Educational pathways and the choice of high school tracks. The role of teacher recommendations in Italy

Skills2Capabilities Working Paper, October 2025

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ABSTRACT

We have conducted two online surveys of Italian teachers in lower secondary schools to investigate how they produce their recommendations for the choice of the upper secondary school track that families and students have to make at the end of lower secondary school. We have found that teachers have lower academic expectations for low socio-economic students and that the effect of students' background on teachers' beliefs vary with teacher personality. This implies that students with similar characteristics but low parental background who are allocated to teachers with specific personality traits may be induced by these traits to choose different high school tracks, with potential long-term consequences for their future education and labour market career. There is also evidence that teachers' recommendations are driven mainly by beliefs about short-term outcomes. The limited weight assigned to long-term outcomes implies that longer-term skill needs might be neglected, thereby contributing to future skill mismatches.

Skills2Capabilities, a Horizon Europe study, is about understanding how skills systems need to develop if they are to assist people to make labour market transitions – i.e. between jobs, employers or sectors – and thereby reduce the level of skill mismatch which might otherwise arise.

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Introduction

A key question addressed by the project "Skills2Capabilities" is understanding how skill systems can better respond to meeting skill demands in a fluid labour market environment. Where skills policy tends to over-refine the specification of skill needs so that they meet shorter-term needs, the chances are that longer-term skill needs might be neglected thereby contributing to future skill mismatches.

Skill and capabilities formation starts at school. In many European countries, students sort (or are sorted) into different curricular tracks after a period of comprehensive education. Students' age at tracking varies across countries, from very below age 13 in Germany, Austria, and the Netherlands, to age 13-14 in Italy, age 16 in Scandinavia and the UK, and age 18+ in the US (where curricular tracking occurs in college).[1] Typically, these curricula either emphasize technical and professional studies or focus on more academic topics, with a view of preparing students to college.

The choice of a school curriculum (or track) is both consequential and challenging for the students and their families, especially at an early age. Choosing the wrong track can usually be remedied, but the costs of doing so vary across countries and institutions. Often the specialization choice made after comprehensive education affects the skills portfolio attained by individuals during subsequent education (if any) and when they enter the labour market, making this specialization choice a consequential one for students.

This portfolio does not always fit with local or broader labour demand, and at the local or aggregate level skills mismatch can emerge, for instance because the supply of skills after education does not match with the demand for skills.

Parents and teachers are key actors in the process leading to the choice of the school curriculum. Teachers are actively involved in counselling and often issue individual recommendations, which, depending on the country, could be binding or not. To what extent are these recommendations influenced by future labour market prospects? And should they?

A critical view is that these prospects are too far ahead to matter, given the speed of change of recent labour markets. Because of this, recommendations should focus on individual development and inclinations (or capabilities), quite independently of future labour market developments.

The purpose of this deliverable is to understand how teacher recommendations work in the specific institutional setup of Italy, where 8th-grade teachers are tasked by the law to provide specific (albeit non-binding) high school recommendations to their students, as these transition from junior high school (grades 6-8) to high school (grades 9-11/13). Are teachers

[1] See for instance Brunello and Checchi, 2007.

concerned with future labour market outcomes, or do they care solely about the attitudes and tastes of their students? We address this issue by implementing two surveys of junior high school teachers, a pilot study in the Veneto region, the area where the University of Padova is located, and a nation-wide study covering the whole country.

The pilot was implemented in the late spring of 2023 and enabled us to test the questionnaire among 235+ junior high school teachers of Veneto. We used the results to fine tune the final questionnaire, which was fielded in 2025. The data collected in the pilot were also used to investigate whether teachers' personality, captured by the Big Five personality traits, affects teachers' subjective assessments ("beliefs") about students' performance prospects in alternative high school tracks. Such assessments or beliefs are important, as teachers' high school track recommendations to students are likely based on them. The first chapter of this report focuses on this study, which was published by the journal "*Economics Letters*" in 2025.[2]

The second chapter reports instead the results of the national survey, based on a questionnaire that was developed and refined using the outcomes of the pilot survey. In this chapter, we focus on the link between teacher beliefs and their high school track recommendations. First, we look at beliefs about student competencies for each track, their ability to complete each track regularly, graduate from college after high school and, most importantly, the likelihood of finding a stable and satisfactory job by age 30. Second, we ask whether teacher beliefs about future labour prospects associated with each high school track affect their recommendations.

Chapter 1.

Teacher Personality and the Perceived Socioeconomic Gap in Student Outcomes

1.1 Introduction

It is well known that students from low socioeconomic backgrounds (SEB) are significantly more likely to attend low educational tracks than their same-ability high-SEB peers, raising concerns for low-SEB students' outcomes and for inequality more generally.[3] The literature has considered multiple explanations for the observed SEB differences in track sorting, including the greater financial, informational, and/or psychological constraints low-SEB students face (e.g. Cameron and Heckman, 2001); SEB differences in preferences (e.g. Giustinelli, 2010), aspirations (e.g. Fruttero, Muller, and Calvo-González, 2024), or beliefs (e.g. Giustinelli and

[2] The version reported in the chapter is not the one published by the journal but an earlier version that appeared as IZA working paper.
[3] See Betts (2011) on the ubiquitousness of tracking, its different forms, and their effects on students' outcomes.

Pavoni, 2017); SEB differences in parental involvement and parenting styles (e.g. Doepke, Sorrenti, and Zilibotti, 2019).

The choice of track is affected also by teachers, via grading (e.g. Burn, Fumagalli, and Rabe, 2024), track recommendations (e.g. Carlana, La Ferrara, and Pinotti, 2022), and less formal actions and interactions with students and families. Teachers' grading and recommendations generally depend on the beliefs and expectations teachers have about their students, which in turn depend on the beliefs about the determinants of students' success in and after school. The latter may include students' tastes, abilities, and effort, as well as other students' characteristics and resources such as their demographics and socioeconomic background.

Notwithstanding their conceptual relevance, teachers' beliefs and expectations have been prominent omitted variables in the empirical economic literature on the SEB gradient in track sorting and other education outcomes, mainly due a lack of interpretable data (see Giustinelli (2023) on high-income contexts and Sabarwal, Abu- Jawdeh, and Kapoor (2021) on low-income contexts).

In this chapter, we begin to fill this gap by directly measuring and analyzing teachers' beliefs about the likelihood of students' success in alternative high school tracks. We find that these beliefs incorporate a large and statistically significant SEB gradient. We also find that they vary across teacher characteristics, most notably with (self-assessed) personality. Higher levels of teacher's extraversion and openness are associated with a steeper negative SEB gradient in teachers' beliefs about students' success prospects in an academic track. Conversely, more conscientious and agreeable teachers assign to low-SEB students, on average, a higher probability of success in a vocational track.

1.2 The institutional setup

Upper secondary education in Italy is structured in three main tracks: academic (*licei*, which are organized into separate scientific and humanities-oriented curricula), technical (*istituti tecnici*), and vocational (*istituti professionali/ istruzione e formazione professionale*). Vocational education provides ready to use skills associated with production activities. Technical education supplies scientific and technological competencies that are useful in technical professions. Academic education is more general, preparing students for further education rather than for specific jobs, and is perceived as more prestigious and challenging than technical and vocational education. Further details on the system are in the Appendix.

Italian teachers play a direct role in students' transition from junior high school (untracked) to high school (tracked), as they are required by law to provide students and their families with formal—though nonbinding—track recommendations, whose goal is to help students select their best-fitting track. The literature points to a greater influence of teachers' recommendations on low-background students, whose parents are generally less involved or

less conscious of the importance of track choice (e.g. Bonizzoni, Cavallo, and Romito, 2014), implying that teachers' recommendation can influence social mobility.

For their recommendations, teachers rely on their beliefs about the students' chances of succeeding in each track (Parente, 2020), while also considering students' and families' preferences. The available empirical evidence shows that teachers' recommendations are correlated with students' academic performance, gender, immigration background, and socioeconomic background (Argentin, Barbieri, and Barone, 2017). However, little is known about the link between teachers' beliefs and students' characteristics, and about how teachers' characteristics contribute to shape this link.

1.3 The data

We collected our data in 2023 via an online survey directed at junior high school teachers working in Veneto, the most populated region of the Italian North-East. Teachers were presented with hypothetical but realistic vignettes portraying an 8th grade student (final year of junior high school) confronting the choice among four high school tracks (academic with a scientific curriculum, academic with a humanities curriculum, technical, and vocational).

Each vignette specified a "student profile", including the student's name (revealing student's gender and immigration background), interests and school performance in the humanities and math (capturing the student's aptitudes and cognitive skills), personality (capturing noncognitive skills), parental occupation (capturing the student's SEB), and choice preference over tracks along those of the student's parents. To induce independence between teachers' and students' characteristics—often correlated in observational data—we randomized the student profiles across survey participants. We then asked teachers to assess the likelihood that a student with a specified profile would successfully and timely graduate from each high school track, what we refer to as teachers' beliefs.

The survey collected also teacher characteristics, including their self-reported personality traits in terms of the so called Big Five: extraversion, conscientiousness, openness, agreeableness, and neuroticism. Using principal component analysis, we extract from these (standardized) traits three personality factors, capturing extraversion and openness (factor 1), conscientiousness and agreeableness (factor 2), and neuroticism (factor 3). Further details on the survey are in the Appendix.

1.4 The empirical analysis

Our empirical analysis focuses on 235 respondents who provided complete information on their personal characteristics (e.g., socio-demographics, work experience, and self-reported

personality) and answered the questions associated with the vignettes illustrating hypothetical student characteristics.

Reported teachers' beliefs vary across the four high school tracks. For simplicity, we group these tracks into two: "high" (academic humanities/scientific) and "low" (vocational/technical). For each of these two tracks *z* (z=1,2), we regress the belief of teacher *i* about the likelihood that a student with profile *j* would successfully and timely graduate from that track on the three teacher personality factors, a dummy for whether the student SEB is low, the interactions between each teacher personality factor and the student SEB, and two vectors of conditioning variables, one including teacher characteristics X and one with vignette student characteristics V. We estimate:

$$Y_{ijz} = \alpha_z + \sum_{n=1}^{3} \gamma_{nz} Factor_{ni} + \gamma_{4z} Low_{SEB_j} + \sum_{n=1}^{3} \beta_{nz} Factor_{ni}\ x\ Low_{SEB_j} + \gamma_{5z} X_i + \gamma_{6z} V_j + \varepsilon_{ijz} \qquad (1)$$

where X_i includes teacher's gender, years of teaching experience, teaching subject, province and municipality size of the location where the teacher works, high school diploma, recent training on student orientation, whether teachers are currently teaching final year junior high school students, and the hours devoted to orientation activities during the current school year. V_j consists instead of the vignette student characteristics described above. We also include a dummy indicating the curriculum within the grouped track.

The two equations for z=1,2 are estimated jointly, and standard errors are clustered at the teacher level. To guarantee that our working sample mimics the regional population of teachers with respect to gender and province of work, we use entropy balancing and apply the associated weights to our regressions.

1.5 Results

Table 1 presents the estimates of equation (1), highlighting the effects of teachers' personality (factors 1 to 3), students' poor parental background (low SEB) and the interactions between the two. Columns (1) and (3) refer to the vocational/technical track, whereas columns (2) and (4) refer to the academic track. We find that teachers' beliefs that students will successfully complete each track are lower for students with low SEB, especially for the academic track. Expressed as percent of the overall mean, the negative gap is equal to 20.7 percent (-12.17/58.61) for the academic track, and to 6.5 (-3.84/58.61) for the vocational / technical track. As shown in the Appendix, these beliefs are consistent with observed student outcomes, as the probability of completing high school, the probability of completing an academic high school, and the final marks in high school are significantly lower for students with low SEB.

The effect of students' SEB on teachers' beliefs varies by teacher personality. To evaluate this variation, we consider as baseline a hypothetical situation where all three personality factors

are in the range [-0.5, 0.5]. We then compute how the marginal effect of low SEB on teachers' beliefs changes when adding a standard deviation to each of the three personality factors.

We find the SEB negative gradient on beliefs is larger among more extraverted and open-to-experience teachers. Adding one standard deviation to factor 1, which loads positively on extraversion and openness, increases the negative gradient from -16.94 (28.9 percent of the overall mean) in the baseline to -27.42 (46.6 percent) in the academic track and from -2.26 (3.8 percent) to -4.76 (8.1 percent) in the other track. The negative gradient is also larger among more neurotic teachers. Conversely, a low SEB increases the beliefs of success in a vocational/technical track if teachers are one standard deviation more conscientious and agreeable, from -2.26 (3.8 percent) in the baseline to 10.09 (17.2 percent).

While the literature has stressed the importance of teacher characteristics such as cognitive skills, gender, and race in shaping students' outcomes (e.g. Dee, 2004), our findings indicate that personality also matters for teachers' belief formation and, through the latter, may affect track recommendations.

1.6 Conclusions

The literature shows that teachers' characteristics, such as gender, race, and cognitive skills, affect student outcomes and teacher beliefs about these outcomes. By modifying beliefs, they alter teacher choices and behaviour. In this chapter, we have emphasized the role played by teacher personality, a characteristic that has never been investigated, because it is hard to observe both by the econometrician and by others interested in teachers' behaviour and performance, including principals, families, and students.

Using data from an online survey conducted in 2023, we have shown that teachers have lower academic expectations for low-SEB students, compared to medium/high SEB students of equal academic ability, attitudes, personality, gender, and migratory background, and that the effect of students' SEB on teachers' beliefs vary with teacher personality. Teachers with similar observable characteristics who are more extrovert and open to experience are more pessimistic about the chances that low-SEB students can succeed in the academic high school track. On the other hand, teachers who are more conscientious and agreeable have higher beliefs that these students can succeed in the vocational/technical track.

Our data cannot tell whether teachers' expectations are correct predictors of actual SEB gaps or contribute to cause them via a self-fulfilling-expectation mechanism. However, our finding that teachers' expectations depend on teacher personality, holding constant student characteristics, at least indicates that not all teachers are correct in predicting SEB gaps. Indeed, correct predictions should reflect only students' characteristics and attitudes, possibly up to random noise, and should not systematically depend on teacher personality.

An implication of our study is that students with similar characteristics but low parental background who are allocated to teachers with specific personality traits may be induced by these traits to choose different high school tracks, with potential long-term consequences for their future education and labour market career. This problem may be addressed by adopting policies that reduce the influence of teacher personality – for instance by relying on artificial intelligence tools. Alternatively, "objective" factors such as test scores should be given a higher weight in the recommendation process, reducing teachers' discretion (Van Leest et al., 2021). Finally, the assessment of teachers' personality traits could take place prior to beginning a university program in educational studies or starting a teaching position. Desirable traits could include non-cognitive skills that improve teacher effectiveness (e.g. Thijssen, Rege, and Solheim, 2022).

Chapter 2.

Teacher Beliefs and their Recommendations of School Tracks

2.1 Introduction

In Italy, lower secondary school teachers provide students with a high school track recommendation, that, although not binding, aims to influence students' future educational choices. Since the choice of the high school track affects future educational and labour market outcomes, it is crucial to understand how teachers generate these recommendations.

In this chapter, we describe the results of a survey conducted with approximately 1,000 teachers from a representative sample of 151 Italian middle schools. Administered between January and June 2025, the survey presented each respondent with two vignettes, each describing a randomly assigned profile of a student approaching the high school track decision.

We asked respondents to express their subjective probabilistic beliefs, on a 0-100 numerical scale of percent chance, that the vignette student would achieve certain educational and labour market outcomes, for each of five possible high school tracks. Then, we asked respondents their subjective probability of recommending each of the five tracks to the vignette student.

We find that teachers place considerable weight on their beliefs about the student's preparedness for a given track and the student's likelihood of success in the track, that is, the likelihood that the student would complete high school in the regular programme. In contrast, teachers' beliefs about the student's likelihood of completing college have no significant influence on track recommendations. Finally, teachers' beliefs about a student's likelihood of obtaining a good job at age 30 play a limited role: they affect recommendations for the technical track but are not consistently associated with academic-track recommendations.

Overall, these results indicate that teachers place greater weight on their beliefs about students' short-term outcomes, while giving less consideration to longer-term prospects. As a result, their recommendations may be aligned with immediate student success but may not fully capture students' potential for longer-run educational and labour market attainments.

2.2 The survey

We survey junior high school teachers across the country using an online survey that could be filled at school or at home. The sample of schools was randomly drawn from strata defined by the region and by municipality type (regional capital or else). We sent invitation letters to the selected schools and the interviewing company, BVA Doxa, contacted school principals of the schools agreeing to participate to the survey.[4] Schools that did not agree were replaced by randomly drawing from the strata until the planned number of schools in each stratum was reached. Table 2 illustrates the number of schools by region.

A company employee visited the schools and presented the questionnaire to teachers, who were invited to complete it at their earliest convenience, either at school or at home, using their digital devices. Teachers who completed the questionnaire were awarded by the survey company a 15-euro coupon. As shown in Table 3, the total number of teachers who handed in a complete questionnaire was 1,002.

The questionnaire collected information on teacher characteristics, including their gender, education, experience and self-reported personality traits. Teachers were presented with two hypothetical but realistic vignettes portraying an 8th grade student confronting the choice among five high school tracks: academic with a scientific curriculum, academic with a humanities curriculum, other academic, technical, and professional.

Each vignette specified a "student profile," including the student's name (revealing the student's gender), immigration status, self-confidence (capturing the student's noncognitive skills), interests and school performance in the humanities and math (capturing the student's aptitudes and cognitive skills), parental occupation (capturing the student's SEB), and the student's (and student family's) desire to continue to college. To induce independence between teachers' and students' characteristics—often correlated in observational data—we randomized the student profiles across survey participants.

We asked teachers to assess the likelihood that a student with a specified profile:

[4] The letter promised a short report comparing school-specific results with national or macro-area averages, as long as enough teachers participate.

1) has the necessary skills to successfully pursue each high school track ("preparedness");
2) will successfully and timely graduate from each high school track ("performance");
3) will graduate from college after completing each high school track ("college");
4) will find a stable and satisfactory job at age 30 without a college degree, after graduating from each high school track ("no-college job");
5) will find a stable and satisfactory job at age 30 with a college degree, after graduating from each high school track ("college job");

We call teachers' perceptions of the associated probabilities "beliefs". Teachers were then prompted to specify for each student the probabilities of recommending each of the five high school tracks. In the final section of the questionnaire, we inquired about the characteristics of the recommendation process in the respondent's school.[5]

Table 4 shows that most teachers are females, with average age equal to 47.5; 84.8 percent have completed an academic high school and close to half have a college degree in the humanities and teaching related topics. Finally, their average experience in school is higher than 15 years.

For each teacher, we compute their subjective probability that the vignette student finds a stable and satisfactory job as the average of outcomes 4) and 5) above, weighted with outcome 3). Table 5 reports average teacher beliefs and probabilities of recommending each of the five tracks.

2.3 Actors involved in the counselling process

Teacher recommendations are the outcome of a process that involves counselling activities, which typically intensify in the first months of the final year of junior high school. According to the interviewed teachers, these activities include meetings with high school teachers (85.1 percent) and high school students (68.5 percent); meetings with psychologists that often involve the administration of aptitude tests (38 percent); meetings with families (54.8 percent); participation to specialized fairs (40.2 percent). Meeting with labour market experts is reported only by 27.9 percent of respondents, suggesting that the need to match demand with supply is not considered as top priority at this stage of the curriculum.

[5] We also asked teachers about their personal characteristics, including gender, age, macro-area of birth, self-assessed personality traits, educational specialization and work experience as teachers, and number, age, and gender composition of children.

2.4 Beliefs, and teacher and student characteristics

Understanding how teachers form expectations is important because their beliefs map into students' short- and long-run outcomes. Causal evidence shows that higher teacher expectations raise students' achievement (Hill & Jones, 2021) and increase the probability of college completion (Papageorge, Gershenson & Kang, 2020).[6] If beliefs suffer from potential bias, they can widen inequalities in educational careers: for instance, expectations shaped by implicit stereotypes can lower female students' performance (Carlana, 2019) and decrease the likelihood that immigrant students receive top-tier high-school recommendations (Carlana, La Ferrara & Pinotti, 2022).

We examine how teacher beliefs about students' educational and labour market outcomes vary with both vignette student and teacher characteristics. For each high school track *s*, we estimate:

$$B_{ijs} = \alpha_s + \beta_s S_i + \gamma_s T_j + \varepsilon_{ijs} \quad (2)$$

where B_{ijs} is the belief expressed by teacher *j* about the probability that student *i* achieves a given outcome if enrolled in track *s*; S_i is a vector of vignette student characteristics; and T_j captures teacher characteristics. All beliefs are expressed on a 0–1 probability scale. Estimates pool the two vignettes per teacher, and standard errors are clustered at the teacher level. Tables 6 and 7 report the relationships between B_{ijs} and S_i (β_s), while Tables 8 and 9 present those between B_{ijs} and T_j (γ_s). Results distinguish between short-term outcomes (adequate preparation for the track and regular high school completion) and long-term outcomes (college completion and employment at age 30, with or without a college degree).

We find that student characteristics are the main determinants of teachers' expectations, and, among them, their performance in middle school (as specified in the vignette) account for most of the observed variation in beliefs. We classify students in four performance groups: a) the *bored*, with no specific interests, who seldom do their homework and have relatively poor results in all fields; b) the *achievers*, who have broad interests, always do their homework and perform well in all fields; c) the *scientists*, who are interested and perform well only in the sciences; d) the *poets*, who are interested and perform well only in the humanities.

Relative to the bored, the achievers are perceived by teachers as substantially more likely to complete college, across all high school tracks (from +4.2 percentage points (p.p.) for the professional track [*+7.5 percent, relative to the average outcome value*][7] to ≈13 p.p. for the classical [*+27.2 percent*] and scientific [*+25.3 percent*] academic curricula). On the other hand, being a poet raises the expected probability of college completion only within academic tracks, whereas being a scientist increases this probability for both academic and technical tracks.

[6] See Sabarwal, Abu-Jawdeh & Kapoor (2022) for a review.
[7] All percentages shown in square brackets indicate changes relative to the mean of the outcome variable.

Teachers' expectations about labour market outcomes follow a similar pattern. Achievers are assigned higher expected probabilities of employment at age 30, for academic and technical tracks (from nearly +4.6 p.p. for technical [≈*7 percent*] to ≈8-9 p.p. for academic schools [*from ≈12 to ≈21 percent*]). In contrast, being a poet is positively correlated with employment expectations only in academic tracks, but negatively in vocational settings.

Performance also influences beliefs about students' preparedness for a certain high school track and the likelihood of completing high school on time. As with long-term outcomes, these effects are track specific. For example, being a poet increases expected preparedness and regularity in academic tracks – especially classical studies (+19.3 p.p. [+*40.3 percent*]) – but reduces them for vocational settings.

Students' aspirations also shape teacher expectations. Preferences for attending university increases the perceived probability of college completion by around 2 p.p. in all but the professional track [≈*3 percent*]. However, such intentions have no effect on expected employment with a college degree for academic tracks and are associated with lower employment expectations for vocational ones. Similarly, university-oriented students are seen as more likely to be prepared and complete high school regularly in academic tracks, but less so in vocational tracks.

Socioeconomic background (SES) introduces a negative gradient. Students from low-SES families are assigned lower expected probabilities – by roughly 1-2 p.p. [*from ≈2 to ≈5 percent*] – across all outcomes, particularly within academic tracks. Teachers thus perceive low-SES students, ceteris paribus, as less likely to succeed in both short- and long-term dimensions.

There is also evidence of gender differentials. Conditional on other observed student characteristics, female students are viewed as less likely to secure employment, for vocational and academic scientific tracks (≈2 p.p. [≈*3 percent*]), but more likely to find a job without a degree, for other academic tracks (+3.1 p.p. [≈*7 percent*]). For these latter tracks, teachers also assign higher probabilities of preparedness (+3.2 p.p. [≈*6 percent*]) and regular completion (+3.9 p.p. [≈*7 percent*]), whereas perceive female students as less regular if attending professional schools (−2.8 p.p. [≈*5 percent*]).

Other student traits play smaller roles. Migratory background has limited influence, with coefficients generally small and statistically insignificant. Confidence shows some effect, with more confident students seen as more likely to complete college, find employment, and display adequate preparation and regularity in high school if they attend academic tracks (≈1-2 p.p. [≈*2-3 percent*]).

Most observable teacher characteristics explain relatively little of the variation in beliefs. Gender, age, and experience generally have limited influence, though some track-specific

associations emerge[8]. Regional origin and workplace location are more influential. Teachers born in Southern Italy, compared to those born in the North, assign lower probabilities of employment at age 30 with a college degree for technical and academic tracks (≈4-5 p.p. [*from ≈7 to ≈10 percent*]). Teachers working in Southern or Central Italy expect higher regularity in academic and technical tracks (form ≈4 to ≈9 p.p. [*from ≈8 to ≈18 percent*]) and higher preparedness for academic tracks, though lower preparedness for professional ones.

Subject specialization aligns expectations with track content: STEM teachers assign higher employment probabilities for technical tracks (+6.8 p.p. without a degree [*+12.2 percent*], +4.8 p.p. with a degree [*+8.6 percent*]) and academic school scientific curricula (+6.4 p.p. with a degree [*+12.4 percent*]). In contrast, humanities teachers are less optimistic about preparedness and regularity in classical studies.

The type of high school teachers themselves attended also shapes their beliefs. Teachers with academic-track diplomas assign lower employment probabilities for academic tracks (up to ≈7 p.p. lower [*−12.8 percent*]) and lower expectations of college completion for technical tracks.

Personality traits play a relatively modest role. Conscientiousness is associated with lower expected employment without a college degree for academic tracks but higher in vocational ones, along with higher expected regularity for vocational tracks. Agreeableness correlates with more optimistic employment expectations for academic tracks and greater preparedness in classical studies. Extraversion is irrelevant for short-term outcomes but linked to higher long-term expectations in other academic tracks. Neuroticism shows no significant associations, and openness is correlated with student preparation, positively for professional schools and negatively for classical academic tracks.

Other teacher characteristics show limited association: roles in student orientation, contract type, and prior work experience rarely affect beliefs.

2.5 Modelling teacher recommendations. An illustrative random utility model

We assume that teachers are altruistic and care about the welfare, V, of their junior high school students, when selecting upper secondary track recommendations for them. Specifically, teachers evaluate each student's welfare through their own lenses, that is, according to a subjective expected utility, defined as follows:

[8] For example, male teachers are slightly less optimistic about employment outcomes with a college degree in technical and other academic tracks. Age is associated with higher expectation of college completion in professional tracks and higher probability of regularity in classical studies, while more experience correlates with lower expectations about college completion for academic tracks but higher employment probability without a degree for professional schools.

$$P_{jis}U_{ji}(Y_{is}=1)+[1-P_{jis}]\,U_{ji}(Y_{is}=0) \quad (3)$$

where Y_{is} is a binary event such as whether student *i* graduates regularly from high school track *s* ($Y_{is}=1$) or not ($Y_{is}=0$); U_{ji} is the (dis)utility teacher *j* assigns to the corresponding event for student *i*; and P_{jis} is teacher *j*'s subjective probability of $Y_{is}=1$.

Equation (3) can be written as,

$$U_{ji}(Y_{is}=0)+P_{ijs}\Delta U_{ji} \quad (4)$$

where $\Delta U_{ji}=U_{ji}(Y_{is}=1)-U_{ji}(Y_{is}=0)$.

As common in random utility models, the analyst observes the decision maker's subjective expected utility up to an alternative-specific error term, ε_{jis}. Following Conti and Giustinelli, 2025, we decompose the error term in two components,

$$\varepsilon_{ijs}=\theta_{jis}+\mu_{jis} \quad (5)$$

where θ_{jis} is observed by the teacher but unobserved by the analyst, whereas μ_{jis} is unobserved by both the teacher and the analyst. The first term is standard. The second term is non-standard and is motivated by the fact that, instead of observing actual recommendation decisions, we elicit teachers' stated recommendations in hypothetical scenarios describing realistic yet fictional students (vignettes). During the elicitation task, teachers may realize that there are aspects of the scenarios that are not specified but may be known or anyway relevant in an actual choice situation. These aspects are captured by μ_{jis}. In our survey, we allow teachers to express uncertainty about μ_{jis}, by eliciting their recommendations probabilistically.

Assuming that the error μ_{jis} is *iid* Type I extreme value distributed across teachers, students, and alternatives, the probability q_{jis} that teacher *j* recommends track *s* to student *i* has the following closed form expression

$$q_{ijs}=Prob[U_{ji}(Y_{is}=0)+P_{ijs}\Delta U_{ji}>U_{ji}(Y_{is}=0)+P_{ijs}\Delta U_{ji}\;=\frac{e\left(U_{ji}(Y_{is}=0)+P_{ijs}\Delta U_{ji}+\theta_{ijs}\right)}{\sum_k e\left(U_{ji}(Y_{is}=0)+P_{ijk}\Delta U_{ji}+\theta_{ijk}\right)} \quad (6)$$

Taking logs of both sides of Equation (6) yields,

$$ln\frac{q_{ijs}}{q_{ij0}}=\alpha_s+[\,P_{ijs}-P_{ij0}]\Delta U+[\theta_{ijs}-\theta_{ij0}] \quad (7)$$

where *s=0* indexes the baseline or reference track; α is a constant term; and ΔU is the weight assigned to teacher's beliefs in the determining teacher recommendation probabilities *q*.

2.6 Estimating the relationship between teacher beliefs and their recommendations

While the illustrative model considers a single event, we have instead four events: a) good preparedness for the track; b) regular successful completion of the track; c) graduation from

college after completing each track; d) a stable and satisfactory job at age 30 after completing each track (integrated out with respect to college enrolment and completion after each track).

Our key research question is to understand whether and how teacher beliefs about the future labour prospects of students (event d) influence their recommendation choices, that we measure with the probabilities of recommending each track.

In our setup, there are five tracks. Setting the professional track as the numeraire (0), we have four equations like (7), one for each track. Each teacher is randomly exposed to two vignettes representing student types. We further assume that the difference $[\theta_{ijs} - \theta_{ij0}]$ is given by

$$[\theta_{ijs} - \theta_{ij0}] = \varphi_j + \omega_{ijs} \quad (8)$$

Where φ_j is a teacher fixed effect, which captures all teacher – specific characteristics that are not observed by the analyst.

The log odds ratio equation (7) implies that the marginal effect of each relative belief $P_{ijs} - P_{ij0}$ on the relative probability of recommending a track is constant. With four events, we can write equation (6) as follows

$$ln\frac{q_{ijs}}{q_{ij0}} = \alpha_s + \sum_k \left[{P_{ijs}}^k - {P_{ij0}}^k \right]\beta_k + \varphi_j + \omega_{ijs} \quad (9)$$

Where k = 1, … ,4 and

${P_{ijs}}^1$ = probability that student *i*'s preparation for track *s* is adequate

${P_{ijs}}^2$ = probability that student *i* completes the track regularly

${P_{ijs}}^3$ = probability that student *i* graduates from college

${P_{ijs}}^4$ = probability that student *i* finds a good job at age 30

Equation (9) is our baseline equation. We estimate (9) both by pooling all tracks together and by track, which is equivalent to allowing that parameters β_k are track specific. In an extension, we allow the constant term to vary not only by track but also with student characteristics. Since we are particularly interested in the effects of the beliefs that students will find a good job at 30, we explore whether these effects vary with student and teacher characteristics.

2.7 Empirical results

We standardize both the outcome $ln\frac{q_{ijs}}{q_{ij0}}$ and relative beliefs ${P_{ijs}}^k - {P_{ij0}}^k$. Since each interviewed teacher is randomly assigned two vignettes, we pool across vignettes and include teacher fixed effects. Table 10 illustrates our estimates when we pool across tracks (column (1)) and separately by track (columns (2) to (5)).

We find that the beliefs that count the most for recommending track *k* relative to the professional track refer to the student having adequate skills and being able to complete the track in a regular manner. We estimate that a one standard deviation increase in the belief that the student is well equipped for the track raises the probability that the track is recommended (relative to the professional track) by 0.32 standard deviations. Similarly, a one standard deviation increase in the belief that the student will complete the track regularly raises the probability of recommending the track by 0.29 standard deviations.

While the belief that the student will graduate from college does not affect teacher recommendations, we find that the belief that the student will find a stable and satisfactory job by age 30 does affect recommendations, although the size of the effect is close to one third of the effect of being well equipped or completely regularly the track.

Estimates by track qualitatively confirm these results. The impact of beliefs that the student will find a good job at 30 is lowest in the academic track with a scientific curriculum (0.084, not statistically significant) and highest in the technical track (0.136, statistically significant). Conversely, the belief that students are well equipped for the track is highest in the academic track with a scientific curriculum (0.398, statistically significant) and lowest in the academic track, other curricula (0.278, statistically significant). Finally, the belief that the student will complete regularly the track has the lowest effect in the technical track (0.154, statistically significant).

Adding student characteristics as additional controls (Table 11) has marginal effects on the estimates for all tracks but reduces the impact of the belief that the student will find a good job at 30, which remains statistically significant only in the technical track. Therefore, the recommendations for the academic tracks depend almost exclusively on the beliefs that the student has adequate skills and can complete the track regularly.

Conditional on teacher beliefs, the student characteristics that matter for teacher recommendations are those referring to individual performance. Being an achiever increases substantially the probability that teachers recommend the top academic track (classical and scientific studies) rather than the professional track. As expected, being a scientist increases the likelihood that teachers recommend the academic track, scientific curriculum, while being a poet increases the likelihood that the academic track, classical curriculum, is recommended. Overall, these results suggest that student attitudes and performance play a key role, larger than beliefs about student skills and ability to complete the track, and much larger than beliefs about future labour market outcomes.

Finally, we ask whether the effect of teacher beliefs about future labour market outcomes vary with student and teacher characteristics by interacting these beliefs with teacher's gender, area of teaching, age and personality traits (Table 12). Most of these interactions, however, turn out to be statistically insignificant, except for teacher neuroticism in the pooled sample of

tracks (column (1) of the table). In this case, our estimates indicate that the marginal effect of beliefs about future labour market outcomes is larger for neurotic than for other teachers.

The parental background of students affects the marginal impact of beliefs about future labour market outcomes only in the technical track. Conversely, student interests and attitudes have broader effects. An interesting result is that the weight of beliefs about future labour market outcomes declines significantly for students that exhibit broad interests or have interests in the humanities.

2.8 Concluding remarks

We provide new evidence on how Italian lower secondary school teachers form expectations about students' educational and labour market trajectories, and how these expectations shape their high school track recommendations.

Surveying approximately 1,000 teachers from a nationally representative sample of 151 schools, we elicit teachers' subjective beliefs about students' outcomes under alternative high school tracks and the corresponding probabilities that each track is recommended.

Our findings reveal three main insights. First, teachers' expectations are shaped primarily by student characteristics, especially performance and educational aspirations, which account for most of the variation in beliefs. In contrast, teacher characteristics play a secondary role, with some differences emerging by region and subject specialization.

Second, teachers' recommendations are driven mainly by beliefs about short-term outcomes – namely, whether the student has adequate skills for the track and is likely to complete it on time. These expectations strongly predict the probability that a given track is recommended. Conversely, beliefs about college completion have no significant influence, and beliefs about labour market outcomes have only modest effects.

Third, the limited weight assigned to long-term outcomes suggests that teachers' recommendations are anchored more in immediate indicators of success, than in future returns. This short-term focus may align recommendations with near-term achievement but risks overlooking students' capacity over the life course. Policies that improve teachers' awareness of the long-run returns to different tracks – and that help integrate such information into the recommendation process – could lead better alignment between teachers' recommendations and students' long-term educational and labour market prospects.

Close to 55 percent of Italian students have chosen in 2024 an academic high school and 26 percent have enrolled in the scientific curriculum, which typically leads to university. Only 31 percent of students have chosen instead a technical school, which typically prepares for the labour market (source: Italian Ministry of Education).

According to Assolombarda, an employer association, the annual supply of graduates from academic high schools is close to 100 thousand per year, much higher than the demand, which is estimated at 30 thousand. On the other hand, the annual supply of graduates from technical high schools is close to 225 thousand, much lower than the demand, which is estimated at 285 to 330 thousand.

This mismatch between demand and supply occurs also at the tertiary level: while the demand for STEM graduates is much higher than the supply, the opposite happens for the humanities, social and political sciences.

These data are open to different interpretations. For some, they suggest that teacher recommendations should give more weight to expected labour demand. For others, they indicate that local industry should adjust demand to the existing supply. While these recommendations are certainly useful, it is important to stress that in the Italian context they are not binding. Families have the last word on which school to enrol their children, and many select the academic track even though teachers recommended a technical track.

Clearly, producing sensible recommendations is a difficult job, which is made perhaps more difficult by the fact that, in the Italian context, it applies to students who are perhaps too young, at age 13, to choose a path that may affect their entire life. Delaying this choice would not only facilitate the design of teachers' recommendations but would also allow for additional counselling, perhaps with a more active involvement of local labour market institutions.

Overall conclusions

We have conducted two online surveys of Italian teachers in lower secondary schools to investigate how they produce their recommendations for the choice of the upper secondary school track that families and students have to make at the end of lower secondary school.

Using data from a pilot survey conducted in 2023 in one Italian region, we have shown that teachers have lower academic expectations for low-SEB students, compared to medium/high SEB students of equal academic ability, attitudes, personality, gender, and migratory background, and that the effect of students' SEB on teachers' beliefs vary with teacher personality.

An implication of these results is that students with similar characteristics but low parental background who are allocated to teachers with specific personality traits may be induced by these traits to choose different high school tracks, with potential long-term consequences for their future education and labour market career.

We have used the pilot survey to refine the questionnaire and conduct a national survey of about 1,000 teachers and 151 schools. We have shown that teachers' expectations are shaped primarily by student characteristics, especially performance and educational aspirations,

which account for most of the variation in beliefs. In contrast, teacher characteristics play a secondary role, with some differences emerging by region and subject specialization.

Teachers' recommendations are driven mainly by beliefs about short-term outcomes – namely, whether the student has adequate skills for the track and is likely to complete it on time. The limited weight assigned to long-term outcomes suggests that teachers' recommendations are anchored more in immediate indicators of success, than in future returns. This short-term focus may align recommendations with near-term achievement but risks overlooking students' capacity over the life course. Policies that improve teachers' awareness of the long-run returns to different tracks – and that help integrate such information into the recommendation process – could lead better alignment between teachers' recommendations and students' long-term educational and labour market prospects.

Tables and figures

Table 1: Teacher beliefs about the likelihood of vignette student's successfully and timely completing the professional/technical and academic tracks.

	Professional	Academic	Professional	Academic
Low socio-economic background (SEB)	-3.838	-12.17***	-2.786	-16.87***
	(4.260)	(4.550)	(3.925)	(4.143)
Personality Factor 1	1.176	-0.373	2.117	1.536
	(1.737)	(1.483)	(1.972)	(1.500)
Personality Factor 2	-1.430	0.272	-3.619*	0.319
	(1.769)	(1.362)	(1.992)	(1.515)
Personality Factor 3	0.395	0.926	1.239	1.164
	(1.548)	(1.434)	(1.650)	(1.459)
Low SEB * Personality Factor 1			-2.676	-11.23***
			(3.248)	(3.013)
Low SEB * Personality Factor 2			13.83***	-3.107
			(4.273)	(4.212)
Low SEB * Personality Factor 3			-1.533	-5.025
			(3.392)	(3.941)
Weights	yes	yes	yes	yes
Marginal effect of low SEB evaluated at baseline			-2.266	-16.939***
Marginal effect of low SEB evaluated at +1 standard deviation of Factor 1			-4.765	-27.428***
Marginal effect of low SEB evaluated at +1 standard deviation of Factor 2			10.093*	-19.717***
Marginal effect of low SEB evaluated at +1 standard deviation of Factor 3			-3.827	-22.055***
Weighted mean	68.201	49.015	68.201	49.015
Observations	470	470	470	470

Note: Each regression includes teacher and vignette controls and is weighted using entropy balancing weights. The vocational track includes professional and technical high schools. The academic track includes schools with a humanities and a scientific curriculum. Standard errors clustered by teacher are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 2. Number of schools by regions.

Region	Number	Percent
Piemonte	10	6.62
Lombardia	22	14.57
Trentino Alto Adige	3	1.99
Veneto	12	7.95
Friuli Venezia Giulia	3	1.99
Liguria	3	1.99
Emilia-Romagna	9	5.96
Toscana	8	5.3
Umbria	3	1.99
Marche	5	3.31
Lazio	12	7.95
Abruzzo	4	2.65
Molise	3	1.99
Campania	15	9.93
Puglia	9	5.96
Basilicata	5	3.31
Calabria	6	3.97
Sicilia	13	8.61
Sardegna	6	3.97
Total	151	100

Table 3. Number of teachers participating to the survey. By region

Piemonte	68	6.79	6.79
Lombardia	180	17.96	24.75
Trentino-Alto Adige	17	1.7	26.45
Veneto	88	8.78	35.23
Friuli-Venezia Giulia	20	2	37.23
Liguria	16	1.6	38.82
Emilia-Romagna	66	6.59	45.41
Toscana	31	3.09	48.5
Umbria	15	1.5	50
Marche	43	4.29	54.29
Lazio	69	6.89	61.18
Abruzzo	28	2.79	63.97
Molise	26	2.59	66.57
Campania	92	9.18	75.75
Puglia	68	6.79	82.53
Basilicata	30	2.99	85.53
Calabria	34	3.39	88.92
Sicilia	80	7.98	96.91
Sardegna	31	3.09	100
Total	1,002	100	

Table 4. Summary statistics

Variable	Obs.	Mean	Std.	Min	Max
percent males	1,002	0.218	0.413	0	1
age	996	47.468	9.620	24	80
birth: north	998	0.317	0.465	0	1
birth: centre	998	0.138	0.345	0	1
birth: south	998	0.532	0.499	0	1
birth: abroad	998	0.013	0.113	0	1
diploma: lyceum	998	0.848	0.359	0	1
diploma: technical school	998	0.130	0.337	0	1
diploma: professional school	998	0.022	0.147	0	1
college degree: STEM + med	968	0.368	0.482	0	1
college degree: humanities	968	0.548	0.498	0	1
open ended contract	1,002	0.817	0.387	0	1
teaches or has taught in the final grade	1,002	0.953	0.212	0	1
experience	999	15.720	9.684	0	43
had other jobs	1,001	0.626	0.484	0	1
teaches humanities	1,000	0.564	0.496	0	1
teaches sciences and math	1,000	0.317	0.466	0	1
has children	1,000	0.638	0.481	0	1

Table 5. Average probabilities

Track	Probability of recommending track	Probability that student is prepared	Probability that student completes regularly	Probability that student completes college	Probability that student finds at 30 a good job
Professional	0.191	0.557	0.569	0.441	0.656
Technical	0.235	0.552	0.573	0.563	0.673
Academic: classical	0.185	0.478	0.493	0.631	0.540
Academic: scientific	0.223	0.514	0.524	0.656	0.590
Academic: other	0.167	0.522	0.545	0.610	0.558
All	0.200	0.525	0.541	0.580	0.603

Table 6. Teachers' beliefs and student characteristics: short-term educational outcomes

	Probability that student is prepared					Probability that student completes regularly				
	Vocational		Academic			Vocational		Academic		
	professional	technical	classical	scientific	other	professional	technical	classical	scientific	other
Student is female	-0.015	-0.008	0.006	0.009	0.032***	-0.028***	-0.019*	0.012	0.004	0.039***
	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)
Student is native	-0.014**	-0.008	0.009*	0.009*	0.002	-0.011*	-0.002	0.007	0.007	0.005
	(0.007)	(0.006)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)
Student low parental background	0.005	-0.005	-0.024***	-0.022***	-0.015***	0.006	-0.004	-0.025***	-0.022***	-0.016***
	(0.007)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Student is confident	0.003	0.010*	0.016***	0.008	0.010*	-0.010	0.006	0.011**	0.009	0.013**
	(0.007)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)
Student has broad interests	0.011	0.109***	0.210***	0.211***	0.156***	0.009	0.108***	0.203***	0.208***	0.154***
	(0.009)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)
Student is interested in science	-0.027***	0.092***	0.027***	0.178***	0.005	-0.021***	0.088***	0.028***	0.170***	0.009
	(0.008)	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)
Student is interested in humanities	-0.081***	-0.040***	0.193***	0.036***	0.136***	-0.079***	-0.029***	0.180***	0.049***	0.130***
	(0.008)	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Student plans to go to college	-0.025***	-0.010*	0.017***	0.014**	0.014***	-0.021***	-0.010*	0.020***	0.016***	0.018***
	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)
Constant	0.438**	0.637***	0.390***	0.573***	0.499***	0.457***	0.647***	0.186	0.526***	0.383***
	(0.174)	(0.136)	(0.130)	(0.126)	(0.133)	(0.160)	(0.126)	(0.131)	(0.130)	(0.133)
Observations	2,004	2,004	2,004	2,004	2,004	2,004	2,004	2,004	2,004	2,004
R-squared	0.102	0.281	0.467	0.451	0.343	0.106	0.249	0.421	0.402	0.315
teacher characteristics	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Note: Standard errors are clustered by teacher. One, two and three stars for statistical significance at the 10, 5 and 1 percent.

Table 7. Teachers' beliefs and student characteristics: long-term educational and labour market outcomes

	Probability that student completes college					Probability that student finds at 30 a good job, *without* college degree					Probability that student finds at 30 a good job, *with* college degree				
	Vocational		Academic			Vocational		Academic			Vocational		Academic		
	professional	technical	classical	scientific	other	professional	technical	classical	scientific	other	professional	technical	classical	scientific	other
Student is female	-0.010	-0.015*	0.006	-0.001	0.016*	-0.020**	-0.018**	0.006	-0.004	0.031***	-0.025***	-0.023***	-0.004	-0.021**	0.016*
	(0.010)	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)	(0.008)	(0.009)	(0.009)	(0.009)
Student is native	-0.004	-0.002	0.012*	0.006	0.014**	-0.002	0.002	0.006	0.004	0.001	0.001	0.004	0.011*	0.009	0.009
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Student low parental background	0.003	-0.008	-0.017***	-0.013**	-0.013**	0.003	-0.007	-0.019***	-0.025***	-0.015**	-0.007	-0.014**	-0.024***	-0.023***	-0.019***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.007)	(0.006)	(0.006)
Student is confident	-0.001	0.009	0.011*	0.017***	0.013**	-0.001	0.001	0.010*	0.011*	0.003	0.001	0.009	0.017***	0.015**	0.010*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)
Student has broad interests	0.042***	0.081***	0.132***	0.134***	0.115***	0.004	0.046***	0.083***	0.085***	0.077***	0.007	0.047***	0.088***	0.084***	0.072***
	(0.008)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.008)	(0.008)	(0.007)
Student is interested in science	0.012	0.067***	0.019**	0.111***	0.015*	-0.020***	0.034***	0.016**	0.078***	0.012*	-0.013*	0.029***	0.003	0.064***	-0.004
	(0.008)	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.009)	(0.008)	(0.008)
Student is interested in humanities	-0.007	-0.002	0.116***	0.034***	0.097***	-0.042***	-0.016**	0.053***	0.028***	0.056***	-0.031***	-0.016**	0.056***	0.025***	0.048***
	(0.008)	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.007)
Student plans to go to college	0.009	0.017***	0.022***	0.023***	0.021***	-0.010*	-0.004	0.010*	0.012**	0.004	-0.017***	-0.012**	0.003	-0.003	0.001
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.007)	(0.006)	(0.006)
Constant	-0.010	0.367***	0.450***	0.515***	0.511***	0.593***	0.646***	0.225	0.358**	0.325**	0.407**	0.620***	0.390**	0.458***	0.534***
	(0.161)	(0.142)	(0.155)	(0.135)	(0.138)	(0.156)	(0.128)	(0.159)	(0.147)	(0.156)	(0.164)	(0.141)	(0.171)	(0.154)	(0.175)
Observations	2,004	2,004	2,004	2,004	2,004	1,902	1,914	1,854	1,877	1,861	1,893	1,919	1,872	1,909	1,873
R-squared	0.046	0.143	0.220	0.215	0.207	0.080	0.118	0.119	0.129	0.125	0.056	0.114	0.125	0.116	0.119
teacher characteristics	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Note: Standard errors are clustered by teacher. One, two and three stars for statistical significance at the 10, 5 and 1 percent.

Table 8. Teachers' beliefs and their characteristics: short-term educational outcomes

	Probability that student is prepared					Probability that student completes regularly				
	Vocational			Academic		Vocational			Academic	
	professiona	technical	classical	scientific	other	professiona	technical	classical	scientific	other
Male	-0.021	-0.018	-0.013	-0.017	-0.012	-0.011	-0.012	0.003	-0.003	0.007
	(0.020)	(0.016)	(0.016)	(0.016)	(0.016)	(0.019)	(0.016)	(0.017)	(0.017)	(0.016)
Age	0.006	-0.001	0.005	-0.003	0.000	0.004	-0.005	0.013**	-0.002	0.004
	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.005)	(0.006)	(0.006)	(0.006)
Age squared	-0.000	0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000**	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Birthplace (ref: North)										
Central Italy	-0.003	-0.025	-0.026	-0.013	-0.014	-0.047	-0.066**	-0.057*	-0.020	-0.042
	(0.040)	(0.031)	(0.029)	(0.027)	(0.031)	(0.038)	(0.033)	(0.032)	(0.032)	(0.033)
Southern Italy	-0.021	-0.018	0.011	0.007	0.004	-0.035	-0.037**	-0.009	0.002	-0.016
	(0.023)	(0.018)	(0.018)	(0.018)	(0.018)	(0.022)	(0.018)	(0.019)	(0.019)	(0.018)
Abroad	0.121*	0.081	0.072	0.086*	0.031	0.055	0.042	0.061	0.123*	0.042
	(0.062)	(0.067)	(0.068)	(0.052)	(0.047)	(0.062)	(0.073)	(0.067)	(0.062)	(0.057)
School location (ref: North)										
Central Italy	-0.014	0.027	0.064**	0.068***	0.051*	0.036	0.074***	0.088***	0.072**	0.086***
	(0.036)	(0.027)	(0.026)	(0.024)	(0.028)	(0.034)	(0.028)	(0.030)	(0.030)	(0.030)
Southern Italy	-0.042*	-0.022	0.042**	0.033*	0.020	-0.021	-0.003	0.062***	0.039**	0.047***
	(0.022)	(0.018)	(0.018)	(0.018)	(0.017)	(0.021)	(0.018)	(0.018)	(0.019)	(0.018)
Academic school diploma	-0.004	-0.033*	-0.004	-0.023	-0.018	-0.006	-0.003	0.010	0.004	0.007
	(0.022)	(0.018)	(0.018)	(0.017)	(0.017)	(0.022)	(0.018)	(0.019)	(0.018)	(0.018)
Permanent contract	0.003	0.005	0.014	0.002	-0.017	-0.017	0.015	0.015	0.029*	0.015
	(0.023)	(0.020)	(0.017)	(0.017)	(0.017)	(0.021)	(0.018)	(0.017)	(0.018)	(0.018)
Currently teaching grade 8	0.019	0.033	0.002	0.024	0.031	0.050	0.045	0.004	0.022	0.026
	(0.037)	(0.025)	(0.029)	(0.028)	(0.030)	(0.033)	(0.028)	(0.031)	(0.030)	(0.033)
Years of experience	0.001	-0.001	-0.002	-0.002	-0.001	0.002	0.000	-0.001	-0.002*	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)

Other job before teaching	0.026	-0.013	-0.013	-0.012	0.003	0.023	0.002	-0.017	-0.017	-0.005
	(0.018)	(0.015)	(0.015)	(0.014)	(0.015)	(0.017)	(0.015)	(0.015)	(0.014)	(0.015)
Role in student orientation	-0.024	-0.012	0.004	0.003	0.002	-0.028	-0.008	0.006	-0.003	0.003
	(0.020)	(0.016)	(0.016)	(0.015)	(0.015)	(0.018)	(0.015)	(0.016)	(0.015)	(0.016)
Teaching humanities	-0.037	-0.033	-0.053***	-0.005	-0.029	-0.005	-0.006	-0.040**	-0.024	-0.012
	(0.026)	(0.021)	(0.020)	(0.021)	(0.021)	(0.024)	(0.021)	(0.019)	(0.021)	(0.022)
Teaching science/math	-0.004	0.015	-0.026	0.009	-0.018	0.026	0.037*	-0.006	0.004	0.000
	(0.027)	(0.022)	(0.021)	(0.022)	(0.023)	(0.025)	(0.022)	(0.020)	(0.021)	(0.023)
Support teacher	0.009	0.024	-0.012	0.013	-0.035	-0.000	0.022	-0.011	0.002	-0.025
	(0.036)	(0.029)	(0.025)	(0.028)	(0.026)	(0.033)	(0.028)	(0.025)	(0.027)	(0.027)
Having children	0.001	0.021	-0.022	-0.007	-0.026	0.014	0.018	-0.036**	-0.019	-0.023
	(0.023)	(0.019)	(0.018)	(0.017)	(0.019)	(0.021)	(0.018)	(0.018)	(0.018)	(0.019)
Teacher personality traits										
Extraversion	-0.004	-0.002	0.011	0.003	0.009	0.001	0.002	0.008	-0.000	0.010
	(0.008)	(0.006)	(0.007)	(0.006)	(0.006)	(0.008)	(0.006)	(0.007)	(0.006)	(0.007)
Conscientiousness	0.010	0.010	-0.009	-0.004	-0.003	0.014*	0.021***	-0.001	0.004	-0.004
	(0.008)	(0.006)	(0.006)	(0.006)	(0.007)	(0.008)	(0.006)	(0.007)	(0.006)	(0.007)
Agreeableness	0.002	0.006	0.014**	0.000	0.002	-0.003	-0.002	0.007	-0.001	0.001
	(0.009)	(0.008)	(0.007)	(0.006)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)
Neuroticism	-0.003	0.004	-0.006	-0.010	0.005	-0.008	0.008	0.001	-0.006	-0.000
	(0.009)	(0.007)	(0.007)	(0.006)	(0.007)	(0.008)	(0.007)	(0.007)	(0.006)	(0.007)
Openness	0.018**	0.005	-0.011*	-0.007	-0.007	0.009	0.005	-0.009	0.002	-0.002
	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)
Constant	0.438**	0.637***	0.390***	0.573***	0.499***	0.457***	0.647***	0.186	0.526***	0.383***
	(0.174)	(0.136)	(0.130)	(0.126)	(0.133)	(0.160)	(0.126)	(0.131)	(0.130)	(0.133)
Observations	2,004	2,004	2,004	2,004	2,004	2,004	2,004	2,004	2,004	2,004
R-squared	0.102	0.281	0.467	0.451	0.343	0.106	0.249	0.421	0.402	0.315
student characteristics	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Note: Standard errors are clustered by teacher. One, two and three stars for statistical significance at the 10, 5 and 1 percent.

Table 9: Teachers' beliefs and their characteristics: long-term educational and labour market outcomes

	Probability that student completes college					Probability that student finds at 30 a good job, *without* college degree					Probability that student finds at 30 a good job, with college degree				
	Vocational		Academic			Vocational		Academic			Vocational		Academic		
	professional	technical	classical	scientific	other	professional	technical	classical	scientific	other	professional	technical	classical	scientific	other
Male	0.004	-0.008	0.027	0.019	0.004	-0.009	-0.027*	0.022	0.016	-0.002	-0.018	-0.032*	-0.029	-0.030	-0.036**
	(0.020)	(0.018)	(0.019)	(0.018)	(0.017)	(0.018)	(0.016)	(0.018)	(0.018)	(0.018)	(0.019)	(0.017)	(0.020)	(0.020)	(0.018)
Age	0.020***	0.011*	0.007	0.007	0.006	0.002	-0.001	0.004	0.003	0.005	0.010	0.003	0.007	0.008	0.003
	(0.007)	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)
Age squared	-0.000***	-0.000*	-0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Birthplace (ref: North)															
Central Italy	-0.022	-0.064*	-0.049	-0.037	-0.035	0.015	-0.014	0.027	0.032	0.042	0.000	-0.038	-0.026	-0.030	-0.014
	(0.039)	(0.034)	(0.038)	(0.035)	(0.033)	(0.031)	(0.030)	(0.038)	(0.036)	(0.036)	(0.034)	(0.032)	(0.040)	(0.035)	(0.035)
Southern Italy	0.008	-0.024	-0.041*	-0.031	-0.033*	-0.005	-0.022	-0.032	-0.021	-0.016	-0.009	-0.040**	-0.048**	-0.051**	-0.048**
	(0.021)	(0.020)	(0.023)	(0.021)	(0.019)	(0.019)	(0.018)	(0.021)	(0.021)	(0.021)	(0.021)	(0.019)	(0.024)	(0.022)	(0.022)
Abroad	0.149**	0.064	0.064	0.111***	0.047	-0.060	-0.065	0.060	0.103*	0.008	-0.046	-0.062	0.020	0.038	-0.012
	(0.062)	(0.076)	(0.064)	(0.041)	(0.058)	(0.066)	(0.081)	(0.064)	(0.053)	(0.070)	(0.062)	(0.075)	(0.066)	(0.046)	(0.063)
School location (ref: North)															
Central Italy	0.038	0.040	0.043	0.035	0.022	-0.042	-0.023	-0.001	-0.018	-0.002	0.005	0.006	0.028	0.032	0.020
	(0.035)	(0.030)	(0.035)	(0.032)	(0.030)	(0.029)	(0.027)	(0.033)	(0.033)	(0.033)	(0.030)	(0.028)	(0.036)	(0.032)	(0.031)
Southern Italy	0.011	-0.041**	0.003	0.003	-0.012	-0.059***	-0.052***	0.033	0.005	0.019	-0.050**	-0.052***	0.005	-0.013	0.001
	(0.021)	(0.020)	(0.023)	(0.021)	(0.019)	(0.020)	(0.018)	(0.021)	(0.021)	(0.021)	(0.021)	(0.020)	(0.024)	(0.023)	(0.022)
Academic school diploma	-0.034	-0.043**	0.009	0.017	-0.011	-0.031	-0.033*	-0.059***	-0.066***	-0.058***	-0.028	-0.027	-0.045*	-0.031	-0.049**
	(0.022)	(0.019)	(0.021)	(0.021)	(0.018)	(0.020)	(0.019)	(0.022)	(0.021)	(0.020)	(0.021)	(0.019)	(0.023)	(0.023)	(0.021)
Permanent contract	-0.010	0.005	0.022	0.014	0.005	-0.041**	-0.022	0.014	0.012	-0.003	-0.033	-0.021	0.024	0.002	0.001
	(0.021)	(0.020)	(0.021)	(0.020)	(0.019)	(0.020)	(0.019)	(0.021)	(0.021)	(0.020)	(0.020)	(0.019)	(0.023)	(0.022)	(0.021)
Currently grade 8	0.021	0.016	0.042	0.016	0.019	0.112***	0.088***	0.042	0.036	0.013	0.079**	0.076**	0.071*	0.042	0.058
	(0.035)	(0.037)	(0.040)	(0.038)	(0.036)	(0.030)	(0.033)	(0.035)	(0.034)	(0.028)	(0.036)	(0.033)	(0.040)	(0.038)	(0.035)
Years of experience	0.002	-0.000	-0.004***	-0.002	-0.003***	0.003**	0.001	-0.002	-0.001	-0.002*	0.001	-0.001	-0.003*	-0.002	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Other job before teaching	-0.001	0.000	-0.009	0.016	-0.015	0.028*	0.016	-0.002	-0.005	-0.002	0.026	0.012	-0.019	-0.002	-0.025
	(0.017)	(0.016)	(0.018)	(0.017)	(0.016)	(0.016)	(0.015)	(0.017)	(0.017)	(0.016)	(0.018)	(0.016)	(0.019)	(0.019)	(0.018)

Role in orientation	-0.017	-0.001	0.003	0.003	0.000	-0.019	-0.017	0.010	0.003	0.001	-0.016	-0.002	0.025	0.028	0.025
	(0.018)	(0.017)	(0.019)	(0.018)	(0.017)	(0.017)	(0.016)	(0.018)	(0.018)	(0.018)	(0.018)	(0.017)	(0.020)	(0.019)	(0.018)
Teaching humanities	-0.008	-0.005	-0.007	-0.005	0.013	-0.007	0.023	0.025	0.011	-0.017	0.022	0.014	0.017	0.034	0.006
	(0.024)	(0.023)	(0.025)	(0.023)	(0.020)	(0.023)	(0.022)	(0.025)	(0.027)	(0.023)	(0.023)	(0.023)	(0.028)	(0.029)	(0.026)
Teaching science/math	-0.018	0.028	0.035	0.036	0.025	0.010	0.068***	0.028	0.014	-0.010	0.024	0.048**	0.046	0.064**	0.030
	(0.025)	(0.023)	(0.026)	(0.023)	(0.020)	(0.024)	(0.023)	(0.026)	(0.028)	(0.023)	(0.024)	(0.023)	(0.029)	(0.029)	(0.027)
Support teacher	-0.049*	-0.019	0.003	-0.025	0.005	-0.028	0.011	0.009	0.018	-0.005	0.048	0.030	0.043	0.029	0.012
	(0.029)	(0.029)	(0.035)	(0.031)	(0.028)	(0.031)	(0.029)	(0.034)	(0.037)	(0.029)	(0.030)	(0.028)	(0.035)	(0.035)	(0.031)
Having children	-0.009	0.013	0.001	-0.004	-0.005	0.019	0.041**	0.023	0.023	0.009	-0.000	0.002	-0.012	-0.013	-0.013
	(0.021)	(0.019)	(0.022)	(0.020)	(0.019)	(0.020)	(0.019)	(0.021)	(0.021)	(0.020)	(0.021)	(0.019)	(0.024)	(0.023)	(0.023)
Teacher personality traits															
Extraversion	0.007	-0.002	0.008	0.005	0.011*	0.012*	0.006	0.009	0.005	0.019***	0.007	0.002	0.006	0.001	0.014*
	(0.008)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.009)	(0.008)	(0.008)
Conscientiousness	0.006	0.013*	0.010	0.005	0.009	0.014*	0.015**	-0.015**	-0.016**	-0.008	0.006	0.010	-0.004	-0.008	-0.003
	(0.008)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)	(0.008)	(0.008)
Agreeableness	0.002	0.009	0.013	0.011	0.012*	0.009	0.010	0.005	0.005	0.019**	0.009	0.011	0.023**	0.024***	0.029***
	(0.008)	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.010)	(0.009)	(0.009)
Neuroticism	-0.003	0.003	0.005	-0.001	0.007	0.009	0.004	-0.003	0.002	-0.002	0.001	0.006	-0.006	-0.003	-0.003
	(0.008)	(0.008)	(0.009)	(0.008)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.010)	(0.009)	(0.009)
Openness	0.002	0.001	-0.001	0.001	-0.002	0.010	0.007	-0.011	-0.002	-0.012*	-0.003	0.003	-0.008	-0.006	-0.009
	(0.008)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.009)	(0.008)	(0.008)
Constant	-0.010	0.367***	0.450***	0.515***	0.511***	0.593***	0.646***	0.225	0.358**	0.325**	0.407**	0.620***	0.390**	0.458***	0.534***
	(0.161)	(0.142)	(0.155)	(0.135)	(0.138)	(0.156)	(0.128)	(0.159)	(0.147)	(0.156)	(0.164)	(0.141)	(0.171)	(0.154)	(0.175)
Observations	2,004	2,004	2,004	2,004	2,004	1,902	1,914	1,854	1,877	1,861	1,893	1,919	1,872	1,909	1,873
R-squared	0.046	0.143	0.220	0.215	0.207	0.080	0.118	0.119	0.129	0.125	0.056	0.114	0.125	0.116	0.119
student characteristics	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Note: Standard errors are clustered by teacher. One, two and three stars for statistical significance at the 10, 5 and 1 percent.

Table 10. The effect of teacher beliefs on teacher recommendations.

	All tracks	Technical track	Academic track, classical	Academic track, scientific	Academic track, other
Probability that student has adequate skills	0.315***	0.291***	0.343***	0.398***	0.278***
	(0.027)	(0.055)	(0.059)	(0.056)	(0.057)
Probability that student completes regularly	0.292***	0.154***	0.284***	0.291***	0.289***
	(0.026)	(0.060)	(0.055)	(0.057)	(0.056)
Probability that student completes college	-0.011	-0.015	-0.010	-0.034	0.011
	(0.023)	(0.053)	(0.057)	(0.049)	(0.050)
Probability that student finds at 30 a good job	0.112***	0.136**	0.112**	0.084	0.104**
	(0.020)	(0.057)	(0.048)	(0.052)	(0.049)
Observations	7,988	1,997	1,997	1,997	1,997
R-squared	0.638	0.676	0.759	0.746	0.739

Note: each regression includes teacher fixed effects. Standard errors are clustered by teacher. One, two and three stars for statistical significance at the 10, 5 and 1 percent.

Table 11. The effect of teacher beliefs on teacher recommendations. With student characteristics.

	All tracks	Technical track	Academic track, classical	Academic track, scientific	Academic track, other
Probability that student has adequate skills	0.273***	0.220***	0.216***	0.282***	0.186***
	(0.025)	(0.054)	(0.061)	(0.053)	(0.058)
Probability that student completes regularly	0.250***	0.099*	0.187***	0.197***	0.212***
	(0.024)	(0.059)	(0.050)	(0.052)	(0.056)
Probability that student completes college	0.003	-0.012	-0.009	-0.019	0.003
	(0.022)	(0.052)	(0.052)	(0.047)	(0.049)
Probability that student finds at 30 a good job	0.099***	0.125**	0.074	0.049	0.078
	(0.021)	(0.058)	(0.048)	(0.052)	(0.048)
Student is native	-0.003	-0.000	0.016	0.014	-0.003
	(0.020)	(0.027)	(0.036)	(0.034)	(0.033)
Student has low parental background	-0.002	0.002	-0.008	-0.013	-0.018
	(0.019)	(0.027)	(0.033)	(0.033)	(0.031)
Student is confident	0.011	-0.009	0.048	0.005	0.023
	(0.020)	(0.026)	(0.034)	(0.034)	(0.032)
Student has broad interests	0.213***	0.160***	0.361***	0.359***	0.218***
	(0.025)	(0.035)	(0.056)	(0.049)	(0.043)
Student is interested in science	0.174***	0.176***	0.193***	0.349***	0.127***
	(0.025)	(0.039)	(0.043)	(0.052)	(0.039)
Student is interested in humanities	0.186***	0.071**	0.401***	0.229***	0.294***
	(0.026)	(0.034)	(0.064)	(0.046)	(0.055)
Student plans to go to college	0.081***	0.060**	0.114***	0.115***	0.080**
	(0.020)	(0.027)	(0.035)	(0.035)	(0.033)
Observations	7,988	1,997	1,997	1,997	1,997
R-squared	0.656	0.698	0.791	0.779	0.762

Note: each regression includes teacher fixed effects. Standard errors are clustered by teacher. One, two and three stars for statistical significance at the 10, 5 and 1 percent.

Table 12. The effect of teacher beliefs on teacher recommendations. With interactions.

	All tracks	Technical track	Academic track, classical	Academic track, scientific	Academic track, other
Probability that student is prepared	0.272***	0.219**	0.221***	0.287***	0.192***
	(0.025)	(0.054)	(0.061)	(0.054)	(0.056)
Probability that student completes regularly	0.240***	0.095	0.171***	0.187***	0.197***
	(0.024)	(0.059)	(0.052)	(0.053)	(0.056)
Probability that student completes college	-0.006	-0.011	-0.040	-0.030	-0.015
	(0.022)	(0.051)	(0.052)	(0.046)	(0.049)
Probability that student finds at 30 a good job (J)	0.105***	0.109	0.108*	0.066	0.102*
	(0.026)	(0.083)	(0.062)	(0.069)	(0.062)
J * male teacher	-0.051	0.004	-0.021	-0.168*	-0.097
	(0.041)	(0.135)	(0.089)	(0.100)	(0.093)
J * teacher of sciences	0.015	0.075	-0.091	0.007	-0.016
	(0.035)	(0.123)	(0.077)	(0.088)	(0.080)
J * young teacher	0.001	-0.028	0.034	0.008	0.043
	(0.033)	(0.121)	(0.082)	(0.075)	(0.091)
J * teacher is conscientious	0.006	0.021	-0.017	0.014	0.034
	(0.016)	(0.066)	(0.036)	(0.043)	(0.041)
J * teacher is agreeable	0.009	0.010	0.042	0.036	0.007
	(0.017)	(0.063)	(0.047)	(0.055)	(0.041)
J * teacher is extrovert	-0.016	0.013	-0.024	-0.025	-0.022
	(0.016)	(0.057)	(0.038)	(0.038)	(0.037)
J * teacher is neurotic	0.039**	0.067	0.058	0.018	0.026
	(0.017)	(0.075)	(0.046)	(0.040)	(0.049)
J * teacher is open	0.008	-0.001	0.020	-0.015	0.017
	(0.016)	(0.060)	(0.041)	(0.039)	(0.039)
J * student has broad interests	-0.074***	-0.031	-0.077*	-0.055	-0.076*
	(0.021)	(0.063)	(0.046)	(0.050)	(0.041)
J * student is interested in the sciences	-0.016	-0.003	-0.026	0.003	-0.037
	(0.016)	(0.064)	(0.039)	(0.045)	(0.039)
J * student is interested in the humanities	-0.086***	-0.038	-0.112***	-0.061	-0.115***
	(0.018)	(0.055)	(0.041)	(0.044)	(0.042)
J * student is native	-0.004	-0.045	-0.027	-0.002	-0.004
	(0.013)	(0.045)	(0.027)	(0.029)	(0.028)
J * student has low parental background	0.016	0.084**	-0.016	0.037	0.032
	(0.013)	(0.041)	(0.030)	(0.031)	(0.032)
J * student is confident	0.015	-0.004	0.026	0.007	0.058*
	(0.015)	(0.044)	(0.031)	(0.035)	(0.033)
J * student will go to college	-0.017	-0.010	-0.022	0.007	-0.032
	(0.013)	(0.045)	(0.029)	(0.032)	(0.030)
Observations	7,988	1,997	1,997	1,997	1,997
R-squared	0.662	0.704	0.798	0.784	0.769

Note: each regression includes teacher fixed effects and student controls. Standard errors are clustered by teacher. One, two and three stars for statistical significance at the 10, 5 and 1 percent.

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Appendix.

A. The Institutional setup

Although by the Italian law a student's graduation track bears no restrictions on access to higher education, students attending different high school tracks experience different education and post-education outcomes. The 2023 survey by Alma Diploma on graduate profiles shows that 89.9% of academic high school graduates intend to continue their education, while only 54.2% of technical high school graduates and 42.2% of vocational high school graduates express the same intention (Alma Diploma, 2023).

Enrollment in and graduation from each track varies by SEB. Using data from the 2018 Participation, Labor, Unemployment Survey (PLUS), Figure A1 shows that the proportion of adults aged 19-34 who graduated from an academic (resp. vocational or technical) high-school is significantly lower (resp. higher) among low-SEB students compared to their medium/high-SEB peers.

B. The online survey

The online survey targets junior high school teachers who are teaching or have taught in the past final-grade students. The survey does not provide teachers with monetary or other incentives but was endorsed by the Regional Education Authority of the Veneto Region, located in the North-east of Italy, which provided practical support by contacting eligible respondents via an official email to school principals with the link to our survey. The link was distributed to teachers by principals. During the three- month fielding period arranged with the Regional Education Authority (June-August 2023), 357 teachers (approximately 2.25% of the eligible population) responded fully or partially to our survey.

The respondents who completed the survey are not a representative sample of the Veneto region. Compared to the relevant population, we over-sample females (85.3 percent versus 76.5 percent) and teachers operating in the province of Vicenza (30.6 percent versus 19.6 percent) and under-sample teachers in the provinces of Belluno and Treviso (8,2 percent versus 22.7 percent). We take these differences into account

with entropy balancing (Hainmueller, 2012), using the generated weights to re- balance out sample in all our regressions.

The survey consists of four sections. The first two sections collect information about the respondents' socio-demographics (place of birth, gender, educational qualifications), self-assessed personality (based on statements mapping into the Big Five personality traits, see McCrae and Costa (2008)), and work experience (place of work, years of experience, grades

and subjects taught). The third section gathers information about student orientation activities implemented in the respondents' school. The fourth section introduces the vignette and elicits teachers' beliefs about the expected school performance of the student described in the vignette in the event of enrollment in four alternative high school tracks: vocational; technical; academic, humanities curriculum; and academic, scientific curriculum.

Each vignette describes the "profile" of a hypothetical but realistic final-year junior high school student, specifying the student's name (conveying information on the student's gender and immigration background), interests and school performance in the humanities and math (capturing the student's aptitudes and cognitive skills), personality (capturing noncognitive skills), parental occupation (capturing the student's SEB), and choice preference over tracks along those of the student's parents. The student attributes specified in the vignette were randomly assigned to survey participants, thus generating independence between students' and teachers' characteristics.

Following the economic literature on survey expectations (e.g. Manski, 2004; Giustinelli, 2023), we asked teachers to express their beliefs on a 0-100 scale of percent chance. We used clickable sliders to minimize response anchoring. This format has been also found to have desirable properties with respect to the use of "focal" and/or rounded responses (Bruine de Bruin and Carman, 2018). As customary in the survey expectation literature, we did not incentivize accurate reporting in individual questions. Prior research on survey-elicited beliefs and expectations has found no significant effects of providing financial incentives for accurate belief reporting based on scoring rules (Botelho and Pinto, 2004) and has anyway avoided doing so on the ground that scoring rules tend to induce biased responses when respondents are not risk neutral (Wiswall and Zafar, 2015).

We verify whether random allocation of vignettes to teachers holds in our data by running balancing tests. Table A1 reports the results and shows only a few cases of statistically significant coefficients. We take this into account by always conditioning our estimates on observed teacher characteristics, therefore assuming random allocation conditional on observables.

Tables A2 and A3 show the summary statistics of the observed characteristics of teachers and students for the sample used in the empirical analysis. We define the student's parental background as low if the mother is unemployed, a housewife or sales assistant, and the father is unemployed, a blue-collar employee, or plumber. The probability of having a low parental background in our working sample is 16 percent (see Table A3).

To reduce the dimensionality of the five personality traits, we carried out a principal component analysis on teacher's standardised Big Five personality traits, obtaining three factors with eigenvalues above or close to 1: factor 1, which loads positively on extraversion and openness (correlations equal to 0.765 and 0.797); factor 2, which loads positively with conscientiousness and agreeableness (correlations equal to 0.776 and 0.809); and factor 3, highly correlated with

neuroticism (correlation equal to 0.992). These three factors explain 72 percent of the total variance associated with the Big Five personality traits.

C. Are teacher beliefs in line with actual outcomes?

Using data from the 2014 and 2016 waves of PLUS (Participation, Labour and Unemployment Survey), we explore whether teacher beliefs from our online survey are in line with the actual educational outcomes of low SEB students in Italy. We thus consider whether low-SEB individuals completed high school, and, conditional on completion, whether they graduated from an academic high school track and the grade they achieved in the final exam. We estimate the following equation:

$$R_i = \alpha + \beta_1 Grade_i + \beta_2 LowSEB_i + \beta_3 Age_i + \beta_4 Age_i^2 + \beta_5 Gender_i + \beta_6 Wave2016 + \varepsilon_i \quad \text{(A1)}$$

where i is for the individual, grade is the final junior high school grade, divided into four categories (sufficient=1; good=2; quite good=3; excellent=4), $LowSEB\ i$ is a dummy equal to 1 if both parents have less than upper secondary education, gender is a dummy equal to one for female respondents and $Wave2016$ is a dummy equal to one for year 2016.

The estimates reported in Table A4 confirm that low-SEB individuals are less likely to complete high school. Conditional on finishing high school, they are also less likely to complete an academic track, and their graduation grades are lower compared to medium/high SEB individuals.

The mechanism behind the documented (qualitative) correspondence between the belief-based and outcome-based SEB gaps is unclear, leaving open multiple non- mutually exclusive possibilities: (i) teachers' use of students' SEB in forming expectations (predictions) of students' performance in alternative high school tracks may reflect the belief that a greater access to certain resources (e.g., financial, cultural, etc.) generally increases a student's chances of succeeding in an academic track, above and beyond the student's cognitive and noncognitive skills in junior high school; (ii) teachers' expectations may reflect some form of active discrimination toward their students (e.g., Bursztyn & Yang, 2022); (iii) teachers' expectations may reflect the belief that the high school environment (composed of teachers, principals, peers) is discriminatory toward low-SEB students; (iv) teachers may make performative predictions (Rosenthal & Jacobson, 1968; Brophy, 1983; Jussim & Eccles, 1992; Ferguson, 2003; Jussim & Harber, 2005; Glover, Pallais & Pariente, 2017; Papageorge, Gershenson & Kang, 2020; Hill & Jones, 2021), meaning that, by their very beliefs or expectations, they may affect students' outcomes and further contribute to (if (i) or (iii) are true) or generate (if (i) and (ii) are not true) the SEB gap in realizations.

D. Robustness checks

We check whether the results in Table 1 are robust to: a) the exclusion of male teachers, who are a small minority of the population of teachers; b) the exclusion of entropy balancing weights. As shown by Tables A5 and A6, we conclude that our results are robust to these variations.

Table A1. Balancing tests

Teacher characteristics	Student's name	Student's math grade	Student's humanities grade	Student's effort	Student's attitude	Mother's job	Father's job	Student's personality
Female	0.0904	0.0330	-0.214	0.0988	0.207	-0.549	-1.010**	0.681
	(0.223)	(0.165)	(0.159)	(0.162)	(0.232)	(0.460)	(0.449)	(1.445)
Academic high school	0.335	0.167	-0.0869	-0.121	-0.109	0.0225	-0.572	0.605
	(0.218)	(0.161)	(0.155)	(0.158)	(0.226)	(0.449)	(0.438)	(1.410)
STEM degree	0.153	0.0910	-0.0383	-0.101	0.0732	-0.877	-0.846	0.624
	(0.305)	(0.225)	(0.217)	(0.221)	(0.316)	(0.628)	(0.612)	(1.972)
Province	-0.0550	0.0220	0.00415	0.0625**	0.0436	0.0351	-0.0656	-0.186
	(0.0374)	(0.0277)	(0.0267)	(0.0272)	(0.0389)	(0.0772)	(0.0753)	(0.242)
Born in Centre or South	-0.253	0.324*	0.0402	-0.194	-0.128	0.518	0.472	-0.211
	(0.227)	(0.168)	(0.162)	(0.165)	(0.236)	(0.469)	(0.457)	(1.472)
Size of municipality	0.0297	0.0241	-0.0525	-0.00175	0.0204	0.0324	-0.133	0.496
	(0.0602)	(0.0445)	(0.0430)	(0.0437)	(0.0626)	(0.124)	(0.121)	(0.390)
Open	-0.0322	0.0320	-0.0151	0.0515*	0.0183	0.0441	-0.0296	-0.129
	(0.0376)	(0.0278)	(0.0268)	(0.0273)	(0.0390)	(0.0774)	(0.0755)	(0.243)
Agreeable	0.0611	0.00902	-0.0450	0.0105	-0.0123	-0.0752	0.0597	0.858***
	(0.0447)	(0.0330)	(0.0319)	(0.0324)	(0.0464)	(0.0921)	(0.0899)	(0.289)
Conscientious	-0.0493	0.0258	0.0537*	0.0534*	0.0757*	0.0574	-0.0601	-0.225
	(0.0415)	(0.0307)	(0.0296)	(0.0301)	(0.0431)	(0.0856)	(0.0835)	(0.269)
Extraverted	-0.00330	-0.0215	-0.00216	0.0273	-0.00988	0.0137	0.0939*	0.0652
	(0.0260)	(0.0193)	(0.0186)	(0.0189)	(0.0271)	(0.0537)	(0.0524)	(0.169)
Neurotic	0.0151	0.00110	0.0181	0.0136	0.0284	0.0450	-0.0646	0.347*
	(0.0304)	(0.0224)	(0.0217)	(0.0220)	(0.0315)	(0.0626)	(0.0610)	(0.196)
Teaches humanities	-0.0907	-0.0380	0.0570	-0.0736	0.00293	-0.606	0.0501	-0.556
	(0.240)	(0.178)	(0.172)	(0.174)	(0.250)	(0.495)	(0.483)	(1.555)
Teaches foreign languages	0.0536	-0.0425	0.0523	-0.463**	-0.191	-0.457	0.120	2.735
	(0.280)	(0.207)	(0.200)	(0.203)	(0.291)	(0.577)	(0.563)	(1.813)
Teaches math or sciences	-0.465*	0.0961	-0.111	-0.0280	-0.134	0.306	0.800	-1.190
	(0.250)	(0.185)	(0.178)	(0.181)	(0.259)	(0.514)	(0.502)	(1.616)
Experience	-0.00326	-0.00392	-0.00654	-0.00260	0.0124	0.00231	0.0134	0.0380
	(0.00835)	(0.00618)	(0.00596)	(0.00606)	(0.00868)	(0.0172)	(0.0168)	(0.0541)
Number of observations	235	235	235	235	235	235	235	235

Table A2. Summary statistics for teachers

Variable	Mean	Standard deviation
Probability of completing high school regularly	58.61	30.27
Experience	18.11	9.48
Female	0.78	
Extravert (standardized)	0.00	1.00
Conscientious (standardized)	0.00	1.00
Open (standardized)	0.00	1.00
Agreeable (standardized)	0.00	1.00
Neurotic (standardized)	0.00	1.00
Factor 1	0.00	1.00
Factor 2	0.00	1.00
Factor 3	0.00	1.00
Teaches humanities	0.39	
Teaches foreign languages	0.13	
Teaches math or sciences	0.22	
Born in Centre or South Italy	0.09	
Province of school: Padova	0.18	
Province of school: Rovigo	0.05	
Province of school: Treviso	0.23	
Province of school: Venice	0.15	
Province of school: Verona	0.19	
Province of school: Vicenza	0.20	
Municipality: less than 10000 inhabitants	0.32	
Municipality: more than 100000 inhabitants	0.19	
Municipality: 10000-25000 inhabitants	0.31	
Municipality: 25000-50000 inhabitants	0.12	
Municipality: 50000-100000 inhabitants	0.06	
Has been trained for counselling activities	0.54	
More than 10 hours of counselling activities	0.49	
Has a STEM degree	0.35	
Taught 8th graders in the past	0.20	
Observations	940	

Note: there are 235 observations for each of the four tracks.

Table A3. Summary statistics for students

Variable	Mean	Standard deviation
Female	0.50	
Foreigner	0.50	
Low parental background	0.16	
Math grade: discrete	0.28	
Math grade: excellent	0.34	
Math grade: insufficient	0.38	
Humanities grade: discrete	0.31	
Humanities grade: excellent	0.37	
Humanities grade: insufficient	0.31	
High effort	0.34	
Medium effort	0.32	
Limited effort	0.34	
No special attitude	0.26	
Loves math	0.21	
Loves humanities	0.24	
Love both	0.28	
Extravert (standardized)	0.00	1.00
Conscientious (standardized)	0.00	1.00
Open (standardized)	0.00	1.00
Agreeable (standardized)	0.00	1.00
Neurotic (standardized)	0.00	1.00
Observations	940	

Note: there are 235 observations for each of the four tracks.

Table A4: Actual SEB Gaps in schooling outcomes. Survey PLUS 2014 and 2016.

	(1) Completed high school	(2) Completed high school, academic track	(3) Grade in final exam for those completing high school
Grade: good	-0.036***	-0.1355***	-6.003***
	(0.007)	(0.006)	(0.178)
Grade: quite good	-0.178***	-0.247***	-9.057***
	(0.007)	(0.006)	(0.184)
Grade: sufficient	-0.407***	-0.333***	-13.124***
	(0.008)	(0.008)	(0.261)
Low SEB	-0.216***	-0.224***	-0.762***
	(0.006)	(0.004)	(0.149)
Age	-0.012***	-0.016***	-0.371***
	(0.001)	(0.001)	(0.038)
Square age	0.000***	0.000***	0.004***
	(0.000)	(0.000)	(0.000)
Female	0.007	0.182***	1.828***
	(0.005)	(0.004)	(0.144)
$Wave_{2016}$	0.002	-0.000	-0.024
	(0.0053)	(0.004)	(0.140)
Constant			92.090***
			(0.817)
Observations	68,737	53,307	45,542
R-squared			0.1392

Note: Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A5: Teacher beliefs on whether the vignette student would succeed in high school, female teachers

	(1) Vocational /technical	(2) Academic
Low SEB	-5.790	-18.44***
	(4.046)	(4.158)
Low SEB * Factor 1	2.812	-10.27***
	(4.214)	(3.862)
Low SEB * Factor 2	21.82***	0.108
	(4.498)	(5.039)
Low SEB * Factor 3	2.630	-0.553
	(3.971)	(3.653)
Factor 1	1.312	1.721
	(2.156)	(1.608)
Factor 2	-6.338***	-1.160
	(1.961)	(1.874)
Factor 3	-0.239	0.118
	(1.644)	(1.535)
Constant	87.45***	50.27***
	(12.31)	(11.08)
Weights	yes	yes
Observations	402	402

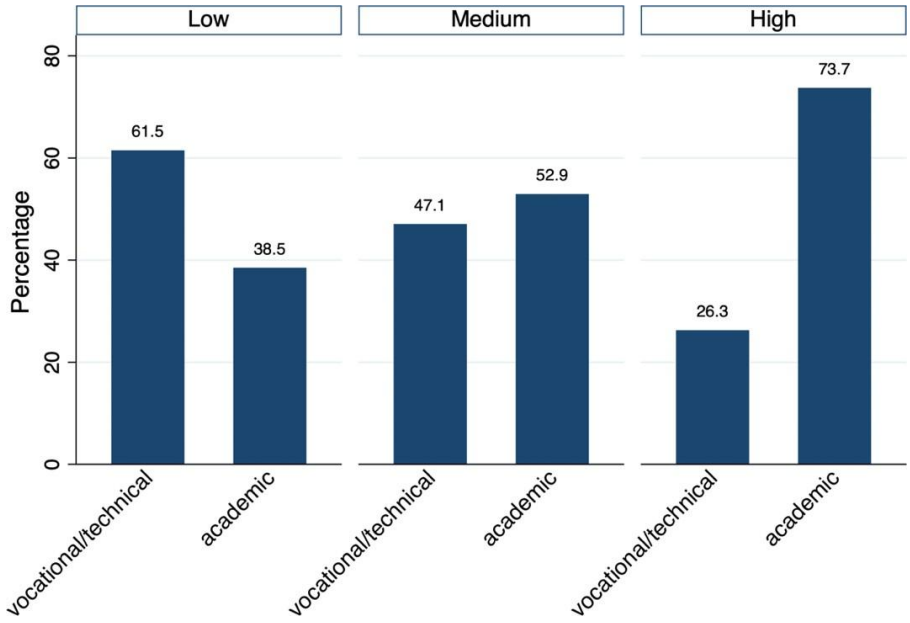
Note: Each regression includes teacher and vignette controls and are weighted using entropy balancing weights. The vocational/technical track includes vocational and technical high schools. The academic track includes schools with humanities or scientific curricula. Standard errors are clustered by teacher in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A6: Teacher beliefs on whether the vignette student would succeed in high school, without weighting

	(1) Vocational /technical	(2) Academic
Low SEB	-0.00205	-14.14***
	(3.489)	(3.784)
Low SEB * Factor 1	1.808	-10.02***
	(2.750)	(2.725)
Low SEB * Factor 2	7.589**	-5.116
	(3.837)	(4.116)
Low SEB * Factor 3	-1.667	-2.116
	(2.982)	(3.539)
Factor 1	1.069	1.816
	(1.630)	(1.418)
Factor 2	-1.538	0.942
	(1.644)	(1.360)
Factor 3	0.169	0.593
	(1.445)	(1.399)
Constant	86.49***	39.77***
	(10.09)	(10.50)
Weights	no	no
Observations	940	940

Note: Each regression includes teacher and vignette controls and are weighted using entropy balancing weights. The vocational/technical track includes vocational and technical high schools. The academic track includes schools with humanities or scientific curricula. Standard errors are clustered by teacher in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Figure A1: Percentage of Adults Aged 19-34 Who Graduated from an Academic vs Technical/Vocational Track by Socioeconomic Background (Low, Medium, High)



Note: Our elaboration from PLUS data, respondents aged 19-34. Low socioeconomic background: neither parent has a high school diploma or higher degree. Medium socioeconomic background: only one parent has a high school diploma or higher degree. High socioeconomic background: both parents have a high school diploma or higher degree.

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