

Swiss Leading House

Economics of Education • Firm Behaviour • Training Policies

Working Paper No. 181

“Against all odds”

**Does awareness of the risk of failure matter
for educational choices?**

Maria A. Cattaneo and Stefan C. Wolter



Universität Zürich
IBW – Institut für Betriebswirtschaftslehre

u^b

**UNIVERSITÄT
BERN**

Working Paper No. 181

**“Against all odds”
Does awareness of the risk of failure
matter for educational choices?**

Maria A. Cattaneo and Stefan C. Wolter

April 2021

Die Discussion Papers dienen einer möglichst schnellen Verbreitung von neueren Forschungsarbeiten des Leading Houses und seiner Konferenzen und Workshops. Die Beiträge liegen in alleiniger Verantwortung der Autoren und stellen nicht notwendigerweise die Meinung des Leading House dar.

Discussion Papers are intended to make results of the Leading House research or its conferences and workshops promptly available to other economists in order to encourage discussion and suggestions for revisions. The authors are solely responsible for the contents which do not necessarily represent the opinion of the Leading House.

The Swiss Leading House on Economics of Education, Firm Behavior and Training Policies is a Research Program of the Swiss State Secretariat for Education, Research, and Innovation (SERI).

www.economics-of-education.ch

“Against all odds”

Does awareness of the risk of failure matter for educational choices?

Maria A. Cattaneo, SKBF-CSRE¹

Stefan C. Wolter, University of Bern and SKBF-CSRE²

April 2021

Abstract

This paper examines the effect of information on dropout risks on preferences for academic versus vocational education. Switzerland is used as a case study because of its strongly developed national vocational education system along with marked differences in preferences for and enrolment rates in academic education across its three language regions. Since the education system is harmonized in terms of expectations for the required cognitive performance for an academic degree, this means that different enrolments in academic education need to be partially corrected later by a stronger selection during the studies. By means of a survey experiment, we investigate whether these more pronounced preferences for academic education stem from the fact that educational risks are unknown when making educational decisions, or whether preferences are so strong that these risks are willingly tolerated. Our results suggest that the latter seems more likely to be the case and that a correction of the mismatch cannot come solely via the deterrent effect of the higher risks of dropping out of education.

¹ Swiss Coordination Centre for Research in Education, Entfelderstrasse 61, CH-5000 Aarau, Switzerland. Phone: +41 62 858 23 96. Email: maria.cattaneo@skbf-csre.ch

² Corresponding author. Department of Economics, Centre for Research in Economics of Education, University of Bern, and Swiss Coordination Centre for Research in Education, Entfelderstrasse 61, CH-5000 Aarau, Switzerland. Phone: +41 62 858 23 91. Email: stefan.wolter@vwi.unibe.ch

The authors thank the Swiss State Secretariat for Education, Research and Innovation for financial support through the Leading House on the Economics of Education.

1. Introduction

Educational decisions are practically always associated with risks, not only in terms of the returns to education, but also, and above all, in terms of the probability of being able to successfully complete an education that has been started. Because individuals are not always able to assess the likelihood of success before making an educational decision, risks are often mitigated through systemic (e.g., aptitude tests) or institutional (admission restrictions) processes by constraining individuals' choices. There is, however, criticism against such constraints on preferences, not least on the reliability of admission tests, and it is sometimes argued that it would be more effective to make the selection during education. The loss of years of education among dropouts is said to be outweighed by the gain in allocative efficiency. However, this argument assumes that individuals who have a low chance of success are sufficiently deterred from making a wrong decision by the expected failure rate during the education program. Moreover, the deterrent effect in turn presupposes that individuals are not only aware of the general risks at the time of an educational decision, but also have a good assessment of their individual chances.

This paper addresses these questions by means of a survey experiment, examining whether individuals' preferences can be influenced by providing information about the possible risks associated with an educational decision, or whether preferences for a certain type of education can be so strong that even clearly larger relative risks of failure are acceptable to the person making the decision.

The reason why we examine the influence of risk on educational decisions specifically on the question of academic versus vocational education and training (VET) is related to the fact that while the latter have aroused a lot of political interest around the globe in recent years (OECD, 2010a, 2010b; OECD and ILO, 2014), it cannot be observed that the population has let itself be diverted in its preferences for an academic education for their children. In order to successfully implement a vocational system in a country without such a tradition, it is indispensable that it receives not only the support of politicians and firms, but also a broad acceptance among the population. To gain acceptance, students and their parents should be convinced that the individual rate of return to vocational education, and the professional and social prestige or status it confers, is sufficiently high

to make it an attractive option compared to general educational pathways. However, it is conceivable that more traditional and historically deep-rooted forms of education in a country prevail, even if the population learns about the benefits and advantages of VET and despite potential larger difficulties of graduates of general education to transition successfully into the labor market, because of the fact that the population favors the existing and more mainstream academic forms of education. If such a status-quo bias exists, it will remain difficult to implement new forms of education, such as VET.

To investigate this question, we use a survey experiment that was conducted in Switzerland. Switzerland offers itself as an ideal study case because, on the one hand, it has had a nationally unified VET/PET³ system for more than a hundred years, but on the other hand, it consists of regions, most importantly three main language regions, that differ greatly from each other historically and socio-culturally, as well as in terms of the preferences for or against VET/PET or general education. Even today, it can still be seen that the individual language regions – not only as far as educational preferences are concerned – are more oriented towards their linguistic-cultural neighboring countries (i.e., either Germany⁴, France, or Italy) than towards a national average.

These different educational preferences manifest themselves most strongly in the choice of type of education after the end of compulsory schooling. In the German-speaking regions, around 15-20% of school leavers choose an academic Baccalaureate school, whereas this proportion is around 40-50% in the Italian and French-speaking cantons.

To understand the set-up of our research design, two things need to be considered: First, the much greater access to general education in French and Italian-speaking Switzerland is not because students there perform better at the end of compulsory schooling. This implies that a larger proportion of students enter these academic courses without the necessary skills; as can be seen, for example, from the PISA tests⁵. Secondly, because an academic baccalaureate in Switzerland practically guarantees universal access to all

³ Professional education and training (PET) is used in Switzerland and some other countries to refer to the part of VET that is at the tertiary level.

⁴ It must be noted, however, that the German-speaking part of Switzerland is more oriented towards a Germany that existed twenty or thirty years ago, since the strong increase in the rates of baccalaureates (Abitur) that can be observed in Germany did not take place in the German-speaking part of Switzerland.

⁵ While less than 5% of pupils in cantons with a leaving or entrance examination entered a baccalaureate school with a competence level of less than 4 in both reading and mathematics in PISA, this percentage is more than 25% in those cantons without an examination (Swiss Education Report, 2018).

universities and subjects in the country, at least part of the increased influx of weaker students into academic programs must be corrected at the upper secondary level by higher drop-out rates⁶. Among pupils choosing a baccalaureate school in the French and Italian-speaking regions, around 15% drop out of school.⁷ In contrast, this percentage is only around 5% in cantons with a more restricted access to general education (Swiss Education Report, 2018). It can thus be observed that in language regions with a greater propensity towards general education, the education system accommodates the preferences of the citizens to the extent that more young people are admitted to academic courses, at the price of a stronger selection during education to “correct” at least partially these different allocations.

Since the risk of failure is naturally concentrated on students who did not perform well enough at school in order to attend an academic course, there are three possible explanations why parents in regions with high rates of transfer to academic courses prefer them to vocational training, despite the risks. First, parents (and their children) generally misjudge and underestimate the risk of failure; second, parents misjudge their child's chances of success because they have only limited information about their child's performance and the demands of the school; and third, the preferences for the academic path are so strong that they are willing to accept any risk.

To find out whether they are indeed the historical and cultural stronger preferences for academic education that make parents and young people decide against vocational training despite the high risks, we use a survey experiment in which we vary the drop-out risks exogenously as information treatments. In doing so, we can exclude the factors of underestimation of the general risk as well as misinterpretation of the specific risk concerning their own child as potential explanations for different decisions. If significant differences in preferences between the language regions remain, these must be due to general differences in preferences for academic versus professional education.

⁶ Evidence shows that 83% of pupils who reach the minimum requirements across all competence areas in PISA were able to progress to their third year in baccalaureate school without having to repeat a year or dropping out. Meanwhile, for pupils that did not meet any of the minimum requirements in the competencies measured by PISA, the equivalent percentage was just 53% (see Wolter and Zumbühl, 2017).

⁷ That an easier access to baccalaureate schools results in a higher mismatch and subsequently in higher drop-out rates can also be observed in other countries (e.g., in Germany, see Osikominu et al. 2021).

Finally, in our survey experiment we also consider a last potential source of differences between language and cultural areas. It is conceivable that individual educational preferences depend on factors related to personality (risk aversion, etc.), own educational background, political attitudes, age, migration background⁸ or, for example, different expectations regarding the labor market success of certain types of education. If the composition of the population in the language regions differs with respect to these characteristics, then this could also be an explanation for different educational preferences. Even though we can never conclusively assess all these alternative explanations, the survey experiment nevertheless gives us the opportunity to control for significantly more factors than other data sets, since many of these personality traits and characteristics were also collected in the survey.

Our analysis builds on a representative public opinion survey on education conducted in 2019, where data on preferences towards general or vocational education among a representative sample of Swiss citizens was collected. The results show that even after controlling for a rich set of observable individual characteristics the baseline preference for general/academic education is substantially higher for people from the French and Italian regions. Providing information on the risks of failure in general education significantly affected the preferences of people only in the German-speaking region but had no or significantly smaller effects on people from the French- and Italian-speaking regions. These results suggest that the familiarity with a certain type of education and/or the preferences for a certain type of education might produce a strong bias towards choosing this path, even in full knowledge of the risks that are associated with this choice. Based on the empirical observation that even substantial risks of failure, cannot dissuade people from linguistic-cultural regions where vocational training is less well established from choosing general and academic courses, it can be assumed that hopes of replacing academic training with vocational training in countries with a strong tradition of academic education will be dashed by parental resistance.

⁸ All the survey respondents are Swiss citizens. Migration background is defined in our analysis as being born outside of Switzerland or having at least one non-Swiss parent. The proportion of Swiss citizens with such a migration background is considerably higher in the French and Italian speaking part of the country (see Abrassart et al. 2020) than in the German speaking region.

The remainder of the paper is structured as follows. Section 2 presents the hypotheses and related literature. Section 3 provides institutional background. Section 4 introduces the data and experimental design. Section 5 reports our main results concerning the preferences for vocational and general education. Section 6 concludes.

2. Hypotheses and previous literature

Human capital theory states that individuals will invest in education only if the expected rate of return exceeds the costs of investment (Becker, 1962). This decision is taken under a certain amount of uncertainty given that the benefits as well as the costs and risks are not perfectly known (Hartog and Bajdechi, 2007). In our context, the decision that individuals face is not whether to pursue further education, but to decide which specific type of education to pursue: vocational or general. As in Becker's human capital theory, this decision is based on the expected rate of return of each option. Given that there is no perfect knowledge of the potential costs and benefits of vocational and general education, the decision has an inherent level of uncertainty. In addition, benefits and costs are highly dependent on the probability of success, which is the focus of our analysis. Evidence suggests that beliefs about probabilities are biased, and that people tend to be overconfident about their own probability of success. Such biased beliefs might influence educational choices (Damgaard and Nielsen 2018, DellaVigna, 2009). Thus, without perfect knowledge, individuals might overestimate the probability of success in the more academically demanding general education pathway.

One goal of this study is to analyze whether and how people's preferences change when they are provided with information about the actual probabilities of success. We hypothesize that knowing about the actual risks of success, or failure, in general education should shift the preferences towards vocational education.

It is also possible that the knowledge of a lower success probability in general education, does not affect the decision for people who live in regions where general education is the most popular alternative, and therefore deeply rooted in individual and cultural beliefs and opinions. A factor that could explain this is status quo bias. Evidence shows that people tend to stick to the default (Kahneman, Knetsch and Thaler, 1991), i.e., they do not

consider other alternatives because the default is the most prominent option. In the context of education, default bias might help explain why people in the French and Italian regions might refrain at first from choosing vocational education. Therefore, our second hypothesis is that the preference shifts in response to the information about risks will be weaker among people who live in regions where attending vocational education after compulsory school is the exception rather than the rule.

If this proves to be true, there are several other aspects worth discussing. On the one hand, the population composition might differ across linguistic regions. Moreover, although common language is an important predictor of values, beliefs, and behavior, as described in Eugster et al. (2011) and Eugster et al. (2017), the different cultural backgrounds might also translate into different personality traits and attitudes towards risk⁹. On the other hand, there are two considerations concerning the expected benefits from general education that might differ across language regions. First, people in the French- and Italian-speaking regions might have higher expectations of the monetary returns from general education compared to vocational education over the life cycle, which in turn would make the risk of failure worth it. There is some evidence that VET can have wage penalties later in life due to a faster rate of skills obsolescence (Hanushek et al., 2017, Golsteyn and Stenberg 2017) even though there is no evidence so far that this is of concern in Switzerland. Second, people from different cultural backgrounds might assign different values to aspects such as occupational prestige or social status, which have been shown to affect education decisions. People care about their image and how others perceive them, and this might explain why some people make choices that do not match their own interests or capabilities (Akerlof and Kranton, 2002).

This paper complements the study of choice between vocational and general education within a random survey experiment as analyzed in Goux et al. (2015) by providing individuals information on the probability of completing general education.¹⁰ Thereby,

⁹ In a study done in Germany, Wölfel and Heineck (2012) found that parental risk attitudes have indeed an influence on the children's secondary school track choice. Children of risk averse mothers were more likely enrolled in lower secondary schooling, while children of risk loving mothers were more likely enrolled in upper secondary schooling.

¹⁰ Goux et al. (2015) perform a randomized controlled trial in France, consisting of a series of meetings to help low achievers to choose between a three-year academic program or a vocational school based on a realistic assessment of their academic aptitudes.

our study contributes to at least two strands of the economics literature. First, it adds to the literature on educational choices among different options or pathways, which studies areas such as choice of college major (e.g., Wiswall and Zafar, 2015; Altonji et al., 2016), or private versus state school (Green et al., 2017; Anders et al., 2020). More specifically, it contributes to the literature that examines the effects of information provision on educational choices (e.g. Baker, et al., 2019; Peter and Zambre, 2017; McGuigan et al, 2016; Pekkala et al., 2015; Hoxby and Turner, 2013; Bettinger et al, 2012) and the effects of providing information in surveys on preferences for education, such as Hastings et al. (2015) on college and major choice, Oreopoulos and Dunn (2013), Bleemer and Zafar (2018) and Lergetporer et al. (2021) on wage expectations and the demand for college education, Roth et al. (2020) on the demand for government spending, and finally Cattaneo et al. (2020) and Lergetporer et al. (2018 & 2020) on preferences for education policies. And second, it adds to the literature that exploits the uniqueness of the Swiss case with its different linguistic regions to study the effect of cultural differences on preferences in various domains such as taxes (Eugster and Parchet, 2019), work attitudes and job search (Eugster et al. 2017), and social insurance (Eugster et al. 2011).

3. Education system in Switzerland

In Switzerland, most compulsory school leavers start a vocational education and training program after completing lower-secondary schooling. Students can choose among around 240 different occupations. VET is mainly based on a dual system, i.e., apprenticeship training where a significant fraction of the education takes place working in a host company and another part in vocational school. Apprentices typically receive a wage, and the training company decides on the selection procedure. In general, criteria for selecting a VET student include the student's performance in lower secondary school, interviews or/and participation in an assessment procedure.

More than two thirds of compulsory school leavers in the German-speaking part of Switzerland choose to follow this path while this share is only around 50 percent in the French- and Italian-speaking regions. Vocational education and training can also be completed at a full-time vocational school. In the French-speaking and Italian-speaking parts of Switzerland, the proportion of full-time vocational schools is higher than in

German-speaking Switzerland. What distinguishes the Swiss VET/PET system from many other systems is the fact that it confers an educational degree that allows to continue studies at the tertiary level. Students attending VET have the option of preparing for a Federal Vocational Baccalaureate, which allows them to continue studying in higher education, either at a university of applied sciences or with an additional aptitude test to qualify for admission at a traditional academic university. Finally, even without a professional baccalaureate they have the option to follow the path of professional education and training (PET), which also belongs to the tertiary level of the education system.

The other option pupils have at the end of compulsory school is to follow the general education path. For this, students can enroll either in a (academic) Baccalaureate school or in an upper secondary specialized school. Depending on the canton, admissions to Baccalaureate schools are based on school marks, teachers' recommendations, or an admission test. The successful completion of a Baccalaureate school ensures access to all Swiss universities. The fraction of students choosing to attend a Baccalaureate school varies greatly by canton and ranges from 15-16 percent in the cantons St. Gallen and Thurgau (in the German-speaking part of Switzerland) to 46% and 39% in cantons Geneva and Ticino (in the French- and Italian-speaking part of the country), respectively (Swiss Education Report, 2018).¹¹ This disparity means, assuming that academic abilities are equally distributed (which is indicated by several waves of PISA assessments), that in cantons with high general education rates, more students with lower competency levels are admitted than in cantons with lower rates. These students have a higher probability of dropout or grade repetition and might have had better chances had they chosen to follow a vocational education. Statistical evidence shows that the probability of successfully graduating from school is higher in cantons with lower admission rates. Completion rates are between 83 and 87 percent in cantons Geneva, Vaud, or Ticino with high admission rates, while the rate is above 90-95 percent in cantons St. Gallen or Thurgau with low admission rates (Swiss Education Report, 2018).

¹¹ The ratios of students who choose to follow a general education, including upper-secondary specialized schools range from 18-19 percent in St. Gallen and Thurgau to 63% and 47% in Geneva and Vaud, respectively.

4. Data and methods

The survey of public opinion on education was conducted by the LINK Institute in Switzerland between September and October 2019 on behalf of the University of Bern. The survey was carried out online. The analysis sample contains information on a total of 6,014 Swiss citizens from all the three language regions (German, French, and Italian) aged between 18 and 74. The sample is based on a random draw from the LINK Internet Panel, with over 130,000 actively recruited persons, who had been selected by phone surveys through landline and randomly generated mobile phone numbers. To ensure representativeness of the analysis sample for the Swiss population, quotas for age, gender, region, and education were used. The Italian-speaking region, which is the smallest in size (approximately 6% of the Swiss population) was oversampled in the data collection and has a total of 500 observations to be able to obtain more accurate estimates. In all our empirical analyses, we employ survey weights to ensure the sample's representativeness with respect to the national population.

Apart from standard questions on socioeconomic and family background, the survey gathered information on risk and time preferences as well as on non-cognitive skills and traits, such as GRIT. In addition, we asked the respondents to express their opinions on a series of questions concerning various aspects of education policy. The hypotheses to be tested in this paper specifically relate to the questions whether respondents would prefer general academic or vocational education, and whether providing selected information about the probability of failing in general education affects the choice between VET and academic baccalaureate schools.¹² The empirical strategy chosen to analyze these questions is the inclusion of an information treatment experiment in the survey questionnaire.

More specifically, we randomly assigned respondents to four subgroups. First, the uninformed group was asked whether they would prefer general or vocational education

¹² We limit the choice to comparable educational options at the upper-secondary level and exclude further educational options at tertiary level, which are – as described – open to students of both educational types at upper-secondary level.

for their own children (hypothetically for those without children).¹³ Four answer categories were available to indicate preferences: 1) baccalaureate schools, 2) rather baccalaureate schools, 3) rather apprenticeship, 4) apprenticeship. The other three groups were provided with different types of factual information on the probability of successfully completing baccalaureate school and about average wages at age 50 for people who choose VET, people who choose VET after failing in baccalaureate school and people who completed an academic general education.¹⁴ After getting the information respondents were asked to elicit their preferences for general or vocational education for their (hypothetical) children in the same way as the uninformed control group.¹⁵

The first treatment group (referred to as info 1 below) was informed that the probability of the children with the academic ability comparable to the ability of their (hypothetical) child to successfully completing the baccalaureate was around 50%.¹⁶ The second treatment group got the same type of information but with probability of success in academic education for the child around 80% (group info 2).¹⁷ In addition, both groups received information about expected wages at age 50 in the different paths, while the third group received only information about the wages (group info 3). Details on the exact wording of the three versions of the question are shown in Appendix B.

Risk and time preferences of respondents were inferred from questions on the general willingness to take risks and willingness to give up something today to benefit in the future. Both items are measured on 0-10 scale where zero means not willing and 10

¹³ Even for most of the respondents with children, the question is hypothetical, because even those who have children are either not yet at the point of making this decision or have children who have already made the decision. We control for these different choice situations in our regressions with a set of regressors.

¹⁴ These numbers were calculated using the Swiss Labor Force Survey 2017. The wages for people with an apprenticeship is the mean of wages for people who stated their highest level of education is a vocational upper-secondary degree, of which most have completed an apprenticeship. Wages for people who successfully completed baccalaureate were calculated as weighted average of mean wages of people with baccalaureate and people with university as highest level of education, taking into account that around 20% with a baccalaureate degree do not continue to go to university or fail to get a degree from university. Wages of individuals who failed baccalaureate school are weighted mean of wages of people with VET and with only compulsory school. The weights correspond to the current distribution of the different educational pathways.

¹⁵ Given that the decision between baccalaureate school or apprenticeship is taken after compulsory school, when school leavers are young adults and most of them still minors, the preferences and support of their parents play a big role in the decision.

¹⁶ This probability corresponds to the success rates of students who enter the baccalaureate schools with academic abilities that fall below the competence level 4 in the PISA test.

¹⁷ This probability is just somewhat lower than the success rate of average students who enter the baccalaureate schools across all cantons.

means completely willing.¹⁸ Based on the original responses, we built two categorical variables. For each, category low is defined as responses lower than the first quartile, medium as responses between the first and third quartiles, and high as responses higher than the third quartile. In addition, we measured wage expectations by asking respondents what wage they expect for a 50-year-old person with a vocational education degree and for one with an academic education degree. The ratio of these two expectations is included in the analysis below. Finally, to capture personality traits, we used the short GRIT 8-item scale (Duckworth et al., 2007; Duckworth and Quinn, 2009). The median person in the survey scored 3.75 on a scale from 1 to 5, where higher scores describe grittier persons. We constructed a categorical variable from these scores with categories low when the score is lower than the first quartile, medium for scores between the first and third quartile, and high for scores higher than the third quartile.

The statistical analysis employs simple descriptive statistics (means, proportions, and their comparison across subgroups of the population using chi-square tests), and logistic regressions to infer the impact of the information experiment on the responses to the question on preferences for general academic versus vocational education. The logistic regression models are specified as:

$$Pr(academic = 1|x) = \Lambda(\beta_0 + \beta_1 info1 + \beta_2 info2 + \beta_3 info3 + z'\gamma)$$

where *academic* equals 1 if the respondent prefers, or rather prefers, baccalaureate school, and 0 else. The main explanatory variables are the indicators for the three information treatments (info1-info3). Given that the information treatments are randomized across respondents, there is no need to control for further variables in the logistic regression model to assess the treatment effect. However, we also report the results controlling for socio-economic, demographic and personality-related background variables as a robustness check and to reduce the residual variance. Moreover, we include a set of Canton- and community-level variables, obtained from the Swiss Federal Statistical Office and merged to the LINK data via the postal code of the respondent's

¹⁸ For these two items we chose to adopt the questions used in the German Socio-Economic Panel, which have been tested and validated for example by Falk et al. (2016). The questions included in our questionnaire were: Are you a person who is generally willing to take risks, or do you try to avoid taking risks? And are you a person who is generally willing to give up something today to benefit from that in the future or are you not willing to do so?

place of residence. These variables are the academic baccalaureate rate in the canton, communal population density, employment in the second and third sector, share of foreigners, and share of people receiving social assistance. All of these background characteristics are summarized in the vector z of control variables.

In the logistic regression model, the probability $Pr(\text{academic} = 1|x)$ is specified as a logistic function $\Lambda(z) = \exp(z) / (1 + \exp(z))$. The parameters $\beta_j, j=1,2,3$ determine the causal impact of the three information treatments on the probability that a respondent prefers general academic education to vocational education. To facilitate interpretation, we report discrete probability effects in the results, which show the change in the probability of $\text{academic} = 1$ when the respondent receives the additional information as opposed to the case that the respondent does not receive the information. Finally, to conduct inference, we cluster standard errors on the community level.

5. Results

Descriptive statistics

Table 1 provides a summary of the data used in our study, in total and by language region. In the total sample, the preferences for academic or vocational education are roughly equally distributed. However, the share of respondents who prefer an academic over a vocational education is significantly lower in the German- than in the French- or Italian-speaking parts of Switzerland.¹⁹ This pattern is also visible in the baccalaureate rates, which are lowest in the German-speaking region. While gender and the age distribution are similar across the language regions, there are several other differences between regions worthwhile to highlight that characterize the cultural differences within the country. First, the share of Swiss nationals with a migration background, a group that also shows higher preferences for academic versus vocational education, is significantly higher in the French- and Italian-speaking regions. Respondents from the French-speaking area are also more willing to give up something today to benefit in the future,

¹⁹ Note that this comparison is pooled over all treatment groups. Differences in educational preferences across language regions in the control group are discussed in more detail below (Figure 1), but they point in the same direction. Randomization worked well (see section “Balance tests”) and therefore we do not see any differences in the background characteristics between the treatment and control groups.

more willing to take risks and they are less gritty than respondents in the German-speaking region. Household income is slightly higher in the German-speaking part, and respondents from this part of the country also report higher relative wage expectation for an academic education (vs. vocational education).²⁰

Insert Table 1 about here

The descriptive statistics in Table 1 show not only significant differences in the preferences for academic versus vocational education across the language regions but also in individual characteristics that may influence these preferences, and how the information treatments may affect people's opinions. Therefore, we interpret Table 1 as supportive evidence that an analysis of our hypotheses benefits from the controls, by increasing the explanatory power of the model, and that the analyses of the effects of the information treatments should not only be done for the overall population, but also separately by language regions and other subgroups of the population.

Balance tests

The three information treatments have been provided as part of randomized survey experiment. This means that individuals were randomly selected to answer one of the four versions of the question about the preference for academic vs. vocational education: a control group without any further information, a group that received information about wage expectations and risk of failure in academic track stated as 50% (info 1), another group with the same information but that the success rate was only 80% (info 2), and a third group that only received information about expected wages without further statement on the uncertainty of completing any of the two tracks. While the data collection process should ensure comparability of the four groups, we can check whether randomization was successful by comparing the background characteristics across the treatment and control groups. Table 2 summarizes the results.

Insert Table 2 about here

²⁰ Note that this information is consistent with actual relative wages in the different regions. Using the Swiss Labor Force Survey, we calculated median wages for full time workers at age 45-55 and found that wages of people with a university degree are 57 percent and 48 percent higher than wages of people who followed vocational education in the German and French speaking parts, respectively.

Overall, there are no signs that any of the background characteristics would differ significantly between the control and the treatment groups. This holds from a statistical point of view, when using chi-square tests to compare groups (none of the p -values is smaller than 10%), and it also holds from a practical point of view with very similar means and proportions across the four groups. We therefore do not find evidence of a violation of the assumption of randomized distribution of information treatments and can therefore interpret changes in preferences between the control and the different treatment groups as causal effects of the information treatment.

Who prefers general academic education?

Before proceeding to the analysis of the causal impacts of the information treatments on educational preferences, we first analyze who prefers general academic vs. vocational education. To do so, we report the results of logistic regression models for the control group in the overall sample and by language region, including education, gender, age, migration background, being a parent, household income, political orientation, GRIT, risk and time preferences, and wage expectations as possible determinants. The results are summarized in Table 3, showing probability changes for each explanatory variable.

Insert Table 3 about here

The results indicate that individuals in the German-speaking region with a vocational background have a higher probability of preferring vocational education for their children than individuals with an academic background or with compulsory schooling only. This is in line with findings from Abrassart et al. (2020) and analyses of preferences for educational spending (Busemeyer et al. 2011), showing that people in general prefer the type of education they themselves had gone through. When differentiating between vocational and academic education by level of education, one sees that the differences in preferences are strongest between respondents with an upper-secondary vocational education as their highest qualification and respondents with an academic background at the tertiary level, with the latter having the strongest preference for an academic track for their children. The preferences for respondents with an academic background at upper-secondary level and those having a vocational background, but at the tertiary level are in between these two groups. This relative preference pattern is also observed for the other two language regions, but preferences of people with secondary and tertiary

education compared to those with compulsory education in the French- and Italian-speaking regions are generally stronger towards academic education.

For respondents living in the German-speaking region, we find a relatively strong age gradient, with older respondents more likely to prefer academic to vocational education for their children. This gradient is characterized by a shift at age 30-39, which is when most become parents and perhaps think more carefully about the educational career path of their children. However, preferences for the academic track become even stronger thereafter, which could be related to either cohort effects or experiences at the workplace, like the observation of the importance of academic degrees for career promotions. The interpretation that the age gradient is not a pure parenting effect is at least partly confirmed by the small and statistically insignificant coefficient for the parent dummy. It is interesting to note that the age gradient differs between the three language regions. In the French-speaking area, there is a major preference shift towards academic over vocational education at ages 30-39, but the preferences for the older cohorts for academic education are then not significantly different from the youngest group (< 30). In the Italian-speaking region, a similar pattern is observed.

Other significant associations are those with migration background and wage expectations. Swiss nationals with a migration background are more likely to prefer the general academic track, which could be related to culture or the unawareness or unfamiliarity with vocational education (Abrassart et al., 2020). Furthermore, the individual assessment of the private rate of return of the two educational tracks plays a role. Individuals who expect a higher wage for the academic track relative to vocational education are more likely to prefer the academic track for their children. The results related to the migration background and individual wage expectations are consistent across the three language regions, and partly even stronger outside the German-speaking part of Switzerland. However, some of the statistically non-significant coefficients for the French- and Italian-speaking regions might also be due to the smaller sample sizes.

Effect of information treatments on preferences for academic education

Figure 1 and Table 4 summarize the main results of our study, i.e., estimates of the impact of the three information treatments on the preferences of individuals for the education of their children. Figure 1 shows the average predicted probabilities of the respondents

preferring academic over vocational education for the control group and for the three information treatment groups based on logistic regressions without further controls. Panel A is for the total sample, pooling the three language regions, panels B-D report the results separately by region. As can be seen, the probability of preferring academic over vocational education is approximately 60% overall in the control group, lower in the German-speaking region (56%) and higher in the French- and Italian-speaking regions (63% and 68%, respectively).

Providing individuals information about the expected wages at age 50 does not change educational preferences by much, and differences are mostly statistically insignificant. What really changes people's educational preferences is the information about the uncertainty of successfully completing the two types of education. The preferences show – as one might expect – a clear shift towards vocational education when respondents are informed that the probabilities of successful completion of the academic baccalaureate school are about 50%, compared to 95% for the vocational track. Confirming our initial hypotheses for heterogeneous treatment effects in relation to the three language regions, we find the largest shift in the preferences for individuals living in the German-speaking part of Switzerland, with a reduction of approximately 15.7 percentage points (see also Table 4). For respondents in the French- and Italian-speaking parts, these reductions are considerably smaller and statistically insignificant.²¹

Insert Figure 1 and Table 4 about here

For the second information treatment, with a success probability in the academic track of 80%, we find a slightly smaller but still surprisingly large preference shift towards vocational education in the German-speaking region (+12.4 percentage points) and again no effect on the preferences in the French- and Italian speaking regions.

Further heterogeneities in treatment effects

In an extension of the above analysis, we aim to explore potential mechanisms driving the heterogeneity in effects across the language regions. More specifically, we assess

²¹ The difference in the estimates for the first information treatment for the Italian-speaking region (Table 4, Panels A vs. B) are due to small imbalances in this region in the control variables likely related to the smaller sample. The imbalances are mostly observed in income and education, and the latter has been shown a key determinant of preferences for educational tracks (see Table 3).

whether treatment effects vary by educational and migration background, age groups, gender, being a parent, income, and personality characteristics. Table 5 summarizes the results. For educational levels and types, we find that respondents with an academic background are significantly more likely to prefer this type of education for their children as opposed to respondents with a vocational background (78.9% versus 51.2%), but the impact of the information treatments is similar across the two educational groups.

Insert Table 5 about here

A major difference, however, is observed when comparing respondents with and without a migration background. When providing the information of a 50% chance of success in the academic track, respondents with a migration background reduce their preference for that track by approximately 8.9 percentage points, while people without migration background react with a reduction of 14.7 percentage points. While both groups respond to the treatment, the strength of the response is very different. Even though the proportion of respondents with a migration background who show a much weaker reaction to the information treatment is much higher in the French and Italian-speaking parts of Switzerland than in the German-speaking part, this heterogeneity in the reaction to the information treatment does not explain the observed difference between the language regions.

There is also an age gradient in the reaction to the information treatments, showing stronger effects with increasing age. The effects of the treatment with a 50% success rate for the academic track have a small and mostly insignificant effect for the 18-29 years-old, whereas it shifts preferences in the direction of vocational education by 12.0 percentage points for the 30-39 years-old, by about 15.5 percentage points for the 40-49 years-old, and by about 17.7 percentage points for the 50+ group. Again, as with the migration background, although the age profiles in the three language regions differ, we do not find that the heterogeneous reactions to the information treatment by age groups explain the differences the educational preferences between language regions.

Individual risk aversion – as one would expect in theory – also explains a part of the heterogeneity in the reaction to the information treatments. The results show a stronger reaction of respondents who are more risk averse if provided with information about the uncertainty of the chances to successfully complete the academic track. More specifically,

while there is not much difference in the baseline preference for any of the two educational tracks by risk profile of the respondent, more risk averse people show an almost 14.8 percentage points lower probability of preferring academic education for info treatment 1 (50% chance of success in the academic track), and a 12.4 percentage points lower probability for info treatment 2 (80% chance of success), compared to a reduction in the preferences for academic education of more risk loving respondents of 9.0 percentage points and a statistically non-significant reduction in the case of treatment 2. Given that respondents in the German-speaking part of Switzerland are on average more risk averse, this contributes at least partly to the effects reported in Table 4.

In the same way as for risk aversion, we also find differences in the reaction to the information treatments by differences in GRIT and time preferences. Overall, we find grittier and more forward-looking individuals to respond less strongly to the information treatments. However, differences are less pronounced than for risk aversion.

Wage expectations enter our study in two ways. First, the information treatments explicitly mention expected wages at age 50 for people following any of the two educational tracks. This information was provided either alone (information treatment 3), or in combination with success probabilities. The results in Table 4 show that the treatment with wage information did not influence the respondents' preferences for the educational options by much, only in the German-speaking region there is a slight preference shift towards vocational education. Secondly, we asked respondents about their wage expectations for people aged 50 with a certain education degree, i.e., either academic or vocational. Overall, respondents in the German-speaking region expect relatively higher wages for the academic track than respondents from the other regions, and thus the information treatment may have corrected their expectations more than those of respondents from the French- or Italian-speaking regions. Indeed, when we interact the self-reported wage expectations with treatment 3, we find a negative coefficient, indicating that the more respondents overestimated the relative wage gains of academic over vocational education, the more the information treatment shifts their preferences towards vocational education.²²

²² This is in line with results from Lergetporer et. al. (2018) where in an experiment about preferences for increasing teachers' salaries they found that the effect on the preferences of giving people information on actual teachers' salaries was bigger for respondents who had underestimated teachers' salaries. In contrast

Being a parent as opposed to not being a parent (and therefore treating the question more hypothetically) does not lead to large differences at baseline in the preferences for academic versus vocational education, although the effects of the information treatment are significantly larger for the parents' group than for the non-parents' group. This could be due to parents not wanting their child to fail in school, and therefore could be indicating a preference for an educational track with a lower risk of failure. Another reason could be that non-parents respond less to the information experiment due to the hypothetical nature of the survey question, and they would respond more if faced with an actual decision.²³

Finally, we considered heterogeneity in the treatment effects by gender and household income. Female and male respondents have about the same baseline preferences for the two educational tracks, but women react overall slightly stronger to the information treatment indicating the uncertain prospects, suggesting more risk averse behavior, whereas the pattern for men is more indicative of a lack of knowledge. For income, we find respondents with higher income report a stronger baseline preference for the academic track, but the reactions to the information treatments are relatively similar across the higher and medium/lower income groups.

Robustness checks

We conducted a couple of additional robustness checks. First, we included cantonal and community level controls in the regressions. More specifically, we included canton fixed effects, which did not change the results. We also estimated a series of models including the cantonal baccalaureate rate, and variables at the community level such as population density, proportion of foreigners, proportion of employees in the second and in the third sector, and the share of individuals receiving social assistance. Again, adding these controls did not change our results (see Table A1 in Appendix A), and none of these variables turned out to be significantly associated with the preferences for educational

Lergetporer et al. (2021) found that even though non-university graduates are more likely to underestimate the returns of university, the effect of providing information on returns to university degree on the preference for attending university is stronger for university graduates.

²³ The stronger response of parents to the information treatments is in line with Lergetporer et al. (2021) who study the effects of information on costs and returns on educational preferences for a hypothetical child. In their study, parents' effects are also higher, although differences to the general population are not significant.

tracks. Second, we estimated the models by region including only those cantons with the least restrictive entry requirements to Baccalaureate schools, i.e., no entrance exam (sample of 6 cantons out of 26). As this is the case mostly for cantons from the French and Italian speaking regions, we did this in order to verify that the smaller effect of the treatment seen for these two regions is indeed due to cultural or historical differences and not due to a different interpretation or understanding of the question because of the more relaxed entry requirements in the canton of residence. Third, we altered the model specification, estimating linear probability models instead of logistic regressions, and we re-estimated the models with each of the treatments separately against the control. None of these changes affected our results and given the type of research design used here, we interpret the results as robust evidence on the impacts of the information treatments on educational preferences.

6. Conclusion

In this paper, we investigate with the help of an information experiment the preferences of individuals for academic versus vocational education in Switzerland, using a public opinion survey from 2019 specifically designed for this purpose. We are interested in whether information about the risk of successfully completing a chosen education, as well as information about different wage prospects associated with different types of education, can change respondents' preferences. There are two possible outcomes for information treatments. Either they change the preferences of respondents, in which case we can assume that the population would have made different decisions without this information, or they do not change the preferences. In the latter case, however, we are not able to identify the reason why the information has no influence on the reported preferences. It may be, on the one hand, that the respondents without information treatment have already incorporated this information into their preferences or, on the other hand, that the information used by the researchers are irrelevant to the respondents.

The reason for our information treatment experiment is the observation that in a country like Switzerland, with a tradition-rich and nationally uniform VET/PET system, people living in different linguistic-cultural regions have preferences for the academic versus the

vocational training options, which are more oriented towards the prevailing educational models of the neighboring countries than towards the national system. In German-speaking Switzerland, the preferences for the vocational model predominate, while in French and Italian-speaking Switzerland, the preferences for the academic type of education dominate. However, because the cognitive performance requirements for a successful academic degree are relatively, if not completely, harmonized nationally, these different preferences mean that the academic path in French and Italian Switzerland is associated with higher risks, leading to significantly more dropouts. The question that arises is whether people in the French and Italian-speaking parts of Switzerland have a higher preference for academic education or an aversion against vocational training, either because they are generally unaware of the risks, because they underestimate them for their children, or because the preferences are so strong that they consciously accept these risks.

Our empirical results confirm that educational preferences for academic vs. vocational education differ significantly across language regions. Moreover, we find that personality traits and socioeconomic characteristics play an important role in these preferences, but the observed differences between the language regions cannot be explained solely by the different composition of the population with respect to these characteristics.

Regarding the question of the role of dropout risk, we find that respondents from the German-speaking part of Switzerland react to a higher risk of failure in academic training with a significant shift in preferences toward vocational training, whereas respondents in the French- and Italian-speaking parts practically do not react at all. In other words, we can rule out the possibility that parents in these language regions opt for the riskier educational option because they are unaware of the general or specific risk of dropping out of education that their decision entails. Alternatively, if they are aware of it, the results suggest that their preferences for academic education are so strong that they would accept the risk willingly. By including another information treatment on the different income streams associated with academic and vocational training, we can also virtually rule out the possibility that the risks were accepted because the economic benefits of academic training outweighed those risks.

Given that educational dropouts are associated not only with individual but also with societal losses, these findings have various educational policy implications. First, it seems that when preferences are very strong and historically and culturally anchored in the population, corrective mechanisms in the education system, such as later selection, may be insufficient to prevent an initial mismatch.²⁴ In other words, education policymakers cannot be confident that high dropout rates will act as enough of a deterrent to keep people from making inefficient choices. This means, in turn, that in such cases only system decisions, such as rigorous entrance exams, can correct parents' preferences and choices.

Second, and more specifically applied to the issue of vocational education, the results from a country with a long and strong vocational education tradition show that a politically motivated and driven introduction or expansion of VET in a country without this tradition could very quickly fail due to the resistance of the population, which would continue to prefer academic education even at high direct or indirect costs. Why this is so cannot be answered conclusively based on this experiment. However, economic arguments seem to play a minor role, and it is therefore more likely that forms of status quo bias or beliefs and perceptions about the superiority of academic education in terms of social status play a more decisive role.

²⁴ This is in line with findings from Osikominu et al. (2021)

References

- Abrassart, A., Busemeyer, M.R., Cattaneo, M.A. & Wolter, S.C. (2020): Do adult foreign residents prefer academic to vocational education? Evidence from a survey of public opinion in Switzerland, *Journal of Ethnic and Migration Studies*, 46 (15), 3314-3334.
- Altonji, J.G., Arcidiacono, P. and Maurel, A. (2016). The Analysis of Field Choice in College and Graduate School: Determinants and Wage Effects. In: Eric A. Hanushek, Stephen Machin, Ludger Woessmann (Eds.), *Handbook of the Economics of Education*, 5, 305-396.
- Akerlof, A. G., and Kranton, R. E. (2002). Identity and schooling: Some lessons for the economics of education. *Journal of Economic Literature*, 40, 1167-1201.
- Anders, J., Green, F., Henderson, M. and Henseke, G. (2020). Determinants of private school participation: All about the money? *British Educational Research Journal*, 46 (5).
- Baker, R., Bettinger, E., Jacob, B. and Marinescu, I. (2018). The Effect of Labor Market Information on Community College Students' Major Choice, *Economics of Education Review*, 65, 18-30.
- Becker G.S. (1962). Investment in Human Capital: A Theoretical Analysis. *Journal of Political Economy*, 70 (5), 9-49.
- Bettinger, E., Long, B.T., Oreopoulos, P. and Sanbonmatsu, L. (2012). The Role of Application Assistance and Information in College Decisions: Results from the H&R Block FAFSA Experiment. *The Quarterly Journal of Economics* 127 (3), 1205-1242.
- Bleemer, Z. and Zafar, B. (2018). Intended College Attendance: Evidence from an Experiment on College Returns and Costs. *Journal of Public Economics* 157, 184-211.
- Busemeyer, M., Cattaneo, M.A. and Wolter, S.C. (2011). Individual Policy Preferences for Vocational versus Academic Education. Micro Level Evidence for the Case of Switzerland, *Journal of European Social Policy*, 21(3), 253-273.
- Cattaneo, M.A., Lergetporer, P., Schwerdt, G., Werner, K., Wößmann, L. and Wolter, S. C. (2020). Information Provision and Preferences for Education Spending: Evidence from Representative Survey Experiments in three Countries. *European Journal of Political Economy*, 63, 101876.
- Damgaard, M. T. and Nielsen, H. S. (2018). Nudging in Education. *Economics of Education Review*, 64(C), 313-342.
- DellaVigna, S. (2009). Psychology and Economics: Evidence from the Field. *Journal of Economic Literature*, 47(2), 315-372
- Duckworth, A.L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6), 1087-1101.
- Duckworth, A.L. & Quinn, P.D. (2009). Development and validation of the Short Grit Scale (Grit-S). *Journal of Personality Assessment*, 91, 166-174.
- Eugster, B., Lalive, R., Steinhauer, A. and Zweimüller, J. (2011). The Demand for Social Insurance: Does Culture Matter?, *The Economic Journal*, 121 (556), 413-448.
- Eugster, B., Lalive, R., Steinhauer, A. and Zweimüller, J. (2017). Culture, work attitudes, and job search: evidence from the Swiss language border. *Journal of the European Economic Association*, 15(5), 1056-1100.
- Eugster, B. and Parchet, R. (2019). Culture and Taxes. *Journal of Political Economy* 127 (1), 296-337.

- Falk, A., Becker, A., Dohmen, T. J., Huffman, D., & Sunde, U. (2016). The preference survey module: A validated instrument for measuring risk, time, and social preferences IZA Discussion Papers 9674.
- Golsteyn, B. H.H. and Stenberg, A. (2017) Earnings over the Life Course: General versus Vocational Education, *Journal of Human Capital*, 11 (2).
- Goux, D., Gurgand, M. and Maurin, E. (2015). Adjusting your dreams? High school plans and dropout behavior. *The Economic Journal*, 127, 1025–1046.
- Green, F., Anders, J., Henderson, M., and Henseke, G. (2017). *Who chooses private schooling in Britain and why? LLAKES research paper*, 62, 1-50. London: Centre for Learning and Life Chances in Knowledge Economies and Societies Research.
- Hartog, J., & Bajdechi, S. (2007). Human capital and risk. In J. Hartog & H. Maassen van den Brink (Eds.), *Human Capital: Advances in Theory and Evidence* (pp. 134-152). Cambridge: Cambridge University Press.
- Hastings, J., Neilson, C.A. and Zimmerman, S.D. (2015). The Effects of Earnings Disclosure on College Enrollment Decisions, NBER Working Papers 21300, National Bureau of Economic Research.
- Hoxby, C. and Turner, S. (2013). Expanding College Opportunities for High-Achieving, Low-Income Students, Discussion Papers 12-014, Stanford Institute for Economic Policy Research.
- Kahneman, D., Knetsch, J.L. and Thaler, R.H. (1991). Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias. *The Journal of Economic Perspectives*, 5(1), 193-206.
- Kahneman, D and Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, 47(2), 63-29.
- Lergetporer, P., Schwerdt, G., West, M. R., Wößmann, L. and Werner, K. (2018). How Information Affects Support for Education Spending: Evidence from Survey Experiments in Germany and the United States. *Journal of Public Economics* 167, 138-157.
- Lergetporer, P., Werner, K. and Wößmann, L. (2020). Educational inequality and public policy preferences: Evidence from representative survey experiments. *Journal of Public Economics*, 188, 104226.
- Lergetporer, P., Werner, K. and Wößmann, L. (2021). Does Ignorance of Economic Returns and Costs Explain the Educational Aspiration Gap? Representative Evidence from Adults and Adolescents, *Economica*, *forthcoming*.
- McGuigan, M., S. McNally and Wyness, G. (2016). Student Awareness of Costs and Benefits of Educational Decisions: Effects of an Information Campaign. *Journal of Human Capital* 10 (4), 482-519.
- OECD (2010a). *Off to a Good Start? Jobs for Youth*, OECD Publishing. <http://dx.doi.org/10.1787/9789264096127-en>
- OECD (2010b). *Learning for jobs*. OECD Reviews of Vocational Education and Training. OECD Publishing: Paris.
- OECD and ILO (2014). *Promoting better labour market outcomes for youth*. Report on youth employment and apprenticeships prepared for the G20 Labour and Employment Ministerial Meeting Melbourne, Australia 2014.
- Oreopoulos, P. and Dunn, R. (2013). Information and College Access: Evidence from a Randomized Field Experiment. *Scandinavian Journal of Economics* 115 (1), 3-26.

- Osikominu, A., Pfeifer, G. and Strohmeier, K. (2021). The Effects of Free Secondary School Track Choice: A Disaggregated Synthetic Control Approach, CESifo Working Paper No. 8879.
- Pekkala Kerr, S., T. Pekkarinen, M. Sarvimäki and Uusitalo, R. (2015). Post-secondary Education and Information on Labor Market Prospects: A Randomized Field Experiment. IZA Discussion Paper No. 9372.
- Peter, F. H. and Zambre, V. (2017). Intended College Enrollment and Educational Inequality: Do Students Lack Information? *Economics of Education Review* 60, 125-141.
- Roth, C., Settele, S. and Wohlfart, J. (2021). Beliefs about Public Debt and the Demand for Government Spending. *Journal of Econometrics*, *forthcoming*.
- Swiss Coordination Centre for Research in Education (2018). Swiss Education Report, Aarau: SCCRE
- Wiswall, M. and Zafar, B. (2015). Determinants of College Major Choice: Identification using an Information Experiment. *The Review of Economic Studies*, 82(2), 791-824.
- Wölfel, O. and Heineck, G. (2012). Parental Risk Attitudes and Children's Secondary School Track Choice. *Economics of Education Review* 31 (5), 727-743.
- Wolter, S. C. & Zumbühl, M. (2017). Wie weiter nach der obligatorischen Schule? Bildungsentscheidungen und -verläufe der PISA-Kohorte 2012 in der Schweiz. SKBF-Staffpaper No. 20. Aarau: SCCRE

Tables and Figures

Table 1: Summary of the data by language region

	Total	Language region			Diff G/F/I
		German	French	Italian	
Preference for academic vs. vocational education	0.524	0.489	0.610	0.639	$p<0.001$
Baccalaureate rate	0.212	0.185	0.276	0.318	$p<0.001$
Educational background					$p<0.001$
Academic	0.265	0.251	0.305	0.290	
Vocational	0.688	0.707	0.631	0.675	
Female	0.492	0.493	0.493	0.476	$p=0.759$
Age					$p=0.386$
18-29	0.213	0.210	0.226	0.175	
30-39	0.137	0.136	0.142	0.136	
40-49	0.278	0.279	0.271	0.302	
50+	0.372	0.375	0.361	0.388	
Political orientation					$p=0.002$
Right	0.383	0.384	0.384	0.369	
Center	0.275	0.267	0.287	0.342	
Left	0.342	0.349	0.329	0.289	
Parent	0.590	0.579	0.617	0.642	$p=0.015$
Migration background	0.296	0.252	0.392	0.534	$p<0.001$
GRIT Personality trait					$p<0.001$
Low	0.274	0.245	0.367	0.255	
Medium	0.419	0.413	0.430	0.456	
High	0.307	0.341	0.204	0.289	
Willingness to take risks					$p<0.001$
Low	0.358	0.395	0.260	0.271	
Medium	0.356	0.348	0.377	0.368	
High	0.286	0.257	0.363	0.361	
Willingness to give up something today to benefit in the future					$p=0.005$
Low	0.317	0.328	0.278	0.348	
Medium	0.230	0.229	0.233	0.228	
High	0.453	0.443	0.489	0.424	
Relative wage expectation (at age 50) academic vs. vocational	1.639	1.674	1.555	1.517	$p<0.001$
Monthly household income					$p<0.001$
Less than 6'000	0.243	0.236	0.253	0.312	
6'001-10'000	0.342	0.341	0.350	0.319	
More than 10'000	0.261	0.266	0.258	0.171	
Missing	0.154	0.157	0.139	0.198	
Number of observations	6,014	4,132	1,373	509	

Source: Survey of Public Opinion on Education 2019. *Notes:* Table reports mean values of variables shown in the first column. Baccalaureate rates are merged to the sample based on the canton of residence. Educational background is generated based on highest education achieved, or current education attended. GRIT personality trait is low when score is 3.4 or lower on 5-point scale, medium for scores between 3.4 and 4, and high for scores 4 and higher. Willingness to take risks and to give up something today to benefit in the future are measured on 0-10 scale where zero means not willing and 10 means completely willing. Category low is defined as responses lower than the first quartile, medium as responses between the first and third quartiles, and high as responses higher than the third quartile. The relative wage expectation is calculated as ratio of the respondent's expectation of the wage for a person with academic vs. vocational education background. Thresholds of household income are given by the survey institute (information is collected in categorical form). Chi-square tests adjusted for clustering at the zip-code level are used to test the null hypothesis of equal distributions of indicators across language regions; p-values are reported in the last column.

Table 2: Treatment and control group balance tests

	Control	Treatments			Diff C/T
		Info 1	Info 2	Info 3	
Baccalaureate rate	0.213	0.212	0.212	0.211	$p=0.594$
Educational background					$p=0.414$
Academic	0.242	0.275	0.269	0.276	
Vocational	0.711	0.681	0.684	0.674	
Female	0.493	0.492	0.490	0.495	$p=0.996$
Age					$p=0.876$
18-29	0.215	0.212	0.209	0.215	
30-39	0.128	0.144	0.133	0.144	
40-49	0.287	0.271	0.287	0.266	
50+	0.371	0.372	0.371	0.375	
Political orientation					$p=0.125$
Right	0.379	0.411	0.386	0.357	
Center	0.277	0.258	0.282	0.284	
Left	0.345	0.331	0.332	0.359	
Parent	0.601	0.584	0.584	0.592	$p=0.727$
Migration background	0.294	0.286	0.308	0.298	$p=0.630$
GRIT Personality trait					$p=0.697$
Low	0.276	0.265	0.282	0.274	
Medium	0.435	0.426	0.405	0.410	
High	0.289	0.309	0.313	0.315	
Willingness to take risks					$p=0.165$
Low	0.359	0.330	0.388	0.357	
Medium	0.354	0.375	0.321	0.372	
High	0.287	0.295	0.291	0.271	
Willingness to give up something today to benefit in the future					$p=0.440$
Low	0.324	0.301	0.338	0.306	
Medium	0.237	0.239	0.209	0.234	
High	0.440	0.460	0.453	0.460	
Relative wage expectation (at age 50) academic vs. vocational	1.651	1.623	1.666	1.618	$p=0.188$
Monthly household income					$p=0.281$
Less than 6'000	0.233	0.238	0.268	0.234	
6'001-10'000	0.344	0.345	0.347	0.331	
More than 10'000	0.272	0.272	0.240	0.259	
Missing	0.151	0.145	0.145	0.176	
Region of living					$p=0.992$
German	0.722	0.718	0.724	0.729	
French	0.237	0.240	0.234	0.232	
Italian	0.042	0.042	0.041	0.039	
Number of observations	1,502	1,512	1,503	1,497	

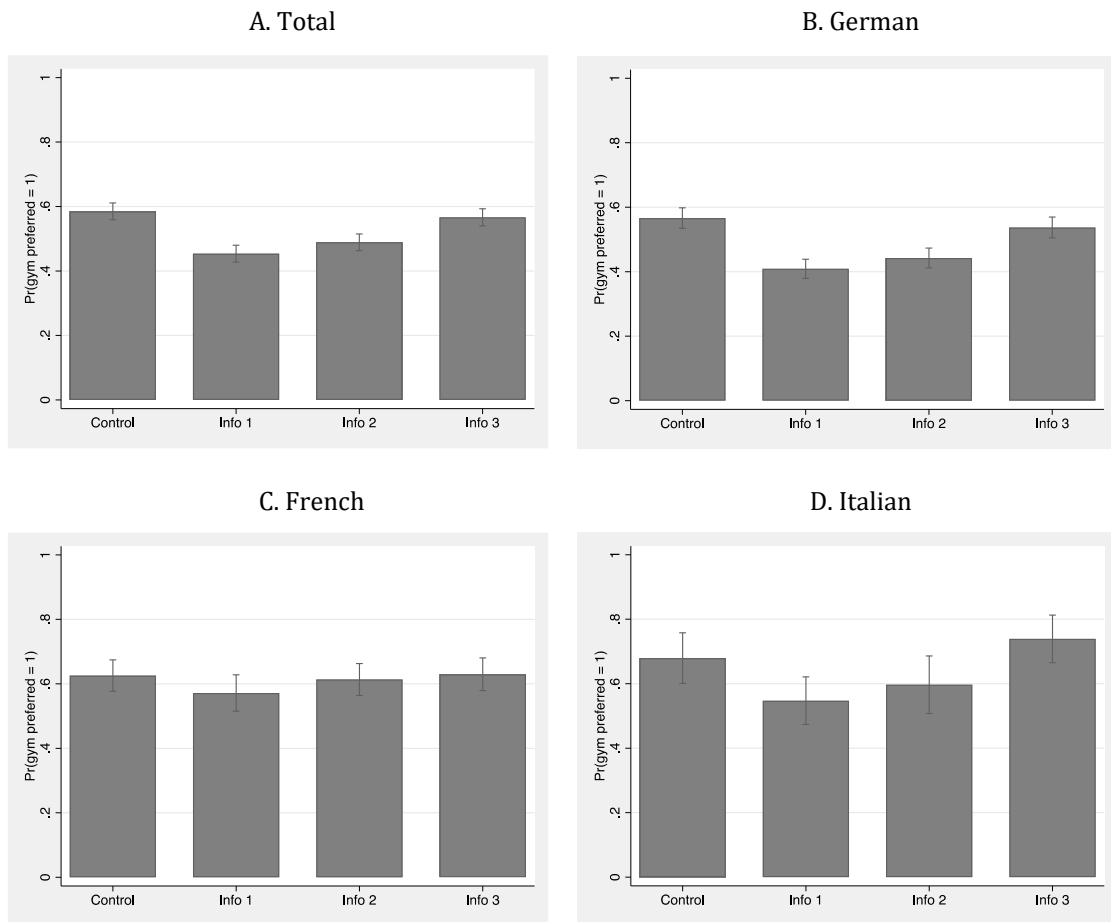
Source: Survey of Public Opinion on Education 2019. Notes: Table reports mean values of the variables shown in the first column. Information treatment 1 (column Info 1) provides information about expected wages and the probabilities of successfully completing a vocational education (95%) and a baccalaureate school (50%). Information treatment 2 (column Info 2) increases the probability of completing baccalaureate school to 80%, and information treatment 3 (column Info 3) only provides information about the expected wages. For a definition of the background variables, see the notes of Table 1. Chi-square tests adjusted for clustering at the zip-code level are used to test the null hypothesis of equal distributions of indicators across groups (control and all treatment groups); p-values are reported in the last column.

Table 3: Logit regressions for preferences academic vs vocational education

	Total	Language region		
		German	French	Italian
Educational background (reference: obligatory)				
Vocational secondary	-0.175** (0.0566)	-0.225** (0.0743)	-0.118 (0.0936)	0.257* (0.101)
Academic secondary	0.0378 (0.0728)	-0.0593 (0.102)	0.134 (0.0985)	0.371*** (0.0375)
Vocational tertiary	-0.0890 (0.0580)	-0.178* (0.0759)	0.0485 (0.0934)	0.342*** (0.0992)
Academic tertiary	0.212*** (0.0551)	0.139 (0.0848)	0.261*** (0.0764)	0.469*** (0.0465)
Female	-0.00177 (0.0257)	-0.0375 (0.0306)	0.126* (0.0526)	-0.182* (0.0772)
Age (reference 18-29)				
30-39	0.113** (0.0422)	0.106* (0.0529)	0.145* (0.0732)	0.0879 (0.132)
40-49	0.135*** (0.0379)	0.148** (0.0456)	0.105 (0.0779)	-0.0213 (0.144)
50+	0.171*** (0.0385)	0.204*** (0.0461)	0.0918 (0.0817)	0.0513 (0.127)
Migration background	0.100*** (0.0268)	0.0830* (0.0349)	0.0890 (0.0521)	0.0788 (0.0716)
Political orientation (reference: Center)				
Right	-0.0102 (0.0312)	-0.0192 (0.0381)	0.0444 (0.0599)	-0.0384 (0.0784)
Left	0.0821* (0.0323)	0.109** (0.0401)	0.0353 (0.0618)	0.200* (0.0858)
Parent	0.0135 (0.0321)	0.00120 (0.0373)	0.00579 (0.0703)	0.152 (0.118)
GRIT Personality trait (reference: Medium)				
Low	-0.0230 (0.0301)	-0.0191 (0.0379)	-0.0185 (0.0607)	-0.0577 (0.113)
High	-0.0672* (0.0294)	-0.0418 (0.0344)	-0.166** (0.0615)	0.0158 (0.0938)
Willingness to take risks (reference: Medium)				
Low	-0.0277 (0.0293)	-0.0226 (0.0340)	-0.0116 (0.0632)	-0.164 (0.103)
High	-0.0308 (0.0321)	-0.0323 (0.0402)	-0.0171 (0.0591)	-0.123 (0.109)
Willingness to give up something today to benefit in the future (reference: Medium)				
Low	-0.0179 (0.0330)	-0.0381 (0.0392)	0.00960 (0.0678)	0.115 (0.112)
High	-0.0290 (0.0323)	-0.0316 (0.0391)	-0.0382 (0.0605)	0.0360 (0.139)
Relative wage expectation academic vs. vocational at age 50	0.0869*** (0.0211)	0.0767** (0.0243)	0.150** (0.0571)	0.0659 (0.110)
Monthly household income (reference: Low)				
Medium	-0.000635 (0.0318)	0.00665 (0.0388)	-0.0137 (0.0646)	-0.0832 (0.107)
High	0.0272 (0.0365)	0.0110 (0.0439)	0.0914 (0.0756)	-0.0175 (0.103)
Number of observations	1502	1031	343	128

Source: Survey of Public Opinion on Education 2019. Notes: Table reports average discrete/marginal probability changes for discrete/continuous explanatory variables from logistic regression models for the probability of the respondent preferring academic versus vocational education. Standard errors in parentheses account for clustering on the zip code level. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 1: Preferences for academic education by treatment and language region



Source: Survey of Public Opinion on Education 2019. Notes: Figure shows the average predicted probability of the respondent preferring academic versus vocational education for the control group and the three information treatment groups (see notes Table 2), in total (panel A), for the German- (panel B), French- (panel C) and Italian-speaking (panel D) regions. 95%-confidence intervals account for clustering on the zip code level.

Table 4: Effects of information treatments on preferences for academic education

	Total	Language region		
		German	French	Italian
<i>Panel A: No control variables</i>				
Info 1 (50% chance of completion)	-0.131*** (0.0185)	-0.157*** (0.0220)	-0.0541 (0.0377)	-0.132* (0.0542)
Info 2 (80% chance of completion)	-0.0961*** (0.0178)	-0.124*** (0.0215)	-0.0122 (0.0337)	-0.0825 (0.0644)
Info 3 (expected wage only)	-0.0186 (0.0179)	-0.0291 (0.0215)	0.00395 (0.0361)	0.0596 (0.0537)
<i>Panel B: With control variables</i>				
Info 1 (50% chance of completion)	-0.136*** (0.0177)	-0.168*** (0.0212)	-0.0497 (0.0346)	-0.0776 (0.0518)
Info 2 (80% chance of completion)	-0.0967*** (0.0170)	-0.124*** (0.0206)	-0.0226 (0.0317)	-0.0610 (0.0605)
Info 3 (expected wage only)	-0.0296 (0.0171)	-0.0480* (0.0207)	0.00902 (0.0325)	0.0954 (0.0491)
Number of observations	6,014	4,132	1,373	509

Source: Survey of Public Opinion on Education 2019. *Notes:* Table reports average discrete probability effects of the three information treatments (see notes Table 2) from logistic regression models for the probability of the respondent preferring academic versus vocational education. Results in panel A are obtained without further controls (raw effects), regressions in panel B include control variables for gender, age, educational and migration background, parent, political orientation, risk and time preferences, GRIT and household income as shown in Table 3. Standard errors in parentheses account for clustering on the zip code level. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Heterogenous treatment effects

	Educational background		Migration background	
	Academic	Vocational	Yes	No
	<i>0.789</i>	<i>0.512</i>	<i>0.665</i>	<i>0.552</i>
Info 1 (50% chance of completion)	-0.139*** (0.0327)	-0.131*** (0.0224)	-0.0888** (0.0333)	-0.147*** (0.0213)
Info 2 (80% chance of completion)	-0.0895** (0.0310)	-0.103*** (0.0217)	-0.0235 (0.0314)	-0.131*** (0.0215)
Info 3 (expected wage only)	-0.00274 (0.0304)	-0.0265 (0.0223)	0.0169 (0.0320)	-0.0343 (0.0220)
Number of observations	1638	4092	1838	4176
	Age 18-29	Age 30-39	Age 40-49	Age 50+
	<i>0.487</i>	<i>0.579</i>	<i>0.604</i>	<i>0.630</i>
Info 1 (50% chance of completion)	-0.0349 (0.0409)	-0.120* (0.0473)	-0.149*** (0.0343)	-0.177*** (0.0302)
Info 2 (80% chance of completion)	0.0824* (0.0397)	-0.0611 (0.0500)	-0.115*** (0.0336)	-0.196*** (0.0295)
Info 3 (expected wage only)	0.0695 (0.0396)	0.0140 (0.0500)	-0.0772* (0.0345)	-0.0389 (0.0296)
Number of observations	1285	834	1650	2245
	Female	Male	Parent	No parent
	<i>0.589</i>	<i>0.581</i>	<i>0.611</i>	<i>0.545</i>
Info 1 (50% chance of completion)	-0.121*** (0.0253)	-0.141*** (0.0273)	-0.155*** (0.0243)	-0.0948** (0.0293)
Info 2 (80% chance of completion)	-0.134*** (0.0254)	-0.0600* (0.0255)	-0.143*** (0.0231)	-0.0271 (0.0281)
Info 3 (expected wage only)	-0.00991 (0.0255)	-0.0271 (0.0265)	-0.0377 (0.0241)	0.0108 (0.0288)
Number of observations	2995	3019	3467	2547
	Willingness to take risks		Willingness to give up something today to benefit in the future	
	High	Medium/Low	High	Medium/Low
	<i>0.567</i>	<i>0.592</i>	<i>0.583</i>	<i>0.587</i>
Info 1 (50% chance of completion)	-0.0903** (0.0345)	-0.148*** (0.0223)	-0.115*** (0.0273)	-0.145*** (0.0256)
Info 2 (80% chance of completion)	-0.0289 (0.0339)	-0.124*** (0.0213)	-0.0616* (0.0282)	-0.125*** (0.0243)
Info 3 (expected wage only)	0.0226 (0.0371)	-0.0344 (0.0211)	0.0148 (0.0275)	-0.0468 (0.0241)
Number of observations	1760	4254	2736	3278
	Monthly household income		GRIT Personality trait	
	High	Medium/Low	High	Medium/Low
	<i>0.626</i>	<i>0.570</i>	<i>0.550</i>	<i>0.599</i>
Info 1 (50% chance of completion)	-0.147*** (0.0374)	-0.125*** (0.0216)	-0.0829* (0.0327)	-0.151*** (0.0223)
Info 2 (80% chance of completion)	-0.0695 (0.0373)	-0.102*** (0.0205)	-0.0820* (0.0344)	-0.101*** (0.0207)
Info 3 (expected wage only)	0.0381 (0.0373)	-0.0373 (0.0210)	0.0208 (0.0341)	-0.0348 (0.0212)
Number of observations	1470	4544	1806	4208

Source: Survey of Public Opinion on Education 2019. Notes: The table reports baseline probabilities (for the control group, in italics) and average discrete probability effects of the three information treatments (see notes Table 2) from logistic regression models for the probability of the respondent preferring academic versus vocational education, by subgroups as indicated in the column heads. Standard errors in parentheses account for clustering on the zip code level. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix A: Supplementary results

Table A1: Effects of information treatments on preferences for academic education

	Total	Language region		
		German	French	Italian
<i>Extended set of control variables (including community variables)</i>				
Info 1 (50% chance of completion)	-0.141*** (0.0183)	-0.173*** (0.0218)	-0.0588 (0.0361)	-0.0804 (0.0503)
Info 2 (80% chance of completion)	-0.106*** (0.0174)	-0.136*** (0.0209)	-0.0311 (0.0328)	-0.0717 (0.0613)
Info 3 (expected wage only)	-0.0414* (0.0176)	-0.0608** (0.0210)	0.0015 (0.0337)	0.0863 (0.0489)
Number of observations	5,691	3,913	1,281	497

Source: Survey of Public Opinion on Education 2019. *Notes:* Table reports average discrete probability effects of the three information treatments (see notes Table 2) from logistic regression models for the probability of the respondent preferring academic versus vocational education. Control variables include those of Table 4, panel B plus cantonal baccalaureate rate and community level population density, proportion of foreigners, proportion of second sector and third sector employees, and the proportion of individuals on social security. Standard errors in parentheses account for clustering on the zip code level. Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix B: Details about survey information experiment

Survey question

a) Regardless of whether you have children or not: Imagine your son / daughter is faced with the choice of either going to baccalaureate school or doing an apprenticeship. The previous achievements in school would meet the requirements for admission to baccalaureate school or alternatively to get an apprenticeship. What would you recommend to your son / daughter?

b) Regardless of whether you have children or not: Imagine your son / daughter is faced with the choice of either going to high school or doing an apprenticeship. The previous achievements in school would meet the requirements for admission to high school or alternatively to get an apprenticeship.

Completing baccalaureate school, however, is fraught with uncertainty and on average only about 50% of those who go to baccalaureate school with these academic achievements successfully complete their diploma. The probability of successfully completing an apprenticeship is 95%.

The average gross monthly wage for a person over the age of 50 is

- for people who started their careers with a successfully completed Matura CHF 12,000;
- for people who started their professional career through an apprenticeship, around CHF 9,500;
- and for people who failed in baccalaureate school about CHF 8,000.

What would you recommend to your son / daughter?

c) Regardless of whether you have children or not: Imagine your son / daughter is faced with the choice of either going to high school or doing an apprenticeship. The previous achievements in school would meet the requirements for admission to high school or alternatively to get an apprenticeship.

Completing baccalaureate school, however, is fraught with uncertainty and on average only about 80% of those who go to baccalaureate school with these academic achievements successfully complete their diploma. The probability of successfully completing an apprenticeship is 95%.

The average gross monthly wage for a person over the age of 50 is

- for people who started their careers with a successfully completed Matura CHF 12,000;
- for people who started their professional career through an apprenticeship, around CHF 9,500;
- and for people who failed in baccalaureate school about CHF 8,000.

What would you recommend to your son / daughter?

d) Regardless of whether you have children or not: Imagine your son / daughter is faced with the choice of either going to high school or doing an apprenticeship. The previous achievements in school would meet the requirements for admission to high school or alternatively to get an apprenticeship.

The average gross monthly wage for a person over the age of 50 is

- for people who started their careers with a successfully completed Matura CHF 12,000;
- for people who started their professional career through an apprenticeship, around CHF 9,500;
- and for people who failed in baccalaureate school about CHF 8,000.

What would you recommend to your son / daughter?