Tertiary Education, Changing One's Educational Decision and the Role of Parental Preferences

Bernhard Christoph[1] · **Heike Spangenberg**[2] · **Heiko Quast**[2]

Abstract

Unequal access to university and the decision processes that give rise to it are important factors in the accumulation of educational inequalities. In this paper, we investigate a specific aspect of such decision processes by focusing on those students who change their original plans to start a (nontertiary) vocational education and decide to pursue a tertiary degree instead. In doing so, we find that more than one-fifth of the students in our sample who originally planned to pursue a vocational education change their original decision in this way. Moreover, while students from a more advantaged background are more likely to go to university in the first place, those among them that initially opted for a vocational education are also more likely to change their decision and go to university instead. We also find that parental preferences for tertiary education play an important role in the process of changing one's mind, even for adult children. Moreover, we find that differential parental preferences contribute to both the emergence of social background effects and—as a result—the perpetuation of educational inequalities.

✉ Bernhard Christoph
bernhard.christoph@iab.de

Heike Spangenberg
Spangenberg@dzhw.eu

Heiko Quast
Quast@dzhw.eu

1 Institute for Employment Research (IAB), Nuremberg, Germany

2 German Centre for Higher Education Research and Science Studies (DZHW), Hannover, Germany

Introduction

In recent years, the percentage of students in Germany pursuing and obtaining a higher secondary degree[1] grew steadily until around 2010 and has since remained at a high level of approximately 50% of a cohort holding such a degree (cf. Autor:innengruppe Bildungsberichterstattung, 2022, p. 201 f.). Accordingly, pursuing a tertiary degree has become an option for an increasing number of young people. As a result, in recent cohorts, approximately 45% enter tertiary education (Autor:innengruppe Bildungsberichterstattung, 2022, p. 207/Table F3.1 web).

However, while for higher secondary degrees the increasing number of graduates has involved a reduction of social selectivity, access to higher education in Germany has remained highly selective (Lörz & Schindler, 2011; Blossfeld et al., 2015). In fact, there are indications that inequality in access to higher education has been developing less favorably in Germany than in other European countries (e.g., Barone and Ruggera, 2018; Palmisano et al., 2022). This seems to be true despite the fact that the formal requirements for university access have become less restrictive, as there is an increasing number of options for students without a higher secondary degree to enter university. Thus, master craftsmen[2], for example, might enter university without a higher secondary degree. More recently, it has also become possible to enter university with only a vocational degree and some work experience.

What politicians expected these measures to do was to allow those who had originally chosen a secondary school track that did not lead to university to reconsider and change their earlier decision and thereby reduce the social selectivity of university access. However, research has shown that instead of reducing inequality, these measures seem to have contributed to upholding it (Jacob et al., 2013), as those among the vocationally educated and master craftsmen with a more advantageous family background are more likely to transfer to a university. Thus, inequality in university access and the decision processes that give rise to it are still important factors in the accumulation of educational advantage, despite the recent increases in university enrollment.

In our paper, we focus on a very specific aspect of these decision processes, namely, students' change in their original plans to enter a vocational education and their subsequent decision to pursue a tertiary degree instead. We are particularly interested in the role of family background during this decision process. Is it those from less advantaged backgrounds who change their original decision and, thus, compensate for existing inequalities? Or is it—quite to the contrary—mainly those from more advantaged families who change their original plans, thus adding to the educational advantages they have already accumulated?

In addition, we are interested in the role of parents' preferences regarding their children's education in students' actual educational decisions. While early educational decisions usually take place in a family context or parents make decisions without their children's participation, the importance of parents in later educational decisions is unclear. However,

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[1] In the German educational system, there are two types of degrees that equip degree holders with a higher education entrance qualification. These are the "Hochschulreife/Abitur" and the "Fachhochschulreife". In principle, the "Hochschulreife" qualifies school leavers to study at all types of higher education institutions. In contrast, the "Fachhochschulreife" allows school leavers to study only at universities of applied sciences, which form the more practice-oriented tier of tertiary education in Germany.

[2] In Germany, one can only obtain a master craftsman's or equivalent degree after finishing a suitable vocational education. Often it is also required that applicants gather some work experience in their job before pursuing a master craftsman's degree.

in particular, the decision between vocational training and university education—which students usually make around the time they come of age—is often assumed to be an individual decision made by the students themselves (Müller & Karle, 1993; Hillmert & Jacob, 2003; Becker, 2017). We will test this assumption.

Throughout the remainder of this paper, we first give an overview of our conceptual framework and of the relevant literature in Sect. 2. We then state our research question and our hypotheses in Sect. 3. In Sect. 4, we introduce the data we use and the methods applied in our analyses. We present our results in Sect. 5. Finally, we discuss these results and draw our conclusions in Sect. 6.

Conceptual Framework and Literature Review

A particular feature of the educational system in German-speaking countries is vocational education[3], which offers an alternative to university studies for those who want to acquire practice-oriented qualifications that are relevant to the labor market. In Germany, for those with a lower secondary degree, a vocational education is usually the only postsecondary educational track available. In contrast, those who finish school with a university entrance qualification, which they usually acquired by earning a degree from a higher secondary school, have more options to choose from. The two major options available to these students to continue their education are either to study at a university (or at a comparable institution offering a tertiary degree) or to pursue a (nontertiary) vocational education.

The availability of these two educational alternatives should influence the decision processes of students, as well as their overall educational outcomes. Thus, some authors argue that—unlike in countries such as the U.S., where the major alternative to going to college is to enter the labor market immediately after leaving school—the sheer availability of these two educational alternatives will result in a lower percentage of potential university students actually entering university (Hillmert & Jacob, 2003).

Moreover, those who decide not to go to university but decide to pursue a vocational education instead are a rather selective group. In addition to those with (subjectively) lower chances of succeeding at university being less likely to enter university than they would be if no educational alternative were available (Hillmert & Jacob, 2003), there is also evidence that those from less advantaged backgrounds are more likely not to enter university in favor of pursuing a vocational education (Shavit & Müller, 2000; Becker & Hecken, 2008; Müller and Pollak, 2016).

To explain decision processes of this type, scholars often refer to rational choice theory. In general, rational choice models assume that a person will make decisions—such as which type of education to pursue—based on a subjective assessment of the expected costs, returns, and success probabilities entailed by the alternatives available. Based on such an assessment, this person will choose the alternative that maximizes her or his subjectively expected utility.

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[3] The German system of vocational education offers postsecondary, nontertiary courses of education with an occupation-specific focus. Vocational education offers programs that vary substantially with regard to complexity, prerequisites, or earnings potential. For more details on vocational education see, e.g., Ebner (2013) or Solga et al. (2014). For a recent and more detailed overview of postsecondary and tertiary education in Germany, see Tieben (2020).

Likely, the most influential rational choice model in educational sociology is Boudon's (1974) model of educational choices. According to Boudon, among the mechanisms that translate differences in children's class background into unequal educational outcomes, one can distinguish between primary and secondary effects of stratification. What Boudon calls primary effects of stratification are actual differences in (average) school achievement by children of different social backgrounds and the effects of these differences on later transitions in these children's educational careers. Thus, students with a university entrance qualification from a lower status home will, on average, have poorer grades than their fellow students from more privileged homes (e.g., because it is easier for wealthier parents to afford a private tutor). For this reason, lower-status students are less likely to enter a university than higher-status students.

What Boudon calls secondary effects of stratification are differences in educational choices among children of different social backgrounds that persist even when controlling for actual achievement. These secondary effects arise because persons of different social backgrounds will not only evaluate the costs and returns of (further) education differently but also differ in how they assess their chances of finishing this education successfully. The reason for this is that such evaluations are not objective but rather depend on one's own social position (Keller & Zavalloni, 1964). The higher the relative distance is to a certain goal and the lower the accessibility is of that goal—e.g., a tertiary education—for persons from a specific social background, the less likely these persons are to pursue this goal. Likewise, the higher the relative value of this goal is to persons of a specific background, the more likely these persons are to pursue this goal.

In a comparable fashion, Breen and Goldthorpe (1997) argue that an important factor driving such different evaluations is risk aversion. In this context, risk aversion means that by means of their educational decisions, students and their families try to avoid downward status mobility. Thus, parents try to prevent their children from obtaining a lower social position than they hold themselves, and accordingly, children try to attain a level of education that allows them to reach a social position that is comparable to that of their parents. To achieve this goal and avoid downward mobility, children from a higher-status home will usually need to obtain a university degree[4], while for lower-status children, a vocational education is often sufficient.[5] As a result of such processes, students with a university entrance qualification from a lower status home will not only consider their chances of successfully finishing an (additional) course of study to be lower but will also assume the

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[4] However, this is not to say that all tertiary educated parents will always and under all circumstances prefer an academic degree for their children. Instead, we follow Sewell et al.'s (1969, p. 85) statement that "*we expect that the significant others with whom the youth interacts base their expectations for his educational and occupational attainments in part on his demonstrated abilities*". Indeed, as those originally opting for a vocational education (i.e., a less-requiring educational track than that of tertiary education) included in our subsample are a selective group, their parents' preferences for their education are, in general, lower than those of the parents in the entire sample. Nevertheless, the preferences of academically educated parents in this group are still considerably more in favor of a tertiary degree than those of parents without an academic degree.

[5] While Keller and Zavalloni (1964, p. 62) also mention status maintenance and avoiding downward mobility as factors making college attendance particularly interesting for middle class students, what differentiates them from Breen and Goldthorpe (1997) is that Keller and Zavalloni's main focus is the motives of the students themselves. In contrast, what is particular about Breen's and Goldthorpe's approach—and particularly important in the context of our paper—is that they explicitly consider the educational decisions guided by these motives to be joint decisions made not only by the students but also by their parents (Breen & Goldthorpe, 1997, p. 277).

returns on obtaining an (additional) degree to be smaller than students from a higher status home.

The importance of educational qualifications for the process of status attainment is also central to status attainment theory (Blau & Duncan, 1967), which relies on the idea that there is no direct inheritance of the status of parents by their children. Instead, it is children's own education that determines their status position. However, children's educational success is not independent of their social background; rather, parents transfer their status indirectly via children's education.

Extensions of this model are particularly useful when one is interested—as we are—in analyzing parental influences on educational decisions. For our purposes, a particularly interesting extension is the Wisconsin social-psychological model of status attainment (Sewell et al., 1969; Sewell & Shah, 1967). This model complements Blau and Duncan's model by additionally including sociopsychological variables. In particular, Sewell and his colleagues add controls for the influence of "significant others" (e.g., parents or peers) in the formation of educational intentions, as well as on education obtained. In turn, these significant others' own social status might influence their expectations, such that higher-status parents should expect their children to obtain higher educational degrees. Thus, we expect that students are more likely to pursue a tertiary degree instead of a vocational education if their parents have a strong preference for the former.

However, parental influence is probably not the same at all ages of the child. While Erikson and Jonsson (1996) consider children's educational choices in general to be family decisions, they also note that this mainly applies to educational transitions made early in students' lives. As the age of the child increases, parental influences on his or her educational decisions decrease, and "the older the child is, the more will the decision be taken by him or her personally" (Erikson & Jonsson, 1996, p. 54). There are also German authors who hold concurring opinions. Hillmert and Jacob (2003) and Becker (2017), for example, argue that while parental influences might be stronger early on, students finishing school with a higher secondary degree most likely make decisions about their further educational careers more or less by themselves.

Research Question and Hypotheses

One of the research questions of our paper is whether those who finish higher secondary school will indeed make further educational decisions by themselves or whether, in contrast, parental influence is still important for older students. However, we are not merely interested in parental influence. Beyond that, we are also interested in the general characteristics of those who change their earlier decision to obtain a secondary degree and opt to pursue a tertiary degree instead. In this context, we particularly focus on the social background of the parental home.

As we discussed in the previous section, earlier research has argued that students with a higher social background are not only more likely to opt to pursue a tertiary degree in the first place (Shavit & Müller, 2000; Becker & Hecken, 2008; Müller and Pollak, 2016) but are also more likely to take "second chances" to acquire such a degree (Jacob et al., 2013). Therefore, we would expect those whose parents hold a tertiary degree to be more likely to change their educational decision than their counterparts **(H1)**.

Previous research has also shown that even though both primary and secondary effects of stratification contribute to the formation of educational inequalities, particularly at the time of transition to university, secondary effects have been shown to be considerably more influential (Becker, 2009; Schindler & Reimer, 2010). Therefore, we assume that students' final grades at school (our operationalization of primary effects) are of lower relevance for changes in their decision than are measures of expected returns on a tertiary degree, anticipated costs of university education, and subjective chances of obtaining a tertiary degree **(H2)**.

With regard to the role of parental preferences in the course of this process of changing one's educational plans, the evidence is mixed. Therefore, we have two alternative hypotheses regarding parental preferences. The social-psychological literature cited above (Sewell et al., 1969; Sewell & Shah, 1967) indicates that parents' wishes should be relevant for educational decisions. Following this strand of the literature, we would expect that students are more likely to pursue a tertiary degree than a vocational education if their parents have a strong preference for the former **(H3a)**. However, as we have also discussed, other researchers argue that older children are much more independent in regard to their educational decisions (Erikson & Jonsson, 1996; Hillmert & Jacob, 2003; Becker, 2017). Thus, given that the students in our sample are approximately 18 years of age in the first wave, the parental influence on educational decisions (which might have been stronger at a younger age) should be comparatively weak **(H3b)**.

Beyond that, we would also assume that parents' wishes should make a substantial contribution to the effects of social background, implying that controlling for their wishes should substantially reduce the relevance of students' social background **(H4)**.

Data and Variables

The relevant subpopulation in our analyses is a group of students who, at the end of secondary school, intended to pursue a vocational education but—over the next months—changed this original decision. This subpopulation represents a particular group on which political practitioners and scientists have started to focus only recently as, for example, researchers target students with information programs aiming at increasing the likelihood of students taking up university studies (e.g., Peter and Zambre, 2016; Peter et al., 2018).

For our analyses, we use data from the German School Leavers Survey (GSLS) 2010, which is carried out by the German Centre for Higher Education Research and Science Studies (DZHW).[6] This survey is a representative panel study of school leavers holding a higher education entrance qualification (in most cases the "Abitur"). It comprises a stratified cluster sample of 696 German schools that grant degrees allowing graduates to access tertiary education (Hochschulzugangsberechtigung). In these schools, all students in their final year received a request to participate in the survey approximately six months before graduation. Further interviews with the students took place one year and five years after the first

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[6] The data used for our analyses are available from the Research Data Centre for Higher Education Research and Science Studies (FDZ-DZHW). For details on data access, please refer to https://www.fdz.dzhw.eu/en. The Stata do-files used for the analysis are available from the authors on request.

Table 1 Planned and Achieved Degrees of School Leavers (N and Row Percentages)

Planned	*Achieved* Only academic degree		Only vocational degree		Academic and vocational degree		Neither of the two	
	N	row %	N	row %	N	row %	N	row %
Only academic degree	2,990	86.9	137	4.0	285	8.3	29	0.8
Only vocational degree	217 *(195)*	22.7	488 *(418)*	51.2	231	24.2	18	1.9
Academic and vocational degree	98	48.8	36	17.9	67	33.3	0	0.0
Neither of the two	238	46.5	93	18.2	66	12.9	115	22.5

Source: DZHW Panel Study of School Leavers; authors' own calculation (N=5,108)

Note: Numbers in parentheses refer to cases in the final model.

panel wave (for details, compare Spangenberg and Quast, 2016 or Heine and Quast, 2009).[7] The data allow the detailed analyses of school leavers who have a choice between pursuing either a vocational or an academic degree. Moreover, these data include a comprehensive set of potential control variables that allow for the operationalization of the theoretical concepts discussed above.

Table 1 provides a cross-tabulation of information on the educational pathways students planned to pursue before graduating from secondary school (wave 1) and the degrees they, in fact, obtained later on (wave 3). The table shows that it is rather uncommon for those planning to obtain an academic degree to change their original plans (only approximately 4% do so). In contrast, among those intending to obtain only a vocational degree, changing their original plans appears to be rather common. Specifically, almost 23% of all respondents who originally planned to obtain a vocational degree changed their decision later on.

Therefore, the processes of changing one's plans analyzed in this paper should indeed be of high relevance for educational decisions, as well as for the potential educational outcomes of the students concerned. Throughout the empirical part of our paper, we analyze the process of changing plans among those who originally intended to obtain a vocational degree. We focus only on those with clear-cut choices. This means that we exclude those students who stated that they want to obtain both an academic and a vocational degree. Moreover, we also exclude those who, after stating they wanted to pursue only a vocational degree, actually obtained both a vocational and a tertiary degree—as this might not be considered a change of their original plan but rather an extension of it.

Thus, our analyses include only those who planned to obtain only a vocational degree and either carried out this choice or changed their original plan and exclusively pursued an academic degree (n=705). After excluding cases with missing values on explanatory variables, our analysis sample includes 613 valid cases.[8]

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[7] Response rates are 49% for the first wave, 39% for the second wave and 62% for the third wave (Spangenberg & Quast, 2016). Due to the disproportionate sampling design, we applied design weights during our analyses. The design weights correct for differences in inclusion probabilities along the following variables: gender, type of secondary school, type of higher education entrance qualification, and the federal state in which the entrance qualification was obtained.

[8] For the explanatory variables in our models, the number of missing observations varies between 0 and 26. Overall, we lost 92 cases due to nonresponse. This means that nonresponse bias might be an issue. Therefore, as a robustness check, we performed multiple imputations, calculating 100 models with chained equations (Royston & White, 2011). The results of these multiple imputations are presented in Tables A1 and A2 in the appendix. As the results presented in both tables are not substantially different from those calculated without multiple imputation, we decided to report the results without imputations in the main

The dependent variable in our analyses distinguishes whether students achieved a vocational degree as originally planned (Y=0) or changed their decision and achieved an academic degree instead (Y=1).

Our central independent variable is students' social background, which we operationalize using their parents' highest level of educational attainment. In doing so, we differentiate between students with at least one academically educated parent and those whose parents have no academic degree.

The first group of explanatory variables includes school biography and school performance. School biography differentiates between the different types of upper secondary certificates available in Germany (0=applied/Fachhochschulreife vs. 1=general/Abitur). We measure school performance—an operationalization for primary effects—by the average final grade in upper secondary school. In Germany, an average grade between 1 and 4 is required for passing secondary school finals, with 1 ("very good") being the best grade and 4 ("sufficient") the poorest.[9]

We also take into account different variables operationalizing students' motives for their educational decision (secondary effects) and for opportunity structures. Anticipated chances of success are measured using students' assumed chances of successfully completing higher education (1=very low to 5=very high). We measure the benefits that students associate with the two alternative courses of education, utilizing their assessment of potential career prospects when holding a vocational training degree and when holding an academic degree (both from 1=not at all to 5=to a great extent). We combine these two variables by subtracting the assessment score for the vocational training degree from that for the academic degree. The score resulting from this subtraction indicates differences in the evaluation of the two alternatives. It ranges from +4 (indicating a more positive evaluation of an academic degree) to -4 (indicating a more positive evaluation of vocational training).[10]

In addition, we also use students' estimates of whether vocational training or an academic degree would be more likely to generate a high income (both from 1=not at all to 5=to a great extent). Similar to our indicator of career prospects, we calculate the difference between both variables to receive a relative evaluation (with +4 indicating income assessment for holding an academic degree to be particularly high and −4=indicating a comparably high assessment of potential income for holding a vocational training degree).

Another motive of students' educational decisions we consider is their intrinsic motivation for academic research. This is measured by the importance of scholarly work as a

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part of the paper. We would like to thank our colleague Dennis Föste-Eggers for practical advice on multiple imputation.

[9] In contrast to the U.S., school GPA is a much more reliable measure for student abilities in Germany. The major reason for grade variation is that in Germany education is in the responsibility of the federal states ("Bundesländer"); thus, curricula and final exams might vary between them as well. Within states, however, grades are highly comparable as in 15 of the 16 German states, examinations for the "Abitur" are centralized (i.e., all students in the state in a given year and subject will take the same exam). Moreover, grades are much more important for entering university than they are in the U.S., not least because there are no commonly used university entrance tests as e.g., the SAT or the ACT.

[10] The idea behind not only this but also further difference scores discussed subsequently is to provide information on relative evaluation—as only if respondents evaluate one option more favorably than the other should the likelihood of the respondents preferring the former be increased. In contrast, evaluating both degree types very favorably (5–5) is undoubtably different from evaluating both poorly (1–1) in many respects. However, both evaluations are identical insofar, as one would expect neither to influence respondents to choose one of the educational options over the other.

motive for their educational choice (0 = not important vs. 1 = important)[11]. Moreover, we also control for students' desire for financial independence after school (0 = not important vs. 1 = important).

While there are usually no tuition fees at German universities, going to university will create opportunity costs for students because apprentices usually receive a salary during vocational training. Thus, students might evaluate these opportunity costs to be more of a burden when striving for financial independence.

In contrast to a vocational education, going to university in most cases requires regional mobility, which can be associated with emotional costs. Therefore, we also include a variable to measure the importance of strong local ties as a motive for choosing a particular course of education (0 = not important vs. 1 = important).

We also control for the impact of opportunity structures (i.e., the availability of tertiary education institutions) on changing one's intention to pursue vocational training and entering higher education instead. For general study decisions, we already know that there is a negative effect of the distance to the closest university on university attendance (e.g., Frenette, 2004, 2006, Long, 2004, Turley, 2009, White and Lee, 2020, or, for Germany, Spiess and Wrohlich, 2010; Helbig et al., 2017). Accordingly, we would expect those living further away from the next university to be less likely to opt for a university instead of a vocational education. To operationalize distance to the closest university, we use geographic coordinates to calculate the average distance (in kilometers) between the location of students' school of graduation and the three closest universities. We group these distances into quintiles, which are included as control variables in the model.[12]

In addition, we include a measure for adverse conditions in the regional labor market. In this way, we take into account external conditions that may influence the realization of a student's original plan to pursue a vocational education. We calculate the indicator for labor market conditions at the district level[13] using principal component analysis extracting a single factor. The variables included are the local unemployment rate, the youth unemployment rate, the average SGB II benefit payments per person[14] and the employment to population ratio. What we would expect is that adverse labor market conditions make students more risk aversive, thereby making it more likely for them to stick with the (supposedly) safe choice of pursuing a vocational education.

In addition, we control whether students continued their education more or less directly after finishing school. As final exams at higher secondary schools take place before the summer break, and the terms for both vocational and university education commence in early autumn, we consider a break of up to four months between school graduation and continuing one's education to

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[11] The original questionnaire item for this variable, as well as the following variables on motives, used a six-point scale ranging from 1 ("very important") to 6 ("unimportant"). We dichotomized these items to ease interpretation.

[12] The 1st quintile refers to a distance of 0.00 to 8.43 km; the 2nd quintile refers to a distance of 8.44 to 19.62 km; the 3rd quintile refers to a distance of 19.63 to 31.08 km; the 4th quintile refers to a distance of 31.09 to 45.15 km; and the 5th quintile refers to a distance of 45.16 to 89.15 km.

[13] We define districts by the postal code of the school at which students obtained their university entrance qualification.

[14] Benefits according to the German Social Code (SGB) II—also called Unemployment Benefit II—are tax-financed, means-tested benefits that cover the minimum needs of employable persons and their dependents. A high percentage of benefit recipients in a region is a good indicator of economic problems and unemployment and/or low wage levels (for details compare BMAS 2020, esp. pp. 44 ff.). As of January 2023, the Unemployment Benefit II was replaced by the so-called Citizens' Basic Income (Bürgergeld).

constitute a direct transfer. We categorize those who took a longer break before continuing their education according to the reason for not continuing their education directly. In addition to those who did not provide a specific reason for taking such an extended break, we distinguish between those who had a longer interruption due to activities such as military or civil service, those who had problems accessing the educational track originally chosen, and those who took a longer break or orientation phase. It is the latter two groups, in particular, that we assume are more likely to have changed their original educational choice.

As we discussed in the literature review, "significant others" and their opinions might influence the formation of educational choices. Thus, in this paper, we control for the potential influences of two groups of significant others on student choices, namely, peers and parents. To control for peer-group influences, we use the percentage of classmates in the final year of graduation who are planning to go to university. We assume that a higher percentage of peers planning to go to university will exert pressure on the students in our sample to change their original choice and go to university instead.

One of the central questions of our paper is whether parental preferences are still important for young adults' educational choices, even after graduating from secondary school. In the first wave of the survey, we ask students how important it is for their parents that the students obtain an academic degree and how important it is for their parents that the students start vocational training. The response scale for both items ranges from 1 (not important) to 5 (very important). Similar to the students' evaluation of career prospects and income potential of the two alternatives, we calculate the difference between these two items. As a result, we obtain a scale for parents' educational preferences that ranges from +4, indicating a higher parental preference for an academic degree, to -4, which represents a higher parental preference for a vocational degree.

Finally, we control for gender (female vs. male), migration background (native vs. school leavers or parents born abroad), and the region in which the certificate to enter higher education was obtained (West Germany vs. East Germany).[15]

Results

In the first step of our analyses, we estimate logistic regressions on a dependent variable indicating whether students changed their original plan to pursue a vocational training degree and went for an academic degree instead. In doing so, we gradually introduce additional explanatory variables into the regression model. We report the effect size of coefficients using average marginal effects, which have the advantage of being comparable across different steps of a regression model (Mood, 2010).[16] In our case, average marginal effects indicate the change in the probability of changing one's original decision, which is associated with a one-unit change in the independent variable, holding all other variables constant.

In a second step, we apply a nonlinear decomposition (KHB method; Karlson et al., 2012) of the parental background effect to analyze the explanatory variables' contribution to

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[15] We control for the difference between the federal states located in former West Germany and those located in former East Germany (including Berlin), because substantial social and economic differences between both parts of the country persist until today.

[16] Here and throughout the discussion of our results we use the term "effect" to refer to the average marginal effects obtained in our analyses. Thus, we use this term in a purely technical sense and not to imply any form of causality.

the mediation of the background effect. We are interested in whether students' final grades in school (our measure of primary effects) are less relevant for changing one's original decision than are the (assumed) returns to a tertiary degree, the anticipated costs of university education, and the subjective chances of obtaining a tertiary degree (our measure of secondary effects), as we argued in Hypothesis 2. Moreover, we are interested in whether parental preferences for their children's education are indeed an important mediator of the social background effect, as we assumed in Hypothesis 4. Nonlinear decomposition is an ideal method with which to answer this type of question, as it indicates the percentage share that each variable or set of variables in the logistic regression models contributes to the explanation of the social background effect.

The models in Table 2 show the results of the logistic regressions. Model 1 controls merely for students' social background, as well as for basic demographic variables. The model shows that students' social background has a considerable effect; i.e., those whose parents have an academic degree are more likely to change their original decision and opt for a tertiary degree. Thus, it appears that, in accordance with our first hypothesis, students from academic families are indeed more likely to take a "second chance" and pursue a tertiary degree after all.

Model 2 adds the controls for school biography and school performance. As we expected, those with a general certificate are more likely to change their decision, while those with an applied certificate are less likely to do so. Likewise, those with poorer grades[17] are also less likely to change their original decision and instead stick to pursuing a vocational education degree.

Model 3 also includes our measures for secondary effects, namely, students' anticipated chances of success, the potential benefits students associate with an academic vs. an occupational degree, and their preferences regarding their future employment. As we expected, Model 3 shows that those who consider it more likely that they will succeed at university and who assume that a university degree will provide them with better career prospects are more likely to change their decision and pursue an academic degree. In contrast, even if students assume that an academic degree will provide them with a higher income, this assumption—contrary to our expectations—does not influence students' likelihood of changing their original choice. Moreover, in accordance with our expectations, those with a preference for scholarly work are more likely to change their original plans and pursue an academic degree. Likewise, those who strive for early financial independence and have strong local ties are less likely to change their original choice and are thus more likely to pursue a vocational degree, which provides them with income right from the start and is usually more easily available close to their home.

Comparing Models 2 and 3 also shows that including the variables that measure the secondary effects of social stratification in Model 3 substantially improves the model fit (by 0.181, i.e., from 0.094 to 0.275). In fact, it improves it more than including the variables that measure the primary effects of stratification, as seen in Model 2 (which improves the pseudo R^2 by 0.058, i.e., from 0.036 to 0.094). This supports our second hypothesis.

As Model 4—which additionally controls for opportunity structures—shows, the distance to the closest university is indeed an issue. In contrast to those in the first distance

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[17] In Germany, high numbers represent poor grades. Therefore, the negative effect displayed in the table means that there is a negative effect for changing one's original decision for those with poorer grades (=higher values). For details, compare our discussion of this variable in the "Data and Variables" section.

Table 2 Logistic Regression on Switching from a Planned Vocational Degree to Pursuing an Academic Degree

	M1 (AME)	M2 (AME)	M3 (AME)	M4 (AME)	M5 (AME)	M6 (AME)
Parents have academic degree (Ref.: no ac. degr.)	0.13**	0.11**	0.08*	0.07+	0.07*	0.05
Female (Ref.: male)	-0.14**	-0.15***	-0.12**	-0.09*	-0.09*	-0.08*
Western Germany (Ref.: Eastern Germany)	0.10*	0.12**	0.08*	0.02	0.01	0.04
With migration background (Ref.: without)	0.05	0.09	0.12*	0.13**	0.13*	0.12*
School certif.: general (Abitur) (Ref.: applied (FHR))		0.16*	0.09	0.07	0.01	0.04
Final grade in school (1 to 4; 1=very good; 4=sufficient)		-0.20***	-0.11**	-0.13***	-0.13***	-0.11**
Assumed chance of success at university			0.06*	0.06*	0.05*	0.03
Career chances (advantage of academ. vs. vocat. educ.):			0.08***	0.07***	0.06**	0.06**
High income (advantage of academ. vs. vocat. educ.)			0.02	0.02	0.02	0.02
Important: interest in scholarly work (Ref.: not imp.)			0.12***	0.13***	0.13***	0.13***
Important: financial independence (Ref.: not imp.)			-0.29***	-0.27***	-0.28***	-0.26***
Important: strong local ties (Ref.: not imp.)			-0.10**	-0.10**	-0.09*	-0.08*
Avg. dist. to 3 closest univ., 2nd quint. (Ref.: 1st quint.)				-0.12*	-0.10+	-0.10+
Avg. dist. to 3 closest univ., 3rd quint. (Ref.: 1st quint.)				-0.11*	-0.09	-0.10+
Avg. dist. to 3 closest univ., 4th quint. (Ref.: 1st quint.)				-0.17**	-0.15**	-0.13*
Avg. dist. to 3 closest univ., 5th quint. (Ref.: 1st quint.)				-0.11+	-0.10+	-0.11+
Local labor market (adverse conditions)				-0.05*	-0.04+	-0.03
>4 mon. unt. contin. edu., no reason for delay (Ref.: <= 4 Mon.)				0.10	0.08	0.09
>4 mon. unt. contin. edu., probl. access. edu. (Ref.: <= 4 Mon.)				0.12*	0.11+	0.13*
>4 mon. unt. contin. edu., long-term interrupt. (Ref.: <= 4 Mon.)				0.11*	0.11+	0.11*
>4 mon. unt. contin. edu., break/orient./other (Ref.: <= 4 Mon.)				0.25***	0.25***	0.24***
Peer effects (proportion [0 to 1] planning to go to univ. per school)					0.37**	0.28*
Parents' pref. for acad. education (imp. acad. - imp. voc.)						0.06***
N	613	613	613	613	613	613
Pseudo R² (McFadden)	0.036	0.094	0.275	0.318	0.328	0.362
Adjusted Pseudo R² (McFadden)	0.025	0.078	0.245	0.268	0.276	0.308

Source: DZHW Panel Study of School Leavers; authors' own calculation; weighted results. $+ = p < 0.10$; $* = p < 0.05$; $** = p < 0.01$; $*** p < 0.001$

quintile (i.e., those for whom the average distance to the closest three universities is not more than 8.43 km), students in the other distance quintiles are less likely to opt for university studies instead of a vocational education.

In contrast to earlier results, adverse local labor market conditions are shown to increase the likelihood of students opting for a university degree instead of a vocational education. Thus, students do not opt for the seemingly safe choice of obtaining a vocational degree but rather decide to go for a higher-tier (university) education; they do so probably to leave the adverse local labor market they come from.

Moreover, as we expected, those who have problems accessing their chosen course of (vocational) education, those who take longer breaks and—in particular—those who take a break for orientation purposes are more likely to change their earlier educational decision.

Model 5 also controls for peer effects. As expected, students at schools in which a high percentage of students opt to go to university are also more likely to change their original choice and go to university instead of pursuing a vocational degree.

As Model 6 shows, parents' (perceived) preferences also have a highly significant effect on students' revision of their decisions. In accordance with Hypothesis 3a, students who perceive that their parents have a strong preference for university education are more likely to change their original decision and pursue a tertiary degree instead of a vocational education. Accordingly, we have to reject Hypothesis 3b, which—based on specific strands of the literature—assumed that students at this age would make educational decisions independent of their parents. Instead, we must conclude that even for adult students, parental preferences are a relevant factor in educational decision-making.

In addition, when comparing the different models, it is striking that the size of the social background effect constantly decreases as we add additional control variables to the model. Ultimately, after controlling for parental preferences in the last model, the background effect even becomes insignificant.

This poses the question of how much the controls added at each modeling step actually contribute to the reduction in the observed background effect (confounding). To answer this question, we use a nonlinear decomposition (Karlson et al., 2012). The nonlinear decomposition procedures we use provide information on the total percentage of the effect of the social background variable in the reduced Model (M1) that is due to confounding factors; i.e., it is mediated by additional independent variables/mediators. Moreover, the procedure shows which part of the total mediation percentage is due to the individual mediators included in the full model (M6) (for technical details, see Kohler et al., 2011).

Table 3 displays the results obtained by applying this procedure. To ease interpretation, in addition to the confounding percentage contributed by the individual variables, we also include percentages for the groups of variables discussed above. The first interesting result is that the variables operationalizing primary effects of stratification make no relevant contribution to the overall confounding percentage (1.58%). In contrast, the variables for secondary effects of stratification contribute substantially (22.66%, which is approximately one-third of the total confounding percentage). Likewise, while the contribution of peer effects is moderate (4.16%), the contribution of parental preferences is substantial (22.01%, which is by far the largest contribution of a single variable). The variables for opportunity structures and demographic controls both make a medium contribution (6.25% and 8.35%, respectively).

Table 3 Nonlinear Effect Decomposition for Mediation of the Social Background Variable

Effect decomposition	Coeff. (AME)	by group:
Reduced model	0.134	
Full model	0.047	
Difference	0.087	
Confounding percentage	**65.41**	**by group**:
Female (Ref.: male)	4.16	**6.25**
Western Germany (Ref.: Eastern Germany)	-0.47	
With migration background (Ref.: without)	2.56	
School certif.: general (Abitur) (Ref.: applied (FHR))	2.40	**1.58**
Final grade in school (1 to 4; 1 = very good; 4 = sufficient)	-0.82	
Assumed chance of success at university	1.87	**22.66**
Career chances (advantage of academ. vs. vocat. educ.):	5.78	
High income (advantage of academ. vs. vocat. educ.)	0.37	
Important: interest in scholarly work (Ref.: not imp.)	4.66	
Important: financial independence (Ref.: not imp.)	7.92	
Important: strong local ties (Ref.: not imp.)	2.06	
Avg. dist. to 3 closest univ., 2nd quint. (Ref.: 1st quint.)	0.62	**8.35**
Avg. dist. to 3 closest univ., 3rd quint. (Ref.: 1st quint.)	0.47	
Avg. dist. to 3 closest univ., 4th quint. (Ref.: 1st quint.)	2.16	
Avg. dist. to 3 closest univ., 5th quint. (Ref.: 1st quint.)	2.17	
Local labor market (adverse conditions)	-1.80	
>4 mon. unt. contin. edu., no reason f. delay (Ref.: <=4 mon.)	1.88	
>4 mon. unt. contin. edu., probl. access. edu. (Ref.: <=4 mon.)	-0.74	
>4 mon. unt. contin. edu., long-term interrupt (Ref.: <=4 mon.)	-0.83	
>4 mon. unt. contin. edu., break/orient./other (Ref.: <=4 mon.)	4.42	
Peer effects (proportion [0 to 1] planning to go to univ. per school)	4.16	**4.16**
Parents' pref. for acad. education (imp. acad. - imp. voc.)	22.01	**22.01**

Thus, while family background is indeed an important predictor of students' likelihood to change their original decision to pursue a vocational education and decide to go to university instead, it seems that this effect is largely mediated by other variables. The largest part of this mediation is—in accordance with Hypothesis 2—due to different motives and evaluations held or made by students from different social backgrounds and—as assumed in Hypothesis 4—by their parents having different preferences regarding the students' future education. The latter result is particularly interesting, as it not only shows that parents and their preferences still substantially contribute to their adult children's educational decisions but also that by influencing their children's decisions in this way, parents' preferences make a substantial contribution to the reproduction of social inequalities—at least in the group observed in our analyses.

Conclusion

Building on a rational choice-based conceptual framework represented, e.g., by the works of Boudon (1974) and Breen and Goldthorpe (1997), we analyzed students who before leaving school planned to pursue a vocational education but later on changed their decision

and went to university instead. In doing so, we were interested in analyzing the factors that are connected to this decision, particularly with regard to the social background of these students.

Summarizing our results, we argue that there are three main takeaways. First, while the students with a higher secondary degree who originally decide to continue their education at a university rarely change this original choice, among those who originally intend to pursue vocational training, changing their original decision is a rather common event. Approximately one in five does so. Thus, for many of these students—particularly (and in accordance with the status-maintenance argument provided by Breen and Goldthorpe, 1997) for those with a higher social background—pursuing a vocational education might have been a less-than-ideal solution in the first place. As many more complex and/or white-collar occupations—at least de facto—require a higher secondary degree to access vocational education, this lack of attractiveness of vocational education programs for school-leavers might become a problem for many employers.

Moreover, this result also has an important methodological implication, namely, that studies focusing on study intentions rather than on actual study decisions might underestimate social disparities when analyzing social inequalities of university access.

Second, students' social background is an important predictor of changing their original decision and—in the end—going to university instead of pursuing a vocational education degree. Thus, similar to what has been documented for other "second-chance options", e.g., pursuing a university degree after finishing a vocational education (Jacob et al., 2013), it is mainly those who are already more likely to go to university in the first place who are also more likely to take advantage of such a second chance. Therefore, the processes of changing one's original decision described in this paper do not contribute to reducing educational inequality but are, in fact, inequality enhancing processes.

Third, notwithstanding earlier results suggesting that parental preferences should be of rather low importance for adult children's educational decisions (Erikson & Jonsson, 1996; Hillmert & Jacob, 2003; Becker, 2017), we found that parental preferences still matter even at this age. Moreover, we have shown that parental preferences for tertiary education not only play an important role in the process of changing one's original decision but also make an important contribution to explaining the social background effect. Thus, it appears that not only are the educational decisions of grown-up children still strongly influenced by their parents' preferences but also that by thus influencing their children's decisions, parents contribute to the emergence of social background effects and—as a result—to the perpetuation of educational inequalities.

A major downside of our study is that we have no detailed information on the reasons behind the behaviors we observed and the actual interactions between parents and children. Thus, while we know that nonacademic parents are less in favor of tertiary education than academic parents, we have no evidence on the reasons that give rise to this difference. While following Breen and Goldthorpe (1997), we would assume that the motive of status maintenance plays an important role in this process, there might be alternative or additional reasons, e.g., that nonacademic parents prefer their children to pursue a career comparable to their own (e.g., to continue their parents' business).[18] However, with the data at hand, we cannot distinguish between such alternative explanations.

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[18] We thank one of the anonymous reviewers of this paper for making us aware of this point.

Moreover, we do not know anything about the interaction processes that occur between parents and children on this issue. In general, there should be a broad range of potential interactions ranging from a rather sublime influencing of children by their parents to rather conflict-laden situations, in which parents, e.g., deny their children financial (or other) support for university studies. In our view, both of these questions are interesting and might be suitable objects of future research.

From a policy perspective, it is important to note that the decision processes of students after finishing school are subject not only to the influences discussed in this paper. Rather, there is the potential to target students by policy interventions aiming to increase the take-up of tertiary education and to reduce social inequality in doing so. As recent experimental studies (e.g., Ehlert et al., 2017; Peter et al., 2021) have shown in the German context, if designed appropriately, then information treatments—e.g., on opportunities to enter university, financial issues, or returns on tertiary education—indeed have the potential to increase university enrollment. Moreover, Peter and her colleagues (Peter et al., 2021) argue that targeting not only students but also parents with such information treatments might improve their effectiveness. Our results on the importance of parental preferences for students' decisions support their position that targeting not only students but also their parents with information treatments on university studies might be a suitable measure with which to increase the take-up of university studies and reduce social inequality among those doing so.

Appendix

Table A1 Logistic Regression on Switching from a Planned Vocational Degree to Pursuing an Academic Degree (with multiple imputation of missing data)

	M1 (AME)	M2 (AME)	M3 (AME)	M4 (AME)	M5 (AME)	M6 (AME)
Parents have academic degree (Ref.: no ac. degr.)	0.13***	0.12**	0.08*	0.07*	0.07*	0.05
Female (Ref.: male)	-0.14**	-0.15***	-0.12**	-0.08*	-0.08*	-0.07+
Western Germany (Ref.: Eastern Germany)	0.09*	0.12**	0.08*	0.03	0.03	0.05
With migration background (Ref.: without)	0.04	0.09	0.11*	0.12**	0.11*	0.10*
School certif.: general (Abitur) (Ref.: applied (FHR))		0.14*	0.08	0.06	-0.01	0.01
Final grade in school (1 to 4; 1=very good; 4=sufficient)		-0.21***	-0.12***	-0.14***	-0.14***	-0.12***
Assumed chance of success at university			0.05*	0.06*	0.05*	0.03
Career chances (advantage of academ. vs. vocat. educ.):			0.08***	0.07***	0.07***	0.06**
High income (advantage of academ. vs. vocat. educ.)			0.02	0.02	0.02	0.02

Table A1 Logistic Regression on Switching from a Planned Vocational Degree to Pursuing an Academic Degree (with multiple imputation of missing data)

	M1 (AME)	M2 (AME)	M3 (AME)	M4 (AME)	M5 (AME)	M6 (AME)
Important: interest in scholarly work (Ref.: not imp.)			0.11***	0.12***	0.12***	0.12***
Important: financial independence (Ref.: not imp.)			-0.27***	-0.25***	-0.26***	-0.25***
Important: strong local ties (Ref.: not imp.)			-0.10**	-0.09**	-0.08*	-0.08*
Avg. dist. to 3 closest univ., 2nd quint. (Ref.: 1st quint.)				-0.08	-0.07	-0.06
Avg. dist. to 3 closest univ., 3rd quint. (Ref.: 1st quint.)				-0.09+	-0.07	-0.07
Avg. dist. to 3 closest univ., 4th quint. (Ref.: 1st quint.)				-0.14**	-0.12*	-0.10+
Avg. dist. to 3 closest univ., 5th quint. (Ref.: 1st quint.)				-0.05	-0.04	-0.04
Local labor market (adverse conditions)				-0.04*	-0.03	-0.02
>4 mon. unt. contin. edu., no reason for delay (Ref.: <= 4 Mon.)				0.09	0.07	0.08
>4 mon. unt. contin. edu., probl. access. edu. (Ref.: <= 4 Mon.)				0.14*	0.13*	0.15**
>4 mon. unt. contin. edu., long-term interrupt. (Ref.: <= 4 Mon.)				0.15*	0.14*	0.14*
>4 mon. unt. contin. edu., break/orient./ other (Ref.: <= 4 Mon.)				0.27***	0.27***	0.25***
Peer effects (proportion [0 to 1] planning to go to univ. per school)					0.35**	0.26*
Parents' pref. for acad. education (imp. acad. - imp. voc.)						0.06***
N	705	705	705	705	705	705

Source: DZHW Panel Study of School Leavers; authors' own calculations; weighted results. + = $p < 0.10$; * = $p < 0.05$; ** = $p < 0.01$; *** $p < 0.001$

Table A2 Nonlinear Effect Decomposition for Mediation of the Social Background Variable (with multiple imputation of missing data)

Effect decomposition	Coeff. (AME)	
Reduced model	0.136	
Full model	0.048	
Difference	0.088	
Confounding percentage	64.81	**by group**:
Female (Ref.: male)	3.52	**4.39**
Western Germany (Ref.: Eastern Germany)	-0.84	
With migration background (Ref.: without)	1.71	
School certif.: general (Abitur) (Ref.: applied (FHR))	0.65	**1.72**
Final grade in school (1 to 4; 1 = very good; 4 = sufficient)	1.07	
Assumed chance of success at university	1.57	**25.49**
Career chances (advantage of academ. vs. vocat. educ.):	8.51	
High income (advantage of academ. vs. vocat. educ.)	1.24	
Important: interest in scholarly work (Ref.: not imp.)	2.75	
Important: financial independence (Ref.: not imp.)	8.76	
Important: strong local ties (Ref.: not imp.)	2.66	
Avg. dist. to 3 closest univ., 2nd quint. (Ref.: 1st quint.)	0.12	**7.68**
Avg. dist. to 3 closest univ., 3rd quint. (Ref.: 1st quint.)	-0.46	
Avg. dist. to 3 closest univ., 4th quint. (Ref.: 1st quint.)	2.43	
Avg. dist. to 3 closest univ., 5th quint. (Ref.: 1st quint.)	0.75	
Local labor market (adverse conditions)	-1.15	
>4 mon. unt. contin. edu., no reason f. delay (Ref.: <=4 mon.)	1.88	
>4 mon. unt. contin. edu., probl. access. edu. (Ref.: <=4 mon.)	-0.65	
>4 mon. unt. contin. edu., long-term interrupt (Ref.: <=4 mon.)	0.16	
>4 mon. unt. contin. edu., break/orient./other (Ref.: <=4 mon.)	4.60	
Peer effects (proportion [0 to 1] planning to go to univ. per school)	3.98	**3.98**
Parents' pref. for acad. education (imp. acad. - imp. voc.)	21.55	**21.55**

Source: DZHW Panel Study of School Leavers; authors' own calculations; weighted results

Declarations

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