Math Skills, Perceptions of Fit, and Occupational Choice*

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Abstract

We study how beliefs about math skills and occupational fit shape early career exploration and choices. We run a field experiment with adolescents in Switzerland at the start of career search, randomizing short, gender-tailored videos about math ability and fit in gender-incongruent occupations. The videos raise perceived fit for both genders. They also shift boys' search toward lower-math, people-facing occupations and broaden the set of occupations they explore, with longer-run effects concentrated among low-math boys. Girls show little behavioral response. The results highlight that light-touch guidance, timed to a key decision window, can expand boys' choice set among those at risk of narrowing their option set early.

JEL classification: J16; I21; C93; J24
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1 Introduction

As labor demand shifts toward care and personal services, viable entry-level pathways increasingly include many low-math, people-facing occupations (Autor and Dorn, 2013; Graves and Kuehn, 2021). Yet boys and men remain underrepresented in these pathways, even as a growing body of evidence documents weaker education and labor market outcomes for boys and men in a range of settings (Blau, Brummund and Liu, 2013; International Labour Office et al., 2018; Welmond and Gregory, 2021; Binder and Bound, 2019). A key margin for understanding these patterns is the set of choices made early in the life cycle—major and course selection, tracking, and initial occupational entry. Because these decisions shape subsequent skill accumulation and the menu of later opportunities, small differences in perceived feasibility can send individuals down very different paths with persistent consequences for human capital and earnings (Card and Payne, 2021; Wiswall and Zafar, 2015; Joensen and Nielsen, 2016). When students rule out large parts of the opportunity set early—because they misperceive their own skills or where they "fit"—the costs are not only individual: distorted sorting can depress aggregate productivity and widen inequality (Hsieh et al., 2019).

Crucially, these choices are made over a *perceived* opportunity set rather than the full set of options. A growing literature shows that subjective expectations about ability, fit, and returns help explain gendered educational choices and occupational plans (Zafar, 2013; Reuben, Wiswall and Zafar, 2017). These expectations reflect not only information, but also stereotypes about what men and women are "good at," which can distort perceived comparative advantage and narrow which options students view as appropriate or attainable (Bordalo et al., 2019). As a result, belief gaps can affect not only what students prefer, but what they consider worth exploring in the first place. This margin is particularly salient for boys if low-math, people-facing occupations are viewed as poor fits or simply outside their opportunity set—even when these pathways offer stable prospects and match their strengths.

In this paper, we examine how beliefs about skills and fit shape early occupational specialization and whether a light-touch intervention can broaden the set of options students actively explore during the period when they search for an apprenticeship—through information events, trial apprenticeships, and applications. We do so in the Swiss apprenticeship system, where adolescents choose among a large and diverse set of occupations as their first major labor-market step. Because this choice is made early—among students spanning much of the ability distribution and before extensive subject

specialization—it provides a particularly clean setting to study how beliefs about skills and fit translate into real exploration. The institutional structure also makes this exploration phase observable, creating a clear window in which belief-based guidance can affect subsequent behavior.

A natural starting point is the pronounced gender sorting we document at the outset of the apprenticeship search. Consistent with descriptive evidence from various contexts, adolescents' occupational interests and exploration are strongly gendered along the math-intensity dimension (Kuhn and Wolter, 2022; Buser, Peter and Wolter, 2022; Palffy, Lehnert and Backes-Gellner, 2023). What makes this sorting especially striking is that it does not line up with gender differences in observed math performance. Instead, we show that it coincides with large gaps in beliefs about skills and fit: girls report lower confidence in their math skills and lower perceived fit for math-intensive occupations, while boys are more likely to view themselves as strong in math and to see math-intensive options as feasible. These belief gaps matter because they can shape not only what students say they prefer, but which occupations enter their active consideration set during the search process (Zafar, 2013; Reuben, Wiswall and Zafar, 2017; Bordalo et al., 2019). This motivates our focus on whether timely, low-cost guidance can shift beliefs about skills and fit at the moment when adolescents begin to explore and apply.

To test whether timely guidance can shift beliefs and downstream behavior, we implement a field experiment embedded in an online survey administered at the beginning of the apprenticeship search period. Students are randomly assigned to watch a short, gender-tailored information video or a control video on how to prepare a CV. Both treatment videos begin by emphasizing that boys and girls are equally good at math, and then target beliefs about skills and fit in gender-incongruent directions. The boys' video highlights that many boys overestimate their math ability, emphasizes that employers value social and communication skills, and points to viable low-math pathways, especially in health and care. The girls' video highlights that many girls underestimate their math ability and encourages consideration of math-intensive apprenticeships. A key advantage of the design is that we can evaluate not only immediate belief changes, but also whether those changes translate into revealed behavior by linking participants to administrative records from a major apprenticeship platform and following their actions along the search funnel over roughly 1.5 years.

Our results show that gender-tailored information changes beliefs for both genders,

but it changes behavior primarily for boys. For boys, the video shifts beliefs about skills and fit in the intended direction and increases search for low-math occupations, the margin emphasized in the video. This directional shift is accompanied by a sustained expansion in occupational search breadth: treated boys explore a wider set of occupations in the linked platform data, and these responses persist to higher-commitment outcomes. The longer-run behavioral effects are concentrated among low-math boys, the group for whom the video's core message is most directly relevant. For girls, the video shifts beliefs about fit but does not translate into detectable changes in revealed search behavior.

Most gender-targeted efforts in education and career guidance have historically focused on expanding girls' access to math-intensive fields (Delfino, 2024). In contrast, there is comparatively little causal evidence on scalable tools designed to broaden boys' occupational opportunity sets—particularly toward viable low-math alternatives, including many low-math, people-facing occupations. This paper fills that gap by showing that a short, gender-tailored guidance tool can meaningfully change boys' real search behavior at the start of the career pipeline, with persistent effects concentrated among low-math boys. In doing so, we complement recent experimental work on barriers to men's entry into female-dominated jobs in adult labor markets (Delfino, 2024) by shifting attention to an earlier and potentially more levered stage, when adolescents are first forming and acting on an occupational opportunity set.

The findings also speak to an efficiency-oriented view of gender segregation: if beliefs about skills and fit distort which options adolescents consider feasible, early sorting can generate misallocation and foregone matches in expanding parts of the economy (Hsieh et al., 2019; Guvenen et al., 2020). More broadly, our intervention can be seen as a form of low-cost advice delivered at the moment choices are made, linking our setting to the job search advice literature that studies how guidance can broaden search and improve outcomes (Belot, Kircher and Muller, 2019). Relative to that literature, we focus on an earlier margin—adolescents choosing a first career pathway—and on guidance that is explicitly gender-tailored, building on evidence that interventions that change women's choices need not symmetrically change men's choices (Palffy, Lehnert and Backes-Gellner, 2023).

The remainder of the paper proceeds as follows. Section 2 describes early occupational choice in the Swiss apprenticeship system. Section 3 presents the research design, descriptive patterns, experimental intervention, outcomes, and empirical strategy. Sec-

tion 4 reports the causal effects on beliefs and occupational search. Section 5 concludes.

2 Early Occupational Choice in the Swiss VET System

In many education systems, adolescents are asked to specialize early, choosing fields of study or occupational tracks that shape their subsequent education and labor-market trajectories (e.g., Card and Payne, 2021; sccre, 2023). Switzerland offers a particularly transparent case of such early specialization through its apprenticeship-based vocational education and training (VET) system. By 8th grade (ages 13–14), most students attend lower-secondary tracks that prepare them for vocational pathways, while roughly one fifth are enrolled in the selective academic track (Gymnasium) that provides direct access to university (sccre, 2023). Around two thirds of students eventually start an apprenticeship in the dual system, typically spending three to four days per week in a firm and one to two days in vocational school. Apprenticeships span nearly 250 occupations and last two to four years, leading to a Federal VET Certificate or Diploma. Crucially, these qualifications are highly permeable rather than terminal: many graduates later obtain a vocational baccalaureate and study in professional colleges and universities of applied sciences; and roughly half pursue additional upper-secondary or tertiary education within five years of completion (Laganà, Babel and Schweiz, 2020). At the same time, a large share work in the occupation they trained for or in closely related fields, making the initial apprenticeship choice a consequential early career decision.

The process of choosing an apprenticeship begins during lower-secondary school. Schools support this process through a compulsory career-orientation module, taught mainly in the last two years of compulsory schooling (8th grade and 9th grade). In this module, students reflect on their strengths, interests, and values; learn about post-compulsory education options and the world of work, including the VET system; and practice decision-making about next steps. They also acquire practical application skills such as preparing a CV and motivation letter and getting ready for job interviews. A central element of this process is short trial apprenticeships (TAs) or company visits, typically lasting one to five days, which allow students to shadow workers and experience everyday tasks on the job. Most students complete several TAs in different occupations before they start submitting formal applications, so experimentation across fields is common well before they settle on a specific apprenticeship. Applications usually start in the summer between 8th grade and 9th grade, and contracts can be signed up to a year

in advance. Our experiment reaches students as they enter this search window, before they have committed to an occupation or secured a contract.

Occupational choices at this stage are strongly gendered along the math-intensity dimension. Boys disproportionately aspire to apprenticeships in engineering, information technology, and other math-intensive technical fields, while girls more often express interest in low-math care and personal-service occupations. In administrative data for Swiss VET graduates, only about 11 percent of STEM apprenticeship graduates are female, compared with 88 percent in care occupations (Brenøe et al., 2026). These patterns show that the Swiss VET system channels boys and girls into very different fields at an early stage, making this context well suited to studying whether light-touch, gender-tailored information can shift beliefs about math skills and fit and, in turn, alter gendered field choices.

3 Research Design and Descriptive Patterns

3.1 Study Population and Data Sources

We implement the field experiment through an online survey and recruit boys and girls in the German-speaking part of Switzerland who are searching for an apprenticeship. We target students in lower-secondary school in 8^{th} grade and 9^{th} grade, as well as young people up to age 18 who are either enrolled in other post-compulsory programs or currently not in education but state that they want to do an apprenticeship in the future. Throughout the paper, we restrict our analysis sample to respondents who, at baseline, do not yet have an apprenticeship contract.

Our primary recruitment channel is Switzerland's main online apprenticeship platform, yousty.ch (henceforth, the platform). The platform aggregates most apprenticeship vacancies posted online in Switzerland, lists many trial-apprenticeship opportunities, and provides detailed occupation profiles and guidance on application materials and interviews, so it is widely used by students during apprenticeship search. In collaboration with the platform, we distributed our survey through four newsletters to registered student users in October 2022, January, March, and April 2023; 69.2 percent of our analysis sample enter via these newsletter links. We recruit the remaining students through lower-secondary schools (excluding academic high schools), contacting schools and teachers in October–December 2022 and asking them to forward school-specific links

to their 8th grade and 9th grade classes with the suggestion that participation take place outside regular school hours. Survey timestamps and the small number of respondents per school indicate that most students participate individually rather than in a shared classroom setting, limiting the scope for within-school treatment spillovers.[1]

Our data combine the baseline survey, a two-week follow-up survey, linked platform administrative records, and an endline survey, as well as an occupation-characteristics dataset assembled from several external sources (Data Appendix B.1). The baseline survey has three parts: a pre-randomization questionnaire, the randomized assignment to either the control or treatment video, and an immediate post-video follow-up; Appendix B.8 reproduces the full survey instruments for all survey waves. In the pre-randomization questionnaire, students report their math and school-language (German) grades from their most recent report card and indicate their canton-specific school type. We classify these school types into low, middle, high, or mixed track as documented in Appendix B.6. Combining track and grades, we construct an indicator for high math skills based on pre-specified, track-specific grade thresholds (also in Appendix B.6). We use this high-math indicator both to stratify the randomization and as a key dimension of heterogeneity in the analysis.

We obtain platform administrative outcomes by linking participants through platform user IDs for students recruited through the platform and through email-based matching for students recruited through schools and teachers, yielding linked records for 82 percent of the analysis sample (Data Appendix B.5). For linked students, these records cover the full period from the baseline survey through May 2024, and we code zero activity when a student does not view, click, or apply on the platform.

Our analysis sample includes 3,505 students without an apprenticeship contract who completed the pre-randomization questionnaire, were randomized to treatment or control, and are observed on at least one post-randomization outcome, either in the immediate post-video follow-up survey or in the platform administrative records.

3.2 Descriptive Patterns Motivating the Intervention

This subsection presents descriptive patterns that motivate the intervention. Boys and girls have similar observed math performance, but they differ in beliefs about fit and their own math ability and in their preferred occupations.

[1] Additional details about recruitment appear in Appendix B.2.

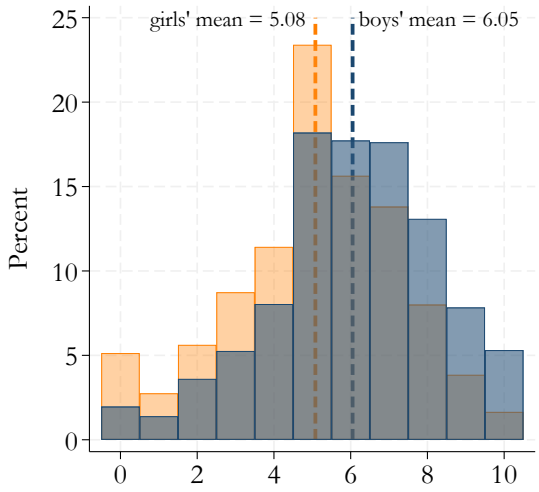
Table 1: Baseline characteristics

	Boys			Girls		
	(1) Pooled	(2) Low Math	(3) High Math	(4) Pooled	(5) Low Math	(6) High Math
Age 13-14	0.65	0.56	0.75	0.71	0.63	0.79
Age 15-16	0.30	0.37	0.23	0.26	0.32	0.18
8^{th} grade	0.64	0.57	0.73	0.68	0.61	0.77
9^{th} grade	0.24	0.29	0.17	0.22	0.27	0.17
High track	0.39	0.08	0.76	0.43	0.11	0.78
Middle track	0.34	0.48	0.18	0.34	0.50	0.17
Low track	0.18	0.32	0.00	0.14	0.27	0.00
High math	0.46	0.00	1.00	0.48	0.00	1.00
Perceived math skills decile	6.06	5.40	6.84	5.10	4.42	5.84
	(2.20)	(2.19)	(1.94)	(2.26)	(2.22)	(2.07)
Perceived language skills decile	6.07	6.12	6.02	6.12	6.13	6.11
	(2.24)	(2.27)	(2.22)	(2.13)	(2.17)	(2.09)
Math grade	4.86	4.61	5.17	4.80	4.52	5.11
	(0.54)	(0.47)	(0.44)	(0.53)	(0.45)	(0.44)
Language grade	4.81	4.71	4.94	4.97	4.85	5.10
	(0.45)	(0.44)	(0.43)	(0.46)	(0.45)	(0.42)
Avg. math req. of preferred occs.	53.58	51.61	55.89	41.10	38.85	43.53
	(11.87)	(11.97)	(11.33)	(11.94)	(11.15)	(12.30)
Avg. language req. of preferred occs.	54.27	52.62	56.21	64.22	64.20	64.23
	(8.53)	(8.74)	(7.85)	(7.75)	(7.63)	(7.88)
Avg. female share of preferred occs.	0.28	0.28	0.28	0.65	0.68	0.62
	(0.20)	(0.20)	(0.19)	(0.22)	(0.20)	(0.23)
Avg. expected earnings of preferred occs.	95,988	94,042	98,279	96,917	96,081	97,821
	(9,271)	(9,126)	(8,914)	(7,164)	(6,916)	(7,321)
Number of observations	1,905	1,030	875	1,600	831	769

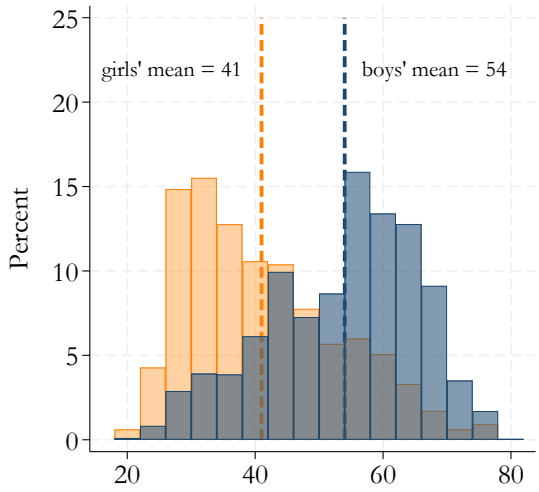
Notes: Analysis sample. The standard deviation is reported in parentheses beneath the mean values for continuous variables. The omitted categories are 17–18 years, having completed compulsory education, and attending the mixed track. Grades range from 1 (lowest) to 6 (highest), with 4 as the passing grade. High-math is defined using the pre-specified track-specific grade thresholds described in Appendix B.6. Occupation-characteristic rows report averages across the apprenticeship occupations each student lists.

Table 1 summarizes baseline characteristics for boys and girls in our analysis sample, both pooled and separately by math-skill group. Most students are 13–14 years old, enrolled in 8^{th} grade, and attend the middle or high track of lower-secondary school; 54 percent are boys and roughly half are classified as high-math. Boys and girls are similar in age, grade level, track distribution, and math grades, while girls have slightly higher grades in the school language. To measure self-perceived ability, the baseline survey asks students how many out of ten students applying for apprenticeships in the same year they think are better than they are in math and in language/communication;

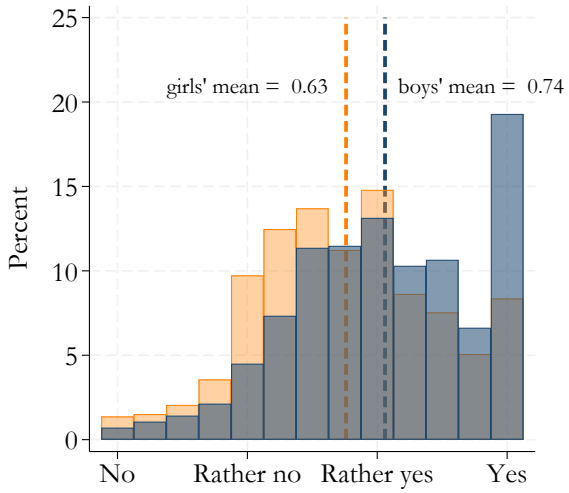
Figure 1: Math preferences and perception of fit



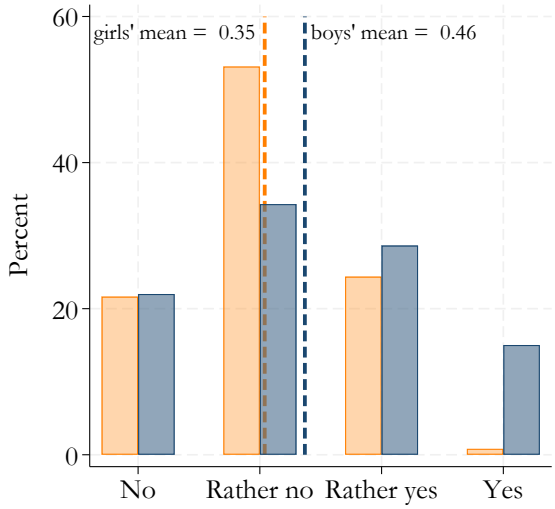
(a) Own perceived math skills decile



(b) Math intensity of preferred occupations



(c) Beliefs about own math skills



(d) Beliefs about own fit to high-math occupations



Note: Analysis sample. Graphs (a) and (b) use pre-randomization baseline-survey responses, while Graphs (c) and (d) use post-video follow-up responses from control students only. Graph (a) plots perceived math-rank (decile, 0–10), and Graph (b) plots the average math requirement of students' preferred occupations (0–100). Graph (c) plots beliefs that one's math skills would be good enough for high-math occupations, and Graph (d) plots perceived fit in high-math occupations. In Graph (d), girls' fit averages four high-math occupations, while boys' fit is based on one. Vertical lines indicate gender-specific means.

we reverse-code these responses so that higher values indicate higher perceived ability. Boys place themselves about one decile higher in the math distribution than girls do on average, whereas perceived language ability is similar across genders (Graph (a) of Figure 1; Table 1). These self-assessments also line up with our high-math classification: for both boys and girls, students classified as high-math place themselves roughly 1.4 deciles above low-math students (Table 1; Appendix Figure A1). This alignment provides descriptive support for the high-math classification used in the heterogeneity analysis, even as boys remain more confident than girls at any given level of observed skills.

In the baseline survey, students report at least three apprenticeship occupations they currently find attractive, and we link these preferred occupations to the occupation-characteristics dataset introduced above, averaging characteristics across the occupations each student lists. Preferred occupations already reflect pronounced gender differences in occupational orientation. Graph (b) of Figure 1 shows that boys' preferred occupations are substantially more math-intensive than girls': on a 0–100 expert-based math-requirements score, the mean is about 54 for boys and 41 for girls. Table 1 further shows that these choices line up with the gender composition and skill profiles of occupations: boys tend to favor male-dominated occupations where math and language requirements are of similar magnitude, whereas girls more often prefer female-dominated occupations in which language requirements substantially exceed math requirements. Expected earnings at age 30 are similar for boys' and girls' preferred occupations. When we weight occupations by the number of graduates, math requirements are only weakly and statistically insignificantly correlated with expected earnings at age 30 ($r \approx 0.10$, $p = 0.253$; Data Appendix Figure X). Thus, boys and girls with comparable math performance are not sorting into systematically better- or worse-paying options but into very different bundles of occupational attributes, especially along the math–language and gender-composition dimensions.

Graphs (c) and (d) of Figure 1 reveal large gender gaps in two beliefs that shape whether high-math occupations appear feasible. One is whether students think their math skills are good enough for such occupations; the other is whether they think they would fit well in them. Using control-group responses, the graphs capture the status quo distribution of these beliefs. These gaps arise despite the absence of meaningful gender differences in observed math performance. Mapping the four response categories ("no," "rather no," "rather yes," "yes") onto a 0–1 scale, boys score markedly higher than girls on both dimensions. For beliefs about whether one's math skills are good enough

for high-math occupations, the mean response is 0.74 for boys and 0.63 for girls, and 20 percent of boys select the most confident category compared with only 8 percent of girls. For perceived fit, very few girls state that they clearly fit high-math occupations and a majority answer "rather no," whereas boys' responses are much more evenly distributed across categories, with an average of 0.46 for boys and 0.35 for girls. These descriptive gaps in beliefs about whether one's math skills are good enough and about fit motivate our information intervention.

3.3 Information Intervention

Motivated by the descriptive patterns documented above, we implement a light-touch information intervention designed to reshape beliefs about math skills and occupational fit at the start of apprenticeship search. We deliver the intervention through a short video embedded in the baseline survey. The gender-tailored messages aim to expand horizons on the relevant margin: they encourage boys to consider a broader set of occupations beyond highly math-intensive options and encourage girls to consider math-intensive apprenticeships they may otherwise overlook.

Treatment boys. The boys' treatment video starts from the premise that boys and girls are equally good at math on average, but stresses that many boys overestimate their own math skills. It argues that this can lead boys to target apprenticeships with high math requirements that are a poor match for their skills—making it harder to secure a contract and, if they do, harder to complete the apprenticeship. The video then emphasizes that employers value social and communication skills in addition to math skills. It encourages boys to consider less math-intensive apprenticeships in which they can use their social skills, especially in health and care, and gives concrete examples (hairdresser, dental assistant, pharmacy assistant, social care worker, healthcare assistant, medical secretary and assistant). The closing message is that these paths allow boys to use their strengths, help others, have fun, and be respected for who they are.

Treatment girls. The girls' treatment video also begins by stating that boys and girls are equally good at math on average, but emphasizes that most girls underestimate their math skills and are often better at math than they think. It argues that this underconfidence leads girls to rule out math-intensive apprenticeships early—even when deciding which trial apprenticeships to try. The video encourages girls to consider math-intensive

options and provides examples of such apprenticeships (information technologist, design engineer, laboratory technician, mediamatics technician, polymechanic, technical illustrator). It then emphasizes that math and language skills can complement each other, so strong communication skills can support success in more math-intensive occupations. As an illustration, it points to software development, where communication skills help workers respond to customer needs, increase the social impact of their work, and play an important team role.

We implement the intervention through an embedded video in the baseline survey. Students in the control group watch a neutral video on how to write a CV, produced by our partner platform and publicly available on its YouTube channel; the control and treatment videos are each under two minutes. Treatment students watch the gender-specific animations described above. The two treatment videos are closely matched in format, length, and visual style and use a voice-over of the same gender as the intended audience. Appendix B.9 illustrates the treatment videos. We randomize students at the individual level, assigning half to control and half to treatment, stratifying by gender and the high-math indicator (Appendix B.6). Appendix Tables A1–A4 show that treatment and control groups are balanced on observed baseline characteristics.

3.4 Outcomes and Timing

We group outcomes into three families that mirror the conceptual pathway from beliefs to behavior. First, we measure beliefs immediately after the video, capturing whether the intervention shifts beliefs about math skills and occupational fit. Second, we study the type of search, focusing on the direction emphasized in the gender-specific videos: low-math occupational search for boys and high-math occupational search for girls. Third, we study breadth of search, asking whether students explore and pursue a wider set of apprenticeship occupations. We observe both search families over the following 1.5 years in a two-week follow-up survey, linked platform administrative records, and an endline survey. Appendix B.5 reports additional details on outcome construction and administrative linkage, and Appendix B.8 reports the full survey instruments.

Beliefs. Immediately after the video, students answer a set of belief questions about occupational fit and whether their math skills are good enough for high-math apprenticeships. We refer to this latter outcome as beliefs about own math skills. We focus

on four outcomes: (i) the math intensity of occupations students recommend to hypothetical same-gender peers, (ii) perceived fit for low-math apprenticeships (boys only), (iii) perceived fit for high-math apprenticeships, and (iv) beliefs about own math skills. For the item-based belief measures, all students rate whether their math skills would be good enough for four pre-specified high-math apprenticeships. Students also rate fit in specific apprenticeships: boys for one high-math apprenticeship and three low-math apprenticeships, and girls for the same four high-math apprenticeships. We average responses across the relevant items (Appendix B.5.2).

In the peer-recommendation task, students evaluate profiles of hypothetical same-gender peers that include grades, interests, and preferences and then recommend two apprenticeship occupations from a common list of 13 options. We map the recommended occupations to our expert-based math-requirements score and define the outcome as the average math requirement of the two selected occupations. The task yields one observation per profile; control students evaluate two profiles, while treatment students evaluate three. We standardize all belief outcomes to have mean zero and standard deviation one in the control group within gender.

Type of search. Our main behavioral outcomes capture whether the intervention changes *which* occupations students search. We focus on the direction emphasized in the gender-specific videos: low-math occupations for boys and high-math occupations for girls. Following the pre-specified thresholds in our pre-analysis plan, we classify occupations as low-math if their expert-based math-requirements score is at most 37 and as high-math if it is at least 59. These cutoffs correspond to the highest math requirement among the occupations featured in the boys' video and the lowest math requirement among the occupations featured in the girls' video; Appendix B.1 reports the occupation lists used in these classifications. We construct type-of-search outcomes at each stage of the search funnel. In the two-week follow-up survey, students report the occupations for which they applied or plan to apply for a trial apprenticeship, an in-person firm information event, or an apprenticeship position. Linked platform administrative records capture whether students view a job ad, click to apply, and submit an application through the platform. The endline survey records the occupations students explored through trial apprenticeships and/or in-person firm information events and the occupations to which they submitted apprenticeship applications. For each stage of the search funnel, we construct an indicator that equals one if the student engages with at least one occupation of

the relevant type and zero otherwise. At endline, we additionally measure whether students hold an apprenticeship contract in an occupation of the relevant type. For brevity, we refer to trial apprenticeships and in-person firm information events collectively as trial apprenticeships (TAs) below.

Breadth of search. To assess whether directional shifts are accompanied by a broader opportunity set, we measure the *number of distinct occupations* in which a student takes a given search or application step. Using the same search funnel, we measure the number of distinct occupations, rather than an indicator for any engagement with the relevant type. These outcomes capture whether treatment expands the set of occupations students consider and pursue, not just the direction of search.

Administrative linkage, coverage, and attrition. We find no evidence of differential attrition or differential availability of administrative outcomes by treatment status (Appendix Table A12). Treatment also does not affect the probability of any platform activity (Appendix Table A11), which supports interpreting platform-based differences as changes in search behavior rather than differences in platform engagement.

3.5 Empirical Strategy

We estimate intention-to-treat effects of assignment to the gender-specific information video. Because treatment content differs by gender, we estimate all specifications separately for boys and girls. For each outcome Y_i, we estimate

$$Y_i = \alpha + \beta \, \text{Treat}_i + X_i'\gamma + \theta_s + \varepsilon_i, \tag{1}$$

where Treat_i indicates assignment to the treatment video, X_i is a vector of baseline covariates measured prior to randomization, and θ_s is an indicator for the stratification group (high-math status). We report heteroskedasticity-robust standard errors. For outcomes observed at the profile level in the peer-recommendation task, we cluster standard errors at the student level. We include covariates to improve precision, selecting them using a LASSO procedure as pre-registered. Specifically, within each gender we allow the LASSO to select from the full set of pre-randomization survey variables (and their transformations) and then include the selected controls in the outcome regressions. Appendix B.7 lists the candidate variables and documents the implementation details.

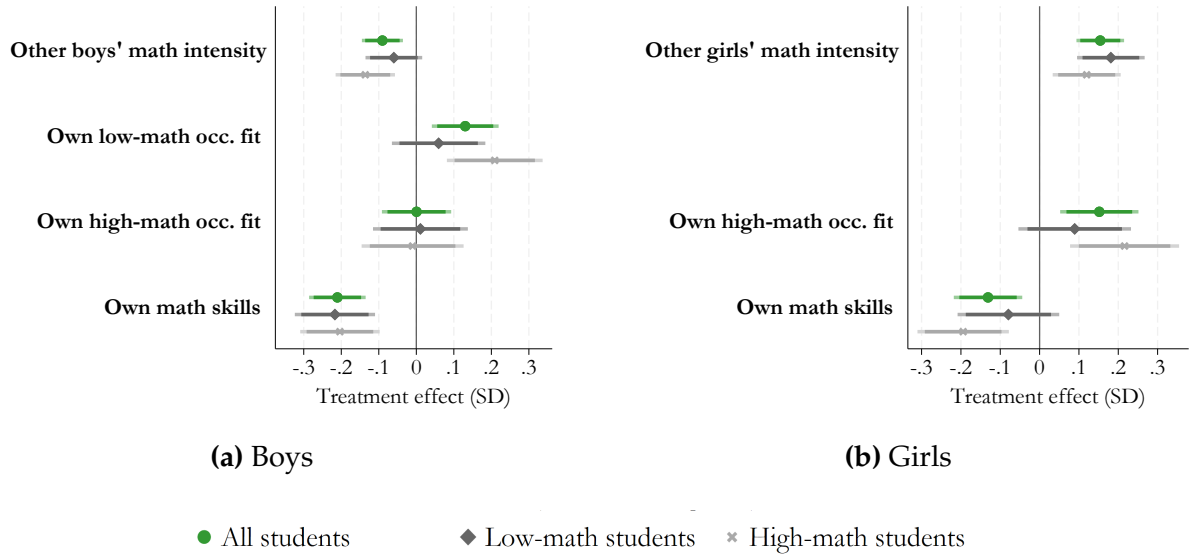
To study heterogeneity by math skills, we report treatment effects separately for low-math and high-math students.

4 Results

This section traces how the gender-tailored videos affect beliefs and then the direction and breadth of occupational search along a funnel from low-cost exploration to higher-commitment actions, leveraging linked platform administrative data observed over roughly 1.5 years.

4.1 Belief Updating

Figure 2: Treatment effects on beliefs



(a) Boys **(b)** Girls

Note: Main sample of **??** boys respectively 2b girls. The dark-green dots show the point estimates of the treatment indicator from the estimation of equation ADD. The dark-grey and the light-grey symbols indicate the point estimates for the sample of low-math skill students respectively high-math students; the whiskers indicate the 90 and 95 (light colored) percent confidence intervals. Each estimate comes from a separate regression with controls as specified in Subsection ADD.

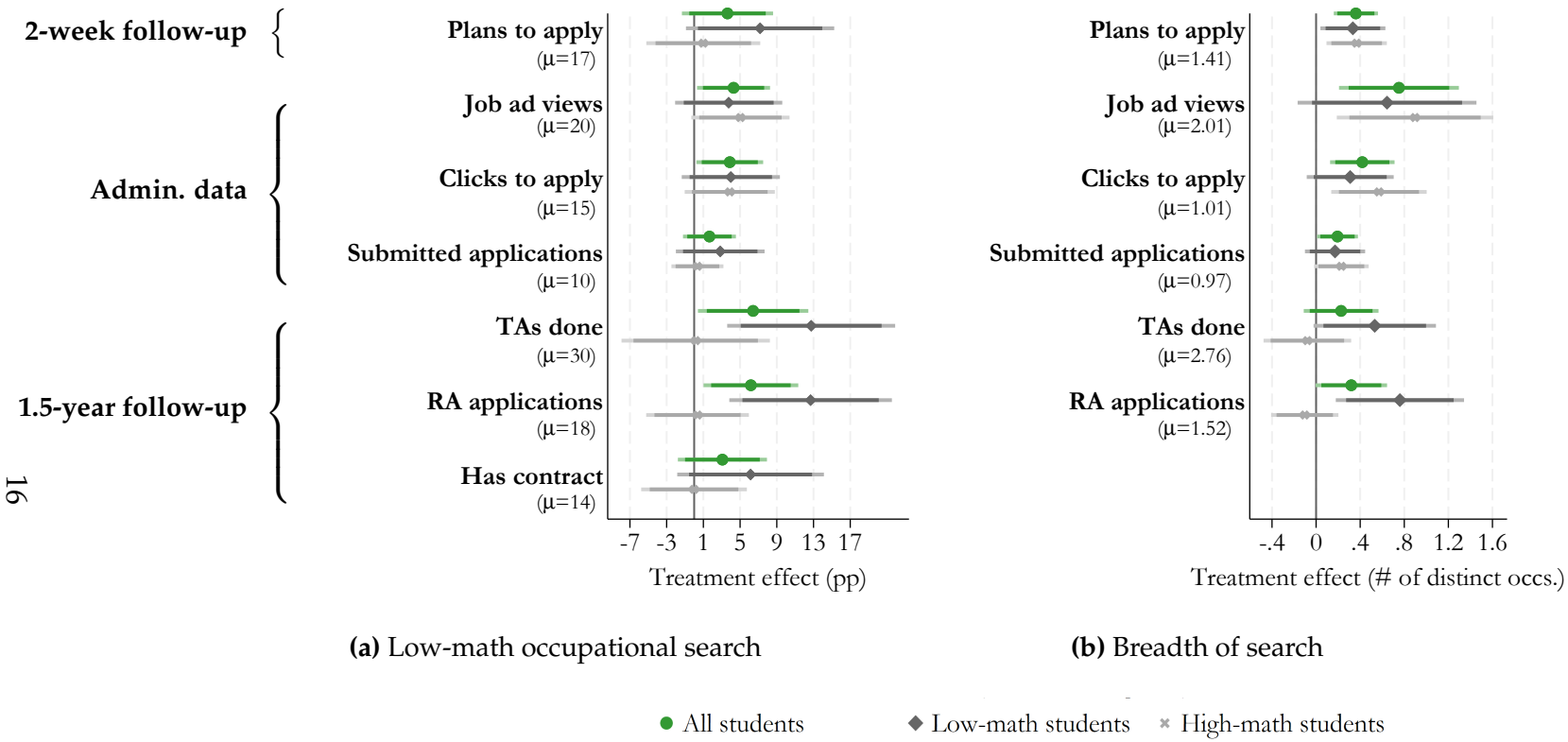
Graph (a) of Figure 2 summarizes the immediate impact of the boys' video on beliefs about fit and own math skills (Appendix Table A8). Treated boys recommend less math-intensive occupations to hypothetical same-gender peers than control boys do (-0.09 SD overall; -0.14 SD among high-math boys), indicating a shift in what boys view as suitable options for boys like them. These updates are mirrored in beliefs about

the self: treated boys increase perceived fit in low-math occupations by 0.13 SD (with a larger effect of 0.21 SD among high-math boys) while leaving perceived fit for high-math occupations unchanged (point estimate 0.00 SD), consistent with broadening rather than substituting between margins. Consistent with the video's message that many boys overestimate their math ability, treated boys also revise downward beliefs about their own math skills for high-math occupations by -0.21 SD. In a supplemental set of self-belief items, agreement with "I am good at math" falls by -0.118 SD (with the largest decline among low-math boys), while confidence in language ability is unchanged.

Graph (b) of Figure 2 shows that treated girls recommend more math-intensive occupations to hypothetical same-gender peers, with the recommendation index increasing by about 0.15 SD (Appendix Table A8). These shifts in perceived fit for others are mirrored in girls' beliefs about themselves: treated girls become more optimistic about their fit for high-math occupations, with the high-math fit index rising by 0.15 SD overall (0.22 SD among high-math girls; 0.09 SD among low-math girls, statistically imprecise). At the same time, treated girls report slightly lower beliefs about their own math skills for the same set of high-math occupations (about -0.13 SD overall, concentrated among high-math girls). One interpretation consistent with the script is that the video increases the salience of requirements and induces a more conservative standard for what it means to be "good enough" in math. To distinguish this from updated beliefs about the occupations, we asked girls to rate the perceived math requirements of the exact same high-math apprenticeships; treatment does not affect these ratings. We also find no effect on language confidence, while agreement with "I am good at math" falls by -0.198 SD, consistent with math-specific updating rather than a general confidence shift.

4.2 Boys Shift Search toward Low-Math Occupations

Figure 3: Treatment effects on boys' occupational search



(a) Low-math occupational search

(b) Breadth of search

Note: Main sample of boys. The green dots indicate the point estimates of the treatment indicator from the estimation [ADD]. The dark-grey and the light-grey symbols indicate the point estimates for the sample of low-math skill boys respectively high-math boys. The whiskers indicate the 90 and 95 (light colored) percent confidence intervals. Below each outcome label on the y-axis, μ indicates the control mean. Each estimate comes from a separate regression with controls as specified in Subsection **??**.

Graph (a) of Figure 3 shows that the boys' video shifts search toward low-math occupations, the margin emphasized in the boys' video (Appendix Table A9). The reorientation is already visible in the two-week follow-up, where low-math boys are more likely to plan to apply to at least one low-math occupation. In the platform data, the probability that low-math boys submit at least one low-math application increases by about 20 percent relative to the control mean—though estimates at this stage are less precise. At endline, the directional shift becomes clearer: low-math boys are about 40 percent more likely to have completed a low-math trial apprenticeship and about 50 percent more likely to have applied for low-math apprenticeships, with contract effects pointing in the same direction but remaining imprecisely estimated. Appendix Figure B.4 indicates that these shifts are not limited to the specific occupations featured in the video: treated boys increase engagement with low-math occupations more broadly, consistent with a reallocation of search toward a wider low-math opportunity set rather than mechanical substitution into the small set of occupations explicitly mentioned in the video.

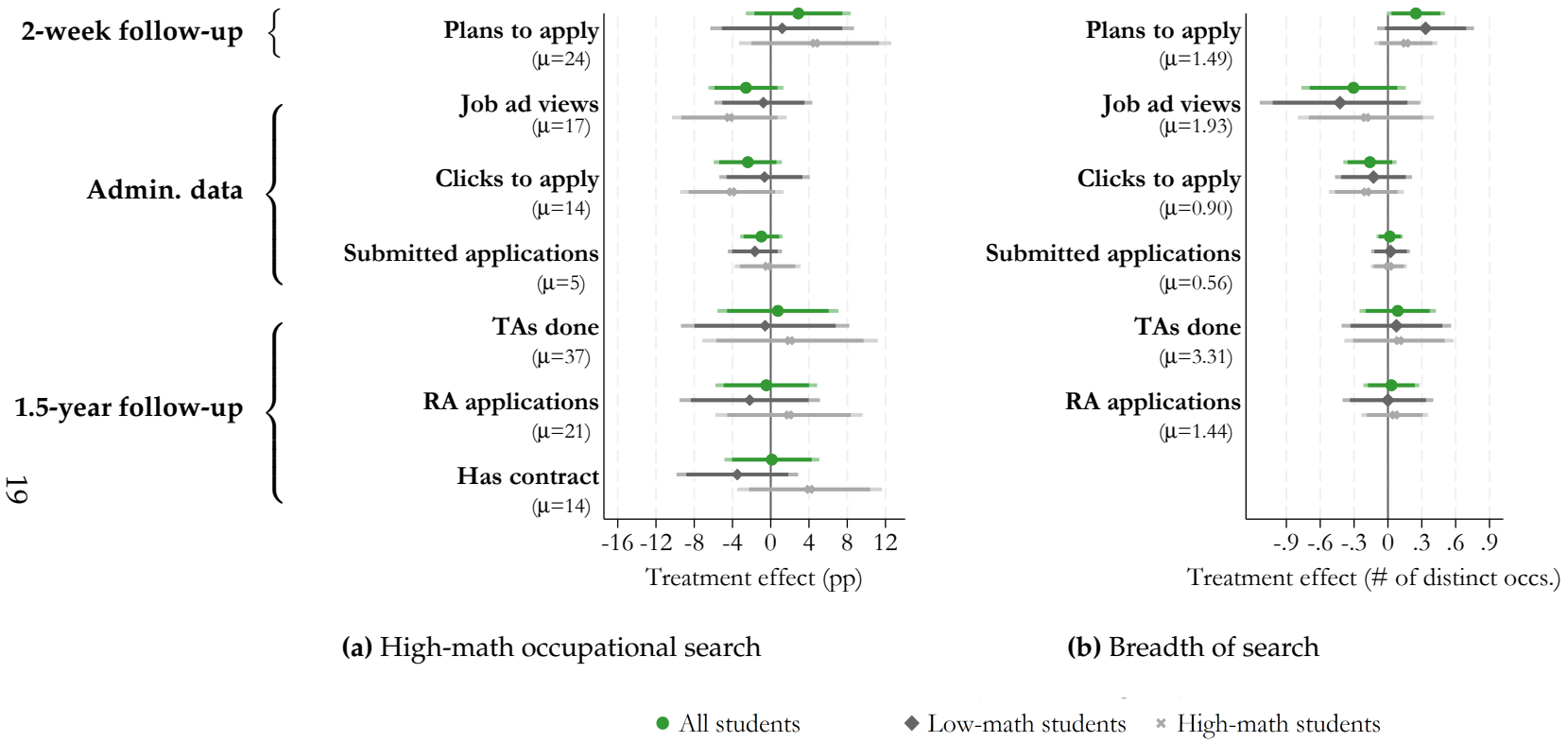
Graph (b) of Figure 3 shows that this directional shift is accompanied by broader exploration along the funnel from short-run plans to revealed platform behavior and endline actions (Appendix Table A9). In the two-week follow-up, treated boys plan to apply in about 25% more occupations than control boys (roughly 0.36 additional occupations on a control mean of 1.41). In the linked platform data, treated boys subsequently explore a wider set of occupations as well—viewing job ads and clicking through to application pages in about 40 percent more occupations than the control group. These early-funnel responses are large given low baseline exploration, consistent with the intervention lowering the cost of considering additional options on a major search platform rather than merely reshuffling attention within a fixed set of intended occupations.

A central takeaway is that the broader exploration translates into sustained higher-commitment activity primarily for the group the boys' video was designed to reach. While both low- and high-math boys expand their intended choice sets shortly after treatment, the endline breadth responses are concentrated among low-math boys. Relative to their control means, low-math boys complete trial apprenticeships in about 20 percent more occupations and submit real apprenticeship applications in nearly 50 percent more occupations—corresponding to increases of about 0.53 additional trial-apprenticeship occupations and 0.76 additional application occupations. By contrast, the corresponding endline breadth estimates for high-math boys are close to zero. This pattern suggests that the video does more than trigger short-run curiosity: for low-math boys it expands

the set of occupations they meaningfully test and pursue, helping explain the directional shift toward low-math pathways.

4.3 No Detectable Search Response for Girls

Figure 4: Treatment effects on girls' occupational search



(a) High-math occupational search

(b) Breadth of search

All students Low-math students High-math students

Note: Main sample of girls. The green dots indicate the point estimates of the treatment indicator from the estimation [ADD]. The dark-grey and the light-grey symbols indicate the point estimates for the sample of low-math skill girls respectively high-math girls. The whiskers indicate the 90 and 95 (light colored) percent confidence intervals. Below each outcome label on the y-axis, μ indicates the control mean. Each estimate comes from a separate regression with controls as specified in Subsection **??**.

Graph (a) of Figure 4 shows no detectable shift in the direction of girls' search toward high-math occupations. Treatment effects on engaging with any high-math occupation are small at each stage, and the contract outcome is essentially zero. Appendix Figure A3 shows no detectable movement toward either the specific high-math occupations featured in the video or high-math occupations more broadly. Interpreted alongside Section 4.1, the results suggest that the girls' video shifts beliefs about fit but does not translate into measurable changes in occupational search. One reason may be that belief updating is mixed—perceived fit rises while beliefs about own math skills fall—so the set of perceived feasible options changes little on net.

Graph (b) shows that, unlike for boys, the girls' video also does not generate a detectable change in search breadth along the funnel (Appendix Table A10). Treated girls report slightly broader plans in the two-week follow-up, but this difference does not carry through to revealed platform behavior or endline outcomes. Across the platform stages, estimated effects on the number of occupations viewed, clicked, or applied to are close to zero, and endline measures of trial apprenticeships and real applications likewise show no meaningful changes.

5 Conclusion

This paper studies how beliefs about math skills and occupational fit shape early career choices in the Swiss apprenticeship market, where students make consequential specialization decisions as teenagers. We document sizeable gender gaps in perceived math skills and fit despite similar observed math performance, and we test whether a short, gender-tailored information video delivered at the start of the apprenticeship search window can shift both beliefs and behavior. Using linked administrative data from a major apprenticeship search platform observed over roughly 1.5 years, we find that the boys' video persistently shifts search toward the lower-math occupations emphasized in the intervention and broadens the set of occupations boys explore, with the longer-run behavioral response concentrated among low-math boys.

The central contribution is to show that a light-touch, scalable intervention can move real search behavior when it targets a well-timed window of opportunity and a margin where adolescents have limited information and narrow priors. Early in the funnel, boys become more likely to search low-math occupations. The economically and policy-relevant mechanism emerges most clearly at higher-commitment stages for low-math

boys: they also broaden the set of occupations they explore through trial apprenticeships and applications, consistent with an expansion of their feasible opportunity set rather than short-lived attention. This pattern speaks to a broader concern that boys face growing risks of disengagement and weaker early-career trajectories, yet most gender-targeted efforts in education and career guidance have historically focused on expanding girls' access to math-intensive fields. Our results highlight the value of developing analogous evidence and tools for boys—the other half of the student population—especially for those most at risk of narrowing their options too early.

A practical implication is that career guidance need not be intensive to matter: when delivered at scale and aligned with actual decision points, small informational inputs can generate sustained changes in behavior. Because the intervention is low-cost and easy to integrate into existing guidance environments, it offers a promising complement to more resource-intensive counseling and is well suited for deployment through the search and matching platforms that already structure how adolescents explore apprenticeship options. More broadly, our findings point to a constructive way forward in gender and education policy: expanding the toolkit beyond efforts aimed solely at girls in math-intensive fields to include interventions that help boys form more accurate self-assessments and explore a wider set of viable pathways.

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Math Skills, Perceptions of Fit, and Occupational Choice

Online Appendix

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Melanie Wassermann

A Appendix figures and tables

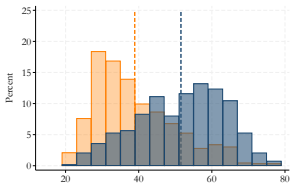
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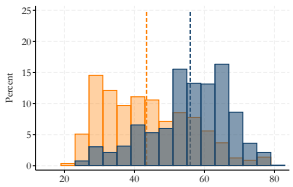
A.1 Figures

Appendix Figure A1: Math preferences and perception of fit by math ability

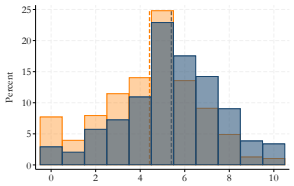
Low Math Sample | **High Math Sample**



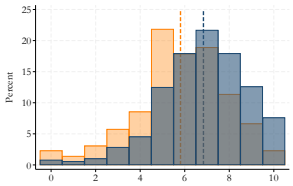
(a) LM students: Occupational math preferences



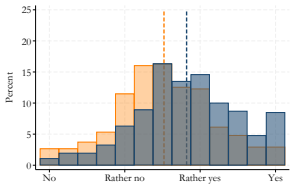
(b) HM students: Occupational math preferences



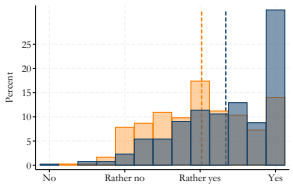
(c) LM students: Own perceived math decile



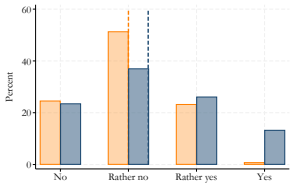
(d) HM students: Own perceived math decile



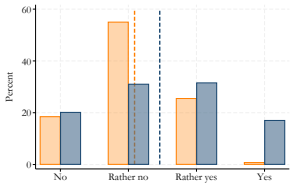
(e) LM students: Beliefs about own math skills



(f) HM students: Beliefs about own math skills



(g) LM students: Beliefs about own fit to high-math occupations

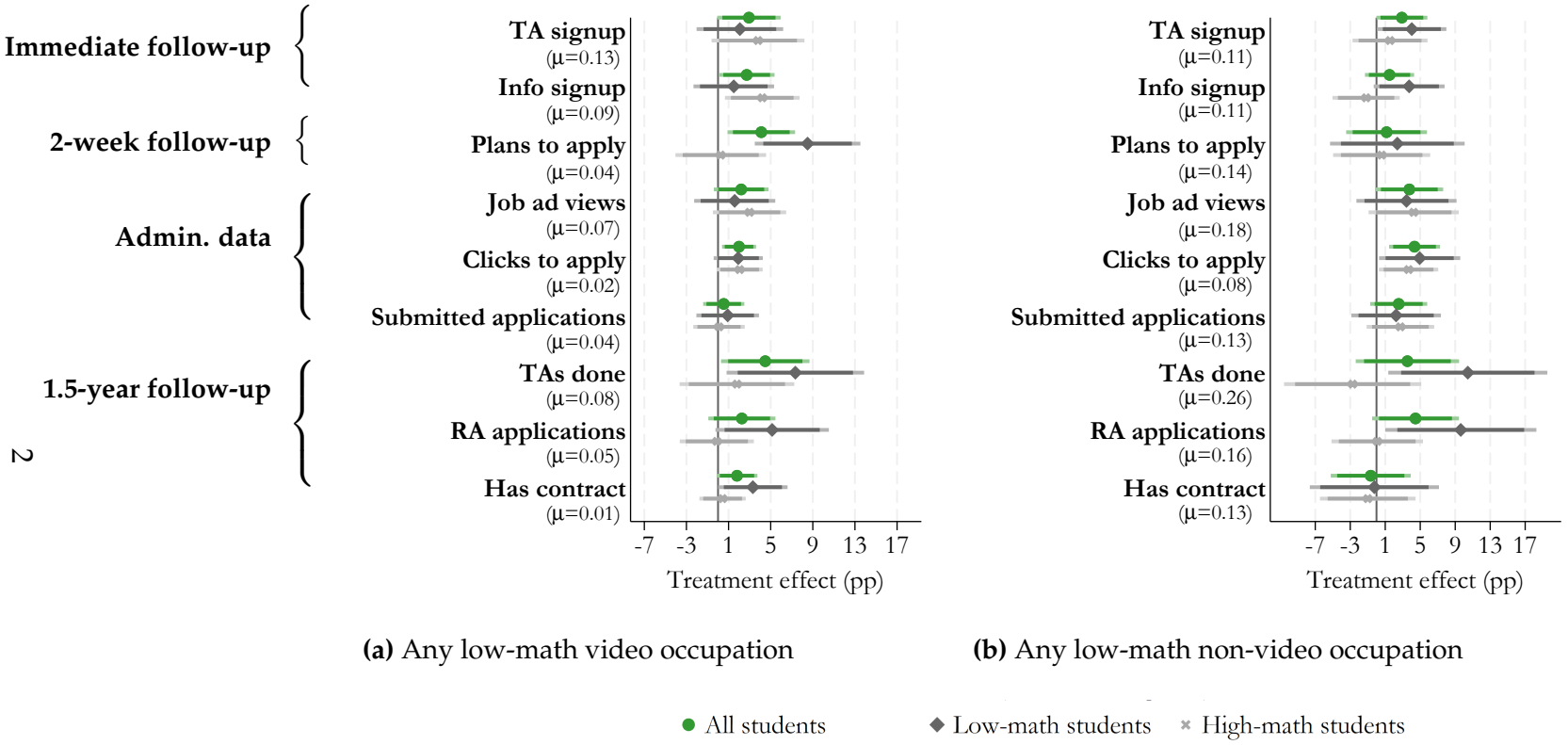


(h) HM students: Beliefs about own fit to high-math occupations



Note: The vertical lines indicate the average for boys (blue) and girls (orange). LM students refers to low-math students, and HM students refers to high-math students. All graphs use our primary sample described in subsection **ADD**; Graphs (e) to (h) only include control students. The definitions of the variables appear in subsections **ADD**. Graph (a) and (b) illustrates the distribution of students' preferred average math preferences. Graph (c) and (d) illustrates the distribution of students' own perceived math skills decile by gender. Graph (e) and (f) illustrates the distribution of beliefs about having good enough math skills for high-math occupations by gender. Graph (g) and (h) illustrates the distribution of beliefs about being a good fit for high-math occupations by gender.

Appendix Figure A2: Treatment effects on boys' occupational search by video-mentioning

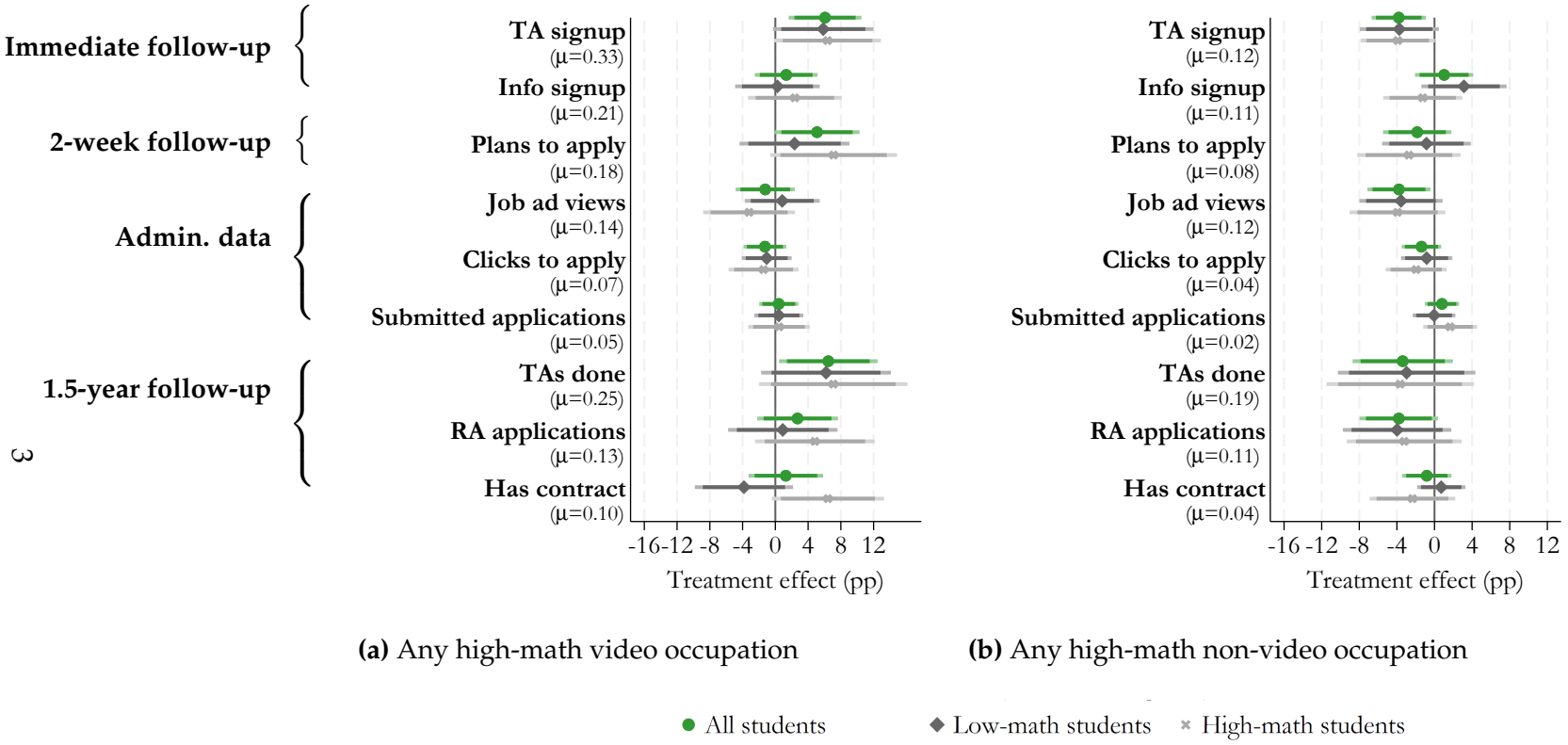


(a) Any low-math video occupation

(b) Any low-math non-video occupation

Note: Main sample of boys. The green dots indicate the point estimates of the treatment indicator from the estimation [ADD]. The dark-grey and the light-grey symbols indicate the point estimates for the sample of low-math skill boys respectively high-math boys. The whiskers indicate the 90 and 95 (light colored) percent confidence intervals. Below each outcome label on the y-axis, μ indicates the control mean. Each estimate comes from a separate regression with controls as specified in Subsection **??**.

Appendix Figure A3: Treatment effects on girls' occupational search by video-mentioning



(a) Any high-math video occupation

(b) Any high-math non-video occupation

Note: Main sample girls. The green dots indicate the point estimates of the treatment indicator from the estimation [ADD]. The dark-grey and the light-grey symbols indicate the point estimates for the sample of low-math skill girls respectively high-math girls. The whiskers indicate the 90 and 95 (light colored) percent confidence intervals. Below each outcome label on the y-axis, μ indicates the control mean. Each estimate comes from a separate regression with controls as specified in Subsection **??**.

A.2 Tables

Appendix Table A1: Baseline characteristics for sample with belief outcomes

	Boys			Girls		
	(1) Control	(2) Treated	(3) (2)-(1)	(4) Control	(5) Treated	(6) (5)-(4)
Age 13-14	0.63	0.67	0.04*	0.71	0.72	0.01
	(0.48)	(0.47)		(0.45)	(0.45)	
Age 15-16	0.31	0.29	-0.03	0.25	0.25	-0.01
	(0.46)	(0.45)		(0.44)	(0.43)	
8^{th} grade	0.63	0.65	0.02	0.68	0.69	0.00
	(0.48)	(0.48)		(0.47)	(0.46)	
9^{th} grade	0.23	0.24	0.01	0.23	0.22	-0.01
	(0.42)	(0.43)		(0.42)	(0.42)	
High track	0.38	0.42	0.04	0.43	0.44	0.00
	(0.49)	(0.49)		(0.50)	(0.50)	
Middle track	0.35	0.33	-0.02	0.33	0.35	0.03
	(0.48)	(0.47)		(0.47)	(0.48)	
Low track	0.18	0.17	-0.01	0.14	0.14	-0.00
	(0.38)	(0.37)		(0.35)	(0.34)	
High math	0.46	0.48	0.02	0.49	0.48	-0.01
	(0.50)	(0.50)		(0.50)	(0.50)	
Perceived math skills decile	6.17	6.03	-0.14	5.13	5.03	-0.10
	(2.14)	(2.23)		(2.19)	(2.31)	
Perceived language skills decile	6.02	6.06	0.04	6.10	6.10	-0.01
	(2.24)	(2.24)		(2.09)	(2.18)	
Math grade	4.87	4.87	0.00	4.81	4.80	-0.01
	(0.53)	(0.54)		(0.54)	(0.53)	
Language grade	4.81	4.81	-0.00	4.97	4.98	0.00
	(0.44)	(0.46)		(0.46)	(0.45)	
Ave. math requ. of pref. appr.	53.34	54.03	0.69	40.55	41.74	1.19*
	(12.27)	(11.60)		(11.68)	(12.16)	
Ave. lang.requ. of pref. appr.	54.15	54.34	0.20	64.53	63.98	-0.55
	(8.58)	(8.62)		(7.90)	(7.47)	
Ave. fem. share in pref. appr.	0.28	0.28	-0.00	0.66	0.64	-0.02
	(0.20)	(0.20)		(0.21)	(0.22)	
Ave. exp. earnings in pref. appr.	95,988	96,014	26	96,943	96,978	35
	9,322	9,279		7,184	7,127	
Number of observations	845	861		730	730	

Note: Main sample, which includes all students without a contract who were randomized into either treatment or control and answered at least one immediate baseline outcome. The standard deviation is reported in parentheses beneath the mean values. The omitted categories are 17–18 years (age), having completed compulsory education (educational situation), and attending the mixed track (track type). A joint test of statistical significance of all baseline characteristics on the treatment indicator gives p = 0.74 for boys and p = 0.71 for girls. The test includes all variables shown in the table. Additionally, the stratifying high math variable, mixed track and a set of six region dummies are included in the joint test.

Appendix Table A2: Baseline characteristics for sample with 2-week follow-up outcomes

	Boys			Girls		
	(1) Control	(2) Treated	(3) (2)-(1)	(4) Control	(5) Treated	(6) (5)-(4)
Age 13-14	0.61	0.67	0.06*	0.67	0.72	0.05
	(0.49)	(0.47)		(0.47)	(0.45)	
Age 15-16	0.33	0.29	-0.04	0.29	0.25	-0.04
	(0.47)	(0.45)		(0.45)	(0.43)	
8th grade	0.61	0.64	0.03	0.64	0.69	0.05
	(0.49)	(0.48)		(0.48)	(0.46)	
9th grade	0.24	0.26	0.02	0.26	0.23	-0.03
	(0.43)	(0.44)		(0.44)	(0.42)	
High track	0.46	0.47	0.00	0.48	0.47	-0.00
	(0.50)	(0.50)		(0.50)	(0.50)	
Middle track	0.34	0.35	0.01	0.32	0.37	0.06*
	(0.47)	(0.48)		(0.47)	(0.48)	
Low track	0.13	0.11	-0.02	0.10	0.10	-0.00
	(0.33)	(0.31)		(0.30)	(0.30)	
High math	0.52	0.56	0.03	0.54	0.51	-0.03
	(0.50)	(0.50)		(0.50)	(0.50)	
Perceived math skills decile	6.22	6.31	0.09	5.40	5.07	-0.33**
	(2.13)	(2.12)		(2.10)	(2.33)	
Perceived language skills decile	6.04	5.97	-0.07	6.19	6.18	-0.01
	(2.18)	(2.22)		(2.01)	(2.08)	
Math grade	4.89	4.92	0.03	4.85	4.81	-0.04
	(0.53)	(0.53)		(0.54)	(0.55)	
Language grade	4.84	4.82	-0.01	5.00	5.01	0.02
	(0.45)	(0.45)		(0.46)	(0.45)	
Ave. math requ. of pref. appr.	54.38	55.46	1.08	41.82	42.83	1.01
	(11.76)	(11.58)		(11.82)	(12.41)	
Ave. lang.requ. of pref. appr.	55.03	55.43	0.40	64.44	63.92	-0.52
	(8.38)	(8.57)		(8.10)	(7.45)	
Ave. fem. share in pref. appr.	0.27	0.28	0.01	0.64	0.63	-0.02
	(0.18)	(0.20)		(0.22)	(0.22)	
Ave. exp. earnings in pref. appr.	97,371	97,345	-26	97,666	97,580	-85
	9,229	8,893		7,427	7,070	
Number of observations	341	342		361	363	

Note: Main sample, which includes all students without a contract who were randomized into either treatment or control and answered at least one 2 week follow-up survey outcome. The standard deviation is reported in parentheses beneath the mean values. The omitted categories are 17–18 years (age), having completed compulsory education (educational situation), and attending the mixed track (track type). A joint test of statistical significance of all baseline characteristics on the treatment indicator gives p = 0.62 for boys and p = 0.27 for girls. The test includes all variables shown in the table. Additionally, the stratifying high math variable, mixed track and a set of six region dummies are included in the joint test.

Appendix Table A3: Baseline characteristics for sample with administrative outcomes

	Boys			Girls		
	(1) Control	(2) Treated	(3) (2)-(1)	(4) Control	(5) Treated	(6) (5)-(4)
Age 13-14	0.61	0.64	0.02	0.67	0.70	0.02
	(0.49)	(0.48)		(0.47)	(0.46)	
Age 15-16	0.33	0.31	-0.02	0.28	0.26	-0.02
	(0.47)	(0.46)		(0.45)	(0.44)	
8th grade	0.62	0.64	0.01	0.66	0.68	0.02
	(0.49)	(0.48)		(0.47)	(0.47)	
9th grade	0.24	0.24	0.00	0.23	0.21	-0.02
	(0.43)	(0.43)		(0.42)	(0.41)	
High track	0.40	0.43	0.03	0.46	0.48	0.01
	(0.49)	(0.50)		(0.50)	(0.50)	
Middle track	0.35	0.32	-0.03	0.30	0.34	0.03
	(0.48)	(0.47)		(0.46)	(0.47)	
Low track	0.18	0.17	-0.01	0.14	0.12	-0.02
	(0.38)	(0.37)		(0.35)	(0.33)	
High math	0.47	0.48	0.02	0.51	0.50	-0.01
	(0.50)	(0.50)		(0.50)	(0.50)	
Perceived math skills decile	6.15	5.95	-0.20*	5.30	5.16	-0.14
	(2.16)	(2.23)		(2.15)	(2.30)	
Perceived language skills decile	6.02	6.10	0.07	6.18	6.19	0.01
	(2.25)	(2.28)		(2.06)	(2.11)	
Math grade	4.87	4.87	0.00	4.81	4.80	-0.01
	(0.53)	(0.54)		(0.53)	(0.54)	
Language grade	4.81	4.82	0.00	4.98	4.99	0.01
	(0.45)	(0.46)		(0.46)	(0.45)	
Ave. math requ. of pref. appr.	53.61	54.23	0.61	40.88	42.19	1.31**
	(12.15)	(11.41)		(11.88)	(12.04)	
Ave. lang.requ. of pref. appr.	54.36	55.00	0.64	64.73	64.06	-0.67
	(8.47)	(8.42)		(7.69)	(7.44)	
Ave. fem. share in pref. appr.	0.28	0.28	0.01	0.65	0.64	-0.01
	(0.19)	(0.19)		(0.22)	(0.22)	
Ave. exp. earnings in pref. appr.	96,480	96,886	406	97,383	97,354	-28
	9,194	9,079		7,169	7,104	
Number of observations	799	785		646	646	

Note: Main sample, which includes all students without a contract who were randomized into either treatment or control and answered at least one administrative data outcome. The standard deviation is reported in parentheses beneath the mean values. The omitted categories are 17–18 years (age), having completed compulsory education (educational situation), and attending the mixed track (track type). A joint test of statistical significance of all baseline characteristics on the treatment indicator gives p = 0.67 for boys and p = 0.26 for girls. The test includes all variables shown in the table. Additionally, the stratifying high math variable, mixed track and a set of six region dummies are included in the joint test.

Appendix Table A4: Baseline characteristics for sample with 1.5-year follow-up outcomes

	Boys			Girls		
	(1) Control	(2) Treated	(3) (2)-(1)	(4) Control	(5) Treated	(6) (5)-(4)
Age 13-14	0.68	0.73	0.05	0.74	0.73	-0.01
	(0.47)	(0.45)		(0.44)	(0.44)	
Age 15-16	0.26	0.25	-0.01	0.22	0.24	0.01
	(0.44)	(0.43)		(0.42)	(0.42)	
8th grade	0.69	0.75	0.06*	0.73	0.71	-0.02
	(0.46)	(0.44)		(0.44)	(0.45)	
9th grade	0.18	0.17	-0.01	0.20	0.22	0.02
	(0.39)	(0.38)		(0.40)	(0.41)	
High track	0.46	0.44	-0.02	0.47	0.47	0.00
	(0.50)	(0.50)		(0.50)	(0.50)	
Middle track	0.34	0.38	0.04	0.32	0.39	0.07*
	(0.47)	(0.49)		(0.47)	(0.49)	
Low track	0.13	0.12	-0.00	0.11	0.09	-0.02
	(0.33)	(0.33)		(0.31)	(0.29)	
High math	0.50	0.51	0.01	0.51	0.49	-0.03
	(0.50)	(0.50)		(0.50)	(0.50)	
Perceived math skills decile	6.17	6.08	-0.08	5.48	5.13	-0.35**
	(2.15)	(2.20)		(1.97)	(2.31)	
Perceived language skills decile	6.04	5.93	-0.10	6.26	6.21	-0.05
	(2.07)	(2.19)		(2.00)	(2.08)	
Math grade	4.87	4.90	0.03	4.85	4.79	-0.06
	(0.53)	(0.53)		(0.52)	(0.54)	
Language grade	4.82	4.82	-0.00	5.01	4.98	-0.03
	(0.45)	(0.46)		(0.47)	(0.46)	
Ave. math requ. of pref. appr.	54.90	55.47	0.57	41.49	42.33	0.84
	(12.15)	(10.95)		(11.91)	(12.53)	
Ave. lang.requ. of pref. appr.	55.43	54.85	-0.58	64.39	63.59	-0.80
	(8.12)	(8.16)		(8.13)	(7.53)	
Ave. fem. share in pref. appr.	0.28	0.27	-0.01	0.65	0.63	-0.02
	(0.19)	(0.19)		(0.22)	(0.21)	
Ave. exp. earnings in pref. appr.	97,621	96,816	-805	97,119	96,810	-309
	8,891	9,038		7,408	7,130	
Number of observations	325	336		313	327	

Note: Main sample, which includes all students without a contract who were randomized into either treatment or control and answered at least one 1.5 year follow-up survey outcome. The standard deviation is reported in parentheses beneath the mean values. The omitted categories are 17–18 years (age), having completed compulsory education (educational situation), and attending the mixed track (track type). A joint test of statistical significance of all baseline characteristics on the treatment indicator gives p = 0.72 for boys and p = 0.26 for girls. The test includes all variables shown in the table. Additionally, the stratifying high math variable, mixed track and a set of six region dummies are included in the joint test.

Appendix Table A5: Treatment effects on beliefs

	Boys			Girls		
	All	Low-math	High-math	All	Low-math	High-math
	(1)	(2)	(3)	(4)	(5)	(6)
Other students' math intensity	-0.09***	-0.06	-0.14***	0.15***	0.18***	0.12***
	(0.03)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)
q-val	0.002	0.291	0.002	0.001	0.001	0.004
Control mean	−0.000	−0.049	0.059	0.000	0.010	−0.010
N	4,125	2,187	1,938	3,541	1,830	1,711
Own low-math occ. fit	0.13***	0.06	0.21***			
	(0.05)	(0.06)	(0.06)			
q-val	0.003	0.425	0.002			
Control mean	−0.000	0.063	−0.074			
N	1,706	910	796			
Own high-math occ. fit	0.00	0.01	-0.01	0.15***	0.09	0.22***
	(0.05)	(0.06)	(0.07)	(0.05)	(0.07)	(0.07)
q-val	0.329	0.660	0.239	0.003	0.236	0.004
Control mean	0.000	−0.076	0.090	−0.000	−0.078	0.081
N	1,706	910	796	1,460	752	708
Own math skills	-0.21***	-0.22***	-0.20***	-0.13***	-0.08	-0.19***
	(0.04)	(0.05)	(0.05)	(0.04)	(0.07)	(0.06)
q-val	0.001	0.001	0.001	0.003	0.236	0.004
Control mean	−0.000	−0.333	0.396	−0.000	−0.349	0.367
N	1,706	910	796	1,460	752	708

Note: We use LASSO controls in all regressions. We run LASSO for the overall sample by gender (columns (1) and (4)) and include the same selected controls for all 3 (sub-)samples. All non-binary variables are standardized to have a mean of 0 and standard deviation of 1 in the control group. The standard error is reported in parentheses beneath the estimate. We report sharpened q-values following Anderson (2008), which indicate the minimum false discovery rate at which each hypothesis would be rejected within its outcome family. Q-values are calculated separately for each outcome family, gender, and sample (pooled, low-math, and high-math).

Appendix Table A6: Treatment effects on boys

	Low-math occupational search			Breadth of Search		
	All	Low Math	High Math	All	Low Math	High Math
Plans to apply	0.04	0.07*	0.01	0.36***	0.33**	0.37***
	(0.03)	(0.04)	(0.03)	(0.10)	(0.15)	(0.14)
q-val.	0.101	0.144	0.908	0.003	0.154	0.014
Control mean	0.17	0.21	0.14	1.41	1.33	1.48
N	733	340	393	645	296	349
Job ad views	0.04**	0.04	0.05*	0.75***	0.64	0.90**
	(0.02)	(0.03)	(0.03)	(0.28)	(0.41)	(0.36)
q-val.	0.069	0.354	0.072	0.012	0.265	0.014
Control mean	0.20	0.24	0.15	2.01	2.33	1.65
N	1,584	832	752	1,584	832	752
Clicks to apply	0.04**	0.04	0.04	0.42***	0.31	0.57***
	(0.02)	(0.03)	(0.03)	(0.15)	(0.20)	(0.22)
q-val.	0.069	0.229	0.286	0.012	0.265	0.014
Control mean	0.15	0.18	0.12	1.01	1.09	0.92
N	1,584	832	752	1,584	832	752
Submitted applications	0.02	0.03	0.00	0.19**	0.17	0.23*
	(0.01)	(0.02)	(0.01)	(0.09)	(0.14)	(0.13)
q-val.	0.125	0.167	0.807	0.032	0.246	0.084
Control mean	0.10	0.15	0.05	0.97	1.09	0.84
N	1,584	832	752	1,584	832	752
TAs done	0.06**	0.13***	0.00	0.23	0.53*	-0.08
	(0.03)	(0.05)	(0.04)	(0.17)	(0.28)	(0.20)
q-val.	0.069	0.165	0.469	0.068	0.443	0.183
Control mean	0.30	0.33	0.27	2.76	2.72	2.79
N	740	363	377	661	325	336
RA applications	0.06**	0.13***	0.00	0.32*	0.76**	-0.10
	(0.03)	(0.05)	(0.03)	(0.17)	(0.30)	(0.16)
q-val.	0.069	0.144	0.515	0.034	0.154	0.494
Control mean	0.18	0.26	0.09	1.52	1.63	1.42
N	740	363	377	740	363	377
Has contract	0.03	0.06	-0.00			
	(0.02)	(0.04)	(0.03)			
q-val.	0.120	0.340	0.908			
Control mean	0.14	0.19	0.10			
N	774	377	397			

Note: We use LASSO controls in all regressions. We run LASSO for the overall sample by gender (columns (1) and (4)) and include the same selected controls for all 3 (sub-)samples. The three columns represent different samples. The first column shows the pooled sample, the second includes only low-math students, and the third contains high-math students. All non-binary variables are standardized to have a mean of 0 and standard deviation of 1 in the control group. The standard error is reported in parentheses beneath the estimate. We report sharpened q-values following Anderson (2008), which indicate the minimum false discovery rate at which each hypothesis would be rejected within its outcome family. Q-values are calculated separately for each outcome family, gender, and sample (pooled, low-math, and high-math).

Appendix Table A7: Treatment effects on girls

	High-math occupational search			Breadth of Search		
	All	Low Math	High Math	All	Low Math	High Math
Plans to apply	0.03	0.01	0.05	0.25*	0.33	0.16
	(0.03)	(0.04)	(0.04)	(0.13)	(0.22)	(0.14)
q-val.	1.000	1.000	0.572	0.549	1.000	0.657
Control mean	0.24	0.19	0.27	1.49	1.50	1.48
N	773	373	400	678	325	353
Job ad views	-0.03	-0.01	-0.04	-0.31	-0.42	-0.20
	(0.02)	(0.03)	(0.03)	(0.24)	(0.36)	(0.31)
q-val.	1.000	1.000	0.105	0.549	1.000	0.969
Control mean	0.17	0.13	0.21	1.93	2.06	1.81
N	1,292	643	649	1,292	643	649
Clicks to apply	-0.02	-0.01	-0.04	-0.16	-0.13	-0.19
	(0.02)	(0.02)	(0.03)	(0.12)	(0.17)	(0.17)
q-val.	1.000	1.000	0.105	0.549	1.000	0.657
Control mean	0.14	0.11	0.16	0.90	0.86	0.94
N	1,292	643	649	1,292	643	649
Submitted applications	-0.01	-0.02	-0.00	0.02	0.02	0.01
	(0.01)	(0.01)	(0.02)	(0.06)	(0.09)	(0.08)
q-val.	1.000	1.000	0.732	0.675	1.000	1.000
Control mean	0.05	0.04	0.05	0.56	0.59	0.53
N	1,292	643	649	1,292	643	649
TAs done	0.01	-0.01	0.02	0.09	0.08	0.10
	(0.03)	(0.04)	(0.05)	(0.17)	(0.25)	(0.25)
q-val.	1.000	1.000	0.732	0.675	1.000	1.000
Control mean	0.37	0.31	0.43	3.31	3.34	3.29
N	708	354	354	640	320	320
RA applications	-0.00	-0.02	0.02	0.03	-0.00	0.06
	(0.03)	(0.04)	(0.04)	(0.13)	(0.20)	(0.15)
q-val.	1.000	1.000	1.000	0.675	1.000	1.000
Control mean	0.21	0.18	0.23	1.44	1.75	1.15
N	708	354	354	708	354	354
Has contract	0.00	-0.03	0.04			
	(0.03)	(0.03)	(0.04)			
q-val.	1.000	1.000	0.572			
Control mean	0.14	0.12	0.16			
N	753	375	378			

Note: We use LASSO controls in all regressions. We run LASSO for the overall sample by gender (columns (1) and (4)) and include the same selected controls for all 3 (sub-)samples. The three columns represent different samples. The first column shows the pooled sample, the second includes only low-math students, and the third contains high-math students. All non-binary variables are standardized to have a mean of 0 and standard deviation of 1 in the control group. The standard error is reported in parentheses beneath the estimate. We report sharpened q-values following Anderson (2008), which indicate the minimum false discovery rate at which each hypothesis would be rejected within its outcome family. Q-values are calculated separately for each outcome family, gender, and sample (pooled, low-math, and high-math).

Appendix Table A8: Treatment effects on beliefs without controls

	Boys			Girls		
	All	Low-math	High-math	All	Low-math	High-math
	(1)	(2)	(3)	(4)	(5)	(6)
Other students' math intensity	-0.08***	-0.02	-0.15***	0.16***	0.18***	0.14***
	(0.03)	(0.04)	(0.04)	(0.03)	(0.05)	(0.05)
q-val	0.010	1.000	0.001	0.001	0.001	0.003
Control mean	−0.000	−0.049	0.059	0.000	0.010	−0.010
N	4,125	2,187	1,938	3,541	1,830	1,711
Own low-math occ. fit	0.12***	0.05	0.20***			
	(0.05)	(0.07)	(0.07)			
q-val	0.010	1.000	0.003			
Control mean	−0.000	0.063	−0.074			
N	1,706	910	796			
Own high-math occ. fit	0.00	0.01	-0.01	0.17***	0.10	0.24***
	(0.05)	(0.07)	(0.07)	(0.05)	(0.07)	(0.07)
q-val	0.319	1.000	0.287	0.002	0.138	0.003
Control mean	0.000	−0.076	0.090	−0.000	−0.078	0.081
N	1,706	910	796	1,460	752	708
Own math skills	-0.21***	-0.23***	-0.22***	-0.14***	-0.12*	-0.16**
	(0.04)	(0.06)	(0.06)	(0.05)	(0.07)	(0.07)
q-val	0.001	0.001	0.001	0.003	0.088	0.008
Control mean	−0.000	−0.333	0.396	−0.000	−0.349	0.367
N	1,706	910	796	1,460	752	708

Note: We use strata FE in all regressions. All non-binary variables are standardized to have a mean of 0 and standard deviation of 1 in the control group by gender. The standard error is reported in parentheses beneath the estimate. We report sharpened q-values following Anderson (2008), which indicate the minimum false discovery rate at which each hypothesis would be rejected within its outcome family. Q-values are calculated separately for each outcome family, gender, and sample (pooled, low-math, and high-math).

Appendix Table A9: Treatment effects on boys without controls

	Low-math occupational search			Breadth of Search		
	All	Low Math	High Math	All	Low Math	High Math
Plans to apply	0.03	0.05	0.01	0.35***	0.33**	0.35**
	(0.03)	(0.05)	(0.04)	(0.10)	(0.15)	(0.14)
q-val.	0.215	0.281	1.000	0.006	0.217	0.011
Control mean	0.17	0.21	0.14	1.41	1.33	1.48
N	733	340	393	645	296	349
Job ad views	0.04**	0.04	0.05*	0.84***	0.70*	1.00***
	(0.02)	(0.03)	(0.03)	(0.29)	(0.42)	(0.38)
q-val.	0.093	0.281	0.099	0.006	0.272	0.011
Control mean	0.20	0.24	0.15	2.01	2.33	1.65
N	1,584	832	752	1,584	832	752
Clicks to apply	0.04**	0.04	0.04*	0.48***	0.31	0.65***
	(0.02)	(0.03)	(0.03)	(0.16)	(0.21)	(0.23)
q-val.	0.093	0.281	0.147	0.006	0.272	0.011
Control mean	0.15	0.18	0.12	1.01	1.09	0.92
N	1,584	832	752	1,584	832	752
Submitted applications	0.01	0.02	-0.00	0.23**	0.19	0.27**
	(0.02)	(0.03)	(0.01)	(0.10)	(0.14)	(0.13)
q-val.	0.256	0.281	0.812	0.015	0.272	0.049
Control mean	0.10	0.15	0.05	0.97	1.09	0.84
N	1,584	832	752	1,584	832	752
TAs done	0.07**	0.12**	0.02	0.27	0.57**	-0.03
	(0.03)	(0.05)	(0.05)	(0.18)	(0.29)	(0.21)
q-val.	0.093	0.281	0.670	0.047	0.341	0.103
Control mean	0.30	0.33	0.27	2.76	2.72	2.79
N	740	363	377	661	325	336
RA applications	0.06**	0.11**	0.01	0.34**	0.77***	-0.08
	(0.03)	(0.05)	(0.03)	(0.17)	(0.30)	(0.16)
q-val.	0.093	0.281	0.813	0.027	0.154	0.350
Control mean	0.18	0.26	0.09	1.52	1.63	1.42
N	740	363	377	740	363	377
Has contract	0.03	0.06	-0.00			
	(0.03)	(0.04)	(0.03)			
q-val.	0.212	0.281	1.000			
Control mean	0.14	0.19	0.10			
N	774	377	397			

Note: We use strata FE in all regressions. The three columns represent different samples. The first column shows the pooled sample, the second includes only low-math students, and the third contains high-math students. All non-binary variables are standardized to have a mean of 0 and standard deviation of 1 in the control group. The standard error is reported in parentheses beneath the estimate. We report sharpened q-values following Anderson (2008), which indicate the minimum false discovery rate at which each hypothesis would be rejected within its outcome family. Q-values are calculated separately for each outcome family, gender, and sample (pooled, low-math, and high-math).

Appendix Table A10: Treatment effects on girls without controls

	High-math occupational search			Breadth of Search		
	All	Low Math	High Math	All	Low Math	High Math
Plans to apply	0.044	0.007	0.081*	0.279**	0.411*	0.157
	(0.031)	(0.041)	(0.046)	(0.135)	(0.230)	(0.143)
q-val.	1.000	0.981	0.164	0.301	1.000	0.683
Control mean	0.24	0.19	0.27	1.49	1.50	1.48
N	773	373	400	678	325	353
Job ad views	-0.017	-0.001	-0.032	-0.291	-0.419	-0.155
	(0.021)	(0.027)	(0.031)	(0.240)	(0.366)	(0.311)
q-val.	1.000	0.979	0.164	0.659	1.000	1.000
Control mean	0.17	0.13	0.21	1.93	2.06	1.81
N	1,292	643	649	1,292	643	649
Clicks to apply	-0.018	-0.003	-0.033	-0.146	-0.132	-0.152
	(0.019)	(0.024)	(0.028)	(0.124)	(0.177)	(0.173)
q-val.	1.000	0.979	0.164	0.659	1.000	0.683
Control mean	0.14	0.11	0.16	0.90	0.86	0.94
N	1,292	643	649	1,292	643	649
Submitted applications	-0.006	-0.014	0.001	0.023	0.018	0.031
	(0.011)	(0.014)	(0.018)	(0.061)	(0.089)	(0.084)
q-val.	1.000	0.981	0.333	0.911	1.000	1.000
Control mean	0.05	0.04	0.05	0.56	0.59	0.53
N	1,292	643	649	1,292	643	649
TAs done	0.024	0.009	0.039	0.054	0.016	0.092
	(0.036)	(0.049)	(0.053)	(0.172)	(0.241)	(0.246)
q-val.	1.000	0.981	0.187	0.911	1.000	1.000
Control mean	0.37	0.31	0.43	3.31	3.34	3.29
N	708	354	354	640	320	320
RA applications	0.011	-0.009	0.031	0.048	0.033	0.064
	(0.031)	(0.041)	(0.046)	(0.132)	(0.220)	(0.147)
q-val.	1.000	0.981	0.223	0.911	1.000	1.000
Control mean	0.21	0.18	0.23	1.44	1.75	1.15
N	708	354	354	708	354	354
Has contract	0.016	-0.026	0.057			
	(0.026)	(0.032)	(0.040)			
q-val.	1.000	0.979	0.164			
Control mean	0.14	0.12	0.16			
N	753	375	378			

Note: We use strata FE in all regressions. The three columns represent different samples. The first column shows the pooled sample, the second includes only low-math students, and the third contains high-math students. All non-binary variables are standardized to have a mean of 0 and standard deviation of 1 in the control group. The standard error is reported in parentheses beneath the estimate. We report sharpened q-values following Anderson (2008), which indicate the minimum false discovery rate at which each hypothesis would be rejected within its outcome family. Q-values are calculated separately for each outcome family, gender, and sample (pooled, low-math, and high-math).

Appendix Table A11: Any breadth of search outcome

	Boys			Girls		
	All	Low-math	High-math	All	Low-math	High-math
	(1)	(2)	(3)	(4)	(5)	(6)
Plans to apply to any occ.	0.05	0.07	0.03	-0.00	-0.01	0.01
	(0.03)	(0.05)	(0.04)	(0.03)	(0.04)	(0.04)
Control mean	0.72	0.68	0.76	0.71	0.73	0.69
N	733	340	393	773	373	400
Viewed any job ad	-0.01	0.00	-0.01	-0.02	-0.01	-0.03
	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)
Control mean	0.41	0.39	0.43	0.37	0.36	0.39
N	1,584	832	752	1,292	643	649
Submitted any application	0.00	0.01	-0.01	-0.01	0.01	-0.03
	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)
Control mean	0.45	0.45	0.44	0.33	0.32	0.33
N	1,584	832	752	1,292	643	649
Applied to any TA & RA	0.02	0.07*	-0.02	-0.00	-0.02	0.01
	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)
Control mean	0.85	0.83	0.87	0.87	0.88	0.86
N	740	363	377	708	354	354
Has any contract	-0.00	0.04	-0.04	-0.01	-0.05	0.03
	(0.03)	(0.05)	(0.05)	(0.03)	(0.05)	(0.05)
Control mean	0.63	0.61	0.65	0.61	0.67	0.56
N	774	377	397	753	375	378

Note: We use LASSO controls in all regressions. We run LASSO for the overall sample by gender (columns (1) and (4)) and include the same selected controls for all 3 (sub-)samples. The three columns represent different samples. The first column shows the pooled sample, the second includes only low-math students, and the third contains high-math students. The outcome "Other students' math intensity" refers to the math intensity of students of the same gender. The standard error is reported in parentheses beneath the estimate.

Appendix Table A12: Attrition of sample

	Boys			Girls		
	All	Low-math	High-math	All	Low-math	High-math
	(1)	(2)	(3)	(4)	(5)	(6)
No immediate outcome	-0.01	-0.02	-0.00	-0.01	-0.00	-0.02
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Control mean	0.13	0.15	0.10	0.11	0.12	0.10
N	1,941	1,060	881	1,637	854	783
No 2-week follow-up outcome	0.01	-0.00	0.02	0.00	-0.01	0.01
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
Control mean	0.06	0.08	0.05	0.06	0.08	0.05
N	733	340	393	773	373	400
No admin. data outcome	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Control mean	0.00	0.00	0.00	0.00	0.00	0.00
N	1,584	832	752	1,292	643	649
No 1.5 year follow-up outcome	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Control mean	0.00	0.00	0.00	0.00	0.00	0.00
N	740	363	377	708	354	354

Note: The three columns represent different samples. The first column shows the pooled sample, the second includes only low-math students, and the third contains high-math students. The standard error is reported in parentheses beneath the estimate.

Appendix Table A13: Gender gap in interest in high-math apprenticeships

	(1)	(2)	(3)	(4)	(5))
Female	-0.34***	-0.34***	-0.32***	-0.30***	-0.28***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Math perception			0.05***	0.02	0.02
			(0.01)	(0.01)	(0.01)
Language perception			-0.03**	-0.02**	-0.02**
			(0.01)	(0.01)	(0.01)
Beliefs about math skills				0.09***	0.08***
				(0.01)	(0.01)
Beliefs about fit					0.05***
					(0.01)
Additional controls		✓	✓	✓	✓
Number of observations	1,575	1,575	1,575	1,575	1,575

Note: The table uses control students from the primary sample described in Subsection ADD The outcome variable, Interested in at least one high-math apprenticeship, takes the value of one if the student prefers at least one high-math apprenticeship and zero otherwise. The control mean for boys is 0.85. Additional controls include indicators for age, grade level attended, and each combination between math and school track and between language grade and school track. Except for the female dummy, all control variables shown in the table are standardized to have a mean of zero and a standard deviation of one within the sample. The standard error is reported in parentheses beneath the estimate and is clustered at the individual level; * p <0.1, ** p <0.05, *** p <0.01.

B Data appendix

B.1 Apprenticeship Characteristics Dataset

We construct an apprenticeship-level dataset that links each nationally recognized apprenticeship occupation to (i) its recent gender composition and size, (ii) broad field of study, (iii) expert-assessed school-skill requirements, and (iv) predicted earnings in adulthood. We use this dataset to characterize students' stated "most preferred apprenticeships," to classify occupations by math intensity (low vs. high), and to provide descriptive context throughout the paper. The unit of observation is the apprenticeship occupation (LABB apprenticeship code). When source data are available at a finer level (e.g., specialization within an apprenticeship), we aggregate to the apprenticeship level as described below.

Female share among graduates. We compute the female share using Swiss Federal Statistical Office (FSO) LABB administrative records (Längsschnittanalysen im Bildungsbereich). The sample includes apprentices in the German-speaking region who completed an apprenticeship between 2019 and 2021. For each apprenticeship occupation, the female share equals the average fraction of graduates who are female over this period.

Number of graduates. Using the same LABB data (2019–2021), we compute the average annual number of apprenticeship completers per occupation. We count all individuals who end an apprenticeship as completers regardless of final exam outcome. We exclude individuals who terminate their apprenticeship contract prematurely.

ISCED field. We assign each apprenticeship occupation to an ISCED field of education using the official FSO mapping file ("Liste der Berufscodes für SBG"), which links apprenticeship codes to ISCED field codes. The LABB data provide three corresponding ISCED field variables, reflecting ISCED levels 2, 3, and 4. We merge this ISCED information into our survey data via the LABB apprenticeship code.

Math and German requirements. We measure school-related skill requirements using expert evaluations from Anforderungsprofile.ch. Publicly, the platform displays requirements on a 4-point scale; for this project we use a proprietary extract that provides a

continuous 0–100 measure. The skill data are available at the specialization level within an apprenticeship. We map specializations to LABB apprenticeship codes using the official FSO crosswalk between the two coding systems and aggregate to the apprenticeship occupation by averaging specialization-level requirement values within each apprenticeship. We construct math requirements and German requirements analogously.

Low- and high-math occupation classifications. Throughout the paper, we classify occupations as high-math if their expert-based math-requirement score is at least 59 and as low-math if it is at most 37. These thresholds follow the pre-analysis plan and are used in the belief outcomes, the type-of-search outcomes, and the descriptive classifications in the main text.

Expected earnings at age 30. We construct an apprenticeship-specific earnings proxy by estimating predicted annual gross full-time-equivalent earnings around age 30 using Swiss Labor Force Survey (SAKE) data linked to SESAM (2015–2019). We fit a weighted regression with apprenticeship fixed effects and a standard set of demographic controls, and then use the estimated apprenticeship fixed effects to predict earnings for a reference worker (30 years old; full-time; employee without supervisory function; urban residence; working in Zurich; no higher education; not married; no children). This yields a comparable apprenticeship-level earnings measure used descriptively in the paper.

B.2 Recruitment and Sample Restriction

B.3 Recruitment

Baseline. Baseline responses were collected between October 18, 2022 and April 30, 2023. The first survey version was fielded in October 2022 and the second survey version in January, March, and April 2023. Student recruitment proceeded through direct student-survey channels and through indirect forwarding channels via teachers and parents.

- *Direct recruitment through Yousty:* four student newsletters, each followed by a reminder, were sent on October 26, 2022 (reminder November 18), January 11, 2023 (reminder January 25), March 6, 2023 (reminder March 22), and April 12, 2023 (reminder April 21).

- *Direct recruitment through schools:* the survey was sent to 632 schools in 13 cantons. School mailings were sent on October 18, 2022 (Lucerne; reminder November 8), October 25, 2022 (Bern; reminder November 8), October 31, 2022 (Zurich excluding Winterthur; reminder November 15), November 1, 2022 (Aargau, Basel-Landschaft, Basel-Stadt, Grisons, St. Gallen, Winterthur; reminder November 15), and November 8, 2022 (Glarus, Nidwalden, Obwalden, Schwyz, Uri, plus schools for which corrected addresses were later obtained; reminder November 22).

- *Indirect recruitment through parents and teachers:* students were also reached through parents and teachers who had been contacted. Parents were contacted through school emails and a Yousty parent newsletter. Contacted parents could decide to forward a student-survey link to their child. Teachers were contacted through teacher-union newsletters, and Swiss Skills. Teacher unions in Aargau, Bern, Fribourg, Glarus, Grisons, and Schaffhausen distributed the survey in their newsletters during October or November 2022; 87 teacher responses were received from all of these cantons except Fribourg. 274 teachers who had indicated willingness to participate in the Swiss Skills evaluation survey, conducted after the September 2022 Swiss Skills occupational fair, were contacted on November 2, 2022; reminders were sent on November 16 and November 23. A French version was provided for this channel. Both groups could request student-survey links at the end of their surveys and forward them to students.

Two-Week Follow-Up. The two-week follow-up was fielded on a rolling basis exactly two weeks after each baseline response, and follow-up reminders extended through May 25, 2023. The raw follow-up data contain 2,223 responses; 2,128 remain after removing repeated follow-up responses, and 1,506 satisfy the primary-sample restrictions.[2]

We flag 87 follow-up responses that were started more than six weeks after the corresponding baseline response. The final number of follow-up observations used in the working follow-up sample is 1,506.

Endline. Endline data were collected for the baseline primary sample of 3,578 students without a contract at baseline. Direct endline contact was possible for 2,853 students who

[2]Here, the primary-sample restrictions refer to the baseline restrictions used to construct the no-contract randomized baseline sample: removal of survey errors, non-randomized observations, duplicates, current apprentices, and respondents with a contract at baseline.

provided an email address at baseline; additional endline responses were also obtained through other endline instruments linked back to the baseline sample. For example, through 41 PoF responses, 69 endline follow-up responses, and 79 two-question endline responses. In the Perceptions of Fit survey by (Brenøe and Rutnam, 2025), Yousty users identified as Math Fit participants based on the user ID were redirected to the Math Fit endline survey instead of receiving the PoF baseline survey. The PoF-linked survey window starts on February 7, 2024, the main endline survey window starts on March 8, 2024, the endline follow-up window starts on June 5, 2024, and the two-question endline survey adds responses recorded through August 20, 2024.

Across all endline instruments, we observe 1,440 endline responses linked to the baseline primary sample. Among the 2,853 students with email contact, 288 email invitations bounced.

B.4 Sample Restrictions

Table B.1 reports the sequence of restrictions used to move from the raw collected baseline data to the final analysis sample. The table distinguishes between the raw data, the tertiary, secondary, and primary samples, and the final analysis sample used in the paper.

Appendix Table B.1: Student Sample Restrictions

Sample	Restriction step	Starting N	Lost N	Remaining N
Raw data	Errors in survey	7,262	7	7,255
Raw data	Not randomized	7,255	2,438	4,817
Tertiary	Duplicates from Yousty	4,817	191	4,626 Tertiary
Duplicates across Yousty and other channels or within channel	4,626	57	4,569	
Secondary	Exclude current apprentices	4,569	181	4,388
Primary	Exclude respondents with contract at baseline	4,388	810	3,578
Analysis	Exclude respondents without at least one non-missing outcome	3,578	73	3,505

B.5 Outcome Construction, Timing, and Administrative Linkage

B.5.1 Outcome families and timing

We organize outcomes into three families. The first family contains the belief outcomes measured immediately after video exposure within the baseline survey. Search outcomes are measured over approximately 1.5 years using (i) a two-week follow-up survey, (ii) linked platform administrative records, and (iii) an endline survey. In both follow-up surveys, questions about trial apprenticeships include in-person firm information events; for brevity, we refer to both as trial apprenticeships (TAs). The second family consists of binary indicators that capture the direction of search, which we label *type of search*. The third family measures the *number of distinct occupations* in which students take a search or application step, which we label *breadth of search*.

Platform administrative outcomes are constructed from activity observed from the baseline survey date through May 2024. This window covers the main apprenticeship-search period for most participants and aligns with the end of compulsory schooling for students who were in 8^{th} grade at baseline.

B.5.2 Belief outcomes measured immediately after the video

Belief questions use four response categories ("no," "rather no," "rather yes," "yes") unless otherwise noted. For descriptive distributions in Figure 1, we map these categories to a 0–1 scale. In treatment-effect analysis, we standardize outcomes to have mean zero and standard deviation one in the control group within gender (see Subsection **??**). This subsection records the exact item construction that Section 3.4 summarizes more briefly.

Perceived rank. In the baseline questionnaire, students report perceived rank in math and in language/communication by stating how many out of ten same-cohort apprenticeship applicants they believe are better than they are. We reverse-code the response so that higher values indicate higher perceived ability, yielding a perceived decile rank on a 0–10 scale (e.g., reporting that 0 out of 10 are better corresponds to a perceived rank of 10). We use these perceived-rank measures descriptively.

Beliefs about own math skills. All students rate whether their math skills would be good enough for four high-math apprenticeships. The four occupations are selected by randomly drawing two occupations from each of two pre-specified high-math sets[3]; the order of occupations is randomized. Following our pre-analysis plan, we classify occupations as high-math if their expert-based math-requirement score is at least 59 (see Appendix B.1). We construct a student-level belief measure by averaging the four responses.

Perceived fit. Students also rate whether they would fit well in specific apprenticeships. Girls rate fit for the same four high-math apprenticeships used in the corresponding question about whether their math skills are good enough. Boys rate fit for one high-math apprenticeship (randomly selected from the high-math sets) and three low-math apprenticeships (two drawn from a pre-specified set of low-math care apprenticeships, which were also presented in the treatment video[4] and one drawn from an additional low-math set[5]). The order of the fit occupations is randomized. Following

[3]Set 1 = {Constructor, Mediamatician, Engineering Draftsman, Information Technologist, Laboratory Worker, Polytechnician}; Set 2 = {Optician, Electrician, Carpenter, Building Services Designer, Automation Technician, Automotive Mechatronics Technician}

[4]The pre-specified consists of pharmacist, Healthcare assistant, Medical Assistant, Hairdresser, Certified Social Care Worker or Dental Assistant.

[5]This set consists of Druggist, Restaurant Specialist, Retail Specialist or Cook.

our pre-analysis plan, we classify occupations as low-math if their expert-based math-requirement score is at most 37 (see Appendix B.1). We construct student-level fit measures by averaging responses across the relevant items (high-math fit for boys uses one item; high-math fit for girls averages four items; low-math fit for boys averages three items).

Peer-recommendation task (math intensity of recommended occupations). We elicit beliefs about peers' fit using a peer-recommendation task. Students evaluate short profiles of hypothetical same-gender peers that include grades as well as stated interests and preferences and then recommend two apprenticeship occupations from a common list of 13 options. For each profile, we map the two recommended occupations to the expert-based math-requirements score and define the outcome as the average math requirement of the two recommended occupations. The task yields one observation per profile. Control students evaluate two profiles, while treatment students evaluate three profiles. In treatment-effect analysis, we use the profile-level recommendation outcome and cluster standard errors at the student level.

B.5.3 Search outcomes: breadth and type

Breadth outcomes. Breadth outcomes measure the number of *distinct occupations* in which a student takes a given search or application step. We construct breadth at multiple stages of the search funnel: (i) Two-week follow-up: students report the occupations for which they applied or plan to apply for a TA, an in-person information event, or an apprenticeship position; we code the number of distinct occupations mentioned. (ii) Platform administrative records: we measure the number of distinct occupations in which students (a) view a job ad, (b) click to apply, and (c) submit an application through the platform (when the platform hosts the application form). (iii) Endline survey: students report (a) the occupations in which they completed TAs and/or attended in-person information events and (b) the occupations to which they submitted apprenticeship applications; we code distinct-occupation counts for each measure.

Type-of-search outcomes. To capture the direction emphasized in the gender-specific videos, we construct binary indicators for each stage of the search funnel. For boys, the indicator equals one if the student engages with at least one low-math occupation at that stage; for girls, the indicator equals one if the student engages with at least

one high-math occupation. At endline, we additionally measure whether students hold an apprenticeship contract in a low-math occupation (boys) or a high-math occupation (girls). Occupation classifications follow the pre-registered thresholds described in Appendix B.1.

B.5.4 Administrative linkage, coverage, and coding of zeros

We link participants to platform administrative records using platform user IDs for students recruited through the platform. For students recruited through schools and teachers, we match survey respondents to platform users based on email addresses. This linkage yields administrative outcomes for 82 percent of the analysis sample. For linked students, the administrative records cover the full period from the baseline survey through May 2024. Students with no platform activity during this period remain in the administrative dataset and contribute zeros to the platform-based outcomes (e.g., zero job-ad views, zero clicks to apply, and zero submitted applications).

Appendix Table A12 reports tests for differential attrition and differential administrative-data availability by treatment status. Appendix Table A11 shows that treatment does not affect the probability of any platform activity, supporting interpretation of platform-based differences as changes in search behavior rather than differences in platform engagement.

B.6 Definitions of School Tracks and Math Skills

School tracks. Lower secondary education in Switzerland is tracked, but the structure and naming of tracks differ across cantons. To ensure comparability across the country, we harmonize canton-specific school types into four broad categories that reflect the academic level of the track. Specifically, we classify school types into high, middle, low, and mixed tracks. High tracks correspond to academically demanding streams that typically prepare students for the academic pathway (e.g., Gymnasium or advanced Sekundarschule levels). Middle tracks represent intermediate streams with moderate academic requirements, while low tracks capture the least academically demanding streams that primarily prepare students for vocational education. Mixed tracks refer to integrated or heterogeneous classes in which students of different ability levels are taught together without strict separation into performance-based streams. Because track names and structures vary substantially across cantons, this harmonization clusters canton-specific

school types into these four categories to create a comparable measure of track difficulty across Switzerland.

High math definition. To identify students with strong mathematical ability, we combine students' math grades with the academic level of their school track. Because grading standards differ across tracks, we apply track-specific thresholds. Students are classified as having high math skills if they have a math grade of at least 4.5 in the high track, 5.5 in the middle track, or 5.0 in mixed tracks. All remaining students, including those in the low track, are classified as having low math skills. Math grades range from 1 (lowest) to 6 (highest), with 4 as the passing grade.

Appendix Table B.2: Definition of High and Low Math Skills

School Track	Math Grade Threshold	Math Skill Category
High track	≥ 4.5	High math
Middle track	≥ 5.5	High math
Mixed track	≥ 5.0	High math
High track	< 4.5	Low math
Middle track	< 5.5	Low math
Mixed track	< 5.0	Low math
Low track	Any grade	Low math

High math variable - Revision In October 2024 the track definitions were revised several track assignments.

Appendix Table B.3: School Types with Revised Track Classification

School Type	Track Change	Affected Cantons (N)
Anderes	low → other	14
Gymnasium	high → middle	7
Leistungszug A	middle → low	1
Leistungszug E	high → middle	1
Leistungszug P	high → middle	1
Orientierungsschule B	middle → low	3
Realklasse	middle → low	1
Realschule	middle → low	8
Sek B	middle → low	1
Sek E	high → middle	1
Sek G	middle → low	1
Sek P	high → middle	1
Sekundarschule	high → middle	4
Sekundarschule A	middle → low	1
Sekundarschule C	low → other	1

B.7 Description of control variables

To flexibly control for observable student characteristics, we implement a post-double selection LASSO procedure following Belloni, Chernozhukov, and Hansen (2013). The LASSO selects control variables from a large set of potential covariates, after which the selected variables are included in a standard OLS regression estimating the treatment effect.

The candidate control set includes measures of students' academic ability, school track, grades, educational plans, recruitment exposure, demographic characteristics, regional fixed effects, and characteristics of occupations in students' preference lists. In particular, the LASSO considers indicators for high math ability, school track categories, grade bins in math and language conditional on track, recruitment exposure indicators, school grade level, planned educational pathways, age categories, and regional dummies. In addition, we include variables summarizing the characteristics of occupations in students' preference lists, such as average math and language requirements, female

share, salary levels, and indicators for whether preferred occupations are high- or low-track occupations, including squared terms for several continuous measures.

For the vignette outcomes, the candidate set is extended with additional belief variables about hypothetical students, including indicators for perceived interests, career preferences, and ability measures conditional on track and subject.

The LASSO estimation uses the pdslasso implementation with standardized and centered covariates. The variable highmath is always included as a partialled-out control and therefore not subject to penalization. Standard errors are clustered at the respondent level for vignette outcomes and heteroskedasticity-robust otherwise.

After the LASSO selects the relevant controls, we run post-LASSO OLS regressions including the treatment indicator and the selected covariates. Treatment effects are estimated separately by gender and, in additional specifications, by high versus low math ability.

B.8 Surveys

B.8.1 Student baseline survey

Block: Introductory text. We are inviting you to participate in the Occupational Choice Study about students' search for apprenticeships. Among all participants who complete the study, we draw 20 winners of a voucher to Galaxus each worth 250 CHF. The survey today takes approximately 10-15 minutes. We will invite you to do a second survey in two weeks and a brief, final survey at the end of the school year. The survey today contains a **video with sound**.

Block: Eligibility, demographics, and plans for next year.

1. What best describes your situation?

    - I attend **8th grade**
    - I attend **9th grade**
    - I attend some **other** education and want to do an apprenticeship in the future

- I am currently **not** in education but want to do an apprenticeship in the future
- I am currently an **apprentice**
- Other

2. How old are you?

   - 12 years or less
   - 13-14 years
   - 15-16 years
   - 17-18 years
   - 19 or more

3. Are you male or female?

   - Female
   - Male

4. [if situation"9th graders" or "Other"] What is your plan for next year?

   - Apprenticeship: already **signed** or will soon sign a **contract** with a specific company
   - Apprenticeship: but has still **not** found a concrete apprenticeship
   - Gymnasium
   - 10th grade and then apprenticeship
   - Other, please specify:

5. [if situation "Other educ. and want to do an appr. in the future" or "Not in educ. but want to do an appr. in the future"] What best describes your situation?

   - I already **signed** or will soon sign a **contract** with a specific company
   - I have still **not** found a concrete apprenticeship

6. In which canton do (did) you go to secondary school?

Dropdown list with cantons

[if plan for next year "Other, please specify"] Termination message: Thank you very much for taking the time to fill out this survey. This survey is intended for people who are interested in doing an apprenticeship in the future.
[if "12 years or less" or "19 years or more"] Termination message: Thank you very much for taking the time to fill out this survey. This survey is intended for students who are 13-18 years.

Block: School type & occupational choice

1. Which school type do (did) you attend?
   [Dropdown answer options, which depend on canton selected]

2. [if situation "signed a contract" or plan for the next year is "signed contract"] What apprenticeship will you do?
   [List of 31 occupations + "Other, please specify"]

3. [if situation is "with contract"] What apprenticeship are you doing?
   [List of 31 occupations + "Other, please specify"]

4. [if situation $8^{th}, 9^{th}$ grade or plan "no contract yet"] Currently, what are your most preferred apprenticeships? Please, select **at least 3** apprenticeships. All apprenticeships on the list are EFZ (Eidgenoessisches Faehigkeitszeugnis). [List of 31 occupations + "Other, please specify"]

Block: Skills

1. Consider 10 people who are applying for apprenticeships the same year as you. **How many** of these students do you think **are better than you** at

   - Math? 0–10 (choose number from dropdown)
   - German? 0–10 (choose number from dropdown)

2. What was your last grade in **Math**? [Dropdown 4.0 or less–(.5)–6.0]

3. What was your last grade in **German**? [Dropdown 4.0 or less–(.5)–6.0]

Block: Video randomization, attention check, and randomized tasks. Randomized assignment to treatment/control block. Treatment video is gender specific Stratifying variables: Gender (male, female); Contract status (with contract, without contract) ; Math skills (high, or not high)

You will now watch a **video with audio**. Please, make sure your audio is on.

We will ask you a question about the content of the video. If you answer the question correctly, we include you in a lottery of a **voucher** to **Galaxus worth 50 CHF**.
So please pay attention!

VIDEO
Please recognize that the button "proceed" will only appear if sufficient time has gone by to see the video until the end. Please watch the video until the end. Please do not reload the page because in this case the timer starts anew. The button "Proceed" appears in the right lower corner. If you have technical problems, please send a mail to berufswahl@econ.uzh.ch Timer on intro page: 10 seconds until they can move on.

1. Did you have any technical issues watching the video?
   (a) No
   (b) Yes, please specify

   *If you answer the following question correctly, you will be entered into an additional draw for a **Galaxus voucher worth CHF 50**.*

2. [if male & treatment] How correctly do **boys** estimate their **math skills**?
   [answer options = "**Under**estimate", "About right", "**Over**estimate", "I do not know"]

3. [if female & treatment] How correctly do **girls** estimate their **math skills**?
   [answer options = "**Under**estimate", "About right", "**Over**estimate", "I do not know"]

4. [if control] Who should not be included in the references? (only one option allowed)
   [answer options = "family members", "teachers", "neighbors", "I do not know"]

5. Attention check: We ask the next question because of the following problem: In many surveys there are some participants who do not **read questions diligently** and just quickly go through the survey. Therefore, there are many random answers which can falsify the survey's relevance. To be certain that you correctly read questions, please choose the **option "Brown" as an answer** to the following question: What is your favorite color?
   [randomized answer options = "red", "blue", "brown", "yellow"]

6. Do you think your **math skills** would be **good enough** to do the following apprenticeships?
   [answer scale = "No", "probably no", "probably yes", "yes"]

   Apprenticeships displayed:

   (a) 2 from this group (select randomly):
   Constructor, mediamatician, engineering draftsman, information technologist, laboratory worker, polytechnician.

   (b) 2 from this group (select randomly):
   Optician, electrical installer, carpenter, building services planner, automation technician, automotive mechatronics technician.

7. Do you think you would **fit well** to the following apprenticeships?
   [answer scale = "No", "probably no", "probably yes", "yes"]

   (a) [if female]: ask the same 4 occupations as for math skill fit above.

   (b) [if male]:

      i. 1 high math (randomly select one of those from above);

      ii. 2 low math apprenticeships from boys' video: Pharmacist, healthcare assistant, medical assistant, hairdresser, certified social care worker, dental assistant;

      iii. 1 low math apprenticeship: Pharmacist, restaurant manager, retail specialist, chef.

Block: Trial Apprenticeship Sign up

1. [if "no contract" & "female"] We **exclusively** include you in a lottery **among girls**. You can either sign up for a voucher to **Galaxus worth 5 CHF** or for a **trial apprenticeship without the need to apply** in one of the following occupations: Optician, building services planner, information technologist, constructionist, laboratory worker, mediamatician, polytechnician, carpenter, engineering draftsman

   We work together with several well-known companies in Switzerland and make sure that the position is close to where you live.

   If you win the lottery, what do you prefer? (only one choice is possible)

   - **Voucher worth 5 CHF** [randomized if first or last option in list]
   - A trial apprenticeship as an **optician**
   - A trial apprenticeship as a **building services planner**
   - A trial apprenticeship as an **information technologist**
   - A trial apprenticeship as a **constructionist**
   - A trial apprenticeship as **laboratory worker**
   - A trial apprenticeship as **mediamatician**
   - A trial apprenticeship as a **polytechnician**
   - A trial apprenticeship as a **carpenter**
   - A trial apprenticeship as an **engineering draftsman**

2. [if "no contract" & "male"] We **exclusively** include you in a lottery **among boys**. You can either sign up for a voucher to **Galaxus worth 5 CHF** or for a **trial apprenticeship without the need to apply** in one of the following occupations: Hairdresser, Dental assistant, Retail specialist, Pharmacist, Certified social care worker, Healthcare professional, Chef, Medical assistant, Waiter.

   We work together with several well-known companies in Switzerland and make sure that the position is close to where you live.

   If you win the lottery, what do you prefer? (only one choice is possible)

   - **Voucher worth 5 CHF** [randomized if first or last option in list]
   - A trial apprenticeship as a **hairdresser**

- A trial apprenticeship as a **dental assistant**
- A trial apprenticeship as a **retail specialist**
- A trial apprenticeship as a **pharmacist**
- A trial apprenticeship as a **certified social care worker**
- A trial apprenticeship as a **healthcare professional**
- A trial apprenticeship as a **chef**
- A trial apprenticeship as an **medical assistant**
- A trial apprenticeship as a **waiter**

Vignette Split by treatment status

- [if "treated"] each participant answers 3 scenarios: 3 girls for girls and 3 boys for boys.
- [if "control"] each participant answers 4 scenarios: 2 girls and 2 boys.

Three different descriptions depending on students situation:

- [if "8th grade"] Imagine the following three/four students were **your classmates**.
- [if "9th grade"] Imagine the following three/four students visited the **8th grade of your school**.
- [if "other than 8th or 9th grade"] Imagine the following three/four students visited the **8th grade of the school** you have visited.

Appendix Figure B.1: Translation: Imagine that the following three[a] students are in their 2nd year of high school at the school you attended[b]:



[a] If in treatment group
[b] If situation is "other than 8th or 9th grade"

Appendix Figure B.2: Translation: Imagine the following four[a] students were your classmates[b].



[a] If in control group
[b] If in 8^{th} grade

They have all **worked hard** in their math and German classes, but they are **differently talented** and therefore also have **different grades**.
They are currently considering **which apprenticeship** they would like to do after 9th grade.
On the following pages, we will give you more information about each of these students.
We will ask you to **select** the **apprenticeships** you think **fit best to each of them**.

Vignette

1. **Name**
   - Female:
     - If treated: Lara, Elena, Anna
     - If control: Elena, Anna
   - Male:
     - If treated: Lukas, David, Nicolas
     - If control: Lukas, David
2. **Grades**
   (If treated: use each once; if control: use each once per gender)

- Same grades:
  - Math 4.0 and German 4.0
  - Math 4.5 and German 4.5
  - Math 5.0 and German 5.0
  - Math 5.5 and German 5.5
- Comparative math advantage:
  - Math 5.0 and German 4.0
  - Math 5.5 and German 4.5
  - Math 5.5 and German 5.0
- Comparative language advantage:
  - Math 4.0 and German 5.0
  - Math 4.5 and German 5.5
  - Math 5.0 and German 5.5

3. **Preferences**
   (Use each twice if control, use each once per gender if treatment)
   - Math
   - Languages
   - Social interactions
4. **Aspirations**
   - A high future salary
   - Good work-life balance
   - To help others
   - Good promotion prospects

1. Which apprenticeships do you think would **fit well to NAME**? *Please give her/him 2 suggestions. All apprenticeships on the list are EFZ (Eidgenössisches Fähigkeitszeugnis).* [Answer options: List of 13 common occupations]

Block: Newsletter. [if "no contract"] Your choice of apprenticeship is important!
Would you like to subscribe to a **newsletter with information** about **specific apprenticeships**?
If yes, please select up to 3 apprenticeships you would like to know more about from this list.

- No, I do not want additional information.
- Optician
- Retail specialist
- Pharmacist
- Certified social care worker
- Healthcare assistant
- Building services planner
- Information Technologist
- Chef
- Constructionist
- Mediamatician
- Medical assistant
- Waiter
- Carpenter
- Engineering draftsman

- new page -

[only wave 1] Block: Gender role attitudes.

i. How much do you agree with the following statements?

[answer scale = "Disagree Strongly", "Disagree", "Agree", "Agree Strongly"]
Randomized order for statements:

- Family life suffers when the woman has a full-time job.
- A pre-school child is likely to suffer if his or her mother works.

- new page -

Block [only wave 2] : Beliefs about math requirements.

i. We want to know YOUR BELIEFS about the **math requirements** in each of the following apprenticeships.

What do you think the **math requirements** are in the following apprenticeships?

Please answer on a scale from 1 (very low) to 8 (very high). On this scale, Healthcare assistant (FaGe) has a requirement of 2, Retail specialist has 3, Salesmen (KV EFZ) has 5, and Carpenter has 6.

	1	2 (e.g. FaGe)	3	4	5 (e.g. KV)	6	7	8
Apprenticeship 1[a]								
Apprenticeship 2								
Apprenticeship 3								
Apprenticeship 4								

[a]The four high math apprenticeships from the math skills fit question.

ii. How much do you disagree or agree with the following statements?

Randomized order of statements:

- **I am good at math.**
- **I am good at languages.**

Answer options:

- Disagree Strongly
- Disagree
- neither disagree nor agree
- Agree
- Agree Strongly

Block: End and feedback.

i. So that we can contact you for the next survey and so that **you can participate in the lottery**, we ask you to provide your email address. *This information will be kept confidential and used only for the purposes of this study.*

A. E-mail address:

B. Repeat e-mail address:

ii. Feedback: Do you have any comments for us here at the end? (Voluntary text box)

Thank you very much for taking the time to participate in this survey! We are looking forward to your continued participation in the study.

B.8.2 Student two-week follow-up survey

The two-week follow-up exists in two survey waves. The substantive content is the same across waves, with wave 2 reordering some blocks and changing the prize-language in the introduction.

Block: Introductory text and apprenticeship search. Two weeks ago, you participated in the first of three surveys in the **Occupational Choice Study**. We are contacting you again to participate in the follow up survey to learn more about your career aspirations.
The survey today takes approximately **5 minutes**.
As a reminder, among all participants who complete the study, we **draw 20 winners of a voucher to Galaxus each worth 250 CHF**.

Block: Application search

i. [if without contract] **For which apprenticeships did you search for information DURING THE LAST 2 WEEKS?**
Searching for information includes activities such as: spending some time on the internet to know more about the occupation, talking with someone who is working in that occupation, attending an information event at a company or fair, doing a ***Trial Apprenticeship*** *in the occupation, etc.*

All apprenticeships on the list are EFZ (Eidgenoessisches Faehigkeitszeugnis).
[List of 31 apprenticeships. Also "none" and "other, please specify" are options, with "none" at the top of the list and "other, please specify" at the bottom.]

ii. [if without contract] During the last 2 weeks, for **which apprenticeships** did you apply or are you planning to apply for a **trial apprenticeship**, an **information event**, or an **apprenticeship**?

All apprenticeships on the list are EFZ (Eidgenoessisches Faehigkeitszeugnis). [List of 31 apprenticeships. Also "none" and "other, please specify" are options, with "none" at the top of the list and "other, please specify" at the bottom.]

Block: Beliefs about fit

i. Do you think your **math skills** would be **good enough** to do the following apprenticeships?
[Answer scale = "No", "probably no", "probably yes", "yes"] [Randomize following 4 occupations]
   - 2 from this group (select randomly): Constructor, Mediamatician, Engineering Draftsman, Information Technologist, Laboratory Worker, Polytechnician.
   - 2 from this group (select randomly): Optician, Electrician, Carpenter, Building Services Designer, Automation Technician, Automotive Mechatronics Technician.

ii. Do you think you would **fit well** to the following apprenticeships?
[Answer scale = "No", "probably no", "probably yes", "yes"]
   - Girls: ask the same 4 occupations as for math fit question above.
   - Boys:
     - 1 high math (randomly select one of those from above);
     - 2 low math apprenticeships from boys' video: Pharmacist, Healthcare Assistant, Medical Assistant, Hairdresser, Certified Social Care Worker, Dental Assistant;
     - 1 low math apprenticeship: Druggist, Restaurant Specialist, Retail Specialist, Cook.

Block: Skills

i. Consider 10 people who are applying for apprenticeships the same year as you. **How many** of these students do you think are **better than you at**

- **Math**?
  [0–10 (choose number from dropdown)]
- **Language/communication**?
  [0–10 (choose number from dropdown)]

(a) [only wave 2] Please consider the 2 apprenticeships below. We want to know your beliefs about the skill requirements and earnings in each of these apprenticeships. Even in case you may not know the answer to a question with certainty, please answer each question as best you can.

(b) [only wave 2] How do you think the **math requirements** are in...

(c) [only wave 2] How do you think the school **language requirements** are in...

(d) [only wave 2] Please consider someone in your canton who is 30 years old, has an apprenticeship, works 40 hours per week, and has a lower Kader position. What do you think the **average monthly salary** is in...

(e) [only wave 2] Thinking about your skills, how much do you think employers are looking for someone like you to do an apprenticeship in the following occupations? answer scale = ”Not at all”, ”little”, ”somewhat”, ”much”, ”very much” randomized order of answer options 2 High math: Mediamatician, Engineering Draftsman, Information Technologist, Polytechnician, Electrician, Carpenter. 2 Low math: Healthcare Assistant, Medical Assistant, Certified Social Care Worker, Dental Assistant, Cook, Retail Specialist.

- new page -

Block: Motivation factors, preferences, and background. [if ”currently an apprentice”] Please, think about a regular working day in your apprenticeship. [if ”NOT an apprentice”] Please, think about a regular working day in your future apprenticeship.

(a) How much math would you like it to involve? Answer scale: ”Nothing at all” (1) – ”Moderately” (4) – ”All the time” (7)

(b) How much social contact and communication with others would you like it to involve? Answer scale: ”Nothing at all” (1) – ”Moderately” (4) – ”All the time” (7)

(c) What are the 3 most important factors for your apprenticeship choice? Please, select 3 options. randomized order of answer options Answer options:

- The future salary
- The future job flexibility (e.g., availability of part-time work)
- Possibilities for further training or education
- The math requirements in the apprenticeship
- The language requirements in the apprenticeship
- My parents' recommendations
- The gender composition in the occupation
- The degree of social contact
- Helping people (e.g., customers and patients)
- The type of workplace (office, outdoor, construction site, etc.)
- The ability to obtain an apprenticeship contract
- Promotion prospects
- My interests
- Other, please specify

(d) Did your mother or father do an apprenticeship? Answer options:

- No
- Yes, my mother
- Yes, my father
- Yes, both

(e) Does your mother or father have a degree from a college or a university? Answer options:

- No, none of them
- Yes, my mother
- Yes, my father
- Yes, both

(f) Were you and your **parents** born in Switzerland? Answer options:

- You - Yes/No
- Your mother - Yes/No
- Your father - Yes/No

(g) [if "mother=born abroad"] In which country was your mother born? Drop down with 197 countries.

(h) [if "father=born abroad"] In which country was your father born? Drop down with 197 countries; if both parents born abroad: additional option "In the same country as my mother" at the top.

(i) [if "with contract"] How much do you like competing with others (for example, in sports, exams at school, etc.)? Answer scale: "Not at all" 0 – 10 "Very much" (coded as slider)

(j) [if "with contract"] How much do you like taking risks, in general? Answer scale: "Not at all" 0 – 10 "Very much" (coded as slider)

(k) Do you have any comments for us here at the end? (Voluntary text box)

Thank you very much for taking the time to participate in this survey! We are looking forward to hearing briefly from you again at the end of the school year.

B.8.3 Student endline survey

Block: Introductory text and current situation. Last school year, you participated in the Occupational Choice Study. We are contacting you again to participate in the final survey to learn more about your career plans. Among all participants who complete this survey, we will draw 20 winners of a voucher to Galaxus each worth 250 CHF. The survey takes 3-5 minutes.

(a) [if "9th grade or other at BL"] What best describes your current situation?

- I am currently an apprentice
- 10th grade or some other type of interim education
- Gymnasium
- Fachmittelschule
- Other, please specify:

(b) [if "8th grade at BL — (9th grade or other at BL & 10th grade or other currently)"] What is your plan for next school year?

- Apprenticeship: already signed or will soon sign a contract with a specific company
- Apprenticeship: but have still not found a concrete apprenticeship
- 10th grade or some other type of interim education
- Fachmittelschule
- Gymnasium
- Other, please specify:

- new page -

Block: Recontact module and contract information. [if "Apprenticeship: but have still not found a concrete apprenticeship"] We would like to contact you again in 4-6 months for a brief survey of 1-2 minutes. Upon completion of that survey, we will give you for sure a Galaxus voucher worth 10 CHF.

(a) [if "Apprenticeship: but have still not found a concrete apprenticeship"] Do you give us permission to contact you for this survey? answer scale = "Yes", "No"

(b) [if "yes"] For us to contact you for the future survey, please provide us with your contact information.

(c) [if "yes"] Email-address:

(d) [if "yes"] Repeat email-address:

(e) [if "yes"] Phone number:

(f) [if "yes"] Repeat phone number:

(g) [if "has contract for next year"] What apprenticeship will you do?

(h) [if "currently apprentice"] What apprenticeship are you doing? List (include most common EBA), other specify.

(i) [if "has contract for next year"] In what firm will you do the apprenticeship?

(j) [if "currently apprentice"] In what firm are you doing the apprenticeship?

(k) [if "has contract"] What is the location of the workplace of the apprenticeship?

- new page -

Block: Trial apprenticeships, applications, and offers.

(a) In which occupations did you do trial apprenticeships and/or attend in-person information events at firms? List, other 1, other 2, other 3, none.

(b) How many apprenticeship applications did you submit in total?

(c) [if "has contract or submitted ¿0 applications"] For which occupations did you apply for apprenticeships? Please tell us about all the occupations you applied for. List (include most common EBA), other specify.

(d) How many offers for an apprenticeship did you receive?

(e) [if "only applied for one occ & (has contract or received ¿0 offers)"] Did you receive any offer for an apprenticeship as XX[occ applied for]?

(f) [if "applied for more than one occ & (has contract or received ¿0 offers)"] Did you receive any offer for an apprenticeship in the following occupations? answer scale = "Yes", "No" Occupations they indicated they applied to.

- new page -

Block: Preferences, beliefs, and closing questions. [if "received offers in multiple occupations"] Of the occupations in which you received offers:

(a) ...which occupation did you prefer that you accept?

(b) ...which occupation did your **parents** prefer that you accept?

(c) ...which occupation did your **teachers** prefer that you accept?

(d) Do you think your **math skills** would be **good enough** to do the following apprenticeships?

(e) Do you think you would **fit well** to the following apprenticeships? answer scale = "No", "probably no", "probably yes", "yes" randomized order of answer options 2 from this group (select randomly): Konstrukteur (constructor), Mediamatiker (Mediamatician), Zeichnerin (engineering draftsman), Informatikerin (Information Technologist), Laborant (Laboratory worker), Polymechanikerin (polytechnician). 2 from this group (select randomly): Optician, Electrician, Carpenter, Building Services Designer, Automation Technician, Automotive Mechatronics Technician. Girls: ask the same 4 occupations as for

math fit above and 1 low-math apprenticeship: Fachmann Apotheke (Pharmacist), Fachmann Gesundheit (FaGe) (Healthcare Assistant), Medizinischer Praxisassistent (Medical Assistant), Coiffeur (hairdresser), Fachmann Betreuung (FaBe) (Certified Social Care Worker), Dentalassistent (Dental Assistant). Boys: 1 high math (randomly select one of those from above); 2 low math apprenticeships from boys' video: Pharmacist, Healthcare Assistant, Medical Assistant, Hairdresser, Certified Social Care Worker, Dental Assistant; 1 low math apprenticeship: Druggist, Restaurant Specialist, Retail Specialist, Cook.

(f) Thinking about your skills, how much do you think employers are looking for someone like you to do an apprenticeship in the following occupations? answer scale = "Not at all", "little", "somewhat", "much", "very much" randomized order of answer options 2 High math: Mediamatician, Engineering Draftsman, Information Technologist, Polytechnician, Electrician, Carpenter. 2 Low math: Healthcare Assistant, Medical Assistant, Certified Social Care Worker, Dental Assistant, Cook, Retail Specialist.

(g) [if "apprentice"] How satisfied are you with the apprenticeship you are doing?

(h) [if "contract for next year"] How satisfied are you with the apprenticeship you will start next year?

(i) [if "no contract"] How satisfied are you with your current educational situation? answer scale = "very dissatisfied", "somewhat dissatisfied", "neither nor", "somewhat satisfied", "very satisfied"

(j) What are the 3 most important factors for your apprenticeship choice? randomized order of answer options Answer options:

- The future salary
- The future job flexibility (e.g., availability of part-time work)
- Possibilities for further training or education
- The math requirements
- The language requirements
- My parents' recommendations
- The gender composition in the occupation
- The degree of social contact
- Helping people (e.g., customers and patients)

- The type of workplace (office, outdoor, construction site, etc.)
- The ability to obtain an apprenticeship contract
- Promotion prospects
- My interests

(k) [if "did not do 2 weeks FU"] Does your mother or father have a degree from a college or a university? Answer options:

- No, none of them
- Yes, my mother
- Yes, my father
- Yes, both

(l) [if "did not do 2 weeks FU"] Were you and your **parents** born in Switzerland? Answer options:

- You - Yes/No
- Your mother - Yes/No
- Your father - Yes/No

(m) Do you have any comments for us? (Voluntary text box)

Thank you very much for taking the time to participate in this study!

B.9 Treatment videos

B.9.1 Boys' video

Appendix Figure B.3: Boys' treatment video with English translations.



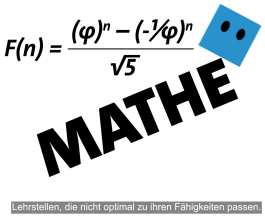
(a) Girls and boys are equally good at math.



(b) But many boys overestimate their mathematical abilities.



(c) Therefore most boys consider apprenticeships with high math requirements.



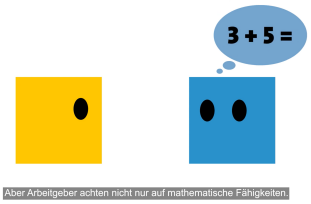
(d) Apprenticeships that do not optimally match their abilities.



(e) Therefore, it may be that after 9th grade they are left without a contract.



(f) Or, if they find an apprenticeship, they have a harder time completing it.



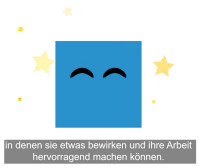
(g) But employers do not only pay attention to mathematical skills.



(h) A lot of value is also placed on social skills and communication strength.



(i) There are many less math-intensive apprenticeships where boys would be well suited,



(j) in which they can make a difference and do their work excellently.



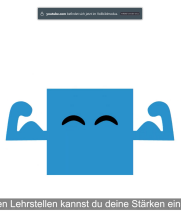
(k) Especially in health and care professions.



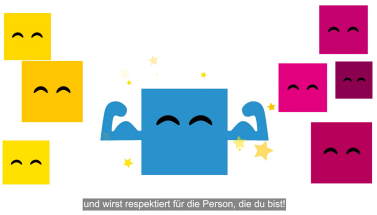
(l) Many boys would be a good fit for these apprenticeships and be successful there:



(m) Dental assistant,



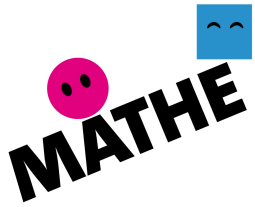
(n) In these apprenticeships you can use your strengths,



(o) and will be respected for the person you are!

B.9.2 Girl' video

Appendix Figure B.4: Girls' treatment video



(a) Boys and girls are equally good at math, but many girls underestimate math skills



(b) Most girls never consider high-math occs



(c) Many girls fit well into high-math occs



(d) Math and language skills are complements

Note: This figure illustrates four snapshots from the girls' treatment video.