
		(0.181)
Low SES * Gaps and Beliefs * High Belief Low SES Failure		0.534**
		(0.226)
Mean high-SES control	0.742	0.742
R^2	0.174	0.187
N. students	1,251	1,251
N. schools	145	145
Stud. controls	Yes	Yes
Diff: (Gaps and Beliefs − Gaps) × High Belief		0.302
Diff. SE		0.232
Diff. p-value		0.194

Notes: This table reports OLS estimates of treatment-effect heterogeneity by teachers' baseline beliefs about low-SES students' failure risk. The dependent variable is an indicator equal to one if the student receives a top-track recommendation. The sample is high-GPA male students assigned to teachers with above-median pre-existing SES gaps in top-track recommendations. High Belief Low-SES Failure is an indicator equal to one if the teacher's elicited belief about the grade-9 failure rate of high-GPA low-SES students is above the sample mean. Column 1 reports the main specification with treatment-by-SES interactions. Column 2 adds the high-belief indicator and all pairwise and triple interactions with treatment assignment and Low-SES; only the triple interactions are reported. All regressions include the baseline student controls, cohort fixed effects, and randomization-wave fixed effects. Standard errors are clustered at the school level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

The endline vignette evidence points in the same direction. The increase in top-track recommendations for low-SES hypothetical profiles in the *Gaps and Beliefs* treatment, reported in Table A17, is driven by teachers with above-mean baseline beliefs about low-SES failure rates. This is consistent with the view that correcting pessimistic beliefs about low-SES

students' academic prospects is an important channel through which the treatment affects recommendations.

Taken together, the heterogeneity results are consistent with the interpretation that each treatment operates through the informational margin it was designed to address. The *Gaps* treatment is effective primarily among teachers whose reports revealed large pre-existing SES gaps in recommendations, consistent with an awareness channel. The *Gaps and Beliefs* treatment is especially effective among teachers with more pessimistic baseline beliefs about low-SES students' failure risk, consistent with a belief-correction channel.

6 Conclusion

Teachers play an important role in shaping students' educational trajectories by providing recommendations that influence major educational investment decisions early in life. Whether these recommendations reflect students' individual prospects or broader expectations associated with their socioeconomic background has important implications for equality of opportunity. This paper studies how teachers form track recommendations and how socioeconomic gaps in these recommendations can be mitigated in a setting where decisions are consequential and made under substantial uncertainty about students' future outcomes.

We combine nationwide administrative data, teacher surveys with incentivized vignette experiments and belief elicitation, and a large-scale field experiment. Administrative data show that low-SES students are less likely to receive recommendations to top-tier academic tracks than high-SES students with similar prior achievement, and that these recommendations are strongly associated with subsequent track enrollment. To address the concern that teachers may be responding to student characteristics correlated with socioeconomic background but unobserved in administrative records, we use incentivized vignettes that hold academic performance, interests, and attitudes constant while randomizing parental background. Teachers are less likely to recommend low-SES profiles to top-tier tracks, and their open-ended explanations reveal lower expectations about these students' future educational trajectories and family support. Belief elicitation further shows that these expectations are miscalibrated: teachers substantially overestimate failure rates among high-achieving low-SES students in demanding tracks and misperceive SES gaps in their own past recommendations. Together, these findings point to a feedback problem: teachers make repeated high-stakes recommendations, but do not observe the systematic outcome data needed to assess whether their expectations and recommendation patterns are accurate.

Motivated by this evidence, we evaluate whether personalized administrative feedback can reduce SES gaps in subsequent recommendation decisions. All teachers received reports on the high school trajectories of their former students. Teachers in the *Gaps* treatment additionally received information on SES gaps in their own past recommendations, with a focus on high-achieving students. Teachers in the *Gaps and Beliefs* treatment received this information plus objective evidence addressing teachers' overestimation of failure rates among high-achieving low-SES students.

The intervention reduces SES gaps in top-track recommendations among high-achieving students, especially among boys assigned to teachers with large pre-existing gaps. These changes reflect reallocation rather than an overall expansion of top-track recommendations: recommendations increase for high-achieving low-SES boys and decline for high-SES boys. The effects on recommendations translate into higher top-tier enrollment for high-achieving low-SES boys, while high-SES students' enrollment choices are largely unaffected. We find no detectable adverse effects on short-run high school performance. Heterogeneity analyses further support the proposed mechanisms: the *Gaps* treatment is most effective among teachers whose reports revealed large prior SES gaps, while the *Gaps and Beliefs* treatment is especially effective among teachers with more pessimistic baseline beliefs about low-SES students' failure risk.

Taken together, the findings suggest that miscalibrated expectations formed under uncertainty may contribute to socioeconomic differences in educational recommendations. The experimental results further show that targeted feedback can modify these decisions, particularly where teachers' prior recommendation patterns or beliefs leave greater scope for updating. Personalized administrative feedback can help teachers revise consequential decisions and expand access to more advanced academic tracks for high-achieving disadvantaged students.

More broadly, the paper highlights the value of systematic and targeted feedback in professional decision-making. In education, health, labor markets, and other settings, professionals often make repeated high-stakes judgments under uncertainty without observing the longer-run consequences of their earlier choices. This missing feedback can limit their ability to assess whether their beliefs are well calibrated and whether their decisions systematically differ across groups. By linking professionals' past decisions to subsequent outcomes, eliciting their beliefs, and experimentally providing personalized information, we show that incomplete feedback can contribute to socioeconomic disparities in high-stakes recommendations and that targeted feedback can reduce those disparities. Administrative data can help close

this feedback loop when translated into personalized, decision-relevant information.

References

Alesina, Alberto, Michela Carlana, Eliana La Ferrara, and Paolo Pinotti, "Revealing stereotypes: Evidence from immigrants in schools," *American Economic Review*, 2024, *114* (7), 1916–1948.

Altonji, Joseph G, Erica Blom, and Costas Meghir, "Heterogeneity in human capital investments: High school curriculum, college major, and careers," *Annu. Rev. Econ.*, 2012, *4* (1), 185–223.

_ , Peter Arcidiacono, and Arnaud Maurel, "The analysis of field choice in college and graduate school: Determinants and wage effects," in "Handbook of the Economics of Education," Vol. 5, Elsevier, 2016, pp. 305–396.

Anelli, Massimo and Giovanni Peri, "The effects of high school peers' gender on college major, college performance and income," *The Economic Journal*, 2019, *129* (618), 553–602.

Autor, David, David Figlio, Krzysztof Karbownik, Jeffrey Roth, and Melanie Wasserman, "Family disadvantage and the gender gap in behavioral and educational outcomes," *American Economic Journal: Applied Economics*, 2019, *11* (3), 338–381.

Bailey, Martha J and Susan M Dynarski, "Gains and gaps: Changing inequality in US college entry and completion," Technical Report, National Bureau of Economic Research 2011.

Bobba, Matteo and Veronica Frisancho, "Perceived ability and school choices," *Journal of Political Economy: Micro*, 2026.

Bound, John and Sarah Turner, "Dropouts and diplomas: The divergence in collegiate outcomes," in "Handbook of the Economics of Education," Vol. 4, Elsevier, 2011, pp. 573–613.

Brunello, Giorgio and Daniele Checchi, "Does school tracking affect equality of opportunity? New international evidence," *Economic Policy*, 2007, *22* (52), 782–861.

Carlana, Michela, "Implicit stereotypes: Evidence from teachers' gender bias," *The Quarterly Journal of Economics*, 2019, *134* (3), 1163–1224.

_ , **Eliana La Ferrara, and Paolo Pinotti**, "Goals and gaps: Educational careers of immigrant children," *Econometrica*, 2022, *90* (1), 1–29.

_ , _ , **and** _ , "Implicit Stereotypes in Teachers' Track Recommendations," *AEA Papers and Proceedings*, May 2022, *112*, 409–14.

Chetty, Raj, Matthew O Jackson, Theresa Kuchler, Johannes Stroebel, Nathaniel Hendren, Robert B Fluegge, Sara Gong, Federico Gonzalez, Armelle Grondin, Matthew Jacob et al., "Social capital I: measurement and associations with economic mobility," *Nature*, 2022, *608* (7921), 108–121.

Clarke, Damian, Joseph P Romano, and Michael Wolf, "The Romano–Wolf multiple-hypothesis correction in Stata," *The Stata Journal*, 2020, *20* (4), 812–843.

Costa-Ramón, Ana, Michaela Slotwinski, Ursina Schaede, and Anne Ardila Brenøe, "(Not) thinking about the future: Financial information and maternal labor supply," *The Quarterly Journal of Economics*, 2026, *141* (2), 1335–1382.

Deshpande, Manasi and Rebecca Dizon-Ross, "The (lack of) anticipatory effects of the social safety net on human capital investment," *American Economic Review*, 2023, *113* (12), 3129–3172.

Dobbie, Will, Andres Liberman, Daniel Paravisini, and Vikram Pathania, "Measuring bias in consumer lending," *The Review of Economic Studies*, 2021, *88* (6), 2799–2832.

Dustmann, Christian, Patrick A Puhani, and Uta Schönberg, "The long-term effects of early track choice," *The Economic Journal*, 2017, *127* (603), 1348–1380.

Dynarski, Susan, Carmello J Libassi, Katherine Michelmore, and Stephanie Owen, "Closing the gap: The effect of reducing complexity and uncertainty in college pricing on the choices of low-income students," *American Economic Review*, 2021, *111* (6), 1721–1756.

Falk, Armin, Fabian Kosse, and Pia Pinger, "Mentoring and schooling decisions: Causal evidence," *Journal of Political Economy*, 2026, *134* (1), 366–396.

Gershenson, Seth, Stephen B Holt, and Nicholas W Papageorge, "Who believes in me? The effect of student–teacher demographic match on teacher expectations," *Economics of Education Review*, 2016, *52*, 209–224.

Geven, Sara, "Tracking procedures and criteria and the SES bias in teacher track recommendations," *American Educational Research Journal*, 2025, *62* (2), 271–304.

Giustinelli, Pamela, "Group decision making with uncertain outcomes: Unpacking child–parent choice of the high school track," *International Economic Review*, 2016, *57* (2), 573–602.

_ **and Nicola Pavoni**, "The evolution of awareness and belief ambiguity in the process of high school track choice," *Review of Economic Dynamics*, 2017, *25*, 93–120.

Grewenig, Elisabeth, "School track decisions and teacher recommendations: Evidence from German state reforms," Technical Report, ifo Working Paper 2021.

Hanna, Rema N and Leigh L Linden, "Discrimination in grading," *American Economic Journal: Economic Policy*, 2012, *4* (4), 146–168.

Hoxby, Caroline, Sarah Turner et al., "Expanding college opportunities for high-achieving, low income students," *Stanford Institute for Economic Policy Research Discussion Paper*, 2013, *12* (014), 7.

Ichino, Andrea, Fabrizia Mealli, and Javier Viviens, "Do test scores help teachers give better track advice to students? A principal stratification analysis," *arXiv preprint arXiv:2511.05128*, 2025.

Jäger, Simon, Christopher Roth, Nina Roussille, and Benjamin Schoefer, "Worker beliefs about outside options," *The Quarterly Journal of Economics*, 2024, *139* (3), 1505–1556.

Kleinberg, Jon, Himabindu Lakkaraju, Jure Leskovec, Jens Ludwig, and Sendhil Mullainathan, "Human decisions and machine predictions," *The Quarterly Journal of Economics*, 2018, *133* (1), 237–293.

Kline, Patrick, Evan K Rose, and Christopher R Walters, "Systemic discrimination among large US employers," *The Quarterly Journal of Economics*, 2022, *137* (4), 1963–2036.

Lavy, Victor and Rigissa Megalokonomou, "The short-and the long-run impact of gender-biased teachers," *American Economic Journal: Applied Economics*, 2024, *16* (2), 176–218.

Ministero dell'Università e della Ricerca, Servizio Statistico, "Contribuzione media, esoneri e borse di studio per studenti iscritti a corsi di laurea," 2026.

Ministry of Education, Statistics Office, "Principali Dati Della Scuola—Avvio Anno Scolastico 2022/2023," 2022.

Miserocchi, Francesca, "Discrimination through biased memory," 2026. Working Paper.

Papageorge, Nicholas W, Seth Gershenson, and Kyung Min Kang, "Teacher expectations matter," *The Review of Economics and Statistics*, 2020, *102* (2), 234–251.

Pizzella, Claudia, "Il diritto allo studio universitario nell'anno accademico 2024–2025," Technical Report, Ministero dell'Università e della Ricerca, Ufficio di Statistica June 2026. First published 26 June 2026.

Romano, Joseph P and Michael Wolf, "Efficient computation of adjusted p-values for resampling-based stepdown multiple testing," *Statistics & Probability Letters*, 2016, *113*, 38–40.

Rosenthal, Robert, "The Pygmalion Effect Lives.," *Psychology Today*, 1973.

Terrier, Camille, "Boys lag behind: How teachers' gender biases affect student achievement," *Economics of Education Review*, 2020, *77*, 101981.

Wiswall, Matthew and Basit Zafar, "Determinants of college major choice: Identification using an information experiment," *The Review of Economic Studies*, 2015, *82* (2), 791–824.

Online Appendix

Contents

A Additional Tables and Figures **41**

B The Intervention **70**

B.1 The Control Report 70

B.2 Additional Information in the Gaps Treatment 78

B.3 Additional Information in the Gaps and Beliefs Treatment 82

B.4 Teachers' satisfaction with the reports 85

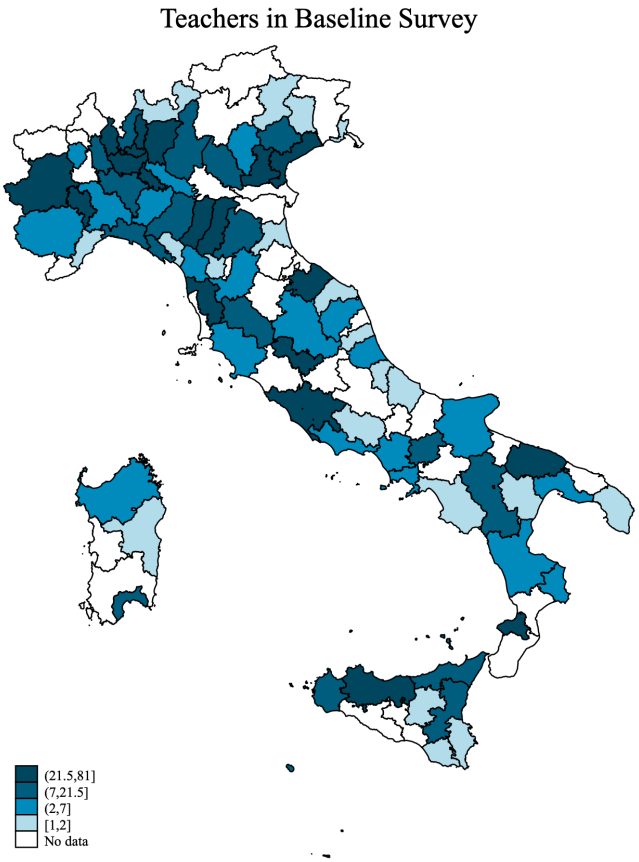
C Details on the text analysis of the baseline vignette **86**

C.1 Keywords used by research assistants to classify teachers' motivations into topics 88

D Teacher Survey **91**

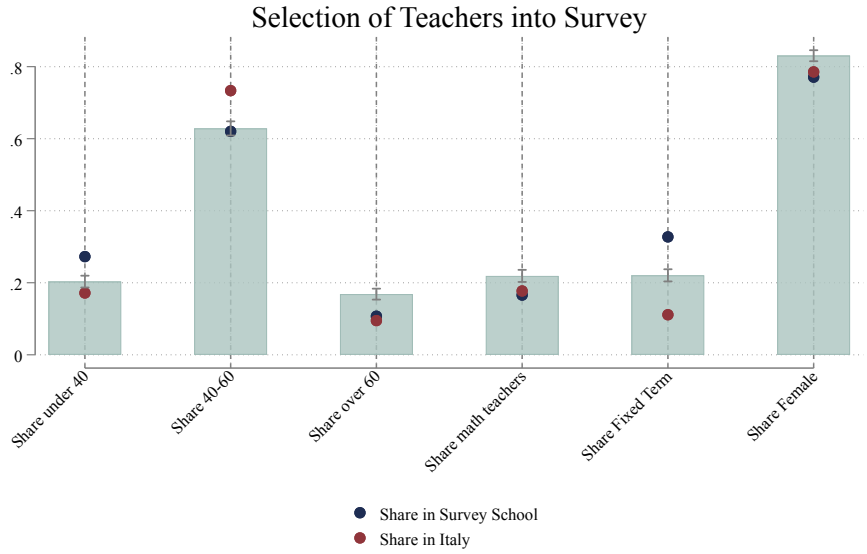
A Additional Tables and Figures

Figure A1: Spatial Distribution of Teachers Participating in the Baseline Survey



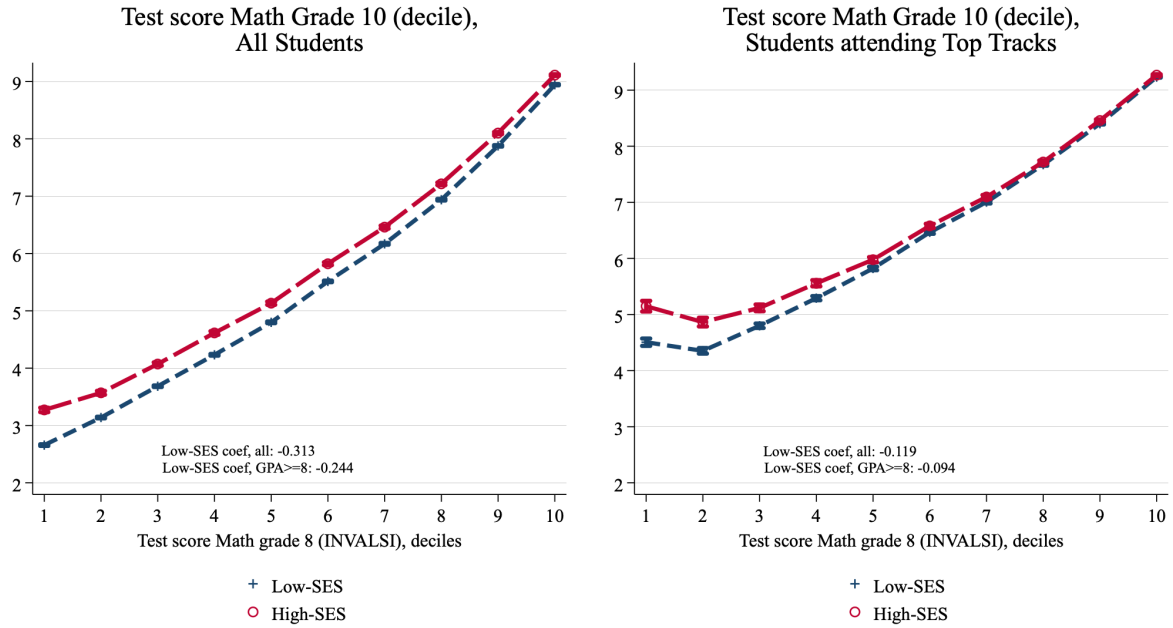
Notes: This figure maps the geographic distribution of schools with at least one teacher participating in the baseline survey. Schools are assigned to provinces based on school location.

Figure A2: Teachers who completed survey, teachers in their schools and teachers in Italy



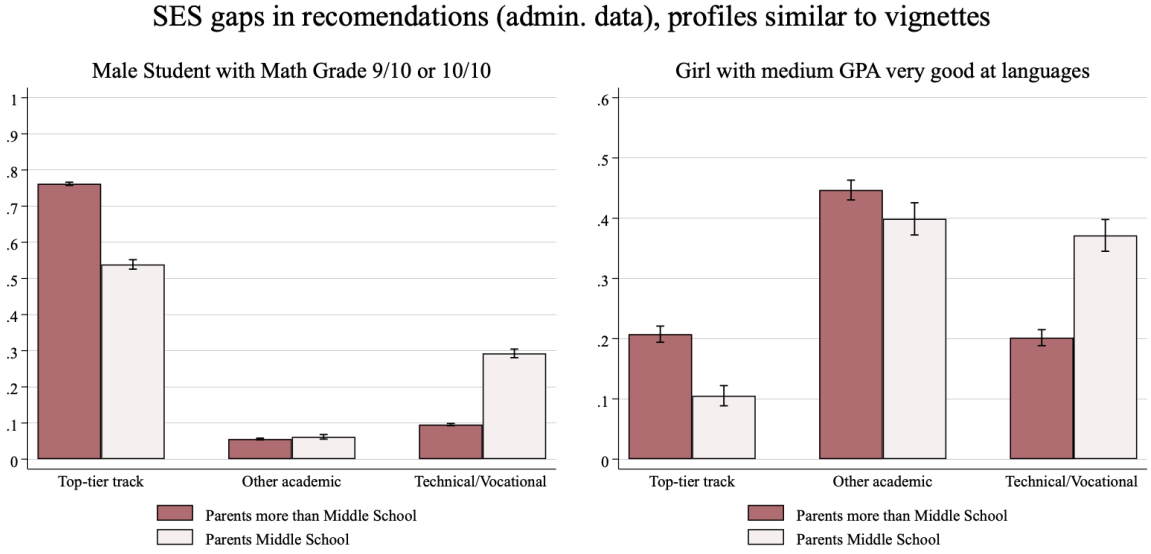
Notes: This figure compares teachers who completed the baseline survey with all teachers in participating schools and with the national population of Italian middle-school teachers. Bars report average characteristics for survey respondents; markers report the corresponding averages for the comparison groups.

Figure A3: Grade-10 Test Scores by Grade-8 Achievement and Student SES



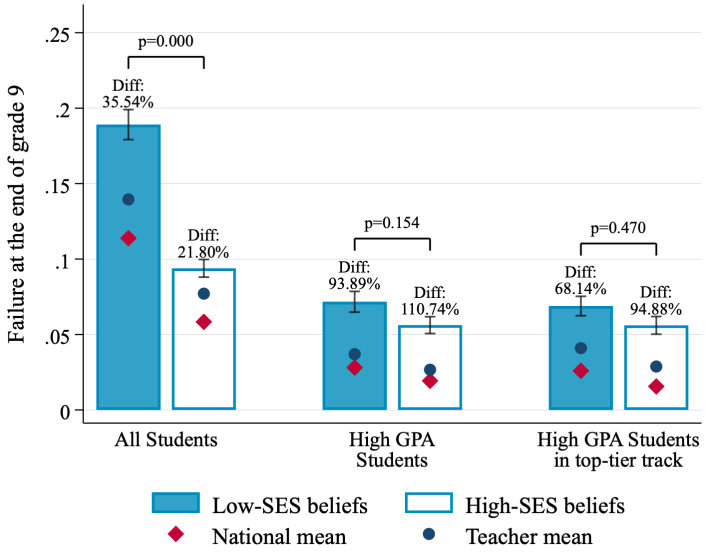
Notes: The left panel plots average grade-10 mathematics test-score deciles by grade-8 mathematics test-score decile, separately by student SES. The right panel restricts the sample to students enrolled in top-tier academic tracks. Vertical bars report 95 percent confidence intervals. Low-SES students are those whose father is not employed in a high-wage occupation.

Figure A4: Administrative Benchmark for Baseline Vignette Profiles



Notes: This figure reports administrative benchmarks for students with characteristics similar to the two baseline vignette profiles. The left panel uses boys with grade-7 mathematics grades of 9 or 10, corresponding to the Matteo profile. The right panel uses girls with grade-7 GPA between 7 and 8 and English grade greater than or equal to 8, corresponding to the Sofia profile. Outcomes are top-track recommendation rates by student SES.

Figure A5: Beliefs about failure rate, benchmark computed using 2018–2022 cohorts.

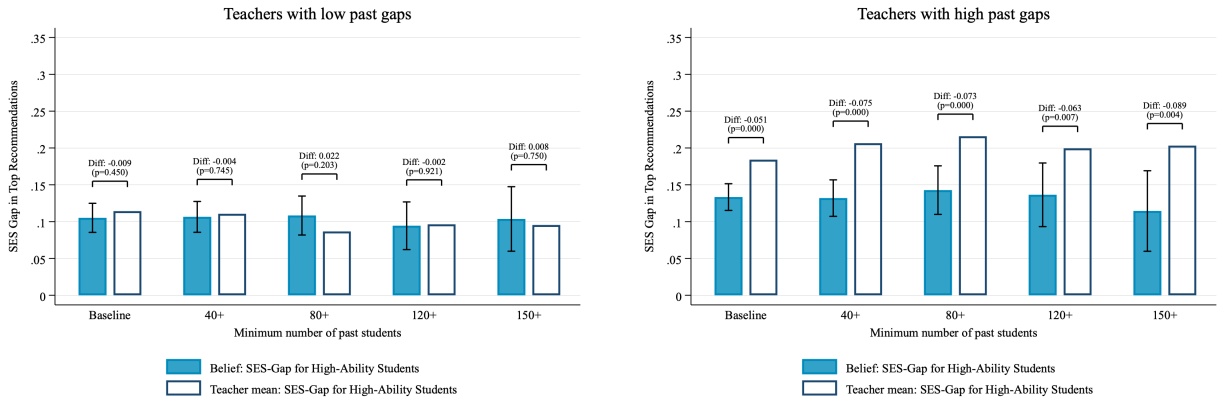


Notes: This figure replicates Figure 3a, replacing the baseline 2016–2021 cohort window used to construct the national and teacher-level "reality" benchmarks with an alternative 2018–2022 window. All other elements of the construction are unchanged: teacher beliefs, sample restrictions, and the SES measure (the SES socioeconomic index used in panel a of Figure 3 and in the personalized reports) are defined exactly as in Figure 3a. Students are grouped into low- and high-SES categories using this same index. For each SES group, the figure plots the average teacher-reported belief about failure risk against the corresponding historical benchmark, where the benchmark is computed separately at the national level and at the teacher level using outcomes from the 2018–2022 cohorts. "Diff" reports the percentage-point gap between the average teacher belief and the average historical benchmark within each SES group. The reported p-value corresponds to a one-sided paired t-test, conducted at the teacher level, comparing each teacher's belief-minus-benchmark gap for low-SES students to their belief-minus-benchmark gap for high-SES students; the null hypothesis is that teachers do not overestimate the failure risk of low-SES students by more than that of high-SES students, against the one-sided alternative that they do.

Figure A6: Teacher Beliefs and Administrative SES Gaps: Robustness to Measurement Precision

(a) Teachers with low past gaps

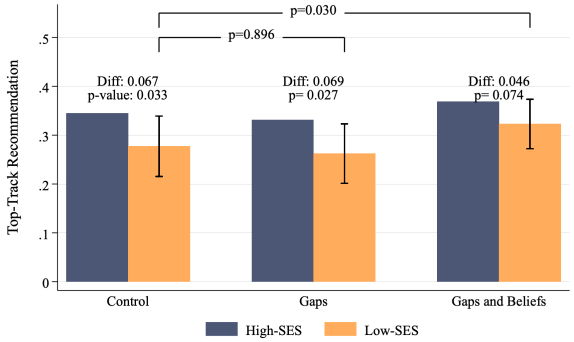
(b) Teachers with high past gaps



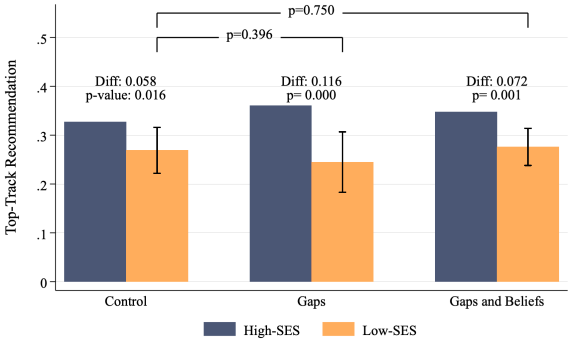
Notes: This figure reproduces Figure 3b while progressively restricting the sample to teachers whose historical recommendation records are based on larger numbers of students. Teachers are matched to 92 former students on average. Panel (a) reports results for teachers with below-median pre-existing SES gaps in recommendations, and Panel (b) for teachers with above-median gaps. "Baseline" reproduces the main figure, using the statistics shown in teachers' reports: when fewer than 10 former students are available for a teacher, the corresponding school-level statistic is used. The remaining estimates restrict the sample to teachers matched to at least 40, 80, 120, or 150 former students. The high- and low-gap classification, elicited beliefs, and administrative benchmarks are otherwise defined as in Figure 3b. Brackets report the difference between perceived gaps and administrative benchmarks, with paired t-test p-values. Error bars report 95% confidence intervals for mean perceived gaps.

Figure A7: Treatment Effects on Top-Track Recommendations for Hypothetical Student Profiles: Endline Survey

(a) Teachers with high past gaps

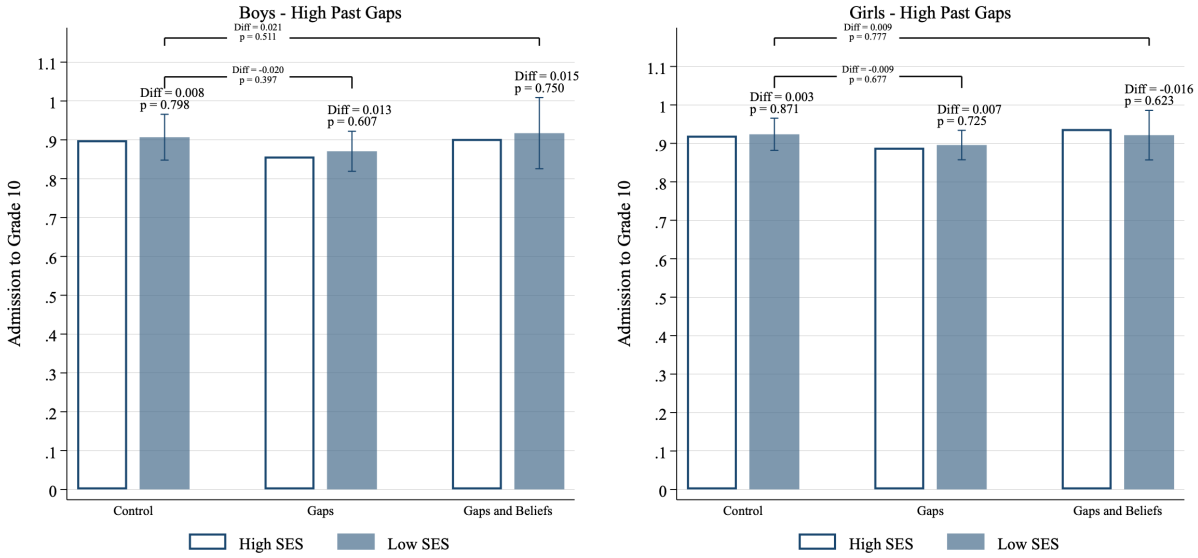


(b) Teachers with low past gaps



Notes: This figure reports the share of hypothetical profiles recommended to top-tier tracks in the endline vignette experiment, by treatment group and randomized profile SES. Panel (a) reports results for teachers with above-median pre-existing SES gaps in recommendations; Panel (b) reports results for teachers with below-median gaps. The sample includes experimental teachers assigned to eighth-grade students. The 2022 endline survey included four profiles and the 2023 survey included six profiles.

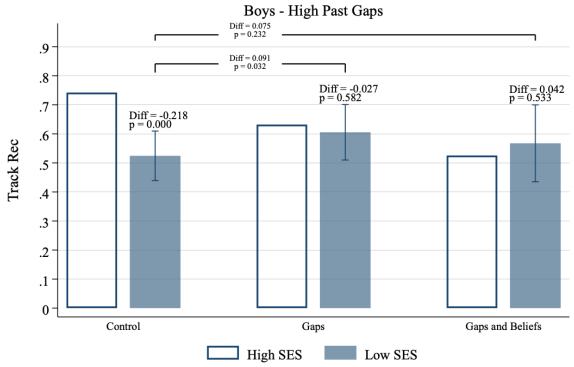
Figure A8: Admission to Grade 10



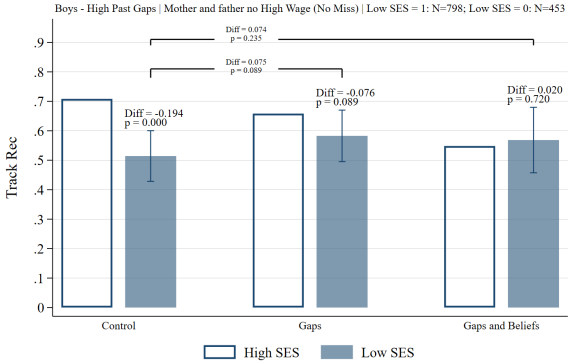
Notes: This figure reports regression-adjusted probabilities of admission to grade 10 for high-GPA students assigned to teachers with above-median pre-existing SES gaps, separately by gender, treatment group, and student SES. Labels report SES gaps within treatment group; brackets report treatment-control differences for low-SES students. Standard errors are clustered at the school level.

Figure A9: Robustness: Alternative Measures of Socioeconomic Status

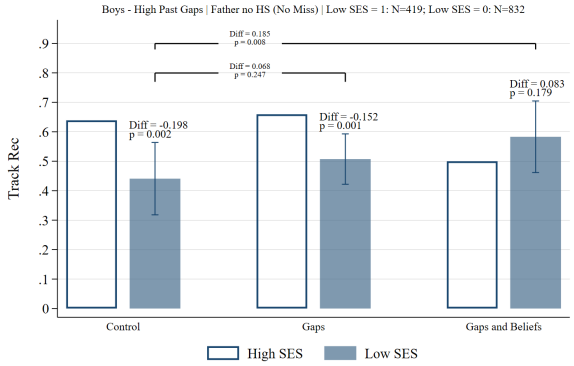
(a) Low-SES measure: Father not in high-wage occupation (main)



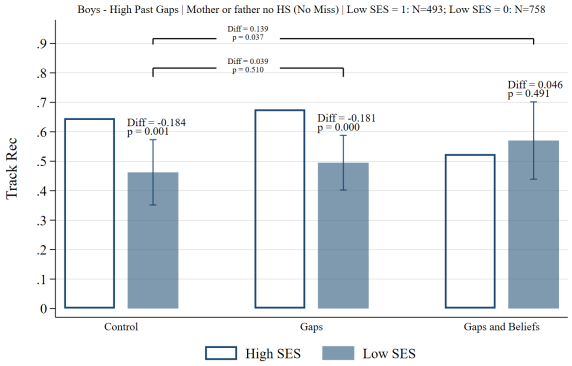
(b) Low-SES measure: Neither parent in high-wage occupation



(c) Low-SES measure: Father without high school degree

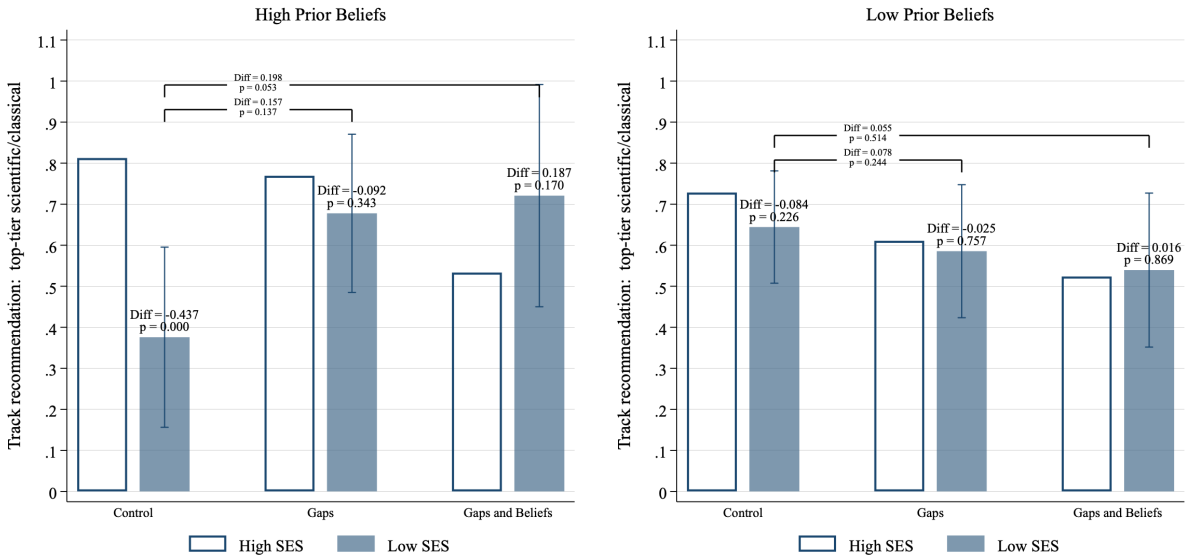


(d) Low-SES measure: Either parent without high school degree



Notes: This figure reports robustness of the main recommendation effects to alternative SES measures. The sample is high-GPA male students assigned to teachers with above-median pre-existing SES gaps. Panel (a) uses the baseline measure, father not in a high-wage occupation. Panel (b) uses neither parent in a high-wage occupation. Panel (c) uses father without a high school degree. Panel (d) uses either parent without a high school degree. All specifications include baseline controls, cohort fixed effects, and randomization-wave fixed effects.

Figure A10: Heterogeneity by Baseline Beliefs about Low-SES Students' Failure Risk in Competitive Tracks



Notes: This figure reports treatment effects on top-track recommendations by teachers' baseline beliefs about low-SES students' grade-9 failure risk. The sample is high-GPA male students assigned to teachers with above-median pre-existing SES gaps. Teachers are classified as having high prior beliefs if their expected failure rate for high-GPA low-SES students is above the sample mean. Estimates include baseline controls, cohort fixed effects, and randomization-wave fixed effects. Standard errors are clustered at the school level.

Table A1: Track Recommendations and Family Background: Administrative Data

	(1)	(2)	(3)	(4)	(5)
Panel A: Top-Tier Recommendation					
Low-SES	-0.163***	-0.100***	-0.0820***	-0.0787***	-0.0480***
	(0.000629)	(0.000587)	(0.000945)	(0.000924)	(0.000796)
Mean of Y	0.364	0.364	0.364	0.364	0.364
Observations	2958168	2958168	2958166	2958166	2958166
R^2	0.0223	0.168	0.225	0.230	0.351
Panel B: Technical/Vocational Recommendation					
Low-SES	0.194***	0.119***	0.0912***	0.0873***	0.0500***
	(0.000745)	(0.000692)	(0.000879)	(0.000832)	(0.000718)
Mean of Y	0.368	0.368	0.368	0.368	0.368
Observations	2958168	2958168	2958166	2958166	2958166
R^2	0.0238	0.177	0.243	0.312	0.429
Cohort Fixed Effects	Yes	Yes	Yes	Yes	Yes
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 reports OLS estimates using administrative data for the universe of Italian eighth-grade students from 2016-17 to 2021-22 academic year. Panel A uses an indicator for receiving a top-tier recommendation as the dependent variable; Panel B uses an indicator for receiving a technical or vocational recommendation. Low-SES is defined using father's occupation. Columns progressively add cohort fixed effects, grade-8 INVALSI mathematics scores, school fixed effects, student controls, and teacher-assigned grades. Student controls include gender, immigrant background, and grade-7 absences in mathematics, Italian, and English. Teacher-assigned grade controls include grades in mathematics, Italian, and English and grade-7 GPA. Standard errors are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A2: Top-Track Recommendations, Enrollment, and Grade-10 Achievement

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. DV: Top-Tier Choice						
Low-SES	-0.223***	-0.125***	-0.102***	-0.082***	-0.080***	-0.070***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Top Tier Recommendation		0.622***	0.559***	0.524***	0.522***	0.460***
		(0.001)	(0.001)	(0.003)	(0.003)	(0.003)
Top Tier Recommendation × Low-SES		0.027***	0.015***	0.016***	0.014***	0.005**
		(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Mean of Y for High-SES	0.474	0.474	0.474	0.474	0.474	0.474
Observations	3312363	2958168	2958168	2958166	2958166	2958166
R^2	0.036	0.383	0.408	0.444	0.446	0.463
Cohort fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Ability	No	No	Yes	Yes	Yes	Yes
School fixed effect	No	No	No	Yes	Yes	Yes
Controls	No	No	No	No	Yes	Yes
Teacher grade	No	No	No	No	No	Yes
Panel B. DV: Test Score Grade 10 (Decile)						
Low-SES	-0.805***	-0.541***	-0.374***	-0.306***	-0.283***	-0.142***
	(0.006)	(0.007)	(0.006)	(0.007)	(0.007)	(0.006)
Top Tier Recommendation		2.281***	1.409***	1.631***	1.595***	0.725***
		(0.010)	(0.009)	(0.012)	(0.012)	(0.010)
Top Tier Recommendation × Low-SES		0.283***	0.256***	0.279***	0.270***	0.140***
		(0.012)	(0.011)	(0.011)	(0.011)	(0.010)
Mean of Y for High-SES	6.160	6.160	6.160	6.160	6.160	6.160
Observations	1278374	1176822	1176822	1176816	1176816	1176816
R^2	0.027	0.181	0.365	0.430	0.438	0.517
Cohort fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Ability	No	No	Yes	Yes	Yes	Yes
School fixed effect	No	No	No	Yes	Yes	Yes
Controls	No	No	No	No	Yes	Yes
Teacher grade	No	No	No	No	No	Yes

Notes: This table reports the association between teacher recommendations and subsequent outcomes using administrative data. Panel A uses top-tier enrollment as the dependent variable. Panel B uses grade-10 mathematics test-score decile as the dependent variable. Top Tier Recommendation is an indicator equal to one if the student received a recommendation to the scientific or classical lyceum. Low-SES is defined using father's occupation. Columns progressively add cohort fixed effects, prior achievement, school fixed effects, student controls, and teacher-assigned grades. The interaction Top Tier Recommendation × Low-SES tests whether recommendations are differentially associated with outcomes for low-SES students. Standard errors are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A3: Baseline Balance in Vignette SES Randomization

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: This table reports balance in teacher characteristics across randomized SES versions in the baseline vignette experiment. The unit of observation is a teacher-by-profile pair. SES is randomized within profile by varying parental education or occupation while holding all other profile characteristics fixed. Columns report means and standard deviations by assigned profile SES, the difference between low- and high-SES versions, and the p-value from a test of equality. The sample includes baseline vignette profiles from the 2022 and 2023 surveys. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A4: Socioeconomic Status and Track Recommendations in Baseline Vignettes

	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 reports OLS estimates of the effect of randomized low-SES status on track recommendations in the baseline vignette experiment. The unit of observation is a teacher-by-profile pair. The dependent variables are indicators for recommending a top academic track, another academic humanities/language/artistic track, or a technical/vocational track. All specifications include profile fixed effects; even-numbered columns add teacher controls; columns 3, 6, and 9 add teacher fixed effects. Teacher controls include subject taught and studied, gender, birth year, father's education, contract type, teacher region of birth, and school location. Standard errors are clustered at the teacher level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A5: Vignette Explanations: Expected University Attendance and Labor-Market Entry

Panel A: Reasons – University vs. Job						
	Topic: University			Topic: Job		
	(1)	(2)	(3)	(4)	(5)	(6)
Low SES	-0.022*	-0.023**	-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
Panel B: Reasons – Parental Support						
	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)	(0.007)	(0.010)	(0.004)	(0.004)	(0.007)
Mean control	0.069	0.069	0.069	0.002	0.002	0.002
Observations	2739	2725	2710	2739	2725	2710
N. teachers	1377	1370	1355	1377	1370	1355
R^2	0.027	0.036	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 reports OLS estimates of the effect of randomized low-SES status on themes mentioned in teachers' open-ended vignette explanations. The unit of observation is a teacher-by-profile pair. Outcomes are indicators for whether the explanation mentions expected university attendance, immediate labor-market entry after high school, parental support, or lack of parental support. Themes are not mutually exclusive. All specifications include profile fixed effects; even-numbered columns add teacher controls; columns 3 and 6 add teacher fixed effects. Standard errors are clustered at the teacher level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A6: Summary statistics of students and teachers in the experimental sample

Variable	Mean	SD	Min	p25	p75	Max
Students: Track Recommendation:						
Track recommendation: top-tier scientific/classical	0.200	0.400	0.000	0.000	0.000	1.000
Track recommendation: technical	0.262	0.440	0.000	0.000	1.000	1.000
Track recommendation: medium humanities (linguistic/artistic/humanities)	0.249	0.433	0.000	0.000	0.000	1.000
Track recommendation: vocational	0.280	0.449	0.000	0.000	1.000	1.000
Students: Track Choice:						
Track Choice Top Tier	0.237	0.426	0.000	0.000	0.000	1.000
Track choice: technical	0.307	0.461	0.000	0.000	1.000	1.000
Track choice: medium humanities (linguistic/artistic/humanities)	0.227	0.419	0.000	0.000	0.000	1.000
Track choice: vocational	0.134	0.341	0.000	0.000	0.000	1.000
Students: Other Characteristics:						
Grade in math - grade 7	7.235	1.379	4.000	6.000	8.000	10.000
Grade in Italian - grade 7	7.378	1.130	4.000	7.000	8.000	10.000
Grade in English - grade 7	7.495	1.296	4.000	7.000	8.000	10.000
Grade point average in grade 7 - first	7.683	0.943	4.154	7.000	8.385	10.000
Kindergarten (3-5 years) attendance	0.930	0.255	0.000	1.000	1.000	1.000
Absence hours in Mathematics - Grade 7 - first	6.588	7.131	0.000	1.000	10.000	20.000
Absence hours in Italian - Grade 7 - first	8.907	7.917	0.000	1.000	20.000	20.000
Father education: no high school	0.432	0.495	0.000	0.000	1.000	1.000
Father education: no university	0.832	0.374	0.000	1.000	1.000	1.000
Mother education: no high school	0.327	0.469	0.000	0.000	1.000	1.000
Mother education: no university	0.767	0.423	0.000	1.000	1.000	1.000
Father occupation: non high wage	0.779	0.415	0.000	1.000	1.000	1.000
Mother occupation: non high wage	0.856	0.351	0.000	1.000	1.000	1.000
Teachers: Characteristics:						
Female	0.834	0.372	0.000	1.000	1.000	1.000
Age	47.986	9.497	22.000	41.000	56.000	77.000
Father's education: high school	0.364	0.481	0.000	0.000	1.000	1.000
Father's education: university	0.189	0.392	0.000	0.000	0.000	1.000
Teaches core subject (Math, Italian or English)	0.671	0.470	0.000	0.000	1.000	1.000
Permanent teaching contract	0.838	0.369	0.000	1.000	1.000	1.000
True SES-gap recomm. top-tier (high-low SES)	0.187	0.095	-0.190	0.131	0.232	0.735
True SES-gap recomm. top-tier (high-low SES), HIGH GPA	0.154	0.117	-0.433	0.100	0.190	0.569
Grades and performance	47.308	16.750	0.000	38.000	60.000	91.000
Attitude and interests	35.540	14.629	0.000	25.000	49.000	100.000
Education level of parents	2.779	5.645	0.000	0.000	5.000	50.000
Economic resources of the family	3.922	6.290	0.000	0.000	5.000	50.000
How much does parental advice/help influence guidance?	10.452	11.415	0.000	0.000	17.000	100.000
Disagree with: SES should influence track guidance	0.861	0.347	0.000	1.000	1.000	1.000

Notes: This table reports summary statistics for all students assigned to experimental teachers and their teachers in the experimental sample. Student variables include track recommendations, track choice, teacher assigned grades, and background characteristics; teacher variables include demographics, contract type, subject taught, and self-reported weights on factors influencing track guidance. Parental education and occupation variables reflect non-imputed survey responses; statistics for all variables are computed over non-missing observations.

Table A7: Summary statistics of students with high GPA in the experimental sample

Variable	Mean	SD	Min	p25	p75	Max
Students: Track Recommendation:						
Track recommendation: top-tier scientific/classical	0.459	0.498	0.000	0.000	1.000	1.000
Track recommendation: technical	0.182	0.386	0.000	0.000	0.000	1.000
Track recommendation: medium humanities (linguistic/artistic/humanities)	0.317	0.465	0.000	0.000	1.000	1.000
Track recommendation: vocational	0.025	0.157	0.000	0.000	0.000	1.000
Students: Track Choice:						
Track Choice Top Tier	0.472	0.499	0.000	0.000	1.000	1.000
Track choice: technical	0.206	0.404	0.000	0.000	0.000	1.000
Track choice: medium humanities (linguistic/artistic/humanities)	0.262	0.440	0.000	0.000	1.000	1.000
Track choice: vocational	0.029	0.167	0.000	0.000	0.000	1.000
Students: Other Characteristics:						
Grade in math - grade 7	8.467	0.956	5.000	8.000	9.000	10.000
Grade in Italian - grade 7	8.410	0.788	6.000	8.000	9.000	10.000
Grade in English - grade 7	8.562	0.901	6.000	8.000	9.000	10.000
Grade point average in grade 7 - first	8.665	0.495	8.000	8.231	9.000	10.000
Kindergarten (3-5 years) attendance	0.951	0.217	0.000	1.000	1.000	1.000
Absence hours in Mathematics - Grade 7 - first	4.983	6.160	0.000	1.000	10.000	20.000
Absence hours in Italian - Grade 7 - first	7.258	7.306	0.000	1.000	10.000	20.000
Father education: no high school	0.281	0.450	0.000	0.000	1.000	1.000
Father education: no university	0.742	0.437	0.000	0.000	1.000	1.000
Mother education: no high school	0.171	0.376	0.000	0.000	0.000	1.000
Mother education: no university	0.648	0.478	0.000	0.000	1.000	1.000
Father occupation: non high wage	0.704	0.457	0.000	0.000	1.000	1.000
Mother occupation: non high wage	0.814	0.389	0.000	1.000	1.000	1.000

Notes: This table reports summary statistics for high-GPA students (grade-7 GPA ≥ 8) assigned to teachers in the experimental sample. Student variables include track recommendations, track choice, background characteristics, and teacher assigned grades.

Table A8: Balance Table, 2023, High-GPA Students

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Full sample	Control	Gaps	Gaps and Beliefs	p-value (3)−(2)	p-value (4)−(2)	Norm. Diff. (3)−(2)	Norm. Diff. (4)−(2)
Panel A: Students in the Field Experiment								
Female	0.560	0.567	0.584	0.525	0.504	0.536	0.024	-0.060
Immigrant	0.041	0.044	0.044	0.034	0.952	0.269	0.000	-0.036
Second generation immigrant	0.030	0.032	0.033	0.024	0.903	0.190	0.004	-0.034
High Grade in Math, grade 7	0.843	0.849	0.836	0.846	0.530	0.904	-0.025	-0.006
High Grade in Italian, grade 7	0.900	0.884	0.897	0.920	0.514	0.074	0.029	0.086
High Grade in English, grade 7	0.876	0.895	0.859	0.879	0.065	0.875	-0.078	-0.036
Absence hours in Math, grade 7	5.429	5.420	4.722	6.205	0.301	0.496	-0.082	0.086
Absence hours in Italian, grade 7	7.990	8.207	7.290	8.644	0.339	0.991	-0.088	0.041
Absence hours in English, grade 7	3.288	3.256	2.983	3.642	0.593	0.352	-0.041	0.055
Kindergarten (3-5 years) attendance	0.959	0.981	0.935	0.965	0.021	0.432	-0.164	-0.070
Parental occupation: Father not high-wage	0.713	0.750	0.705	0.685	0.169	0.057	-0.072	-0.102
Parental occupation: Mother not high-wage	0.815	0.837	0.803	0.809	0.162	0.144	-0.063	-0.052
Parental education: father without high school diploma	0.289	0.301	0.283	0.284	0.607	0.720	-0.028	-0.026
Parental education: mother without high school diploma	0.175	0.171	0.176	0.176	0.830	0.947	0.009	0.009
Low SES (index)	0.387	0.407	0.373	0.385	0.369	0.652	-0.049	-0.032
Students	3,657	1,130	1,395	1,132				
Schools	188	64	68	56				
Panel B: Teachers characteristics								
Female	0.836	0.816	0.845	0.843	0.444	0.869	0.055	0.051
Age	48.079	47.284	48.000	48.784	0.554	0.174	0.055	0.118
Low-SES: father without high school diploma	0.455	0.509	0.457	0.411	0.240	0.125	-0.074	-0.139
Teaches core subject (mathematics, Italian or English)	0.665	0.637	0.708	0.641	0.117	0.528	0.107	0.006
Permanent teaching contract	0.846	0.785	0.864	0.865	0.415	0.383	0.147	0.149
Track guidance: academic performance	48.328	51.377	47.138	47.626	0.070	0.095	-0.169	-0.151
Track guidance: student interests and attitudes	36.061	34.000	36.234	37.100	0.232	0.063	0.105	0.147
Track guidance: parental education	2.457	2.287	2.335	2.664	0.931	0.579	0.007	0.054
Track guidance: parental wealth	3.628	2.918	4.330	3.412	0.060	0.389	0.154	0.068
Track guidance: parental advice and involvement	9.526	9.418	9.963	9.199	0.689	0.866	0.035	-0.013
Past SES gap in top-track recommendations	0.194	0.186	0.203	0.190	0.170	0.879	0.131	0.031
Believed failure rate: high-ability low-SES students	0.074	0.075	0.081	0.064	0.697	0.325	0.033	-0.062
Teachers	669	179	253	237				

Notes: This table reports covariate balance across treatment arms for the 2023 cohort, columns report group means, p-values comparing each treatment arm with control, and normalized differences. Panel A reports student characteristics; Panel B reports teacher characteristics. Balance tests cluster standard errors at the school level and include the relevant cohort and returning-school fixed effects when applicable.

Table A9: Balance Table, 2022, High-GPA Students

	(1)	(2)	(3)	(4)	(5)
	Full sample	Control	Gaps	p-value (3)−(2)	Norm. Diff. (3)−(2)
Panel A: Students in the Field Experiment					
Female	0.589	0.611	0.568	0.075	-0.062
Immigrant	0.058	0.057	0.059	0.920	0.006
Second generation immigrant	0.045	0.040	0.050	0.509	0.034
High Grade in Math, grade 7	0.847	0.858	0.838	0.367	-0.039
High Grade in Italian, grade 7	0.891	0.886	0.896	0.600	0.023
High Grade in English, grade 7	0.902	0.910	0.896	0.466	-0.033
Absence hours in Math, grade 7	4.105	4.033	4.170	0.891	0.017
Absence hours in Italian, grade 7	5.855	5.840	5.868	0.979	0.003
Absence hours in English, grade 7	2.635	2.635	2.635	1.000	0.000
Kindergarten (3-5 years) attendance	0.935	0.884	0.982	0.049	0.282
Parental occupation: Father not high-wage	0.686	0.706	0.670	0.256	-0.055
Parental occupation: Mother not high-wage	0.811	0.814	0.808	0.744	-0.011
Parental education: father without high school diploma	0.266	0.273	0.260	0.735	-0.021
Parental education: mother without high school diploma	0.164	0.166	0.162	0.857	-0.008
Low SES (index)	0.394	0.391	0.397	0.895	0.009
Students	1,908	900	1,008		
Schools	74	35	39		
Panel B: Teachers characteristics					
Female	0.830	0.813	0.849	0.385	0.068
Age	47.864	47.300	48.498	0.343	0.087
Low-SES: father without high school diploma	0.437	0.448	0.424	0.682	-0.034
Teaches core subject (mathematics, Italian or English)	0.680	0.617	0.751	0.027	0.206
Permanent teaching contract	0.828	0.817	0.839	0.676	0.041
Track guidance: academic performance	46.047	44.202	48.116	0.042	0.173
Track guidance: student interests and attitudes	34.896	34.843	34.955	0.934	0.006
Track guidance: parental education	3.178	3.700	2.593	0.132	-0.125
Track guidance: parental wealth	4.284	4.561	3.975	0.351	-0.066
Track guidance: parental advice and involvement	11.595	12.695	10.362	0.040	-0.146
Past SES gap in top-track recommendations	0.177	0.171	0.185	0.452	0.100
Teachers	435	230	205		

Notes: This table reports covariate balance across treatment arms for the 2022 cohort, columns report group means, p-values comparing each treatment arm with control, and normalized differences. Panel A reports student characteristics for high GPA students; Panel B reports teacher characteristics. Balance tests cluster standard errors at the school level and include the relevant cohort and returning-school fixed effects when applicable.

Table A10: Balance Table, All Students

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Full sample	Control	Gaps	Gaps and Beliefs	p-value (3)−(2)	p-value (4)−(2)	Norm. Diff. (3)−(2)	Norm. Diff. (4)−(2)
Panel A: Students in the Field Experiment								
Female	0.493	0.501	0.491	0.480	0.267	0.366	-0.014	-0.030
Immigrant	0.117	0.127	0.129	0.072	0.910	0.004	0.004	-0.131
Second generation immigrant	0.072	0.075	0.081	0.043	0.595	0.008	0.016	-0.096
High Grade in Math, grade 7	0.414	0.401	0.418	0.431	0.294	0.484	0.024	0.043
High Grade in Italian, grade 7	0.439	0.412	0.446	0.480	0.088	0.222	0.049	0.097
High Grade in English, grade 7	0.490	0.491	0.487	0.494	0.842	0.910	-0.006	0.004
Absence hours in Math, grade 7	6.596	6.269	5.951	8.303	0.609	0.213	-0.033	0.197
Absence hours in Italian, grade 7	8.917	8.656	8.226	10.688	0.538	0.399	-0.039	0.182
Absence hours in English, grade 7	4.328	4.308	3.844	5.250	0.364	0.206	-0.058	0.110
Kindergarten (3-5 years) attendance	0.930	0.922	0.933	0.942	0.646	0.359	0.030	0.056
Parental occupation: Father not high-wage	0.779	0.796	0.768	0.767	0.125	0.270	-0.048	-0.050
Parental occupation: Mother not high-wage	0.856	0.863	0.851	0.849	0.403	0.622	-0.024	-0.028
Parental education: father without high school diploma	0.432	0.457	0.411	0.427	0.092	0.898	-0.066	-0.043
Parental education: mother without high school diploma	0.327	0.340	0.315	0.327	0.249	0.717	-0.038	-0.019
Low SES (index)	0.525	0.543	0.507	0.525	0.207	0.889	-0.051	-0.026
Students	14,854	5,738	6,295	2,821				
Schools	221	81	84	56				
Panel B: Teachers characteristics								
Female	0.834	0.814	0.846	0.843	0.314	0.869	0.060	0.054
Age	47.986	47.294	48.242	48.784	0.297	0.173	0.070	0.114
Low-SES: father without high school diploma	0.447	0.473	0.441	0.411	0.350	0.124	-0.045	-0.088
Teaches core subject (mathematics, Italian or English)	0.671	0.626	0.727	0.641	0.012	0.528	0.153	0.022
Permanent teaching contract	0.838	0.805	0.852	0.865	0.374	0.382	0.088	0.115
Track guidance: academic performance	47.308	46.739	47.641	47.626	0.729	0.094	0.038	0.037
Track guidance: student interests and attitudes	35.540	34.545	35.576	37.100	0.383	0.062	0.051	0.125
Track guidance: parental education	2.779	3.200	2.468	2.664	0.200	0.578	-0.090	-0.065
Track guidance: parental wealth	3.922	3.980	4.147	3.412	0.625	0.387	0.018	-0.068
Track guidance: parental advice and involvement	10.452	11.536	10.168	9.199	0.193	0.866	-0.086	-0.140
Past SES gap in top-track recommendations	0.187	0.178	0.195	0.190	0.199	0.879	0.126	0.092
Believed failure rate: high-ability low-SES students	0.074	0.075	0.081	0.064	0.697	0.325	0.033	-0.062
Teachers	1,104	409	458	237				

Notes: This table reports covariate balance across treatment arms. It reports balance for all students. Columns report group means, p-values comparing each treatment arm with control, and normalized differences. Panel A reports student characteristics; Panel B reports teacher characteristics. Balance tests cluster standard errors at the school level and include the relevant cohort and returning-school fixed effects when applicable.

Table A11: Baseline Covariate Balance: High GPA Students – Including Schools Not Reporting Track Recommendations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Full sample	Control	Gaps	Gaps and Beliefs	p-value (3)−(2)	p-value (4)−(2)	Norm. Diff. (3)−(2)	Norm. Diff. (4)−(2)
Panel A: Students in the Field Experiment								
Female	0.571	0.587	0.577	0.529	0.586	0.594	-0.014	-0.083
Immigrant	0.046	0.046	0.051	0.034	0.596	0.251	0.016	-0.043
Second generation immigrant	0.035	0.033	0.040	0.024	0.331	0.180	0.026	-0.038
High Grade in Math, grade 7	0.846	0.854	0.838	0.848	0.255	0.890	-0.031	-0.012
High Grade in Italian, grade 7	0.898	0.891	0.895	0.920	0.787	0.160	0.009	0.070
High Grade in English, grade 7	0.884	0.902	0.868	0.884	0.021	0.864	-0.075	-0.041
Absence hours in Math, grade 7	4.827	4.690	4.312	6.135	0.438	0.508	-0.046	0.161
Absence hours in Italian, grade 7	7.182	7.149	6.607	8.560	0.299	0.959	-0.054	0.134
Absence hours in English, grade 7	2.984	2.886	2.763	3.603	0.689	0.348	-0.020	0.107
Kindergarten (3-5 years) attendance	0.946	0.925	0.957	0.962	0.252	0.558	0.096	0.114
Parental occupation: Father not high-wage	0.701	0.721	0.690	0.690	0.224	0.036	-0.048	-0.048
Parental occupation: Mother not high-wage	0.811	0.817	0.805	0.815	0.541	0.116	-0.022	-0.004
Parental education: father without high school diploma	0.280	0.287	0.273	0.280	0.557	0.355	-0.022	-0.011
Parental education: mother without high school diploma	0.169	0.169	0.167	0.174	0.913	0.751	-0.004	0.009
Low SES (index)	0.384	0.383	0.384	0.386	0.994	0.702	0.001	0.004
Students	6,210	2,335	2,668	1,207				
Schools	236	86	89	61				
Panel B: Teachers characteristics								
Female	0.833	0.816	0.842	0.846	0.394	0.819	0.049	0.057
Age	48.062	47.649	48.263	48.416	0.479	0.578	0.046	0.058
Low-SES: father without high school diploma	0.444	0.469	0.441	0.406	0.374	0.092	-0.040	-0.090
Teaches core subject (Mathematics, Italian or English)	0.675	0.639	0.724	0.638	0.030	0.900	0.129	-0.001
Permanent teaching contract	0.840	0.813	0.852	0.858	0.438	0.514	0.074	0.086
Track guidance: academic performance	47.486	46.818	47.663	48.220	0.782	0.158	0.036	0.058
Track guidance: student interests and attitudes	35.494	34.708	35.827	36.123	0.365	0.293	0.055	0.069
Track guidance: parental education	2.734	3.220	2.358	2.661	0.125	0.496	-0.107	-0.067
Track guidance: parental wealth	3.833	3.928	3.988	3.388	0.696	0.345	0.007	-0.066
Track guidance: parental advice and involvement	10.454	11.325	10.164	9.608	0.277	0.828	-0.074	-0.098
Past SES gap in top-track recommendations	0.185	0.177	0.190	0.190	0.285	0.872	0.097	0.101
Believed failure rate: high-ability low-SES students	0.071	0.074	0.074	0.064	0.948	0.267	0.000	-0.057
Teachers	1,203	441	508	254				

Notes: This table reports covariate balance across treatment arms for high GPA students. It includes schools initially randomized but excluded from the main analysis because they did not report track recommendations to the Ministry of Education. Columns report group means, p-values comparing each treatment arm with control, and normalized differences. Panel A reports student characteristics; Panel B reports teacher characteristics. Balance tests cluster standard errors at the school level and include the relevant cohort and returning-school fixed effects when applicable.

Table A12: Romano-Wolf (2016) correction for multiple hypotheses testing

Subgroup	Coefficient	(1) Coeff.	(2) p-value	(3) Romano–Wolf p-value
Family 1: Column (1) – no subgroup cut				
All Students, All	Low SES × Gaps	0.006	0.869	0.871
All Students, All	Low SES × Gaps and Beliefs	0.095	0.028	0.039
Family 2: Columns (2)–(3) – cut by gender				
All Students, Males	Low SES × Gaps	0.028	0.602	0.845
All Students, Males	Low SES × Gaps and Beliefs	0.166	0.009	0.029
All Students, Females	Low SES × Gaps	-0.008	0.857	0.873
All Students, Females	Low SES × Gaps and Beliefs	0.044	0.380	0.378
Family 3: Columns (4), (7) – cut by past-gap group				
Low Past Gaps, All	Low SES × Gaps	-0.055	0.276	0.278
Low Past Gaps, All	Low SES × Gaps and Beliefs	0.061	0.283	0.303
High Past Gaps, All	Low SES × Gaps	0.082	0.054	0.108
High Past Gaps, All	Low SES × Gaps and Beliefs	0.141	0.007	0.022
Family 4: Columns (5)–(6), (8)–(9) – cut by gender × past-gap group				
Low Past Gaps, Males	Low SES × Gaps	-0.142	0.041	0.124
Low Past Gaps, Males	Low SES × Gaps and Beliefs	0.098	0.198	0.495
Low Past Gaps, Females	Low SES × Gaps	0.011	0.869	0.988
Low Past Gaps, Females	Low SES × Gaps and Beliefs	0.044	0.531	0.656
High Past Gaps, Males	Low SES × Gaps	0.191	0.004	0.021
High Past Gaps, Males	Low SES × Gaps and Beliefs	0.260	0.001	0.013
High Past Gaps, Females	Low SES × Gaps	0.004	0.946	0.988
High Past Gaps, Females	Low SES × Gaps and Beliefs	0.053	0.417	0.656

Notes: This table reports Romano–Wolf stepdown p-values adjusting for multiple hypothesis testing for the Low SES × Gaps and Low SES × Gaps and Beliefs interaction coefficients reported in Table 2 (Romano and Wolf (2016)). Coefficients, samples, and specifications are identical to those in Table 2. Conventional p-values are based on standard errors clustered at the school level. Romano–Wolf adjusted p-values are computed using the *rwolf* command of Clarke et al. (2020), with 3,000 bootstrap replications clustered at the school level. Hypotheses are grouped into four families corresponding to the level of heterogeneity examined in Table 2: Family 1 contains the two treatment interactions for the full high-achieving sample (column 1); Family 2 contains the four gender-specific interactions (columns 2–3); Family 3 contains the four interactions by teachers' past SES gaps (columns 4 and 7); and Family 4 contains the eight interactions jointly by gender and past SES gaps (columns 5–6 and 8–9).

Table A13: Treatment Effects on Top-Track Recommendations: Excluding the 2023 Cohort of Returning Schools

	DV: Top Track Recommendation								
	Sample: All Students			Sample: Low Past Gaps			Sample: High Past Gaps		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All	Males	Females	All	Males	Females	All	Males	Females
Low SES	-0.101***	-0.120***	-0.087***	-0.055	-0.045	-0.071	-0.146***	-0.201***	-0.101**
	(0.029)	(0.043)	(0.029)	(0.041)	(0.055)	(0.046)	(0.037)	(0.052)	(0.044)
Gaps	0.026	0.017	0.034	0.035	0.143*	-0.039	0.003	-0.100	0.081
	(0.043)	(0.063)	(0.043)	(0.062)	(0.085)	(0.068)	(0.048)	(0.072)	(0.055)
Gaps and Beliefs	-0.080	-0.150**	-0.024	-0.089	-0.131	-0.068	-0.062	-0.169**	0.036
	(0.054)	(0.068)	(0.054)	(0.076)	(0.092)	(0.081)	(0.058)	(0.080)	(0.066)
Low SES * Gaps	0.008	0.017	0.001	-0.054	-0.178**	0.034	0.081*	0.188**	-0.005
	(0.038)	(0.058)	(0.044)	(0.056)	(0.078)	(0.069)	(0.048)	(0.075)	(0.062)
Low SES * Gaps and Beliefs	0.095**	0.161**	0.047	0.068	0.093	0.061	0.126**	0.238***	0.036
	(0.044)	(0.068)	(0.049)	(0.059)	(0.082)	(0.071)	(0.055)	(0.087)	(0.067)
Mean of Y for high-SES Control	0.543	0.642	0.460	0.500	0.558	0.448	0.588	0.738	0.473
R^2	0.127	0.120	0.108	0.121	0.113	0.112	0.139	0.154	0.116
N. students	4,819	2,089	2,730	2,344	1,007	1,337	2,475	1,082	1,393
N. schools	218	210	214	142	135	138	141	137	140
Summ Coeff. Gaps ($\beta_2 + \beta_4$) (p-value)	0.251	0.392	0.274	0.624	0.531	0.911	0.027	0.062	0.083
Summ Coeff. Gaps and Beliefs ($\beta_3 + \beta_5$) (p-value)	0.641	0.827	0.565	0.638	0.502	0.897	0.174	0.284	0.174

Notes: This table replicates Table 2 excluding 2023 observations from schools that participated in both experimental waves. For these returning schools, only observations from the 2022 cohort, corresponding to their original randomized assignment, are retained. All other sample restrictions, variable definitions, controls, and specifications are identical to those in Table 2. Standard errors are clustered at the school level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A14: Overall Effects of Treatments on Top-Track Recommendations

	DV: Top Track Recommendation								
	Sample: All Students			Sample: Low Past Gaps			Sample: High Past Gaps		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All	Males	Females	All	Males	Females	All	Males	Females
Panel A: Sample: High-Achieving Students									
Gaps	0.039	0.042	0.036	0.008	0.032	-0.005	0.059*	0.040	0.069*
	(0.030)	(0.042)	(0.028)	(0.039)	(0.058)	(0.036)	(0.032)	(0.039)	(0.036)
Gaps and Beliefs	-0.006	-0.025	0.010	-0.030	-0.044	-0.017	0.027	0.006	0.055
	(0.035)	(0.045)	(0.038)	(0.047)	(0.058)	(0.053)	(0.044)	(0.055)	(0.048)
Mean of Y for Control	0.541	0.639	0.465	0.486	0.550	0.436	0.601	0.742	0.496
R^2	0.134	0.132	0.112	0.121	0.113	0.106	0.151	0.166	0.125
N. students	5,565	2,393	3,172	2,688	1,142	1,546	2,877	1,251	1,626
N. schools	221	214	217	144	137	140	149	145	148
Panel B: Sample: All Students									
Gaps	0.014	0.016	0.013	-0.004	0.001	-0.006	0.028	0.025	0.028
	(0.015)	(0.019)	(0.014)	(0.018)	(0.023)	(0.017)	(0.018)	(0.021)	(0.019)
Gaps and Beliefs	-0.006	-0.011	-0.003	-0.015	-0.014	-0.016	0.011	-0.001	0.021
	(0.019)	(0.022)	(0.020)	(0.025)	(0.029)	(0.027)	(0.024)	(0.028)	(0.025)
Mean of Y for Control	0.316	0.339	0.292	0.280	0.300	0.260	0.359	0.386	0.330
R^2	0.304	0.347	0.264	0.282	0.319	0.249	0.326	0.377	0.281
N. students	14,854	7,532	7,322	7,442	3,745	3,697	7,412	3,787	3,625
N. schools	221	221	221	144	144	144	149	149	149

Notes: This table reports OLS estimates of the overall effects of the *Gaps* treatment and *Gaps and Beliefs* treatment on top-track recommendations, without interacting treatment assignment with student SES. Panel A restricts to high-GPA students; Panel B includes all students. Columns 1–3 include all students, columns 4–6 restrict to teachers with below-median past SES gaps, and columns 7–9 restrict to teachers with above-median past SES gaps; within each group, results are shown for all students, boys, and girls. All regressions include baseline student controls, cohort fixed effects, and randomization-wave fixed effects. Standard errors are clustered at the school level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A15: Reallocation of Top-Track Recommendations by Student SES and Prior Mathematics Grade

	DV: Top Track Recommendation					
	Sample: Low Past Gaps			Sample: High Past Gaps		
	(1)	(2)	(3)	(4)	(5)	(6)
	All	Males	Females	All	Males	Females
Panel A: Low SES						
Math Grade ≤8 * Gaps	0.013	-0.013	0.041	0.040	0.039	0.045
	(0.046)	(0.077)	(0.045)	(0.040)	(0.061)	(0.046)
Math Grade ≤8 * Gaps and Beliefs	-0.006	-0.045	0.022	-0.020	-0.060	0.032
	(0.055)	(0.082)	(0.059)	(0.048)	(0.079)	(0.060)
Math Grade ≥9 * Gaps	-0.039	0.003	-0.080	0.104**	0.137**	0.082
	(0.043)	(0.060)	(0.058)	(0.044)	(0.054)	(0.057)
Math Grade ≥9 * Gaps and Beliefs	-0.048	0.014	-0.105	0.113*	0.177**	0.075
	(0.052)	(0.066)	(0.078)	(0.064)	(0.079)	(0.074)
R^2	0.166	0.163	0.166	0.158	0.193	0.131
N. students	2,043	862	1,181	2,064	883	1,181
N. schools	144	134	139	148	140	145
Panel B: High SES						
Math Grade ≤8 * Gaps	0.036	0.109	0.012	-0.012	-0.137	0.099
	(0.075)	(0.131)	(0.068)	(0.065)	(0.108)	(0.066)
Math Grade ≤8 * Gaps and Beliefs	-0.115	-0.299*	0.013	-0.103	-0.230*	0.048
	(0.105)	(0.171)	(0.111)	(0.084)	(0.130)	(0.107)
Math Grade ≥9 * Gaps	0.044	0.151*	-0.052	-0.015	-0.100	0.035
	(0.071)	(0.086)	(0.088)	(0.056)	(0.064)	(0.069)
Math Grade ≥9 * Gaps and Beliefs	-0.003	0.020	-0.042	-0.100	-0.180*	-0.031
	(0.097)	(0.128)	(0.120)	(0.080)	(0.096)	(0.108)
R^2	0.225	0.235	0.259	0.215	0.297	0.216
N. students	644	280	364	813	368	445
N. schools	127	98	112	125	105	107

Notes: This table reports OLS estimates of treatment effects on top-track recommendations separately by student SES and prior mathematics grade. Panel A restricts to low-SES students; Panel B restricts to high-SES students. Math Grade ≤ 8 and Math Grade ≥ 9 are indicators based on grade-7 mathematics grades and are interacted with treatment assignment. Columns 1–3 report estimates for students assigned to teachers with below-median past SES gaps; columns 4–6 report estimates for students assigned to teachers with above-median past gaps. All regressions include the baseline controls, cohort fixed effects, and randomization-wave fixed effects, interacted with the mathematics-grade indicators. Standard errors are clustered at the school level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A16: Balance: Teachers Who Answered the Endline Vignettes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Full sample	Control	Gaps	Gaps and Beliefs	p-value (3)−(2)	p-value (4)−(2)	Norm. Diff. (3)−(2)	Norm. Diff. (4)−(2)
Teachers who answered the endline vignettes, in the experimental sample								
Female	0.832	0.810	0.835	0.871	0.492	0.319	0.046	0.118
Age	48.222	47.725	48.374	48.964	0.472	0.347	0.049	0.097
Low-SES: father without high school diploma	0.433	0.461	0.440	0.350	0.597	0.039	-0.030	-0.160
Teaches core subject (mathematics, Italian or English)	0.691	0.636	0.749	0.669	0.013	0.356	0.174	0.049
Permanent teaching contract	0.869	0.842	0.887	0.885	0.298	0.264	0.093	0.088
Track guidance: academic performance	47.556	45.975	47.791	50.127	0.410	0.580	0.075	0.179
Track guidance: student interests and attitudes	35.228	34.567	35.077	36.824	0.783	0.241	0.025	0.115
Track guidance: parental education	2.868	3.284	2.677	2.465	0.430	0.485	-0.071	-0.100
Track guidance: parental wealth	3.796	4.062	3.943	2.972	0.980	0.630	-0.014	-0.135
Track guidance: parental advice and involvement	10.552	12.113	10.512	7.613	0.148	0.159	-0.098	-0.298
Past SES gap in top-track recommendations	0.186	0.176	0.196	0.183	0.164	0.935	0.148	0.054
Believed failure rate: high-ability low-SES students	0.073	0.075	0.088	0.054	0.438	0.249	0.067	-0.124
Teachers	811	316	347	148				

Notes: Sample restricted to teachers in the experimental sample who answered at least one endline vignette. Column (1) reports the full-sample mean; columns (2)–(4) report means by treatment arm. Columns (5)–(6) report p-values from a regression of each variable on treatment-arm indicators, absorbing cohort and last-year-report fixed effects, with standard errors clustered at the school level. Columns (7)–(8) report the normalized difference between each treatment arm and control.

Table A17: Treatment Effects on Top-Track Recommendations in Endline Vignettes

	DV: Top Track Recommendation					
	Low-SES Students			High-SES Students		
	(1)	(2)	(3)	(4)	(5)	(6)
Gaps	-0.005	-0.001	0.021	-0.003	-0.003	0.035
	(0.038)	(0.035)	(0.045)	(0.028)	(0.028)	(0.043)
Gaps and Beliefs	0.077**	0.080**	0.048	0.042	0.037	0.037
	(0.035)	(0.038)	(0.038)	(0.031)	(0.032)	(0.040)
High Belief Low SES Failure			-0.034			-0.035
			(0.045)			(0.062)
Gaps × High Belief Low SES Failure			-0.022			-0.004
			(0.078)			(0.077)
Gaps and Beliefs × High Belief Low SES Failure			0.103			-0.026
			(0.073)			(0.080)
Mean of Y	0.291	0.291	0.291	0.333	0.333	0.333
R^2	0.393	0.401	0.405	0.501	0.502	0.509
Observations	1,043	1,043	1,043	1,060	1,060	1,060
N. schools	131	131	131	131	131	131
N. teachers	385	385	385	390	390	390
name FE	Yes	Yes	Yes	Yes	Yes	Yes
Stud. teacher control	No	Yes	Yes	No	Yes	Yes
Diff: (Gaps and Beliefs − Gaps) × High Belief			0.125			-0.022
Diff. SE			0.085			0.065
Diff. p-value			0.141			0.731

Notes: This table reports treatment effects on top-track recommendations in the endline vignette experiment. Columns 1–3 restrict to low-SES profiles; columns 4–6 restrict to high-SES profiles. The unit of observation is a teacher-by-profile pair. The sample includes experimental teachers with eighth-grade students and above-median pre-existing SES gaps. The 2022 endline survey includes four profiles and the 2023 endline survey includes six profiles. All specifications include profile fixed effects; columns with teacher controls include teacher gender, age, core-subject status, and permanent-contract status. Standard errors are double-clustered by school and teacher. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A18: Treatment Effects on Top-Track Enrollment. Sample: High-Achieving Students

	DV: Top Track Choice								
	Sample: All Students			Sample: Low Past Gaps			Sample: High Past Gaps		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All	Males	Females	All	Males	Females	All	Males	Females
Low SES	-0.159***	-0.190***	-0.142***	-0.140***	-0.159***	-0.126***	-0.182***	-0.224***	-0.158***
	(0.027)	(0.037)	(0.035)	(0.031)	(0.044)	(0.042)	(0.037)	(0.051)	(0.047)
Gaps	0.038	0.034	0.037	0.023	0.057	0.003	0.032	-0.002	0.049
	(0.040)	(0.052)	(0.046)	(0.050)	(0.070)	(0.059)	(0.052)	(0.069)	(0.061)
Gaps and Beliefs	-0.040	-0.105	0.004	-0.077	-0.141*	-0.031	0.002	-0.084	0.062
	(0.049)	(0.065)	(0.054)	(0.061)	(0.080)	(0.077)	(0.065)	(0.084)	(0.075)
Low SES * Gaps	0.017	0.045	0.003	-0.003	-0.055	0.032	0.053	0.137**	-0.003
	(0.036)	(0.049)	(0.049)	(0.049)	(0.066)	(0.065)	(0.048)	(0.064)	(0.063)
Low SES * Gaps and Beliefs	0.044	0.126**	-0.014	0.079	0.116*	0.046	0.016	0.154*	-0.082
	(0.039)	(0.058)	(0.053)	(0.049)	(0.068)	(0.079)	(0.056)	(0.084)	(0.066)
Mean of Y for high-SES Control	0.585	0.663	0.524	0.550	0.622	0.493	0.623	0.711	0.557
R^2	0.117	0.116	0.102	0.107	0.104	0.104	0.130	0.145	0.108
N. students	5,564	2,392	3,172	2,688	1,142	1,546	2,876	1,250	1,626
N. schools	221	214	217	144	137	140	149	145	148
Summ Coeff. Gaps ($\beta_2 + \beta_4$) (p-value)	0.061	0.046	0.219	0.569	0.967	0.378	0.037	0.003	0.344
Summ Coeff. Gaps and Beliefs ($\beta_3 + \beta_5$) (p-value)	0.900	0.672	0.803	0.971	0.728	0.781	0.685	0.200	0.688

Notes: This table reports OLS estimates of equation 1 using top-track enrollment as the dependent variable. The sample includes high-GPA eighth-grade students assigned to experimental teachers. Columns follow the same structure as Table 2. Low-SES is defined using father's occupation. All specifications include baseline student controls, cohort fixed effects, and randomization-wave fixed effects. Standard errors are clustered at the school level. "Summ Coeff." rows report p-values for the total treatment effect for low-SES students. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A19: Treatment Effects on Admission to Grade 10

	DV: Admission to Grade 10								
	Sample: All Students			Sample: Low Past Gaps			Sample: High Past Gaps		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All	Males	Females	All	Males	Females	All	Males	Females
Low SES	-0.013	0.007	-0.025	-0.026	-0.007	-0.036	0.006	0.021	-0.006
	(0.017)	(0.024)	(0.022)	(0.022)	(0.028)	(0.033)	(0.023)	(0.036)	(0.024)
Gaps	-0.027	-0.034	-0.019	-0.043	-0.054	-0.032	-0.014	-0.019	-0.010
	(0.022)	(0.029)	(0.029)	(0.034)	(0.043)	(0.045)	(0.025)	(0.040)	(0.029)
Gaps and Beliefs	0.031	0.022	0.042	0.044	0.020	0.061	0.020	0.023	0.027
	(0.026)	(0.038)	(0.028)	(0.032)	(0.043)	(0.041)	(0.036)	(0.054)	(0.038)
Low SES * Gaps	0.025	0.023	0.024	0.047	0.056	0.040	0.001	-0.004	0.006
	(0.023)	(0.033)	(0.029)	(0.035)	(0.046)	(0.046)	(0.028)	(0.045)	(0.030)
Low SES * Gaps and Beliefs	-0.018	-0.020	-0.020	-0.031	-0.032	-0.027	-0.008	-0.006	-0.021
	(0.028)	(0.042)	(0.031)	(0.033)	(0.047)	(0.042)	(0.041)	(0.062)	(0.042)
Mean of Y for high-SES Control	0.898	0.886	0.908	0.896	0.889	0.902	0.901	0.883	0.914
R^2	0.023	0.032	0.025	0.027	0.039	0.026	0.029	0.046	0.038
N. students	5,298	2,286	3,012	2,558	1,086	1,472	2,740	1,200	1,540
N. schools	221	213	217	144	137	140	149	144	148
Summ Coeff. Gaps ($\beta_2 + \beta_4$) (p-value)	0.922	0.552	0.776	0.852	0.929	0.755	0.536	0.349	0.887
Summ Coeff. Gaps and Beliefs ($\beta_3 + \beta_5$) (p-value)	0.575	0.923	0.441	0.674	0.731	0.388	0.671	0.629	0.863

Notes: This table reports OLS estimates of equation 1 using admission to grade 10 as the dependent variable. Admission is measured using the June end-of-year decision; students with insufficient grades may still take remedial exams before a final retention decision. The sample includes high-GPA eighth-grade students assigned to experimental teachers. Columns follow the same structure as Table 2. All specifications include baseline student controls, cohort fixed effects, and randomization-wave fixed effects. Standard errors are clustered at the school level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A20: Treatment Effects on Grade-9 Academic Performance

	Absences in Main Subjects 9		GPA 9 (std)		Core Sub Fail	
	(1)	(2)	(3)	(4)	(5)	(6)
	All	Males, High Past Gaps	All	Males, High Past Gaps	All	Males, High Past Gaps
Low SES	0.710	1.878	0.014	0.060	0.001	-0.005
	(0.627)	(1.663)	(0.034)	(0.086)	(0.015)	(0.036)
Gaps	-0.479	2.000	-0.007	-0.042	0.010	-0.019
	(0.962)	(1.972)	(0.045)	(0.090)	(0.019)	(0.036)
Gaps and Beliefs	0.801	-1.972	0.002	0.076	-0.034*	-0.012
	(1.376)	(2.564)	(0.054)	(0.113)	(0.019)	(0.051)
Low-SES × Gaps	0.034	-2.531	-0.009	0.053	-0.005	0.047
	(0.854)	(1.988)	(0.045)	(0.100)	(0.020)	(0.041)
Low-SES × Gaps and Beliefs	-0.532	1.822	-0.068	-0.010	0.036	0.003
	(1.074)	(2.523)	(0.051)	(0.129)	(0.022)	(0.056)
Mean of Y for high-SES Control	11.125	12.447	0.518	0.446	0.071	0.074
R^2	0.059	0.071	0.053	0.067	0.027	0.048
N. students	5,302	1,200	5,565	1,251	5,149	1,168
N. schools	221	144	221	145	221	144
Summ Coeff. Gaps ($\beta_2 + \beta_4$) (p-value)	0.551	0.733	0.542	0.824	0.659	0.170
Summ Coeff. Gaps and Beliefs ($\beta_3 + \beta_5$) (p-value)	0.834	0.948	0.164	0.348	0.945	0.772

Notes: This table reports treatment effects on grade-9 academic performance. Each column is a separate regression. Outcomes are the sum of grade-9 absences in the three core subjects (Italian, mathematics and English), standardized grade-9 GPA, and an indicator for failing at least one core subject. For each outcome, one column reports the full high-GPA sample and one column restricts to high-GPA male students assigned to teachers with above-median past SES gaps. All specifications include Low-SES, treatment indicators, Low-SES-by-treatment interactions, baseline controls, cohort fixed effects, and randomization-wave fixed effects. Standard errors are clustered at the school level. "Summ Coeff." rows report p-values for the total treatment effect for low-SES students. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

B The Intervention

All teachers received a personalized report summarizing the high school tracks attended by their former students and their subsequent academic performance. Teachers assigned to the *Gaps* treatment additionally received personalized information on socioeconomic differences in their own past track recommendations. Teachers assigned to the *Gaps and Beliefs* treatment received the same information together with evidence comparing teachers' expectations about failure among high-achieving, low-SES students with the corresponding rates observed in the administrative data. Below we report three anonymized examples of report to a control teacher in Appendix B.1, a teacher in the *Gaps* treatment in Appendix B.2, and a teacher in the *Gaps and Beliefs* treatment in Appendix B.3.

B.1 The Control Report

The control report contained the information common to all three experimental groups. It summarized the high school tracks attended by teachers' former students and their first-year high school outcomes. Figure B.1 reproduces the first-page summary of an English-language example of the control report. The reproduced pages retain the organization, wording, figure titles, and explanatory material shown to teachers, translated into English.

REPORT ON ACADEMIC CAREER

School: XXX

Teacher: XXX

Summary of the information presented in this report

Upper-secondary tracks attended by your former students

Figure 1:

Percentage of students in different upper-secondary tracks	**Scientific/Classical: 18.0%**
	Vocational training/School dropout: 35.9%

Academic performance of your former students during the first year of upper-secondary school

Figure 2: Promotion, failed subjects, and grades

Percentage of students promoted to the second year	**98.5% of your former students**
Average number of failed subjects requiring remedial work	**1.7**
Average grades in mathematics, Italian, and English	**Mathematics: 6.5, Italian: 6.8, English: 6.9**

Figure 3: Performance of students who followed the track recommendation and those who did not

Figures 4, 5, and 6: Performance by upper-secondary track attended

With the scientific collaboration of:
Michela Carlana (Harvard University and LEAP-Bocconi)
Francesca Miserocchi (Harvard University)

Report produced with the support of the UniCredit Foundation.

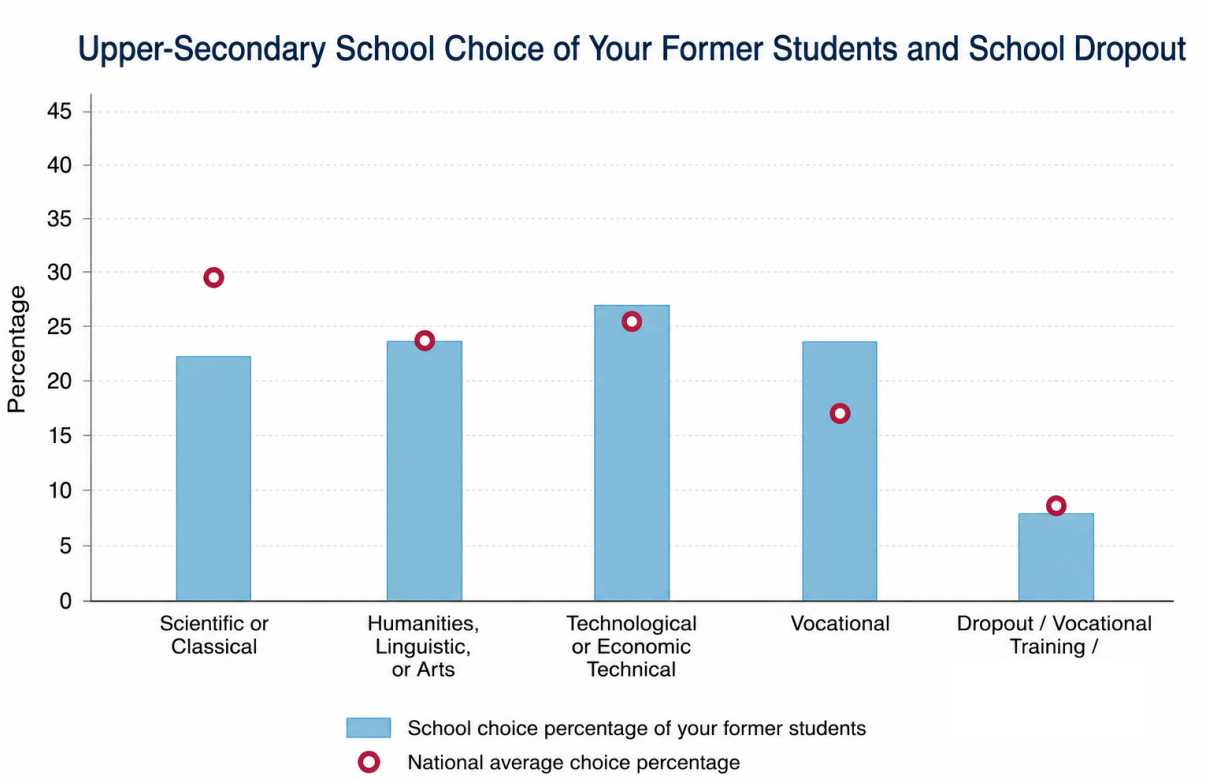
Università Bocconi
LEAP
Laboratory for Effective Anti-poverty Policies

Figure B.1: First-Page Summary of the Control Report

Notes: English translation of the first-page summary of an example control report. The control report contained only information on former students' high school tracks and subsequent academic performance.

High school Tracks Attended by Former Students

Figure B.2: High School Tracks Attended by Your Former Students

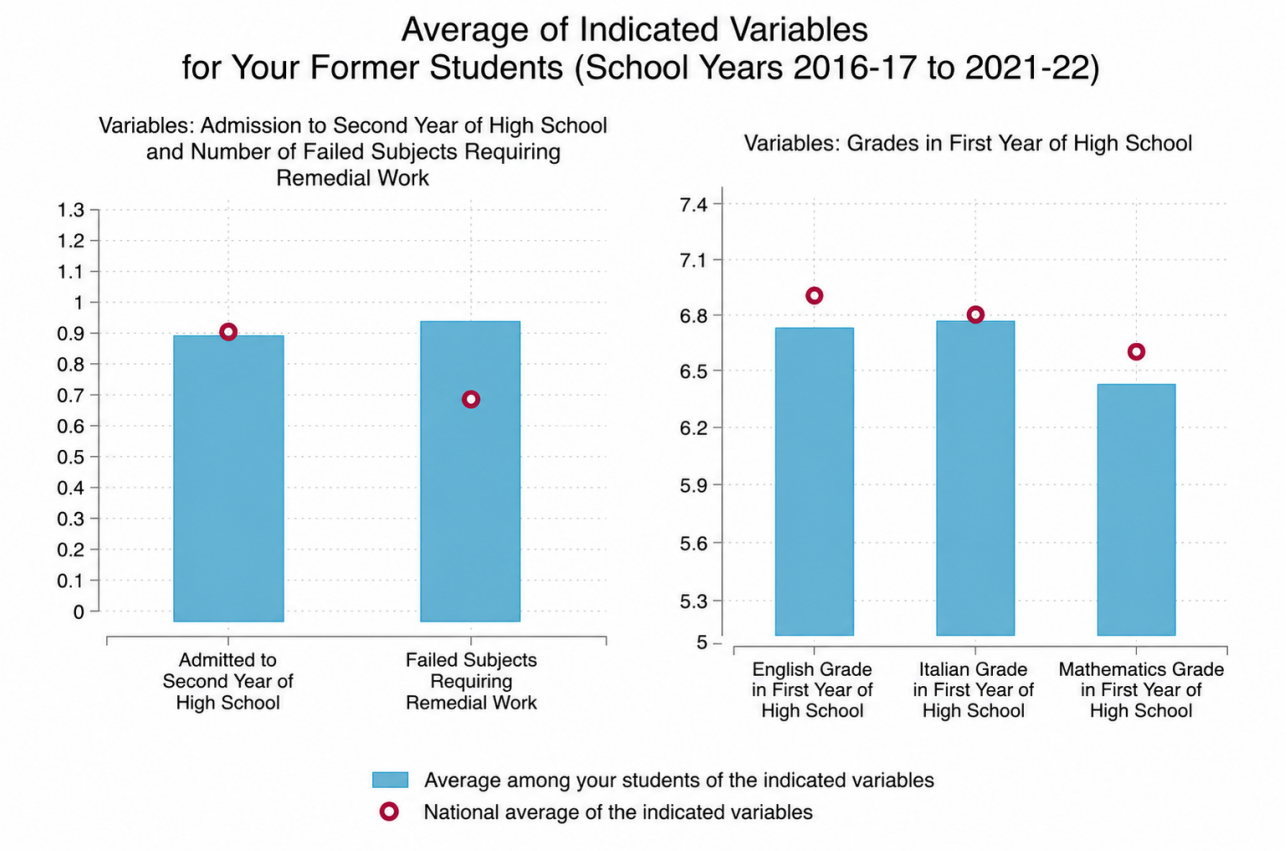


How to read Figure B.2?

- The red circles indicate the national average.
  - From left to right, the national averages show that approximately 30% of students attend a scientific or classical high school, 23% another academic high school, 25% a technical institute, 15% a vocational institute, while 7% either leave school or attend regional vocational education programs (not recorded in the Ministry of Education and Merit data).
- The bars report the average for the variables shown below using the teacher's former grade-8 students over the school years covered by this report (2016–17 to 2021–22).
  - For example, if the first bar is below the red circle, the teacher's former students were less likely than students nationally to enroll in a scientific or classical high school. The remaining bars can be interpreted in the same way.

Academic Performance after Middle School

Figure B.3: Academic Performance during the First Year of High School



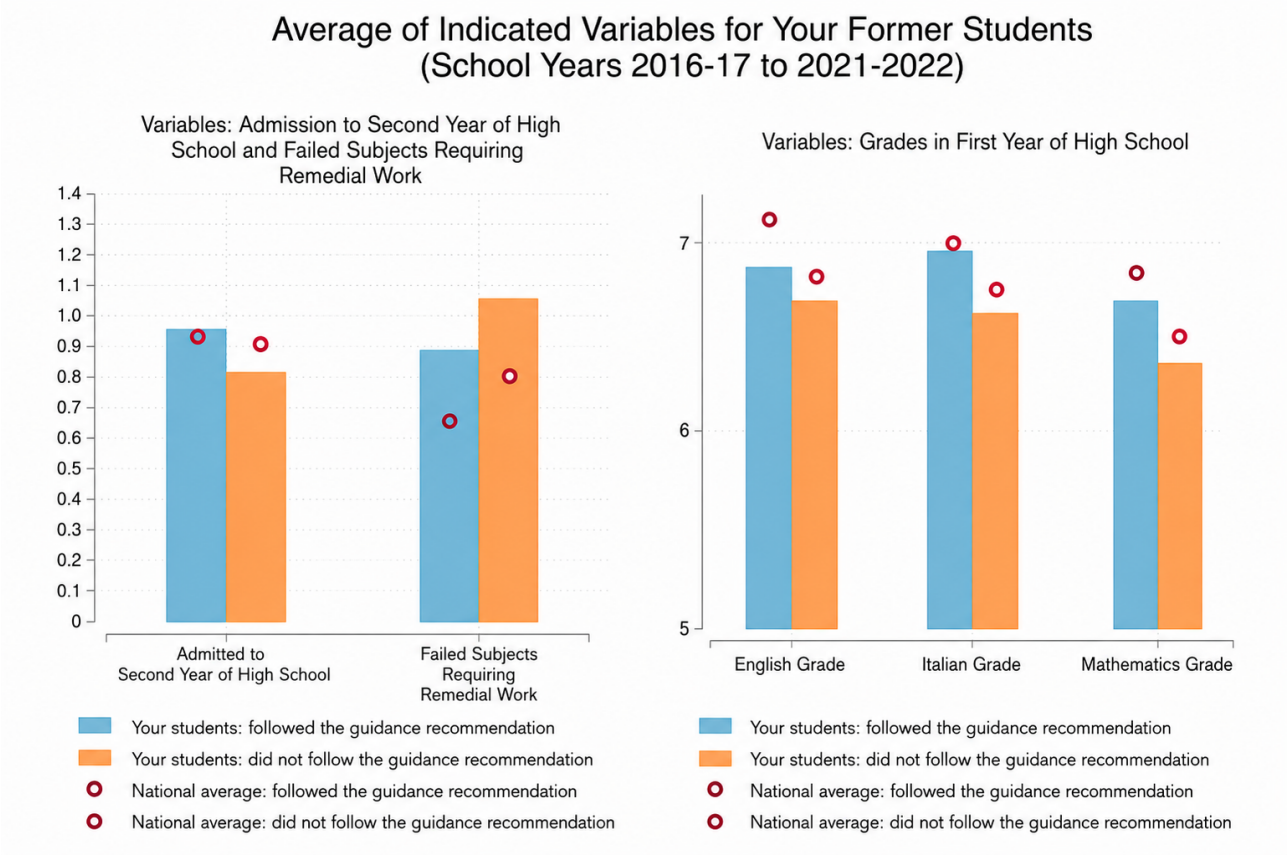
How to read Figure B.3?

- The red circles indicate the national average.
  - Nationally, approximately 90% of students are promoted to the second year of high school after their first year, and students have an average of 0.7 failed subjects requiring remedial work. [Left-hand panel]
  - The national average grades in English, Italian, and mathematics are 6.8, 6.8, and 6.6, respectively. [Right-hand panel]
- The bars report the average for each variable shown below using the teacher's former students over the school years covered by this report (2016–17 to 2021–22).
  - For example, if the first bar is below the red circle, it means that the teacher's former students were less likely than students nationally to be promoted regularly to the second year of high school.

    The remaining bars can be interpreted in the same way.

How does academic performance differ between students who followed the track recommendation and those who did not?

Figure B.4: First-Year Academic Performance of Students Who Followed or Did Not Follow the Track Recommendation



How to read Figure B.4?

- At the national level, approximately 90% of students who followed the track recommendation are promoted to the second year of high school school. The share is lower among students who did not follow the track recommendation. Nationally, the average number of failed subjects requiring remedial work is approximately 0.8 among students who did not follow the recommendation and 0.6 among those who followed it.
- The blue bars report the average of each outcome for the teacher's former students who followed the track recommendation. The orange bars report the average of each academic-performance outcome for the teacher's former students who did not follow the track recommendation.

How does academic performance vary according to the high school track attended?

The following figures show how students' outcomes vary according to the high school track they attended. Figure B.5 reports promotion to the second year of high school, Figure B.6 reports the average number of failed subjects requiring remedial work, while Figure B.7 reports average grades across the different tracks.

The figures can be interpreted in the same way as the previous figures in the report. Each bar represents the teacher's former students, while the red circle indicates the national average for comparison.

Figure B.5: Promotion to the Second Year of High School by Track

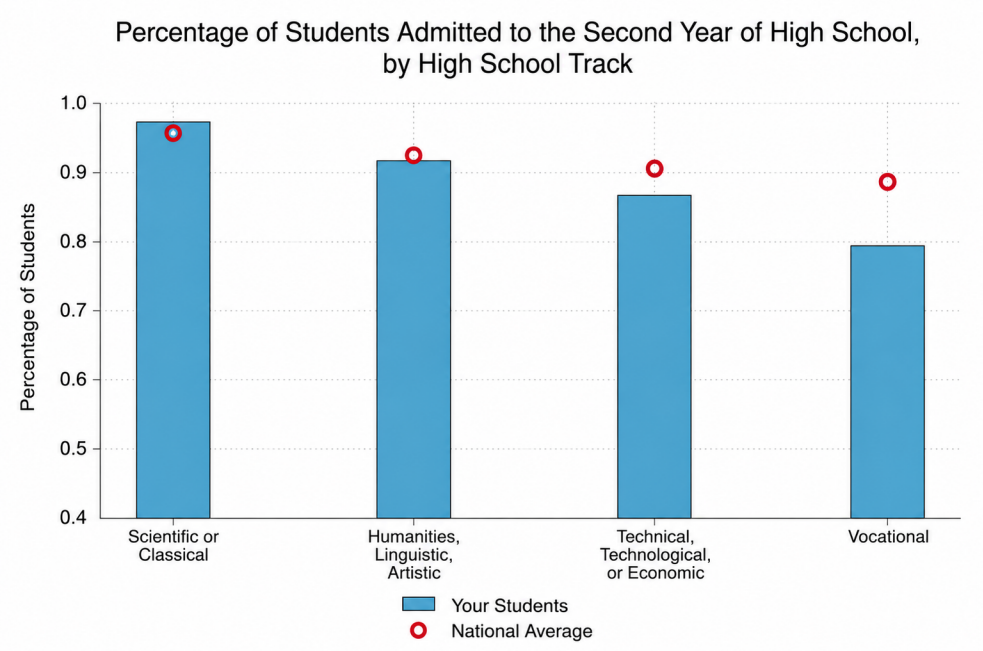


Figure B.6: Average Number of Failed Subjects Requiring Remedial Work by Track

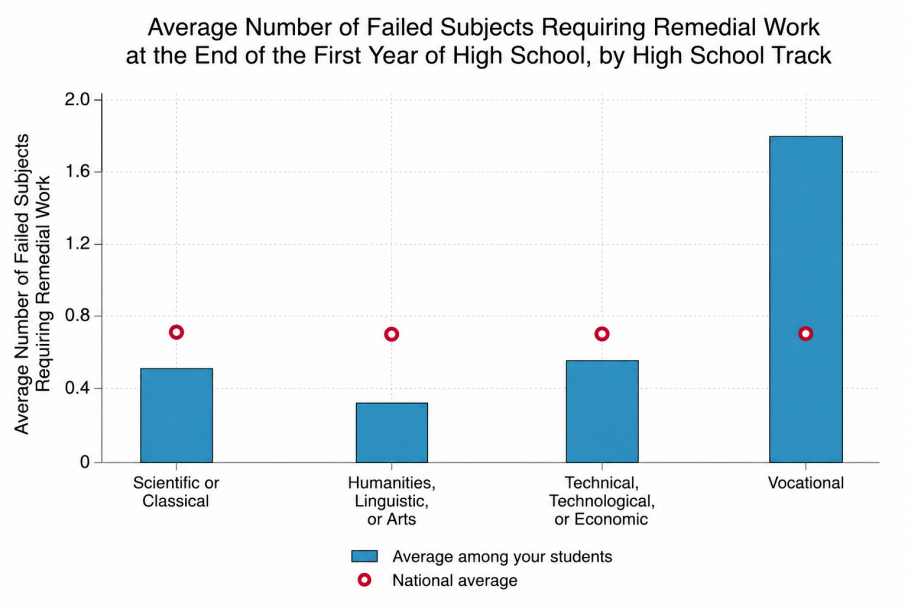
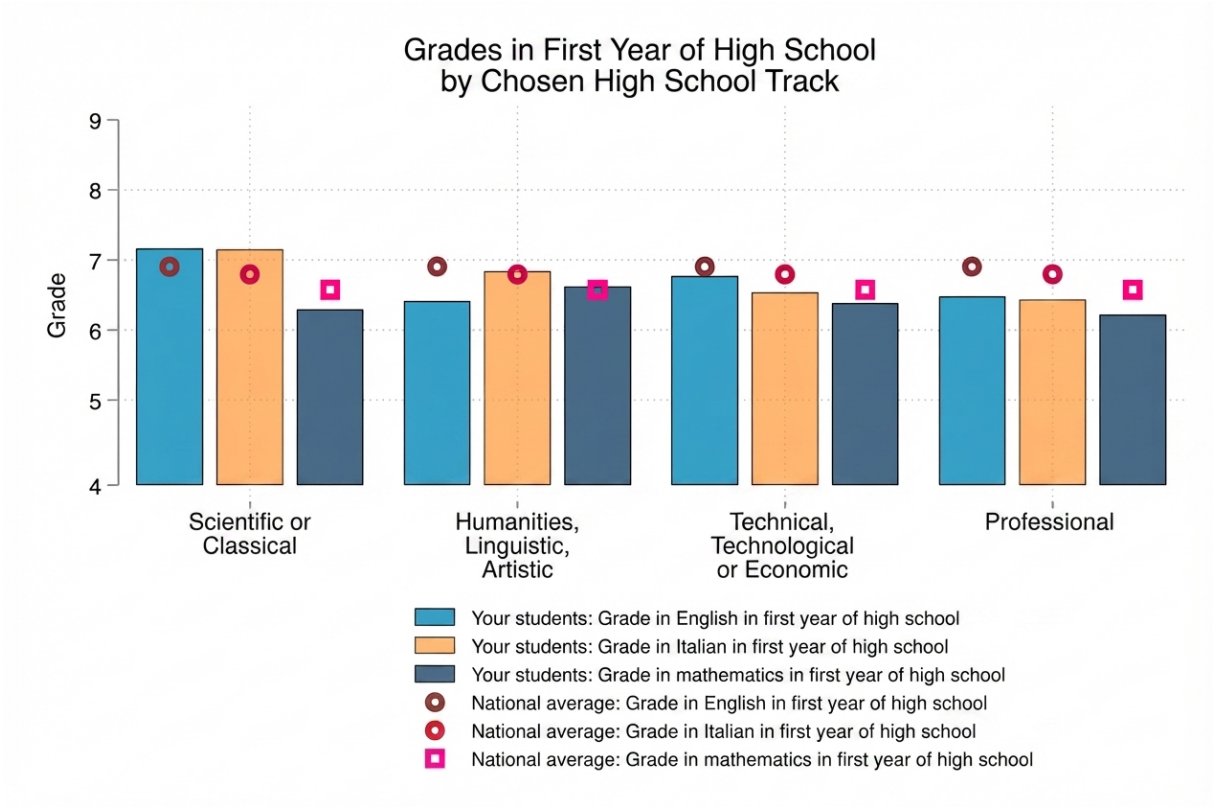


Figure B.7: Average Grades during the First Year of High School by Track



Further Information on the Project and the Report

The transition from lower-secondary school to high school is a crucial stage in students' educational careers, with important implications for future university education and labor-market opportunities. In November 2022, our research team launched a pilot project to support schools by providing access to data on the educational trajectories of their former students. This report contains aggregated information on the high school trajectories of your students who completed lower-secondary school between 2016-17 and 2021-22.

The data used in this report were processed by the research team under the Research Protocol entitled "School System, Educational Choices, and Interventions to Reduce Educational Poverty in Italy," conducted jointly by LEAP–Bocconi, the Ministry of Education and Merit, and INVALSI. Information on teachers' classroom assignments was collected by the research team through an online survey administered from November 2022 by researchers at Bocconi University and Harvard University.

The results are reported only in aggregated form, making it impossible to identify individual students or teachers. The figures in this report follow the disclosure rules specified in the document "Rules for the Release of Processing Results," published by the ADELE (Laboratory for the Analysis of Elementary Data) User Guide of the Italian National Institute of Statistics (ISTAT), February 2018.

In particular, each value reported in the figures is based on at least ten statistical units. Whenever fewer than ten statistical units are available for a given teacher in a particular graph (after pooling students who completed lower-secondary school between 2016-17 and 2021-22, including students from schools other than the teacher's current school), school-level aggregated values are reported instead. In these cases, an asterisk (*) appears in the graph title.

We hope that this report provides useful information and represents the first step toward a long-term collaboration. As the research project progresses, we hope to provide additional tools and data to support you in the important task of guiding your students through their educational careers. As agreed, we will contact you again in the coming weeks with a final questionnaire to collect your feedback on this report and to learn which additional information you would find most useful.

This report was prepared with the collaboration of the research team at the Laboratory for Effective Anti-Poverty Policies (LEAP) at Bocconi University, including Luca Calianno, Elisa Muscarella, Marta Magnani, Giorgia Cascone, Martina Vercillo, Lorenzo Alberti, Giulia Montenapoleone, and Ada Gianassi.

This report was made possible through the financial support of the UniCredit Foundation.

B.2 Additional Information in the Gaps Treatment

Teachers assigned to the *Gaps* treatment received the common report described in Section B.1, together with personalized information on socioeconomic differences in their own past track recommendations.

The treatment report shared the same structure as the control report but included an additional section on socioeconomic differences in teachers' past track recommendations. The following pages reproduce the additional material together with the first-page summary of an English-language example treatment report. The first-page summary used for the *Gaps and Beliefs* treatment followed the same layout and is therefore not reproduced again in Section B.3; that version additionally listed the beliefs component described there.

REPORT ON ACADEMIC CAREER

School: XXX
Teacher: XXX

Summary of the information that will be explored in detail in this report

Educational path taken by your former students

Figure 1:

Percentage of students in different tracks

Scientific / Classical: 27.912%

Professional/School dropout rate: 9.253%

The track recommendation received by your former students

Figure 2:

Track recommendation

Students from wealthy families: 37.736% recommended for a classical or scientific high school

Students from disadvantaged families: 16.162% recommended for a classical or scientific high school

Figure 3:

Track recommendation *for students with the same grades*

Students from wealthy families and with *an average grade higher than 8*: 54.545% recommended to a classical or scientific high school.

Students from disadvantaged families and with *an average grade higher than 8*: 61.538% recommended to a classical or scientific high school.

Academic performance of your former students during the first year of high school

Figure 4: Admission, Failed Subjects Requiring Remedial Work, and Grades

Percentage of students admitted	**89.286% of your former students**
Average number of failed subjects (remedial work)	**0.946**
Average grades (Italian, mathematics, English)	**Mathematics: 6.398, Italian: 6.758, English: 6.714**

Figure 5: Performance among students who followed the track recommendation and those who did not

Figures 6, 7, and 8: Performance by upper-secondary track attended

With the scientific collaboration of:
Michela Carlana (Harvard University and LEAP-Bocconi)
Francesca Miserocchi (Harvard University)
Report produced with the support of the UniCredit Foundation.

Università Bocconi
LEAP
Laboratory for Effective Anti-poverty Policies

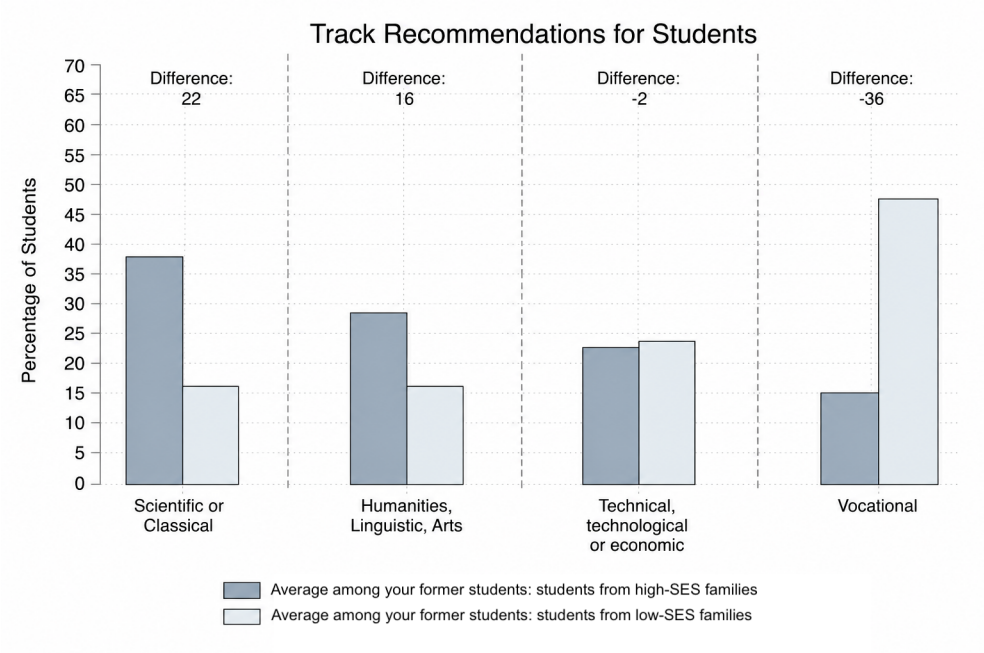
Figure B.8: First-Page Summary of the Treatment Report

Notes: English translation of the first-page summary of an example treatment report. The page summarizes the information common to all teachers together with the additional treatment components.

Track Recommendations and Socioeconomic Background

How do track recommendations vary according to the socioeconomic background of your former students?

Figure B.9: Track Recommendations and Family Socioeconomic Background



How to read Figure B.9?

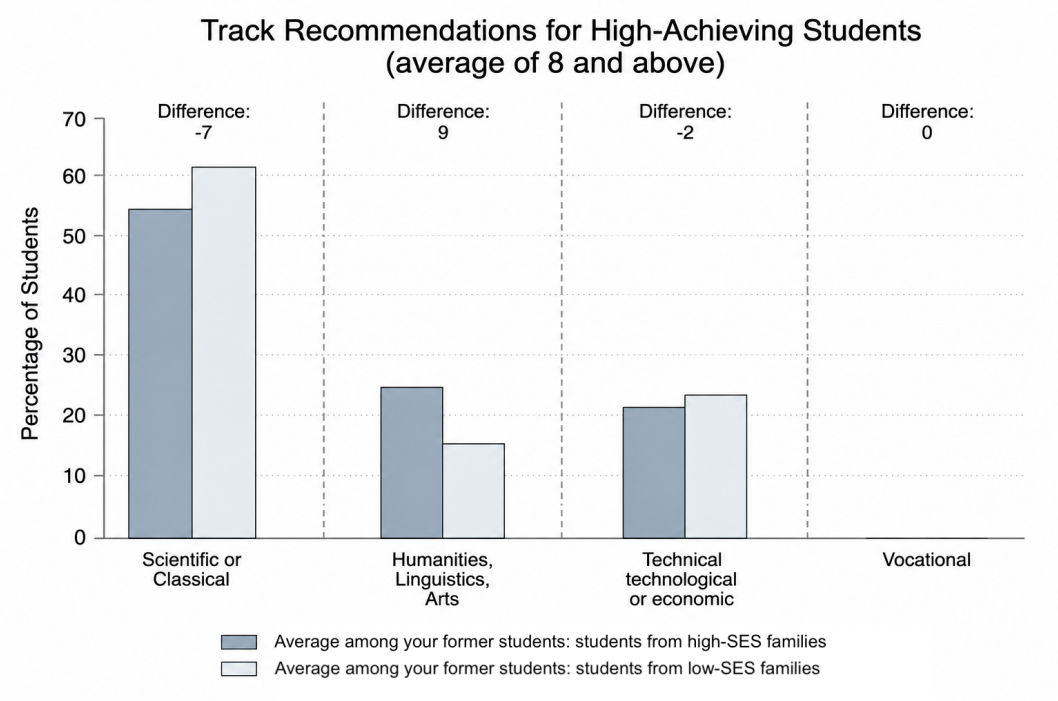
- Consider the two bars on the left above the label "Scientific or Classical." Each bar reports the percentage of the teacher's former students and allows the teacher to compare the share recommended to a scientific or classical high school among students from families with above-average socioeconomic background (dark gray bar) and students from families with below-average socioeconomic background (light gray bar).
- **If the dark gray bar is higher than the light gray bar, students from higher-income families in the teacher's classes were more frequently recommended to a scientific or classical high school than students from lower-SES families.**
- If the two bars have the same height, the teacher's former students were recommended to a scientific or classical high school independently of their family socioeconomic background.
- Above each pair of bars, the figure reports the difference between former students from families with above-average and below-average SES.

Do Track Recommendations Vary by Socioeconomic Background Even Among Students with High Academic Achievement in Middle School?

According to more than **90% of teachers** who completed the questionnaire in the preceding weeks, track recommendations **should not be influenced by students' socioeconomic background**, conditional on the same academic performance.

The figure below presents the corresponding information for your former students.

Figure B.10: Track Recommendations and Family Socioeconomic Background among High-Achieving Students



How to read Figure B.10?

- Figure B.10 shows track recommendations for former students who obtained an average middle-school grade of 8 or above.
- Let us focus on the two bars on the left above the label "Scientific or Classical." **If the dark gray bar is higher than the light gray bar, this means that in your classes students from higher-income families were more frequently recommended to a scientific or classical high school than equally high-achieving students from lower-SES families.**
- Above each pair of bars, we report the difference between the two groups of your former students.

Further Information on the Project and the Report

The pages reproduced above show the information added for teachers assigned to the *Gaps* treatment. Except for the additions concerning track recommendations and socioeconomic background, the remainder of the report—including the general project information and the sections on high school choice and subsequent academic performance—was identical to the common control report reproduced in Section B.1 and is therefore not repeated here. For completeness, the list below reproduces the organization of the treatment report and highlights the additional Section 2.

1. **High School Choice.** Figure 1 presents information on the high school choices made by your former students. The administrative data provided by the Ministry of Education and Merit do not contain detailed information on regional vocational education programs, making it impossible to distinguish them precisely from school dropout.

2. **Track Recommendations and Socioeconomic Background.** Section 2 presents information on the track recommendations received by your former students. In particular, it allows you to compare recommendations across students from different socioeconomic backgrounds. Nationally, conditional on the same assigned grades, students from disadvantaged socioeconomic backgrounds are substantially less likely to be recommended to a scientific or classical high school than classmates from more advantaged families. The information provided in this report allows you to assess whether the same pattern is observed among your former students.

3. **Outcomes during High School.** Section 3 presents the outcomes of your former students during their first year of high school, focusing on (i) promotion to the second year, (ii) the average number of failed subjects requiring remedial work at the end of the first year, and (iii) grades in Italian, mathematics, and English. We also report the corresponding provincial and national averages. The data are presented separately for students who followed the track recommendation and those who did not, as well as by the high track attended.

B.3 Additional Information in the Gaps and Beliefs Treatment

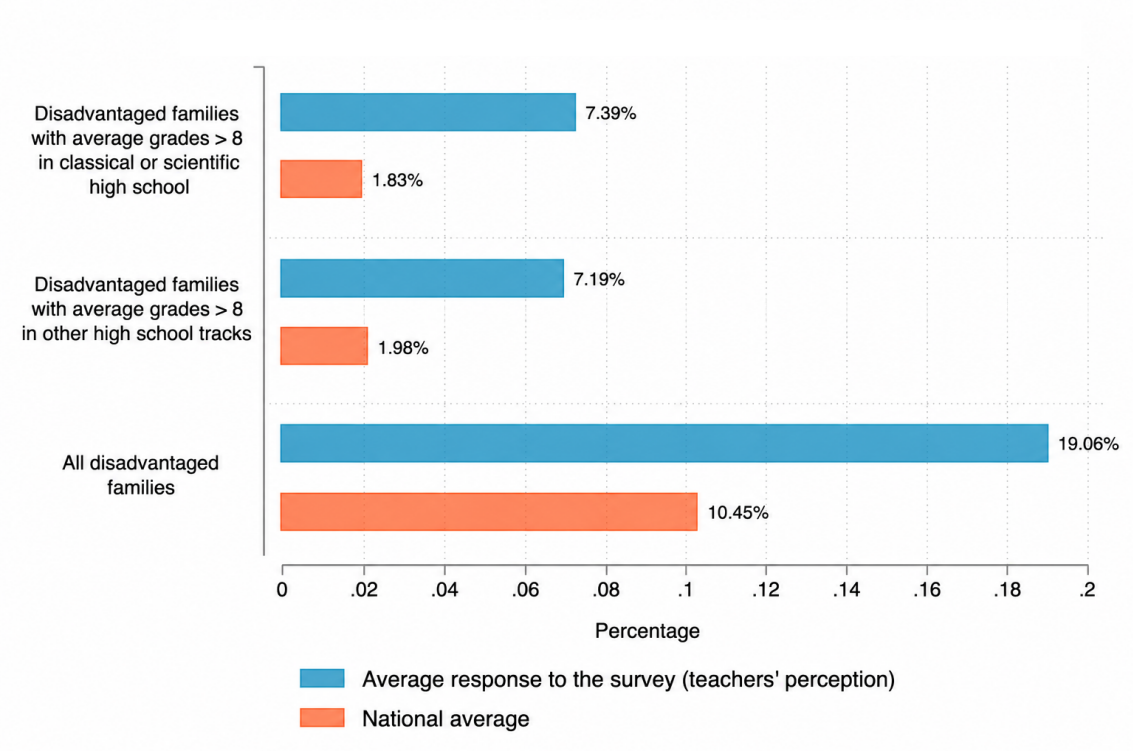
Teachers assigned to the *Gaps and Beliefs* treatment received the common report described in Section B.1, together with the personalized recommendation-gap information presented in Section B.2. In addition, they received evidence comparing teachers' expectations about the

probability of failure among high-achieving students from disadvantaged socioeconomic backgrounds with the corresponding rates observed in the administrative data.

The pages below reproduce only the material that was unique to the *Gaps and Beliefs* treatment. Specifically, they present the belief-correction component comparing teachers' perceptions with the corresponding failure rates observed in the administrative data for high-achieving students from disadvantaged socioeconomic backgrounds. All other pages were identical to those received by teachers in the *Gaps* treatment, including the information common to the control group, and are therefore not reproduced again. Likewise, the first-page summary followed the same layout as the treatment-report summary reproduced in Section B.2, with the addition of the belief-correction section among the report contents.

What is the probability of failure for students with high academic performance in middle school but coming from disadvantaged families?

Figure B.11: Teachers' perception in the questionnaire and the actual fraction of students from disadvantaged families who failed the first year of high school.



How to read Figure B.11?

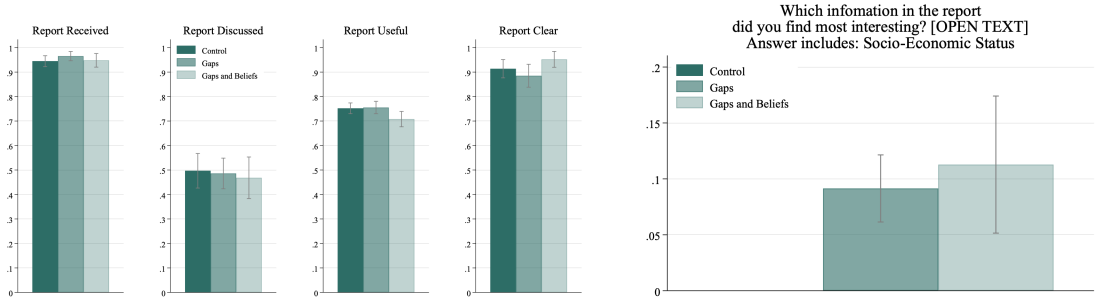
- Middle school teachers expect a much higher probability of failure than what we observe in the data.
- Teachers who completed the questionnaire believe that 19% of students from a disadvantaged background fail the first year of high school, compared to 8% of those with an average grade greater than or equal to 8 (regardless of whether they chose a classical/scientific high school or another path).
- **The actual probability of failure is significantly lower than teachers expect**: on average, 11% of students from disadvantaged families fail, and only 2% of those with an average greater than or equal to 8.
- In general, teachers underestimate the impact of high academic performance in reducing the failure rate for students from disadvantaged backgrounds. In reality, good performance is associated with an 80% reduction in failure for high-achieving students from disadvantaged backgrounds.

The text below reproduces the only additional paragraph included in the "Further Information on the Project and the Report" page for the *Gaps and Beliefs* treatment. The rest of that page was identical to the version received by the *Gaps* group and reported above.

Teachers' Expectations about Student Failure. Section 4 compares teachers' expectations about the probability of failure among students from disadvantaged socioeconomic backgrounds with the corresponding rates observed in the administrative data. The comparison highlights how expectations differ from the outcomes actually observed for students with different levels of academic achievement.

B.4 Teachers' satisfaction with the reports

Figure B12: Teacher Satisfaction with Personalized Reports



Notes: This figure reports teachers' satisfaction with the personalized reports, based on responses to the endline survey.

C Details on the text analysis of the baseline vignette

Appendix Table C.1 provides illustrative examples for the first profile, an academically excellent student passionate about robotics. When the student is described as high-SES, teachers' narratives often emphasize his suitability for an engineering degree; when the same student is described as low-SES, they more often emphasize the possibility of turning his passion into a profession and anticipate more limited parental support for further study.

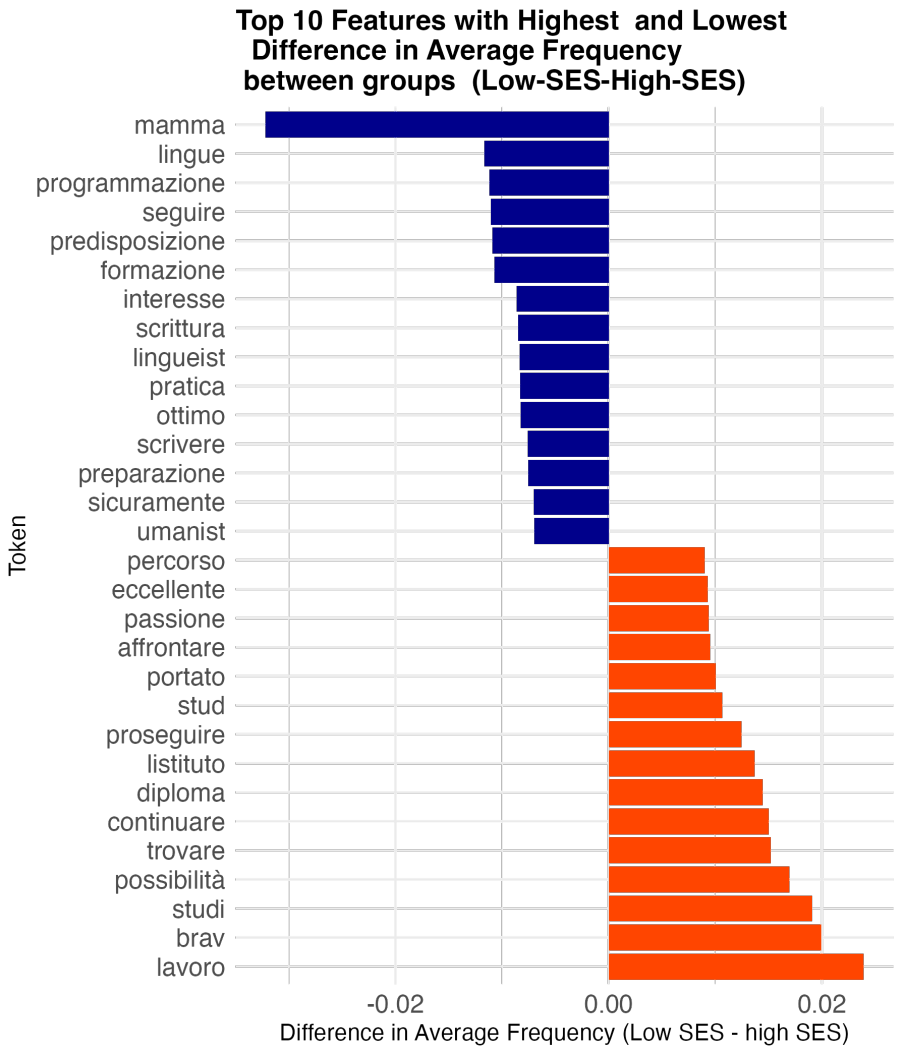
We begin by identifying the words that most strongly distinguish explanations for otherwise observationally identical high- and low-SES profiles. As shown in Appendix Figure C.1, references to "job" are more common for low-SES profiles, whereas references to "parents" are more frequent for high-SES profiles. Guided by these patterns and by a systematic reading of all responses by two research assistants, we classify each explanation according to whether it mentions four non-mutually exclusive themes: (i) immediate labor market entry after high school, (ii) university attendance, (iii) parental support for the student's studies, and (iv) lack of parental support. Two research assistants independently classified all responses, with agreement exceeding 95 percent. The results are robust to requiring agreement from both coders. The keywords used for each category are reported in Appendix C.1.

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-track 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 reports illustrative examples of teachers' open-ended explanations in the baseline vignette experiment. The examples refer to hypothetical profiles that hold academic performance, interests, and attitudes constant while varying family background. Responses were translated from Italian and lightly edited for grammar and readability without changing their substantive content.

Figure C.1: Most distinctive words by SES



Notes: This figure reports the words that most distinguish teachers' open-ended explanations for low-SES and high-SES profiles in the baseline vignette experiment. Bars report differences in word frequency between explanations for low-SES and high-SES profiles. Words directly referring to track names were excluded, and text was preprocessed by removing stopwords and punctuation, stemming words, harmonizing synonyms, and excluding sparse terms.

C.1 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, fruibile a scopi lavorativi, iniziare subito a lavorare, futuro lavorativo solido, non costringe 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, in grado di affrontare un percorso universitario, proseguire gli studi, potrebbe continuare con ingegneria, seguire sviluppo della ricerca scientifica, ottima base per scelte eventuali future, miglior 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 remunerativo; 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 può 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 Teacher Survey

D.1 Teacher Baseline Survey (2022)

No.	Question	Response options
	Introduction, consent, and contact information	
1	What is your email address? *The email address was collected to send the second survey and aggregate information on the school performance of the teacher's students.*	Open-ended.
2	What is your name and surname? *This information was used only to correctly link the baseline and endline questionnaires. The data were pseudonymised and treated confidentially under the GDPR.*	Open-ended.
3	At what telephone number may we contact you, if necessary? *The number could be used to send the endline questionnaire and information about the report by SMS or WhatsApp if you do not regularly use email.*	Open-ended.
	Teaching experience and professional networks	
4	At which school do you currently teach?	Open-ended.
5	Which subject or subjects do you teach? Select all that apply.	• Mathematics • Science • Italian • History • Geography • Other subject, please specify
6	In which year did you begin teaching?	Year.
7	In which year did you begin teaching at the school where you currently teach?	Year.
8	During the past seven years, from school year 2016–17 to the current school year 2022–23, have you always taught at the school where you currently teach?	• Yes • No
9	In which classes did you teach during each of these school years?	Class-by-school-year matrix for 2016–17

	Please indicate the grade and section of every class taught in each year. For example, a teacher who taught class 1A and classes 2C and 3C in 2021–22 would enter "1A", "2C", and "3C" in the corresponding row.	through 2022–23.
10	What type of teaching contract do you have?	• Permanent contract • Fixed-term contract for the full school year • Short-term substitute contract
11	Do you hold any of the following roles within your school? *Select all that apply.*	• Vice-principal • Principal's collaborator • Coordinator of the Mathematics Olympiad • Coordinator of high school guidance • Head of a subject area • Laboratory coordinator • None of these roles
12	When you are uncertain about an issue concerning a student or another work-related matter, which colleagues at your school do you ask for advice? *The teachers you identify will not be contacted and will not be informed in any way that you identified them. Answering this question is voluntary and is intended to help us understand whether information is more effective when shared through colleagues.*	• Names of Teacher 1 and Teacher 2 • open-ended
13	With which of your colleagues do you interact most frequently within the school? *The teachers you identify will not be contacted and will not be informed in any way that you identified them. Answering this question is voluntary and is intended to help us understand whether information is more effective when shared through colleagues.*	• Names of Teacher 1 and Teacher 2 • open-ended
14	How often do you spend time with your colleagues outside school?	• Never • Occasionally • Often • Very often • Regularly

15	If I make a strong effort, I can motivate even the most difficult or unmotivated students.	• Strongly disagree • Disagree • Agree • Strongly agree
16	Even a teacher with strong teaching skills may be unable to make a difference for many students from difficult family environments.	• Strongly disagree • Disagree • Agree • Strongly agree
	Perceptions of students' track recommendations and choices	
	Teachers were asked to move the slider to indicate an approximate number of students.	
17	Out of 10 students whose parents do not have university degrees, how many attend a scientific or classical lyceum?	Integer from 0 to 10.
18	Out of 10 students whose parents do not have university degrees, how many received a recommendation to attend a scientific or classical lyceum?	Integer from 0 to 10.
19	Think about your current grade-8 students. Are there any particularly insistent parents who try to influence the track recommendation?	• No • If yes: number of parents
	Social norms and student-profile experiment	
	Vignette instructions. Teachers were informed that the following profiles described grade-8 students. Although the information was limited, Please provide their best estimate of the track recommendation that each student would receive. Each teacher was paired with another participating teacher. For each profile, teachers who gave the same recommendation entered a lottery for an Amazon gift card worth 100 euros. Three gift cards were offered. Socioeconomic characteristics shown in square brackets were randomised across respondents.	
20	Sofia is a good student, although she is not the best in her class. She loves languages and won a competition with an essay she wrote. Her parents are divorced, and she lives with her mother, who works as a **pediatrician/cashier**. What track recommendation would you give Sofia? Why did you choose this recommendation?	Drop-down menu with list of tracks; Open-ended explanation.
21	Matteo is an excellent student. He loves computer programming and built a robot for a school competition. Both of his parents are **university**	Drop-down menu with list of tracks; Open-ended explanation.

graduates/completed lower-secondary school.
What track recommendation would you give Matteo?
Why did you choose this recommendation?

Explicit beliefs and self-reported decision criteria

22	Students from low-income families do not receive sufficient parental support to attend scientific or classical lyceums.	5-points Likert scale
23	Students from low-income families do not follow my recommendation to attend a scientific or classical lyceum, even when they perform well in middle school.	5-points Likert scale
24	Students from high-income families do not follow my recommendation to attend a vocational programme, even when they perform poorly in middle school.	5-points Likert scale
25	Girls will not feel comfortable in high school classes in which most students are male, as often occurs in applied-sciences or technical-technological programmes.	5-points Likert scale
26	Boys will not feel comfortable in high school classes in which most students are female, as often occurs in classical lyceums or human-sciences lyceums.	5-points Likert scale
27	Girls do not follow my recommendation to attend a scientific lyceum, even when they perform well in mathematics in middle school.	5-points Likert scale
28	Think about how teachers assign track recommendations for grade-8 students. How much does each of the following factors influence their decision? *The assigned weights had to sum to 100.*	• Grades and academic performance • Student's aptitudes and interests • Parents' education • Family's economic resources • Family involvement in the child's education • Parents' suggestions
29	Do you think private tutoring is necessary and useful for obtaining good grades in each of the following types of high school?	• Scientific lyceum • Classical lyceum • Other lyceum • Technical institute • Vocational institute

30	Is there a school psychologist or counsellor who helps students choose their high school track?	• Yes • No
31	Think about how grade-8 students choose a high school track. How much does each of the following factors influence their decision? *The assigned weights had to sum to 100.*	• Grades and academic performance • Student's aptitudes and interests • Teachers' track recommendation • Parents' advice • Parents' education • Family's economic resources • School psychologist's recommendation • Friends' choices
32	When will the track recommendations for this year's grade-8 students be decided?	• Week of 14–18 November • Week of 21–25 November • Week of 28 November–2 December • Week of 5–9 December • Week of 12–16 December

Background characteristics

33	In which province were you born?	Dropdown list of Italian provinces, including "Born outside Italy".
34	What is the postal code of your current place of residence?	Open-ended.
35	What is your marital status?	• Married • Cohabiting • Separated or divorced • Widowed • Single • Prefer not to disclose

36	What is the highest level of education that you have completed?	• high school diploma • Bachelor's degree • Master's degree • Doctorate
37	What was your final university degree grade, out of a maximum of 110?	Numeric response; shown to respondents with a university degree.
38	In which subject did you graduate? Please select only the subject most closely related to the subject you currently teach.	• Biology/Natural sciences • Mathematics • History • Engineering • Geography/Geology • Physics • Chemistry • Literature • Education sciences • Psychology • Philosophy • Other
39	What is the highest level of education completed by your mother?	• No schooling • Primary school • Middle school • high school • Bachelor's degree • Master's degree or doctorate
40	What is the highest level of education completed by your father?	• No schooling • Primary school • Middle school • High school • Bachelor's degree • Master's degree or doctorate

D.2 Teacher Endline Survey (2022)

No.	Question	Response options
	Introduction and confirmation of contact information	
1	Do you confirm that the following details are correct? Name Surname Email address	• Yes • No. If no, provide the correct information
	Feedback on the report	
2	In order to establish a useful collaboration for the coming years, it is very important for us to receive your feedback on the reports so that we can improve them in future years. In December, we sent you a personalized report on the school careers of your former students. Did you receive the report?	• Yes • No - please send it to the following email address: _____
3	Did you discuss the information received with your colleagues?	• Yes • No
4	If yes, with whom did you discuss the information contained in the report?	Open-ended.
5	How useful did you find the information in the report, on a scale from 1 to 5?	Scale from 1 to 5.
6	Did you find the report clear and easy to understand?	• Yes • No - please explain: _____
7	Which information in the report did you find particularly interesting?	Open-ended.
8	What information that was not included in this year's report would you like to see included in reports in future years?	Open-ended.
9	Do you have any other suggestions on how to improve the reports and make them more useful for teachers?	Open-ended.
	Student profiles	
10	In the following questions, we present profiles of several students in the final year of lower-secondary school. We	Drop-down menu with list of tracks;

	are aware that the information is limited, but we ask you to make your best estimate of the track recommendation that the following students would receive from their teachers. You will be paired with another teacher who completes this questionnaire. For each student profile, if you give the same track recommendation, you will enter a lottery for a EUR 100 Amazon gift card. If you give different track recommendations, you will not enter the lottery. In total, three EUR 100 gift cards will be awarded for these responses. **Gaia** is a girl who does not perform particularly well at school, but she always manages to obtain a passing mark in every subject. She has an aptitude for social subjects and interaction with others. Both of her parents **are university graduates / completed compulsory schooling**. What track recommendation would you give Gaia?	Open-ended comment.
11	**Luca** is a very bright student with high school performance, especially in mathematics and technology. He enjoys spending his free time building things and created a small electrical circuit for a student competition. His **father is a mechanic / is a mechanical engineer**. What track recommendation would you give Luca?	Drop-down menu with list of tracks; Open-ended comment.
12	**Margherita** is a diligent student with excellent school performance. She greatly enjoys painting and is very artistically talented. Her parents are separated, and she lives with her mother, who is a **successful lawyer / secretary in a small company**. What track recommendation would you give Margherita?	Drop-down menu with list of tracks; Open-ended comment.
13	**Giovanni** is a very sporty and athletic boy with a passion for outdoor activities and nature. His school performance is good, although not excellent: his average mark is 7 in all subjects. He comes from a rural town; his mother **has a university degree / a high school diploma**, and his father **has a high school diploma / completed lower-secondary school**. What track recommendation would you give Giovanni?	Drop-down menu with list of tracks; Open-ended comment.

Track recommendations for current students

14	We now ask you to think about the track recommendations given to your current students in the final year of lower-secondary school. For each answer, if you are unsure of the exact number, you may provide an approximate estimate. If some students received more than one track recommendation, consider the first, primary recommendation. Move the slider to select the approximate number of students. How many students are in the final year of lower-secondary school in your classes this year?	Number of students.
15	You indicated that you have a total of X students this year. Among your students this year, how many received each of the following track recommendations? *The values must sum to the number of students reported above.*	• Scientific lyceum, applied-sciences lyceum, or classical lyceum • Language, human-sciences, or arts lyceum • Technical-technological or technical-economic school • Vocational school or vocational education and training
16	Now consider your current students from families in which neither parent is a university graduate. How many students in the final year of lower-secondary school in your classes this year have two non-graduate parents? If you are unsure of the exact number, you may provide an approximate estimate.	Number of students.
17	You indicated that you have a total of X students this year whose parents are both non-graduates. How many of these students received each of the following track recommendations? *The values must sum to the number of students reported above.*	

		• Scientific lyceum, applied-sciences lyceum, or classical lyceum • Language, human-sciences, or arts lyceum • Technical-technological or technical-economic school • Vocational school or vocational education and training
18	Think about the student with the highest mathematics mark and answer the following questions about this student's characteristics.	• Student is male/female • Both parents are non-graduates/at least one parent is a university graduate • Open-ended ideal track recommendation for this student
19	Think about the student with the highest Italian mark and answer the following questions about this student's characteristics.	• Student is male/female • Both parents are non-graduates/at least one parent is a university graduate • Open-ended ideal track recommendation for this student
20	Think about the student with the lowest mathematics mark and answer the following questions about this student's characteristics.	

		• Student is male/female • Both parents are non-graduates/at least one parent is a university graduate • Open-ended ideal track recommendation for this student
21	Think about the student with the lowest Italian mark and answer the following questions about this student's characteristics.	• Student is male/female • Both parents are non-graduates/at least one parent is a university graduate • Open-ended ideal track recommendation for this student
22	During the teachers' meeting held to determine students' track recommendations, did the teaching staff disagree about the appropriate track recommendation for any student? Please describe briefly the reason for the disagreement and the circumstances of the students for whom it was most difficult to assign a track recommendation.	Open-ended.
23	In the questionnaire administered in November, many teachers reported that they consider students' performance in lower-secondary school when assigning the track recommendation. More specifically, which of the following actions are taken in the process of assigning the track recommendation? Select all that apply.	

- I usually remember my students' school performance without checking their individual marks in the register
- During the teachers' meeting, I keep the register open and check each student's marks
- Another teacher usually keeps the register open and checks the student's marks during the class-council meeting
- Before the class-council meeting, I note the ideal track recommendation that I would assign to each student
- We mainly discuss the track recommendation during the teachers' meeting and I do not usually prepare a proposal before the meeting
- Other, please specify

24 When teachers determine students' track recommendations, which of the following actions do they take? Select all that apply.

- Teachers usually remember their students' school performance without checking the register during the teachers' meeting
- Teachers usually keep the register open and check marks
- Teachers discuss the recommendation during the teachers' meeting without explicitly checking marks in the register, while considering more broadly the student's aptitudes, effort, and demonstrated interest
- Other, please specify

25 Thinking about the process of assigning track recommendations to your students in the final year of lower-secondary school, approximately how much time did you spend on each of the following activities between September and December before giving the recommendation? Report the average time spent per student.

- Responses for each activity: 1–10 minutes per student
- 10–20 minutes per student
- 20–40 minutes per student
- 40–60 minutes per student
- Other, please specify

1. Talking with the student about the student's aspirations and wishes
2. Checking the student's marks in the register
3. Talking with the parents to understand their perceptions of their child
4. Discussing the student with the other teachers during the teachers' meeting

26	In the decision-making process for assigning students' track recommendations, how frequently does each of the following situations occur? 1. If a final-year class is particularly large and there are many students to evaluate, we take more time to discuss and extend the teachers' meeting beyond its originally scheduled end time. 2. If a final-year class is large and there are many students to evaluate, we often have to decide the track recommendations more quickly in order to finish the teachers' meeting at the scheduled time. 3. We spend a great deal of time discussing track recommendations for students in more "difficult" circumstances and with low school performance, and decide more quickly for students with high school performance. 4. We spend a great deal of time discussing track recommendations for students with high school performance, and decide more quickly for students from more difficult circumstances and with low school performance. 5. We spend approximately the same amount of time deciding the track recommendation for every student in the class. Thank you very much again for your time and collaboration!	Frequency scale for each statement.

D.3 Teacher Baseline Survey (2023)

No.	Question	Response options
	Introduction, informed consent, and contact information	
1	Informed consent.	
2	Consent to the processing of personal data under the GDPR.	
3	Do you confirm that the following details are correct? Name Surname Email address	• Yes • No. If no, provide the correct information
	Teaching experience	
4	At which school do you currently teach? If you cannot find the name of the comprehensive school at which you teach, select "NONE OF THE ABOVE" under comprehensive school. If you teach at more than one school site or comprehensive school, you will be able to specify this later.	• Province • Comprehensive school • School-site name. Drop-down menus
5	If you selected "NONE OF THE ABOVE," enter here the school-site code of the school where you currently teach.	• Name of comprehensive school • Name of school site • School-site code
6	In which classes do you currently teach at the school site indicated above?	Matrix of classes.
7	Have you also taught at this school site in other school years?	• No • School year 2022/23 • 2021/22 • 2020/21 • 2019/20 • 2018/19 • 2017/18 • 2016/17. Select all that apply
8	In which classes did you teach at the school site indicated above in each selected school year?	A class matrix was shown separately for each selected school year

		from 2016/17 through 2022/23.
9	Do you teach this year at any other comprehensive school or school site besides the one selected above?	• Yes • No
10	In which years have you taught?	Drill-down year list beginning in 1970.
11	What type of teaching contract do you have?	• Permanent teacher • Fixed-term teacher (contract for the school year) • Fixed-term teacher (short-term substitute)
12	Do you hold any of the following roles within your school? Select all that apply.	• Deputy headteacher • Headteacher's assistant • Coordinator of the Mathematics Olympiad • Coordinator of outgoing guidance • Coordinator of a subject area • Laboratory coordinator • None of these roles
13	When you are uncertain about a matter concerning a student or about other work-related matters, which colleagues at the school where you teach do you ask for advice? *The teachers you indicate will not be contacted and will not be informed in any way that you named them. Answering this question is voluntary and is intended to help us understand whether shared information is more effective when transmitted through colleagues.*	• Teacher 1 and subject taught by Teacher 1 • Teacher 2 and subject taught by Teacher 2
14	Among your colleagues, with whom do you interact most within the school? *The teachers you indicate will not be contacted and will not be informed in any way that you named them. Answering this question is voluntary and is intended to help us understand whether shared information is more effective when transmitted through colleagues.*	• Teacher 1 and subject taught by Teacher 1 • Teacher 2 and subject taught by Teacher 2

We will now ask you a series of questions about your perceptions of students' educational and employment trajectories and of their families. We will subsequently provide you, in your report, with information specific to your students.

For each question, we ask you to report the percentage of students: indicate a number out of 100 potential students with the stated characteristic.

15	Think about the students you taught in the classes mentioned above during the last three school years, beginning with school year 2021/22. Move the slider to select the approximate number of students. Out of 100 of your students, how many do you think come from a disadvantaged family? Consider disadvantaged families to be those whose socioeconomic status is below the national average.	Slider from 0 to 100.
16	Think about the students you taught in the classes mentioned above during the last three school years, beginning with school year 2021/22. Out of 100 of your students, how many do you think have: 1. both parents who are university graduates; 2. one parent who is a university graduate; 3. neither parent who is a university graduate?	Numbers summing to 100.
17	We now ask about your perceptions of high school choice. *Note: Consider disadvantaged families to be those whose socioeconomic status is below the national average, and affluent families to be those whose socioeconomic status is above the national average.* 1. Out of 100 students, how many do you think attend a classical or scientific lyceum? 2. Out of 100 of your students from a disadvantaged background, how many do you think attend a classical or scientific lyceum? 3. Out of 100 of your students from an affluent background, how many do you think attend a classical or scientific lyceum? 4. Out of 100 of your students with an average mark greater than or equal to 8 who come from a	Scale from 0 to 100 for each item.

disadvantaged background, how many do you think attend a classical or scientific lyceum?

5. Out of 100 of your students with an average mark greater than or equal to 8 who come from an affluent background, how many do you think attend a classical or scientific lyceum?

18 We now ask about your perceptions of track recommendations.
Note: Consider disadvantaged families to be those whose socioeconomic status is below the national average, and affluent families to be those whose socioeconomic status is above the national average.

Scale from 0 to 100 for each item.

1. Out of 100 students, how many do you think were recommended to attend a classical or scientific lyceum?

2. Out of 100 of your students from a disadvantaged background, how many do you think were recommended to attend a classical or scientific lyceum?

3. Out of 100 of your students from an affluent background, how many do you think were recommended to attend a classical or scientific lyceum?

4. Out of 100 of your students with an average mark greater than or equal to 8 who come from a disadvantaged background, how many do you think were recommended to attend a classical or scientific lyceum?

5. Out of 100 of your students with an average mark greater than or equal to 8 who come from an affluent background, how many do you think were recommended to attend a classical or scientific lyceum?

19 We now ask about your perceptions of the probability of being held back in the first year of high school.
Note: Consider disadvantaged families to be those whose socioeconomic status is below the national average, and affluent families to be those whose socioeconomic status is

Scale from 0 to 100 for each item.

above the national average.

1. Out of 100 students, how many do you think were held back in the first year of high school?

2. Out of 100 of your students from a disadvantaged background, how many do you think were held back in the first year of high school?

3. Out of 100 of your students from an affluent background, how many do you think were held back in the first year of high school?

4. Out of 100 of your students with an average mark greater than or equal to 8 in lower-secondary school who come from a disadvantaged background, how many do you think were held back in the first year of high school?

5. Out of 100 of your students with an average mark greater than or equal to 8 in lower-secondary school who come from an affluent background, how many do you think were held back in the first year of high school?

6. Out of 100 of your students with an average mark greater than or equal to 8 in lower-secondary school who attend a classical or scientific lyceum and come from a disadvantaged background, how many do you think were held back in the first year of high school?

7. Out of 100 of your students with an average mark greater than or equal to 8 in lower-secondary school who attend a classical or scientific lyceum and come from an affluent background, how many do you think were held back in the first year of high school?

20	Think about your current students in the final year of lower-secondary school: are there insistent parents who try to influence the track recommendation?	• No • If Yes, how many? (2), open-ended number

Social norms and student profiles

In the following questions, we present the profiles of sev-

	eral students in the final year of lower-secondary school. We are aware that the information is limited, but we ask you to make your best estimate of the track recommendation that the following students would receive from their teachers. *Randomized incentive condition:* **Version 1.** You will be paired with another teacher who completes this questionnaire. For each student profile, if you both provide the same track recommendation, you will enter a lottery for a EUR 100 Amazon gift card. If you provide different track recommendations, you will not enter the lottery. In total, two EUR 100 Amazon gift cards will be awarded for these responses. **Version 2.** For each student profile, if you answer this question, you will enter a lottery for a EUR 100 Amazon gift card. In total, three EUR 100 Amazon gift cards will be awarded for these responses.	
21	Sofia is a good student, although she is not the best in her class. She loves languages and won a competition with an essay she wrote. Her parents are divorced, and she lives with her mother, who works as a **pediatrician/cashier**. What track recommendation would you give Sofia? Why did you choose this recommendation?	Drop-down menu with list of tracks; Open-ended explanation.
22	Matteo is an excellent student. He loves computer programming and built a robot for a school competition. Both of his parents are **university graduates/completed lower-secondary school**. What track recommendation would you give Matteo? Why did you choose this recommendation?	Drop-down menu with list of tracks; Open-ended explanation.
23	In this question, we present a series of statements. Please read each statement carefully and, for each one, select the box that corresponds to your opinion. 1. Students in my classes were recommended to attend a scientific or classical lyceum. 2. Students in my classes from a disadvantaged background were recommended to attend a scientific or classical lyceum. 3. Students in my classes from an affluent background were recommended to attend a scientific or classical lyceum. 4. Students in my classes from a disadvantaged background and with an average mark greater than	• Responses for each statement: Much less than the national average • Less than the national average • Equal to the national average • More than the national average • Much more than the national average

	or equal to 8 were recommended to attend a scientific or classical lyceum. 5. Students in my classes from an affluent background and with an average mark greater than or equal to 8 were recommended to attend a scientific or classical lyceum.	
24	In this question, we present a series of statements. Please read each statement carefully and, for each one, select the box that corresponds to your opinion. 1. Students with the same school performance and interests should receive the same track recommendation from their teachers. 2. It is fair for socioeconomic and family background to influence the choice of track recommendation when school performance and interests are equal.	• Responses for each statement: Strongly disagree • Disagree • Partly agree • Agree • Strongly agree
Explicit self-reported questions		
25	Think about how teachers assign high school track recommendations to students in the final year of lower-secondary school. How much does each of the following factors influence teachers' decisions about which recommendation to give students? *The values assigned to the factors listed below must sum to 100.*	• Marks and school performance • Student's aptitudes and interests • Parents' education • Family's financial resources • Family involvement in the child's education • Parents' suggestion
26	Think about how students in the final year of lower-secondary school choose their high school track. How much does each of the following factors influence students' decisions? *The values assigned to the factors listed below must sum to 100.*	

		• Marks and school performance • Student's aptitudes and interests • Teachers' track recommendation • Parents' advice about high school • Parents' education • Family's financial resources • School psychologist's suggestion • Friends' choices
27	When will the track recommendation for students in the final year of lower-secondary school be decided this school year?	• Week of 6–10 November • Week of 13–17 November • Week of 20–24 November • Week of 27 November–1 December • Week of 4–8 December • Week of 11–15 December
28	How will the track recommendation be provided to students in the final year of lower-secondary school this school year?	• Through the electronic register • Printed and provided during a meeting with the parents • Printed and given to the student • Printed and provided during a meeting with the student
Demographic information		
29	Province of birth.	Drop-down list.

30	What is your marital status?	• Married • Cohabiting • Separated or divorced • Widowed • Single • Prefer not to disclose
31	What is the highest level of education that you have completed?	• Completed high school • Bachelor's degree • Master's degree • Doctorate
32	What was your final university degree mark, out of a maximum of 110?	Numeric response.
33	In which subject did you earn your degree? Select only the subject corresponding to the subject that you teach at school.	• Biology • Mathematics • History • Engineering • Geography/Geology • Physics • Chemistry • Literature • Education sciences • Psychology • Philosophy • Other, please specify • Primary education sciences • Foreign languages and literatures
34	What is the highest level of education completed by your mother?	• Never attended school • Completed primary school • Completed lower-secondary school • Completed high school • Bachelor's degree • Master's degree or doctorate

35	What is the highest level of education completed by your father?	• Never attended school • Completed primary school • Completed lower-secondary school • Completed high school • Bachelor's degree • Master's degree or doctorate
36	What is your date of birth?	• Day • Month • Year

D.4 Teacher Endline Survey (2023)

No.	Question	Response options
	Introduction and personal information	
1	Do you confirm that the following information is correct? Name: ${e://Field/RecipientFirstName} Surname: ${e://Field/RecipientLastName} Email: ${e://Field/RecipientEmail}	• Yes • No
2	Do you confirm that the following details are correct? Name Surname Email address	• Yes • No. If no, provide the correct information
	Feedback on the report	
	In order to establish a useful future collaboration, it is very important for us to receive your feedback on the reports so that we can improve them in future years.	
3	In November/December, we sent you a personalized report on the school careers of your former students. Did you receive the report?	• Yes • No, please send it to the following email address: _____
4	Did you discuss the information received with your colleagues?	• Yes • No
5	If yes, with whom did you discuss the information received in the report?	Matrix with five rows: teacher's first and last name; main subject taught.
6	How useful did you find the information in the report, on a scale from 1 to 10?	Scale from 1 to 10.
7	Which information in the report did you find particularly interesting?	Open-ended.
8	What information that was not included in this year's report would you like to see included in reports in future years?	Open-ended.
9	Do you have any other suggestions on how to improve the reports and make them more useful for teachers?	Open-ended.
	Track recommendations: student profiles	

In the following questions, we will present profiles of several students in the final year of lower-secondary school. We are aware that the information is limited, but we ask you to make your best assessment of the track recommendation that you would assign to each student.

If you answer these questions, you will enter a lottery for a EUR 100 Amazon gift card. In total, three EUR 100 gift cards will be offered for these responses.

10	Paola/Paolo is a diligent student with excellent school performance. She/he has an average mark of 8.5 out of 10, with 9 in Italian, 8 in mathematics, and 8 in English. Paola/Paolo's parents have law degrees and place a strong emphasis on their children's education / Paola/Paolo's parents do not have university degrees and believe that she/he could work in their small family business in the future. What track recommendation would you give Paola/Paolo?	Drill-down list of high school tracks.
11	Why did you choose this track recommendation for Paola/Paolo?	Open-ended.
12	Luca/Lucia is a very bright student, with particularly strong school performance in mathematics and technical subjects. She/he has an average mark of 8 out of 10, with 8 in mathematics, 9 in technology, and 7 in Italian. She/he built a small electrical circuit for a student competition. Her/his father is a mechanic, and Luca/Lucia has expressed a desire to follow in her/his father's footsteps in the future / Her/his father is an engineer, and Luca/Lucia has expressed a desire to follow in her/his father's footsteps in the future. What track recommendation would you give Luca/Lucia?	Drill-down list of high school tracks.
13	Why did you choose this track recommendation for Luca/Lucia?	Open-ended.
14	Carlo/Carla is a very lively student with good, although not excellent, school performance. She/he has an average mark of 7 out of 10, with 6 in Italian and 7 in English, mathematics, and technology. She/he is not very diligent and often does not complete homework, but still manages to obtain marks that are more than sufficient. Neither of her/his parents has a university degree / Both of her/his parents have university degrees. What track recommendation would you give Carlo/Carla?	Drill-down list of high school tracks.

15	Why did you choose this track recommendation for Carlo/Carla?	Open-ended.
16	Giovanni/Giovanna is a very creative student, is a member of a musical group, and has a passion for drawing comic strips. She/he has an average mark of 7 out of 10, with 8 in art history and English and 7 in mathematics and Italian. Her/his father is a renowned university professor / owns a small business involved in timber processing and trade. What track recommendation would you give Giovanni/Giovanna?	Drill-down list of high school tracks.
17	Why did you choose this track recommendation for Giovanni/Giovanna?	Open-ended.
18	Matteo/Marika has passing marks in all subjects. She/he has an average mark of 6.5 out of 10, with 6 in mathematics and Italian and 7 in English and art history. She/he shows an aptitude for social activities and for interacting with others. Both of her/his parents have university degrees / Her/his parents do not have university degrees. What track recommendation would you give Matteo/Marika?	Drill-down list of high school tracks.
19	Why did you choose this track recommendation for Matteo/Marika?	Open-ended.
20	Valerio/Valeria is a diligent student with excellent school performance. She/he has an average mark of 8.5 out of 10, with 9 in mathematics and 8 in Italian and English. She/he has a passion for languages and spent three weeks in Ireland, where she/he improved her/his ability to speak English. Her/his parents are separated, and she/he lives with her/his mother, who is a successful surgeon / a secretary in a small company. What track recommendation would you give Valerio/Valeria?	Drill-down list of high school tracks.
21	Why did you choose this track recommendation for Valerio/Valeria?	Open-ended.

Current students' track recommendations

We now ask you to think about the track recommendations given to your current students in the final year of lower-secondary school. For each response, if you are unsure of the exact number, you may provide an approxi-

	mate estimate. If some students were given more than one track recommendation, consider the first, main recommendation. Move the slider to select the approximate number of students.	
22	How many students in the final year of lower-secondary school are in your classes this year?	Scale from 0 to 100.
23	You indicated that you have a total of X students this year. Among your students this year, how many received each of the following track recommendations?	• Scientific lyceum, applied sciences lyceum, or classical lyceum • Language, human sciences, or arts lyceum • Technical institute, technological or economic track • Vocational institute or vocational education and training
24	How many students in the final year of lower-secondary school in your classes this year have parents who are both non-graduates? If you are unsure of the exact number, you may provide an approximate estimate.	Scale from 0 to 100.
25	You indicated that you have a total of X students this year whose parents are both non-graduates. How many of these students received each of the following track recommendations?	• Scientific lyceum, applied sciences lyceum, or classical lyceum • Language, human sciences, or arts lyceum • Technical institute, technological or economic track • Vocational institute or vocational education and training
26	Think of the student with the highest mark in mathematics. Is this student male or female? Are both parents non-graduates, or does at least one parent have a university degree? What is the ideal track	

	recommendation that you would assign to this student?	• Male • Female. Both parents are non-graduates • At least one parent has a university degree. Drill-down list of high school tracks
27	Think of the student with the highest mark in Italian. Is this student male or female? Are both parents non-graduates, or does at least one parent have a university degree? What is the ideal track recommendation that you would assign to this student?	• Male • Female. Both parents are non-graduates • At least one parent has a university degree. Drill-down list of high school tracks
28	Think of the student with the lowest mark in mathematics. Is this student male or female? Are both parents non-graduates, or does at least one parent have a university degree? What is the ideal track recommendation that you would assign to this student?	• Male • Female. Both parents are non-graduates • At least one parent has a university degree. Drill-down list of high school tracks
29	Think of the student with the lowest mark in Italian. Is this student male or female? Are both parents non-graduates, or does at least one parent have a university degree? What is the ideal track recommendation that you would assign to this student?	• Male • Female. Both parents are non-graduates • At least one parent has a university degree. Drill-down list of high school tracks
30	During the teachers' meeting held to decide students' track recommendations, did the teaching staff disagree about the appropriate track recommendation for any student? Please briefly describe the reason for the disagreement and the circumstances of the students for whom assigning a track recommendation was most difficult.	Open-ended.
31	In the questionnaire that we administered in November, many teachers said that they consider students'	

	lower-secondary-school performance when assigning track recommendations. In particular, which of the following actions are taken in the process of assigning a track recommendation? Select all that apply.	• I usually remember my students' school performance without checking individual marks in the register • During the teachers' meeting, I keep the register open and check each student's marks • Another teacher usually keeps the register open and checks the student's marks during the class council meeting • Before the class council meeting, I note the ideal track recommendation that I would assign to each student • We mainly discuss the track recommendation during the teachers' meeting, and I usually do not prepare a proposal before the meeting • Other, please specify
32	Would you like to share any observations or corrections concerning your previous answers? Thank you for your collaboration!	Open-ended.