



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

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ABSTRACT

Educational decisions are always made under uncertainty. This paper examines the effect of providing information about dropout risks on stated preferences for academic versus vocational education in Switzerland, making use of the fact that there are marked historical and cultural differences in preferences for and enrolment rates in academic vs. vocational education across the different language regions. Since there is some harmonisation in terms of the required cognitive performance for an academic degree, different enrolment rates in academic education need to be partially corrected later, resulting in higher risks of dropout during the program in regions with higher preferences for academic education. By means of a survey experiment, we show that in those language regions with a strong preference for academic education, the disclosure of the risk of dropping out of education has no effect on preferences, while in the regions with less strong preferences for academic education, the information treatment on the risks significantly shifts preferences towards vocational education. Our results suggest that the deterrent effect of a higher risk of dropping out is too small to achieve an efficient allocation of talents, if preferences for a particular type of education are very strong.

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 (e.g., admission restrictions) processes. There is, however, criticism against such constraints on individuals' choices, not least due to the reliability of admission tests; it is sometimes argued that, instead, it would be more effective to make the selection during education. The loss of years of education amongst 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 an incorrect 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 them with information about the possible risks associated with an educational decision or whether preferences for a certain type of education are so strong that even clearly greater relative risks of failure are tolerable to the person making the decision.

The reason why we examine the influence of risk on educational decisions, and specifically on the question of academic versus vocational and professional education and training (VPET³), is because, while the latter has aroused much political interest around the globe in recent years (OECD, 2010a, 2010b; OECD & ILO, 2014), there is no evidence that the population has shifted its preference away from academic

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

education for its children. Even though in many countries the disadvantages of academic education, such as problems in the transition to the labour market or high drop-out risks in the education programmes themselves, have become evident, these facts have apparently not been able to shift the preferences of the population towards VPET. In this study, we therefore specifically investigate the question of whether the disclosure of information on risks that may be associated with the choice of academic education pathways would be sufficient to change preferences for specific types of education in the population and whether the effect of such information depends on how strong preferences for academic education are at baseline.

To investigate this question, we use a survey experiment that was conducted in Switzerland. Switzerland is an ideal study case because, on the one hand, it has had a nationally unified VPET system for more than a hundred years, and on the other hand, it consists of three main language regions that differ traditionally greatly from each other in terms of the preferences for or against VPET or academic education. These different educational preferences manifest themselves most strongly in the choice of type of education after the end of compulsory schooling. In German-speaking regions, approximately 15–20% of school leavers choose an academic Baccalaureate school, whereas this proportion is approximately 40–50% in the Italian and French-speaking cantons.

To understand the setup 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, as seen, for example, from the PISA data. This implies that a larger proportion of students enter these academic courses without the necessary skills, helped by the fact that contrary to many cantons in the German-speaking area, access to academic programs is not restricted by external entrance examinations.⁴ Second, because an academic baccalaureate in Switzerland guarantees universal access to all universities in the country, at least part of the increased influx of weaker students into academic programs must be corrected already at the upper secondary level by higher drop-out rates.⁵ amongst pupils choosing an academic baccalaureate school in the French and Italian-speaking regions, approximately 15% drop out of school, while in contrast, this percentage is only approximately 5% in German-speaking cantons with more restricted access to general education (Swiss Education Report, 2018).⁶ It can thus be observed that in language regions with a greater propensity towards general education, the education system accommodates the preferences of citizens to the extent that more young people are admitted to academic courses at the price of a stronger selection during education to at least partially “correct” these different allocations.

Since the risk of failure is naturally concentrated in students who did not perform well enough at school to attend an academic course, there

⁴ While less than 5% of pupils in cantons with an external 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 entrance examination (Swiss Education Report, 2018).

⁵ 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 drop 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).

⁶ 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).

are three possible explanations why parents in regions with high rates of transfer to academic courses still prefer this pathway, despite the risks. First, parents⁷ (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 school demands; and third, the preferences for the academic path are so strong that they are willing to accept any risk.

To determine whether the historically and culturally stronger preferences for academic education are what indeed drive parents and young people to decide against vocational training despite the risks in academic education, we use a survey experiment in which we vary the drop-out risk 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.

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 (e.g., risk aversion), one’s own educational background, political attitudes, age, migration background⁸ or, for example, different expectations regarding the labour 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 and different reactions to the treatment. Even though we can never conclusively assess all these alternative explanations, the survey experiment nevertheless gives us the opportunity to assess whether the effects of the information treatments differ amongst people with different characteristics, and we can control for them in our analysis of regional differences.

Our analysis builds on a representative public opinion survey on education conducted in 2019, where data on preferences towards general or vocational education amongst a representative sample of Swiss citizens were collected. The results confirm the real-world observation that the preference for general/academic education is substantially higher for people from the French and Italian regions, even after controlling for a rich set of observable individual characteristics. This observation is not surprising, as it simply confirms that the preferences stated in the survey are roughly those that also correspond to actual decisions. But the empirical observation in the survey is reassuring in the sense that it shows that the respondents in a hypothetical decision behave similarly to how they would in reality. More important, however, is the finding, which has never been previously documented, that the presentation of information on the risk of the educational decision has very different effects on preferences depending on the language region the respondent comes from. 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 familiarity with a certain type of education and/or preferences for a certain type of education might produce a strong bias towards choosing this path, even with full knowledge of the

⁷ In our survey experiment, adults are interviewed because they (see also Section 3) not only influence the decisions of young people aged 14-17 for or against vocational training by giving advice but also because the young people themselves are legally not allowed to make the decision on their own and thus depend on the consent of their parents.

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.

risks associated with this choice. Based on the empirical observation that even substantial risk 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.

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). Educational decisions are made under uncertainty, given that the benefits, as well as the costs and risks of different educational pathways, are not perfectly known (Hanushek, Kinne, Lergetporer & Woessmann, 2021; Hartog & Bajdechi, 2007; Kunz & Staub, 2020). In our context, the decision that individuals face is not whether to pursue further education but which specific type of education to pursue: vocational or general/academic. 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/academic education, the decision has an inherent level of uncertainty. In addition, benefits and costs are highly dependant 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 & 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 therefore to analyse whether and how people's preferences change when they are provided with information about the actual probabilities of success. We hypothesise that knowing about the actual risks of success, or failure, in general education should shift preferences towards vocational education.

It is also possible that the knowledge of a lower probability of success in general education does not affect the decision of people who live in regions where general education is the preferred alternative and is, 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 & 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 amongst 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 a common language is an important predictor of values, beliefs, and behaviour, as described in

Eugster, Lalive, Steinhauer and Zweimüller (2011) and Eugster, Lalive, Steinhauer and Zweimüller (2017), different cultural backgrounds might also translate into different personality traits and attitudes towards risk.⁹ In addition, there are two other 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 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 VPET can have wage penalties later in life due to a faster rate of skills obsolescence (Hanushek et al., 2017, Golsteyn & Stenberg, 2017), even though there is no evidence thus 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 (Abrassart & Wolter, 2019), which have been shown to affect education decisions. People care about their image and how others perceive them, which might explain why some people make choices that do not match their own interests or capabilities (Akerlof & Kranton, 2002).

However, it is important to note here that the research question of this paper is to investigate whether individuals or groups of individuals react differently to an information treatment with regard to the risk of dropping out of education and not to be able to prove explanations for any differences in the treatment effect. This second step is not possible with the survey data and would be the subject of further research. At most, we can form hypotheses about it that would be consistent with the empirical findings regarding treatment heterogeneity, but even these hypotheses are not exhaustive, i.e. other hypotheses are still conceivable.

Our study contributes in at least two ways to the economics literature. First, it adds to the literature on educational choices amongst different options or pathways, which studies areas such as choice of college major (e.g., Altonji, Arcidiacono & Maurel, 2016; Wiswall & Zafar, 2015 (Baker et al., 2018)) private versus state school (Anders, Green, Henderson & Henseke, 2020; Green, Anders, Henderson & Henseke, 2017) and very closely related to our study question, the randomized control trial study of choice between vocational and general education as analysed in Goux, Gurgand and Maurin (2015) in France,¹⁰ or an experimental study with study counsellors in Germany (Fitzenberger, Hillerich-Sigg & Sprietsma, 2020). More specifically, it contributes to the literature that examines the effects of information provision on educational choices (e.g., Baker et al., 2019; McGuigan, McNally & Wyness, 2016; Peter & Zambre, 2017; Pekkala et al., S. 2020; Hoxby & Turner, 2013; Bettinger, Long, Oreopoulos & Sanbonmatsu, 2012) and the effects of providing information in surveys on preferences for education, such as Hastings, Neilson and Zimmerman (2015) on college and major choice, Bleemer and Zafar (2018) and Lergetporer, Werner and Wößmann (2021), Oreopoulos and Dunn (2013) on wage expectations and the demand for college education, Roth et al. (2021) on the demand for government spending, and finally Cattaneo et al. (2020) and Lergetporer, Schwerdt, West, Wößmann and Werner (2018 & P. 2020) on preferences for education policies. Second, it adds to the

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

¹⁰ Goux et al. (2015) perform a randomized controlled trial in France, consisting of a series of meetings to help low achievers choose between a three-year academic program or a vocational school based on a realistic assessment of their academic aptitudes. While in Goux et al. (2015), subjects are informed about their own actual probabilities of graduation, our survey experiment differs by using a hypothetical choice situation with success probabilities informed by average instead of individual probabilities.

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 & 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 amongst approximately 240 different occupations. VPET 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 a vocational school. Apprentices typically receive a wage, and the training company decides on the selection procedure. In general, criteria for selecting a VPET 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 approximately 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 VPET system from many other systems is the fact that it confers an educational degree that allows us to continue studies at the tertiary level. Students attending VPET 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 of following the path of professional education and training (PET), which belongs to tertiary education in Switzerland.

The other option pupils have at the end of compulsory school is to follow the general education path. For this, students can enrol either in a (academic) Baccalaureate school or in an upper secondary specialised 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 program ensures access to all Swiss universities. The fraction of students choosing to attend a Baccalaureate school varies greatly by canton and ranges from 15 to 16 percent in the cantons St. Gallen and Thurgau (in the German-speaking part of Switzerland) to 46% and 39% in the 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 more or less 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 the Geneva, Vaud, or Ticino cantons with high admission rates, while the rate is above 90–95 percent in the 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.

Another feature of Swiss VPET is of utmost importance in the context of our survey experiment: since young people on average start an apprenticeship at the age of 14–17 or enter a baccalaureate school at 12–15, the young people themselves are not legally able to make this decision on their own; they require the consent of their parents. The parents also sign the apprenticeship contract with the company, for example. In other words, young people cannot make this decision independently against the will of their parents. Independent of this legal veto possibility of the parents, most young people are also guided by the preferences and wishes of their parents, as regular and representative surveys of school leavers show. In the 2021 survey by the State Secretariat for Education, Research and Innovation (the so-called "Nahstellenbarometer"), 90% of young people stated that they were supported in their choice of education by their parents, and only 15% stated that they were supported by institutional career guidance. These two observations—the legal situation that requires explicit parental consent to the young people's choice of education and the strong orientation of the young people towards the advice of their parents—show that the adults who make up the sample in our survey do not have to make a very hypothetical decision; rather, it is a decision that they had to or must make if they had or have children.

4. Data and methods

The survey of public opinion on education was conducted in Switzerland between September and October 2019 by the LINK Institute on behalf of the University of Bern. The survey was carried out online. The sample analysis contains information on a total of 6014 Swiss citizens from all 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 landlines and randomly generated mobile phone numbers. To ensure the representativeness of the 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 had 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 the risk and time preferences of respondents as well as on their non-cognitive skills and traits, such as GRIT. In addition, we asked 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 of whether respondents would prefer academic over vocational education and whether providing selected information about the probability of failing in general education affects the stated preferences between VPET and academic baccalaureate schools.¹²

The empirical strategy chosen to analyse 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 for their own children

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

(hypothetically for those without children).¹³ Four answer categories were available to indicate preferences: 1) baccalaureate schools, 2) somewhat prefer baccalaureate schools, 3) somewhat prefer apprenticeship, and 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 VPET, people who choose VPET after failing in baccalaureate school and people who completed an academic general education.¹⁴ After obtaining 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 an academic ability comparable to the ability of their (hypothetical) child of successfully completing the baccalaureate was approximately 50%.¹⁶ The second treatment group received the same type of information but with a probability of success in academic education for the child of approximately 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.

The 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 a 0–10 scale, where zero means not willing and 10 means completely willing.¹⁸ Based on the original responses, we built two categorical variables. For each, the low category 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 & Quinn, 2009; Duckworth, Peterson, Matthews & Kelly, 2007). The median person in the survey scored 3.75 on a scale from 1 to 5, where the higher scores describe grittier persons. We constructed a categorical variable from these scores with low categories when the score was lower than the first quartile, medium for scores between the first and third quartiles, 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:

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

where *academic* equals 1 if the respondent prefers, or somewhat prefers, baccalaureate school and 0 otherwise. The main explanatory variables are the indicators for the three information treatments (info1–info3). Given that the information treatments are randomised 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 socioeconomic, 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 place of residence. These variables are the academic baccalaureate rate in the canton, communal population density, employment in the second and third sectors, share of foreigners, and share of people receiving social assistance. All these background characteristics are summarised 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 β_j and $j = 1, 2, \text{ and } 3$ determine the causal impact of the three information treatments on the probability that a respondent prefers the 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 *academic* = 1 when the respondent receives the additional information as opposed to the case in which the respondent does not receive the information. Finally, to conduct inference, we cluster standard errors on the community level.

5. Results

5.1. Descriptive statistics

Table 1 provides a summary of the data used in our study, in total

¹³ Even for most of the respondents with children, the question is hypothetical, either because they are not yet at the point of making this decision or because they have children who have already completed their education. We control for these different situations in our regressions with a set of regressors (see Table 4 below, comparing Panels A and B). Moreover, when restricting the sample to parents in the age range 30–49, which is the group most likely facing the actual decision of selecting an educational track for their children, the results remain stable (see Table 5 and the related discussion in the text). However, it must be noted that we are confronting respondents with a hypothetical choice situation in our survey experiment. While this does not invalidate the experimental design *per se*, individuals may understand the question differently, depending on their background, which could affect the interpretation of our findings, especially on effect heterogeneity. We discuss this in more detail when presenting the results.

¹⁴ These numbers were calculated using the Swiss Labour Force Survey 2017. The wage for people with an apprenticeship was calculated as 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. The wages for people who successfully completed baccalaureate was calculated as a weighted average of the mean of wages of people with a baccalaureate degree and people with university as the highest level of education, considering that approximately 20% with a baccalaureate degree do not continue on to university or fail to get a degree from university. Wages of individuals who failed baccalaureate school were calculated as a weighted mean of wages of people with VPET and with only compulsory school. The weights correspond to the distribution of the different educational pathways in that year.

¹⁵ Given that the choice between baccalaureate school or apprenticeship is made after compulsory school, when school leavers are young adults and most of them still minors (decisions are made, at least initially, at age 12), the preferences and support of parents play a big role in this decision.

¹⁶ This probability corresponds to the average success rate of students who enter baccalaureate schools with academic abilities that fall below proficiency level 4 in the PISA test. Participants were also informed about a 95% probability of successfully completing an apprenticeship in the two treatments info 1 and info 2. For students below PISA level 4, this approximately corresponds to the average graduation rate as obtained from the Swiss Educational Attainment and Transition Study (SEATS), while the rate for students above level 4 is slightly higher at approximately 97%. It should be noted that these rates are basically the same across language regions (differences at maximum 2 percentage points), and thus, providing respondents with a common number for the probability seems a realistic assumption for the information experiment.

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

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?

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	
centre	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	6014	4132	1373	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.

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 age distribution are similar across the regions, there are other differences between regions worth highlighting that characterise cultural differences within the country. First, the share of Swiss nationals with a migration background, a group that also shows a higher preference for academic education, is significantly higher in the French- and Italian-speaking parts. Respondents from the French-speaking area are also more willing to give up something today to benefit in the future, more willing to take risks and 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 expectations for academic education (vs. vocational education).²⁰

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 by individual characteristics that may influence these preferences and the way information treatments 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 be done not only for the overall population but also separately by language regions and other subgroups of the population.

5.2. Balance tests

The three information treatments were provided as part of a randomised 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 the 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 information about 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 randomisation was successful by comparing the background characteristics across the treatment and control groups. Table 2 summarises the results.

Overall, there were no signs that any of the background characteristics differed significantly between the control and treatment groups. This holds from a statistical point of view when using chi-square tests to compare groups (none of the p values are smaller than 10%), and it also holds from a practical point of view with very similar means and proportions across the four groups. Therefore, we find no evidence of a violation of the assumption of randomised distribution of information

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.

²⁰ Note that this information is consistent with actual relative wages in the different regions. Using the Swiss Labour 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.

Table 2
Treatment and control group balance tests.

	Treatments				Diff C/ T
	Control	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	
centre	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	1502	1512	1503	1497	

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.

treatments and can interpret changes in preferences between the control and the different treatment groups as causal effects of the information treatment.

5.3. Who prefers general academic education?

Before proceeding to the analysis of the causal impacts of the information treatments on educational preferences, we first analyse who prefers general academic vs. vocational education. To do so, we report the results of the 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 summarised in Table 3, showing

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*** (0.0929)
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: centre)				
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:

* $p < 0.05$,

** $p < 0.01$,

*** $p < 0.001$.

probability changes for each explanatory variable.

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, Busemeyer, Cattaneo and Wolter \(2020\)](#) and analyses of preferences for educational spending ([Busemeyer, Cattaneo & Wolter, 2011](#)), showing that people, in general, prefer the type of education they themselves had. When differentiating between vocational and academic education by level of education, one sees that the differences in preferences are greatest 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 of respondents with an academic background at the upper-secondary level and of 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 the 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 characterised 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, such as 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 of the older cohorts for academic education are not significantly different from those of the youngest group (< 30). In the Italian-speaking region, a similar pattern is observed.

Other significant associations are those with migration backgrounds and wage expectations. Swiss nationals with a migration background are more likely to prefer the general academic track, which could be related to culture, lack of knowledge, 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.

5.4. Effect of information treatments on preferences for academic education

[Fig. 1](#) and [Table 4](#) summarise 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. [Fig. 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. The results are shown by the three language regions. The probability of preferring academic over vocational education is

lower in the German-speaking region (56%) than in the French- and Italian-speaking regions (63% and 68%, respectively).

Providing individuals with information about expected wages at age 50 does not change educational preferences by much, and differences are mostly statistically insignificant. What truly 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 baccalaureate school are approximately 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](#)), while for respondents in the French- and Italian-speaking parts, these reductions are considerably smaller and statistically insignificant.²¹

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.

5.5. Further heterogeneities in treatment effects

In an extension of the above analysis, we aim to explore potential mechanisms driving the heterogeneity in effects across language regions. More specifically, we assess whether treatment effects vary by educational and migration background, age groups, gender, being a parent, income, and personality characteristics. It should be noted here that the focus of our analysis is on factors that potentially explain the regional differences in treatment effects, i.e., factors moderating the main effects. None of these factors confounds the main effects since treatments have been randomised.

[Table 5](#) summarises the results of the heterogeneity analysis. 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. This is an important result because it is not only consistent with previous evidence on the intergenerational transmission of education in Switzerland (e.g., [Bauer & Riphahn, 2007 & 2009](#), [Cattaneo, Hanslin & Winkelmann, 2007](#), [Falter, Wendelspiess, Juárez & Ferro-Luzzi, 2012](#)) but also highlights that differences in education across language regions cannot explain the heterogeneity in treatment effects. Moreover, we may suspect that individuals with a higher education background are better informed about the risks of failure in different educational pathways and, therefore, respond less to the information treatments. Nevertheless, our results do not support this hypothesis.

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 a migration background react with a reduction of 14.7 percentage points. While both groups responded to the treatment, the strength of the response was very different. This could be because our sample includes

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 as a key determinant of preferences for educational tracks (see [Table 3](#)).

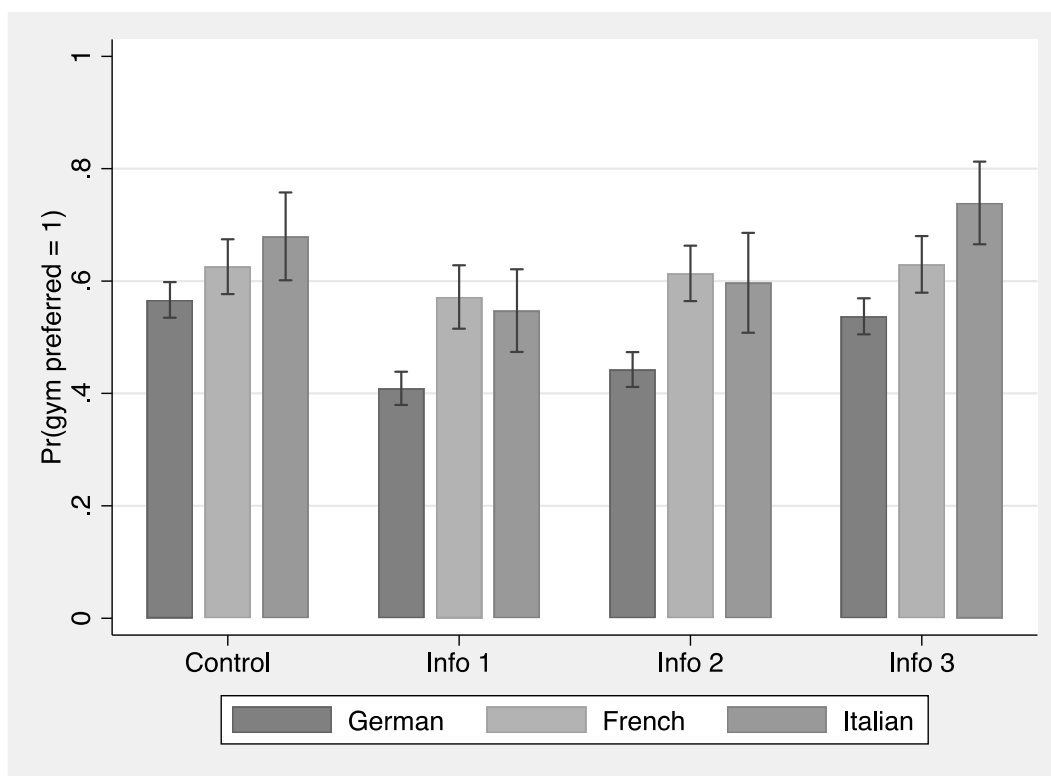


Fig. 1. Preferences for academic education by language region

Source: Survey of Public Opinion on Education 2019. Notes: Figure shows the average predicted probability of the respondents preferring academic versus vocational education for the control group and the three information treatment groups (see notes Table 2) for the German-, French- and Italian-speaking 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	6014	4132	1373	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:

* $p < 0.05$, ** $p < 0.01$,
*** $p < 0.001$.

mainly highly educated migrants. However, this could also be because migrants have a stronger attachment to academic education, and therefore, their preferences do not change even after the provision of information about the risk of failure. When we run the analysis by academic vs. vocational education background in the migrants' subsample, the results are almost identical to those reported in Table 5 for the average effects in the migrants' subsample. Moreover, even though the proportion of respondents with a migration background is higher in the French and Italian-speaking parts of Switzerland than in the German-speaking part, the heterogeneity in the reaction to the treatments by language region remains in the migrants' subsample, and therefore migration status does not explain the heterogeneity across 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-year-old group, whereas it shifts preferences in the direction of vocational education by 12.0 percentage points for the 30–39-year-old group, by approximately 15.5 percentage points for the 40–49-year-old group, and by approximately 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 in 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

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***	-0.131***	-0.0888**	-0.147***
	(0.0327)	(0.0224)	(0.0333)	(0.0213)
Info 2 (80% chance of completion)	-0.0895**	-0.103***	-0.0235	-0.131***
	(0.0310)	(0.0217)	(0.0314)	(0.0215)
Info 3 (expected wage only)	-0.00274	-0.0265	0.0169	-0.0343
	(0.0304)	(0.0223)	(0.0320)	(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	-0.120*	-0.149***	-0.177***
	(0.0409)	(0.0473)	(0.0343)	(0.0302)
Info 2 (80% chance of completion)	0.0824*	-0.0611	-0.115***	-0.196***
	(0.0397)	(0.0500)	(0.0336)	(0.0295)
Info 3 (expected wage only)	0.0695	0.0140	-0.0772*	-0.0389
	(0.0396)	(0.0500)	(0.0345)	(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***	-0.141***	-0.155***	-0.0948**
	(0.0253)	(0.0273)	(0.0243)	(0.0293)
Info 2 (80% chance of completion)	-0.134***	-0.0600*	-0.143***	-0.0271
	(0.0254)	(0.0255)	(0.0231)	(0.0281)
Info 3 (expected wage only)	-0.00991	-0.0271	-0.0377	0.0108
	(0.0255)	(0.0265)	(0.0241)	(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**	-0.148***	-0.115***	-0.145***
	(0.0345)	(0.0223)	(0.0273)	(0.0256)
Info 2 (80% chance of completion)	-0.0289	-0.124***	-0.0616*	-0.125***
	(0.0339)	(0.0213)	(0.0282)	(0.0243)
Info 3 (expected wage only)	0.0226	-0.0344	0.0148	-0.0468
	(0.0371)	(0.0211)	(0.0275)	(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***	-0.125***	-0.0829*	-0.151***
	(0.0374)	(0.0216)	(0.0327)	(0.0223)
Info 2 (80% chance of completion)	-0.0695	-0.102***	-0.0820*	-0.101***
	(0.0373)	(0.0205)	(0.0344)	(0.0207)
Info 3 (expected wage only)	0.0381	-0.0373	0.0208	-0.0348
	(0.0373)	(0.0210)	(0.0341)	(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:

* $p < 0.05$,
 ** $p < 0.01$,
 *** $p < 0.001$.

people show a nearly 14.8 percentage point lower probability of preferring academic education for info treatment 1 (50% chance of success in the academic track), and a 12.4 percentage point 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 nonsignificant 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 risk aversion, we also find differences in the reaction to the information treatments by differences in GRIT and time preferences. Overall, we find that grittier and more forward-looking individuals respond less strongly to the information treatments. However, the 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 was there a slight preference shift towards vocational education. Second, 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 However, differences in wage expectations across language regions, which are likely related to differences in local labour markets, do not seem to drive our results regarding the impacts of the information treatments.²³ This may be because evaluating the treatment effects in the model with interaction terms at the average of the relative wage expectations within region shows almost identical results to those reported in Table 4, and interactions of wage expectations with the other information treatments (including the educational risks) are insignificant, for all regions.

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

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 greater for respondents who had underestimated teachers' salaries. In contrast, 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 One point to consider is that the expected wages in the local labour market might not be the correct measure on which people base their educational choices. Depending on the place of residence people might consider labour market prospects beyond their canton, language region, or even country.

education, although the effects of the information treatment are significantly larger for the parents' group than for the non-parents' group.²⁴ This could be due to parents not wanting their child to fail in school and, therefore, could indicate 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 react more if faced with an actual decision.²⁵ While our experiment does not allow us to differentiate between these explanations, it should be noted that the general pattern of heterogeneity across language regions can also be observed in the parents' subsample.

Finally, we considered heterogeneity in the treatment effects by gender and household income. Female and male respondents have approximately the same baseline preferences for the two educational tracks, but women react slightly stronger overall to the information treatments, indicating uncertain prospects and suggesting more risk-averse behaviour, whereas the pattern for men is more indicative of a lack of knowledge. For income, we find that 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.

5.6. 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, the proportion of employees in the second and third sectors, 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 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). Given that this is mostly the case for cantons from the French- and Italian-speaking regions, we did this 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. Relatedly, some cantons in the German-speaking part of the country are not (yet) part of the so-called HarmoS concordat, which provides a legal justification for a harmonised school system in Switzerland, including the academic and vocational tracks. When excluding cantons that are not part of HarmoS, the treatment effect estimates remain basically the same. Third, we altered the model specification, estimated linear probability models instead of logistic regressions, and 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.

²⁴ The results remain stable even when we restrict the parents' subsample to the age range 30-49, with the argument that parents in this age group most likely have children about the age of transitioning from primary to secondary school, and therefore face the decision shown in our survey experiment.

²⁵ 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 than nonparents' effects, although the differences with the general population are not statistically significant.

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 certain education type, as well as information about different wage prospects associated with each type, can change respondents' preferences. There are two possible outcomes for these treatments. Either they change preferences, in which case we can assume that the population would have made different decisions without this information, or they do not change 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 the information treatment have already incorporated this information into their preferences or, on the other hand, that the information used by the researchers is irrelevant to the respondents.

The reason for our information treatment experiment is the observation that in a country such as Switzerland, with a tradition-rich and nationally uniform VPET system, people living in different linguistic-cultural regions have preferences for academic versus vocational training options, which are more orientated towards the prevailing educational models of neighbouring countries than towards the national system. In German-speaking Switzerland, preferences for the vocational model predominate, while in French- and Italian-speaking Switzerland, preferences for academic education dominate. However, because the cognitive performance requirements for a successful academic degree are relatively, if not completely, harmonised nationally, 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 because they are generally unaware of the risks, because they underestimate the risks for their children or because the preferences are so strong that they consciously accept these risks.

Our empirical results confirm not only the real-world observation that educational preferences for academic vs. vocational education stated in our survey experiment 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 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 preference towards vocational training, whereas respondents in the French- and Italian-speaking parts have practically no reaction. 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 the risk, the results suggest that their preferences for academic education – for whatever reason – are so strong that they willingly accept the risk. 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.²⁶ In other words, education policy-makers 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. Instead, additional mechanisms at the system level may be needed, such as entry exams, to prevent inefficiencies in student allocations. Such entry exams exist in some cantons, but not in all. Assessing the effect of such system changes on allocative efficiency is beyond the scope of our study, but the results we report in the paper are important in this context because they highlight the decisive role of parental preferences, and differences between language regions, in student allocations across educational tracks. This implies, that policymakers and school officials may need to take a stronger role in empowering parents to make efficient choices towards the education for their children. Such an argument would be in line with the studies of Goux et al. (2015) or Fitzenberger et al. (2020), amongst others, who demonstrate the importance of counselling in making educational choices. Since the decision of vocational vs. academic track in Switzerland at least initially is made rather early in the educational career of a child, and therefore it is to a large extent made by the parents, increased efforts to inform parents about educational pathways, including the involved risks, are perhaps needed at the local level to reach parents with different backgrounds. Anecdotal evidence suggests that in some school districts this is indeed common practice, but more systematic evidence on information provision is currently lacking. Based on our results, we can, however, argue that key information on risks is unknown to at least some groups of the population.

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 VPET in a country without a vocational 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. We also need to acknowledge the usual limitations of hypothetical choice settings as those used in our survey experiment.²⁷ However, economic arguments seem to play a minor role in our context, and it is more likely that forms of status quo bias or beliefs and perceptions about the superiority of academic education in terms of social status are more decisive.

Supporting information

Risk Paper_2nd_EER Revision
Appendix A: Supplementary results

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.econedurev.2022.102225](https://doi.org/10.1016/j.econedurev.2022.102225).

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.
- Abrassart, A., & Wolter, S. C. (2019). Investigating the image deficit of VET: Occupational prestige ranking depending on the educational requirements and the skill content of occupations. *Journal of European Social Policy*, 30(2), 221–236.
- Akerlof, A. G., & Kranton, R. E. (2002). Identity and schooling: Some lessons for the economics of education. *Journal of Economic Literature*, 40, 1167–1201.
- Altonji, J. G., Arcidiacono, P., & Maurel, A. (2016). The analysis of field choice in college and graduate school: Determinants and wage effects. In: Eric A. Hanushek, Stephen Machin, Ludger Wößmann. In *Handbook of the Economics of Education*, 5 pp. 305–396.
- Anders, J., Green, F., Henderson, M., & Henseke, G. (2020). Determinants of private school participation: All about the money? *British Educational Research Journal*, 46(5), 967–992.
- Baker, R., Bettinger, E., Jacob, B., & Marinescu, I. (2018). The Effect of Labor Market Information on Community College Students' Major Choice. *Economics of Education Review*, 65, 18–30.
- Bauer, P. C., & Riphahn, R. T. (2007). Heterogeneity in the intergenerational transmission of educational attainment: Evidence from Switzerland on natives and second-generation immigrants. *Journal of Population Economics*, 20, 121–148.
- Bauer, P. C., & Riphahn, R. T. (2009). Age at school entry and intergenerational educational mobility. *Economics Letters*, 103(2), 87–90.
- 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., & 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., & 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., & 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, A., Hanslin, S., & Winkelmann, R. (2007). The Apple Falls Increasingly Far: Parent-Child Correlation in Schooling and the Growth of Post-Secondary Education in Switzerland. *Swiss Journal of Economics and Statistics*, 143, 133–152.
- Cattaneo, M. A., Lergetporer, P., Schwerdt, G., Werner, K., Wößmann, L., & 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, Article 101876.
- Damgaard, M. T., & 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.
- Diaz, G., Grady, C., & Kuklinski, J. (2020). Survey experiments and the quest for valid interpretation. In *The Sage Handbook of Research Methods in Political Science and International Relations*, 2 pp. 1036–1052. SAGE Publications Ltd.
- Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the short Grit Scale (Grit-S). *Journal of Personality Assessment*, 91, 166–174.
- 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.
- Eugster, B., Lalive, R., Steinhauer, A., & Zweimüller, J. (2011). The demand for social insurance: Does culture matter? *The Economic Journal*, 121(556), 413–448.
- Eugster, B., Lalive, R., Steinhauer, A., & 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., & Paret, 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.
- Falter, J. M., Wendelspiess, F., Juárez, C., & Ferro-Luzzi, G. (2012). Does Tracking Shape the Intergenerational Transmission of Educational Attainment? Evidence from Switzerland. Working Papers halshs-00771941, HAL.
- Fitzenberger, B., Hillerich-Sigg, A., & Sprietsma, M. (2020). Different counselors, many options: Career guidance and career plans in secondary schools. *German Economic Review*, 21(1), 65–106.
- Golsteyn, B. H. H., & Stenberg, A. (2017). Earnings over the life course: General versus vocational education. *Journal of Human Capital*, 11(2).
- Goux, D., Gurgand, M., & Maurin, E. (2015). Adjusting your dreams? High school plans and dropout behavior. *The Economic Journal*, 127, 1025–1046.
- Green, F., Anders, J., Henderson, M., & 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 Economics and Societies Research.
- Hanushek, E. A., Kinne, L., Lergetporer, P., & Woessmann, L. (2021). Patience, risk-taking, and human capital investment across countries. *Economic Journal*, forthcoming.
- 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., & Zimmerman, S. D. (2015). The effects of earnings disclosure on college enrollment decisions. NBER Working Papers 21300. *National Bureau of Economic Research*.
- Hoxby, C., & 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., & Thaler, R. H. (1991). Anomalies: The endowment effect, loss aversion, and status Quo Bias. *The Journal of Economic Perspectives*, 5(1), 193–206.
- Kunz, J. S., & Staub, K. E. (2020). Early subjective completion beliefs and the demand for post-secondary education. *Journal of Economic Behavior & Organization*, 177, 34–55.

²⁶ This is in line with findings from Osikominu et al. (2021)

²⁷ See, for example, Diaz et al. (2020) for a discussion of the limitations of survey experiments.

- Lergetporer, P., Schwerdt, G., West, M. R., Wößmann, L., & 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., & Wößmann, L. (2020). Educational inequality and public policy preferences: Evidence from representative survey experiments. *Journal of Public Economics*, 188, Article 104226.
- Lergetporer, P., Werner, K., & Wößmann, L. (2021). Does ignorance of economic returns and costs explain the educational aspiration gap? Representative evidence from adults and adolescents. *Economica*, 88, 624–670.
- McGuigan, M., McNally, S., & 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 and ILO. (2014). Promoting better labour market outcomes for youth. In *Report on youth employment and apprenticeships prepared for the G20 Labour and Employment Ministerial Meeting*. Melbourne, Australia, 2014.
- OECD. (2010a). Off to a Good Start?. *Jobs for youth*. Paris: OECD Publishing.
- OECD. (2010b). *Learning for Jobs. OECD Reviews of Vocational Education and Training*. Paris: OECD Publishing.
- Oreopoulos, P., & 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., & Strohmeier, K. (2021). The Effects of Free Secondary School Track Choice: A Disaggregated Synthetic Control Approach, CESifo Working Paper No. 8879.
- Pekkala Kerr, S., Pekkarinen, T., Sarvimäki, M., & Uusitalo, R. (2020). Post-secondary education and information on labor market prospects: A randomized field experiment. *Labour Economics*, 66(2020), Article 101888.
- Peter, F. H., & Zambre, V. (2017). Intended college enrollment and educational inequality: Do Students lack information? *Economics of Education Review*, 60, 125–141.
- Roth, C., Settele, S., & 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., & Zafar, B. (2015). Determinants of college major choice: Identification using an information experiment. *The Review of Economic Studies*, 82(2), 791–824.
- Wölfel, O., & 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.