SN Soc Sci (2023) 3:194
https://doi.org/10.1007/s43545-023-00780-x

ORIGINAL PAPER

High hopes but aiming low? Explaining why some families with high educational aspirations do not choose the academic track in German secondary education

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Received: 13 December 2022 / Accepted: 3 October 2023 / Published online: 6 November 2023

Abstract

Selecting a school track after primary schooling is an early and highly influential decision families have to make in the German educational system. Usually, families with high educational aspirations choose the academic track since it is the direct pathway to higher education eligibility, yet there are families selecting another track. Explaining this decision is highly relevant since it is known that other tracks can divert aspirations away from the initial high goals, resulting in overall lower educational achievements. The present study analyzes the National Educational Panel Study (NEPS) dataset to investigate predictors of academic track selection ($N > 1500$). As dominance analyses show, the overall share of variance that all factors can explain is relatively low (ca. 13%), and only the teacher recommendation and the federal state of residence contribute meaningfully to this total share. Overall, it remains unclear what drives the decision, and other explanatory approaches should be investigated.

Keywords Secondary track choice · Tracking · Aspirations · NEPS · Dominance analysis

Introduction

The German educational system can be described as highly and early tracked, since students are sorted into up to four qualitatively different school tracks after primary school, aged around ten years old (Eckhardt 2017). As decades of past research have shown, this sorting has significant and long-lasting consequences for the entire life course as various tracks open or close educational and occupational pathways (Breen et al. 2012; Ditton and Krüsken 2010; Neugebauer et al. 2013). Of particular relevance

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is that students with initially high educational aspirations often lose them if they transfer to a non-academic track, resulting in lower educational achievements (Bittmann and Schindler 2021). Even though reforms in the last decades have aimed to make the system more permeable in general, such as introducing options to upgrade lower educational qualifications directly, it is out of the question that the decisive character of the first school track decision is still evident. While in the past, the decision for or against certain school tracks was entirely up to the class teacher in the final school year of primary school and was aimed to be based upon academic performance due to the meritocratic nature of the system, most federal states have abolished this binding character of the teacher recommendation, and it is up to the parents to make a final decision that can overrule the teacher (Bittmann 2021b). Hence, parents have gained much influence and can theoretically choose even the most academically demanding track, even if the prior performance of the student was low, underlining the influence significant others can have besides the teachers (Zimmermann 2018). This fact opens up a large number of highly relevant research questions, as it is crucial and interesting to understand how parents make a decision with this newly gained freedom of choice. One could argue that parents should always choose the academic track (*Gymnasium*) since it opens up most opportunities and access to all tiers of tertiary education. However, this would be naive since students can still fail in the academic track and be transferred to a lower schooling track, resulting in sunken costs (Gabay-Egozi et al. 2010). Seen analytically, parents have to consider quite a large number of parameters to make an optimal choice for the future success of their children given the manifold options the German system offers, such as educational upgrading (Esser and Kroneberg 2020).

To be concrete, the study attempts to explain why some families with overall high educational aspirations (that is for the *Abitur*) do not select the most ambitious school track for their children in secondary education. Why not go the direct pathway if the final goal should be the *Abitur*? At this point, it needs to be better understood what drives this decision. The following analyses aim to shed more light on this riddle. Summarized, there are two main research questions. The first one is more descriptive and asks: given a sample of families with overall high aspirations, how do the ones entering the academic track differ from the ones choosing any other track with respect to a large set of variables? This is the first step to understand better how these groups differ and what can drive the decision. The second one then goes a step further and asks how much variance of the decision to enter the academic track can be explained by the relevant variables. This is useful to gauge the relative influence of these variables on the decision. Answering these questions might be useful to create interventions to guide parents and students when facing this challenging decision.

Theoretical framework

Rational choice or social influence?

There are two major sociological frameworks that are useful to explain how (educational) decisions are made. The first comprises theories of rational choice (RC).

It is assumed that agents are rational and plan future decisions best to their current knowledge (Breen and Goldthorpe 1997; Stocké, 2012). To make a decision, all feasible options are assessed with three components: the benefit, the probability of success and the costs. The overall rating or utility of an option is the product of benefit and probability of success minus the costs. To be concrete, at the end of primary education, families face the decision about the school track in secondary education. To simplify, we consider this to be a binary decision, that is, choosing the academic track or not. This simplification is justified for several reasons: first, the academic track exists in all German federal states, while the other tracks can slightly differ, sometimes having different names, or slightly different objectives. Second, the academic track is the only track that concludes secondary education with the *Abitur*. All other tracks require further decisions or sequential educational upgrading, even if feasible within a school (for example, in comprehensive schools where multiple tracks are combined).

To come to a rational decision, the family has, therefore, to put a value on each of the parameters. The *benefit* can depend on various aspects, especially the social origin or status of the family. This is a classical argument of status-maintenance hypotheses (Breen and Yaish 2006). The *probability of success* mainly depends on the child's academic performance since this is the main factor that predicts whether the *Abitur* can be acquired. Finally, the *costs* must be gauged. While the German educational system is public and free of charge, there are some minor costs (e.g., materials for the class like office supplies) and especially opportunity costs. Since the academic track takes the longest time, students enter the labour market later. Additionally, there can be non-monetary costs, such as stress or effort, that must be invested to acquire a certificate (e.g., learning, doing homework, and time spent at school). As long as families can estimate all three parameters correctly, their final decision is rational.

The second major framework assumes that decisions are mostly driven by social influences. Children usually learn their values and goals from their parents and significant others (e.g., relatives, friends, teachers, and individuals of status relevant to the child). There is less rational deliberation but simply the goal to conform to the wishes and desires of other people that are internalized in the process. The most relevant formalization of this framework is the Wisconsin Model of status attainment, which has been a central part of social research for more than 50 years (Sewell et al. 2003; Sewell and Hauser 1980). For the given example, students usually follow their parents' wishes, especially since they are still relatively young but teachers and friends can also be influential. These significant others teach the child about values and goals in life, which contribute to the formation of general, educational and occupational aspirations, even when no rational arguments are available.

As prior research shows, both theories are correct to some extent and can predict and explain educational decisions (Zimmermann 2020). Instead of a straightforward binary right/wrong choice, the reality is more subtle and requires us to rank the relative influence of both models. The main question is now how aspirations are related to this decision. Classically, aspirations are defined as the "cognitive orientational aspect of goal-directed behavior" (Haller 1968, p. 484) and are highly relevant since they allow us to predict a decision much in advance. Aspirations, which can

easily be traced over time, make it possible to see how things change and why. For the given research question, we face a puzzle. Overall, the entire family has high aspirations, that is, for the *Abitur*, yet still opts for a non-academic pathway. One explanation is risk aversion or hedging (Gabay-Egozi et al. 2010). Since some parents believe that the probability of success in the academic track is not very high, they decide to complete a lower track first, which also awards a degree and then use sequential upgrading to obtain the final goal. This can be seen as a rational approach to decisions made under uncertainty, yet it also comes with downsides, especially since many students lose their initially high aspirations in non-academic pathways. Of course, there can be other explanations, such as a general lack of knowledge of the German educational system or even psychological ones. Overall, it is currently somewhat puzzling to explain why high aspirations are not acted upon in some families. The following analyses attempt to give some more new insight by testing a large number of potential explanatory factors. Since this can be regarded as an explanatory analysis, no concrete hypotheses are formulated at this point.

Prior research

Due to its significant influence on further educational and occupational trajectories, track choice after primary schooling has already been well-researched. One main goal has been to estimate the influence of both primary and secondary effects of social influence (Boudon 1974). Here, primary effects are differences between pupils that are due to academic performance. Secondary effects are differences in decisions, even when performance is held constant. Newer research also attempts to account for tertiary effects, which are effects due to differences in how teachers rate students (Esser and Hoenig 2018). Overall, as the German system attempts to select on abilities, grades and performance are usually seen as the most relevant explanatory factors. Summarized, the most relevant variables predicting and explaining track choice are grades (Kristen 2002; Kurz and Paulus 2008; Neugebauer 2010), social origin and parental education (Ditton and Krüsken 2010; Maaz and Nagy 2010), ethnic origin (Becker et al. 2022; Billmann-Mahecha and Tiedemann 2006; Gresch 2012), parental aspirations (Bittmann 2022), cultural capital of the family (Gerleigner and Aulinger 2017), parental subjective assessment of the utility of higher education (Becker 2000), recommendation of the class teacher in grade 4 (Ditton and Krüsken 2010), and effects of social composition of the classroom (especially social and ethnic origin) (Gröhlich and Guill 2009). While risk aversion of the mother is negatively correlated with choosing the academic track (Wölfel and Heineck 2012), the personality traits of the child itself are apparently without significant influence (Usslepp et al. 2020). Most studies base their conclusions on the statistical significance of their independent variables which are usually tested in some form of regression model. A comprehensive study assessing the relative influence of primary and secondary effects comes to the conclusion that 41% of the difference between social groups is due to primary effects and the other 59% are attributed to secondary effects (Neugebauer 2010). In federal states with a non-binding teacher recommendation, this share of secondary effects is even slightly higher

(61%). While these studies demonstrate in general that the most relevant predictors of track choice have already been identified, there are two major research gaps.

The first is that their relative influence is usually not tested, meaning that it remains unclear how much influence a certain variable exerts in relation to all other variables in the model. The second gap concerns the samples used, which are usually student samples. This is fine to make statements about the general population, yet the present study has a quite special subpopulation under consideration, that is, families with overall high aspirations. It is clear that this can influence the findings as this is a rather selective sample that differs from the overall population. Summarized, the following analyses contribute to the literature by a.) shifting the focus to this special (yet rather large group), b.) utilizing an advanced statistical approach to decompose the relative predictive power of a large number of variables for more insight, and c.), quantifying the uncertainty around these statistics, which is relevant for inference.

Empirical analyses

Data and sample

For the following analyses, the German National Educational Panel Study (NEPS) will be used as it provides a unique collection of relevant variables in a panel setting (Blossfeld and Roßbach 2019; NEPS Network 2020). To be concrete, starting cohort 2 (SC2) is the source, where students were first sampled in 2011 when they were in kindergarten, aged around four years old.[1] Students, parents, educators and teachers were then repeatedly surveyed about once per year. By doing so, panel data are available up to wave 10 of the survey (2020/21). The data are well suited for the planned analyses since they contain a rich set of information about aspirations, sociodemographic background variables, grades, performance, and psychological measurements. They enable researchers to trace the entire educational trajectories in primary school and the transition into secondary schooling, which is the highest priority for the given research questions.

The total sample is restricted as follows: the dependent variable, the track chosen in secondary education, is measured in wave 7 of the panel in 2016/17, where 4,220 students participated. To avoid imputing this critical information, only students are considered who participated in that wave. Next, only students are considered living in federal states where the recommendation of the class teacher in grade 4 is non-binding, meaning that parents can overrule this recommendation. At the time of the survey, this was not possible in the states of Bavaria, Berlin, Brandenburg, Saxony, and Thuringia. In these states, the teacher recommendation hence puts a hard limit on the track choice as parents cannot send their child to a more demanding track

[1] This paper uses data from the National Educational Panel Study (NEPS). The NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi, Germany) in cooperation with a nationwide network.

(only a lower one than recommended); in Berlin, the time of tracking is later. Since this restricts the decision-making process of the parents, these states are not considered in the analyses, leaving a sample of 3,157 students. Next, students who report a mental or physical disability are not considered since the decision-making process might be quite different due to the different situation the child is in, removing another 23 students. Next, all cases are removed where not a single aspiration item was available in grade 3 or 4 due to item-nonresponse. These cases are not considered as this can result in poor imputation results. This leaves a total of 3,031 cases. For the following analyses, the sample is restricted to cases with overall high aspirations of both parents and their children, leaving a final sample of 1,522. To arrive at a robust measurement of "overall high aspirations", only families are retained where the student and the responding parent report that they think that the Abitur can be realistically obtained in two waves (grade 3 and 4). This means that these families have overall high, consistent (between parents and children), and temporally stable aspirations. Missing information will be imputed (for details, see further below).

Operationalization

The dependent variable measures whether or not the student has factually transferred to the academic schooling track (*Gymnasium*) in secondary education. If any other track has been chosen (*Hauptschule*, *Realschule*, or comprehensive school), this variable has the value 0.

To measure the aspirations of the family, realistic educational aspirations are measured. For the students, this item is as follows: "If you think about everything you know now: Which qualification do you think you'll actually leave school with?". Realistic aspirations were chosen since they are closer to the factual decision as they do not measure some idealistic wishes and desires but ask the student to take restrictions (like bad grades) into account. This item is available for students and their parents in grades 3 and 4. A somewhat restrictive definition for "high aspirations" was chosen as follows: if both the student and the parents opted for the higher educational eligibility qualification (*Abitur*) in both school years, this case was classified as having high aspirations; otherwise, not. This means that cases classified this way have temporally stable aspirations and also an agreement between parents and children, meaning that no family-internal dissent is present. For a better overview, the following explanatory variables are grouped by topic.

Academic performance, grades and teacher's assessment

Objective academic performance is measured by cognitive tests conducted within the NEPS survey in mathematics and reading. These tests are standardized, so all students in the sample receive the same tests, rendering them highly comparable. This is a contrast to regular schooling grades, which are assigned by the class teachers and include a sizeable subjective part. For more information on the testing framework, refer to Pohl and Carstensen (2012). The grades assigned by the teacher measure subjective academic performance. The grades of mathematics and

German were averaged over grades 3 and 4. The traditional German scale, with 1 being the best and 6 the worst grade, was reversed with values from 0 (worst) to 5 (best) for a more convenient interpretation. Grades are reported by the parents. To get further information about the performance, class teachers in grade 4 were asked to rate the performance of each student on various dimensions (like social skills, the ability to concentrate, oral and written skills, and knowledge about math and nature). This instrument contains a total of 5 items and has high reliability (Cronbach alpha = 0.889). The track recommendation by the class teacher is available in grade four. This is a binary item (recommendation for the academic track or any other track).

Social origin and parental education

The average household income is measured and adjusted by the OECD definition regarding the number of adults and children in the household. This variable is then logarithmized to ease statistical inference. It measures the overall financial situation of the family. The median value is taken if the information is available for multiple survey waves prior to grade 5. The ISEI (International Socio-Economic Index of Occupational Status) is a measurement of the social status of the family and depends on the occupations held by the parents. If both parents report an ISEI value, the average was taken; otherwise, the only available one. The ISEI ranges from 16 to 90, where higher values stand for higher occupational prestige. The educational level of both parents is measured with the CASMIN scale with five distinct levels: low degree (*Hauptschulabschluss*) or no degree / intermediate degree (*Mittlere Reife*) / higher education entrance qualification (*Abitur*) / university of applied science degree (*Fachhochschulabschluss*) / any other tertiary degree from a university.

Socio-demographic background

Included are also the gender of the child (male and female) and the age, measured in grade 4 (reference date is January 2016). The migration status is measured with three levels (both parents born in Germany, one parent born abroad, and both parents born abroad). The interaction language between mother and child is reported by the child and binary (always or mostly German coded with 1, 0 otherwise). It is measured whether the parents are living together in a nuclear family in grade 4 or not (including divorced or widowed). The total number of individuals in the household is also included. The federal state of residence in grade 5 is coarsened due to some small case numbers in a few states as follows: Saxony-Anhalt, Hamburg, Bremen / Lower Saxony / North-Rhine Westphalia / Hesse / Rhineland-Palatinate, Saarland / Baden-Württemberg / Mecklenburg-Vorpommern, Saxony-Anhalt. Due to data protection regulations of the NEPS, no descriptive information about the distribution of federal states will be presented.

Rational choice components

Following the theoretical arguments, the NEPS contains various items to measure rational choice components directly. The first is the benefit of having the *Abitur*: "What do you think, how good would your prospects of getting a good job be with the [Abitur]?" The scale is from 1 ("very bad") to 5 ("very good"). with five distinct levels. This item is available for students and parents and is measured in grade 3. The probability of success is measured in a similar fashion with the following item: "How likely do you think it is that you could obtain the Abitur?". The scale goes from 1 ("very unlikely") to 5 ("very likely") with five distinct values. Again, this item is measured in grade 3 and is available for students and parents. The parental knowledge of the German educational system is measured with a short quiz using ten items in question form. The items measure, for example, if respondents know what educational qualification is required for specific occupations, how long it usually takes to acquire the *Abitur*, or what "Dual system" means in the German context. The resulting scale is the share of correct responses. To measure non-monitary costs of the pupil, the following item is utilized: "For the different school-leaving qualifications different amounts of effort are necessary. How much effort would the following [Abitur] school-leaving qualifications require for you?" The scale with five distinct levels ranges from 1 ("very low") to 5 ("very high").

Influence of significant others and social capital

There are two items available to measure the influence of significant others. The parents are asked about the share of friends and relatives that have obtained any tertiary qualification. The scale goes from 1 ("none") to 7 ("all") with seven distinct values. These two items hence measure the educational level of the most relevant significant others that might have an influence on the family. Furthermore, the overall social capital is quantified as follows. The parents are asked about 13 occupations and whether they know friends or relatives with this occupation, for example, a nurse, a lawyer, or a teacher. According to the ISEI classification, each occupation then receives a numerical value, and the total ISEI over all occupations present is computed. Higher numbers hence measure whether parents have a diverse circle of friends (with respect to occupations) and whether these occupations have high prestige. This is also known as the position generator (Schulz et al. 2017). To avoid high numerical values, this scale is furthermore z-standardized to have a mean of 0 and a standard deviation of 1.

Big Five personality traits

Personality traits are measured in grade 2 as reported by the parents. They comprise the established Big Five inventory (Extraversion, Conscientiousness, Agreeableness, Openness, and Neuroticism). Each scale is created by multiple items and has a scale

from 0 to 10. For more methodological information and quality measurements of the instrument, refer to Müller et al. (2016).

Strategy of analysis

The first step is to only retain cases with overall high aspirations in the family, as explained above, leaving a total of 1,522 cases. Therefore, the sample only comprises cases where both students and parents have high realistic aspirations, that is, for the *Abitur*. The primary classification variable is then whether the student has transferred to the academic track or not. The next step is to compare these two groups descriptively with respect to the explanatory variables. This gives a first impression of how the two groups differ. The following step is to test statistically whether any differences in point estimates are statistically significant. This is achieved by estimating regression models with the classification variable being the only independent variable. The type of regression model (e.g., linear, binary, ordinal…) depends on the scaling of the variable tested. This step is repeated for each explanatory variable. The omnibus test of each model gives a p-value. We will consider any p-value below 0.05 as having at least a mild explanatory power. All variables that reach this target level will be used in the following second analysis.

After having selected a set of variables with some explanatory power, it is of special interest to test and compare their relative influence on the outcome. Usually, this is done by using a set of nested regression models, however, becomes complicated as soon as explanatory variables are correlated. This problem is solved by dominance analyses (Azen and Budescu 2003; Budescu 1993). This well-established approach can be used to rank the absolute and relative influence of predictors when the variance of an outcome is to be explained. The main concept of dominance analysis is to test all potential subsets of independent variables to quantify the additional explanatory power of each. For example, if there are three independent variables A, B, C, the following models must be tested: A / B / C / A + B / A + C / B + C / A + B + C. Therefore, this method is conceptually relatively simple yet requires many regression models, depending on the number of explanatory variables. The overall increase is non-linear due to the fast-growing number of combinations. To ease the additional computational burden, some predictors are thematically grouped together. To provide confidence intervals for this analysis, bootstrapping is utilized (Bittmann 2021a; Efron and Tibshirani 1994). All analyses are conducted in Stata 16.1; the dominance analyses use the package *domin (*Luchman 2015*)*.

To account for item-nonresponse, data are imputed with multiple imputation (MICE) (Azur et al. 2011). A total of 55 samples is generated using various imputation models (linear, binary, ordinal, multinomial, and predictive mean matching). The statistical quality of the imputed data has been assessed by common standards (e.g., convergence, no creation of impossible values).

Results

Descriptive results and group differences

The main descriptive findings are presented in Table 1. Summary statistics are first provided for the entire sample, means then also for the two groups of interest. The first thing to notice is that the overall tendency to choose the academic track is very high when aspirations are high as only about 12% of the sample choose another track. This makes sense as the academic track is the direct pathway to achieve the desired goal of the *Abitur*. However, the challenge is to explain why some families still decide against it.

Starting with abilities, it is clear that children ending up in the academic track have both better objective test results as well as better grades. Teachers rate them higher, and they have a much higher probability of having received a recommendation for the academic track. The difference between the two groups is statistically highly significant for all these variables. Regarding the social origin and sociodemographic background variables, the differences are small and not significant. This also holds for the CASMIN of the father, but not for the mother; here, the differences are borderline significant. The only exception is living in a single household with one parent only and the place of residence, as there are differences between federal states. While the actual values cannot be shown due to data protection regulations of the NEPS, the difference between some states is statistically highly significant. Continuing with the rational choice items, there are almost no differences regarding the utility of the *Abitur*. This means that both groups agree that this qualification has a high utility. However, the opinion regarding the probability of success diverges clearly. The group in the academic track gives a higher probability that the Abitur can actually be reached; these differences are statistically significant. Parents with children in the academic track have a slightly higher knowledge of the German educational system. Next, for the influence of significant others like friends and relatives, there are minimal differences; the same holds for the social capital measurement. Finally, psychological differences are found for the Big Five dimensions of conscientiousness and openness. Children in the academic track are more open to new experiences and are rated as having a higher conscientiousness.

Dominance analysis

As Table 1 presents, there is a total of 13 explanatory variables that show statistically significant differences between the two groups. Accordingly, these variables will be tested in the dominance analysis to rank their additional predictive power for the explanation of the variance of the decision to enter the academic track or not. The absolute and relative contribution is presented in Fig. 1. The absolute contribution is the overall additional variance that is explained by a variable or set of variables. The relative one is the relative contribution a variable has and the sum of all relative ones adds up to 1 (100%).

95% confidence intervals are provided by bootstrapping with 500 replications. Some variables are grouped together due to their similarity: testing scores; Probability of *Abitur* by children and parents; Big Five dimensions.

Table 1 Descriptive overview and group differences

	Overall				Other tracks	Academic track	*p*-value of difference
	Mean	SD	Min	Max	Mean	Mean	
Math score	0.63	0.98	− 4.11	4.88	0.31	0.68	< 0.001
Reading score	0.11	1.16	− 5.67	3.84	− 0.25	0.16	< 0.001
Average grades	4.30	0.48	2	5	4.10	4.32	< 0.001
Rating by teacher in grade 4	4.04	0.63	1.33	5	3.80	4.07	< 0.001
Teacher recommendation grade 4	0.86	0.35	0	1	0.60	0.90	< 0.001
Log. HH income	7.22	0.42	4.67	8.78	7.17	7.23	0.09
Parental ISEI	56.2	13.2	16	90	55.5	56.3	0.461
CASMIN (Mother)							
Low	0.074	0.26	0	1	0.093	0.071	0.044
Intermediate	0.21	0.41	0	1	0.24	0.20	
HEE	0.22	0.41	0	1	0.23	0.22	
UAS	0.15	0.36	0	1	0.15	0.15	
UNI	0.35	0.48	0	1	0.29	0.36	
CASMIN (Father)							
Low	0.029	0.17	0	1	0.018	0.030	0.303
Intermediate	0.24	0.42	0	1	0.23	0.24	
HEE	0.31	0.46	0	1	0.29	0.31	
UAS	0.093	0.29	0	1	0.094	0.093	
UNI	0.34	0.47	0	1	0.37	0.33	
Female child	0.53	0.50	0	1	0.51	0.54	0.546
Age in grade 4	9.81	0.33	8.26	10.8	9.81	9.81	0.878
Migration status							
Both parents born in Germany	0.79	0.41	0	1	0.80	0.79	0.852
One parent born abroad	0.13	0.34	0	1	0.12	0.13	
Both parents born abroad	0.081	0.27	0	1	0.083	0.081	
Federal state (anonymized)							< 0.001
Language spoken with mother mostly German	0.91	0.29	0	1	0.91	0.91	0.954
Parents living together	0.87	0.33	0	1	0.80	0.88	0.009
People living in the household	4.17	0.94	2	11	4.07	4.18	0.474
Knowledge about the educational system in grade 3	0.86	0.16	0	1	0.83	0.86	0.017
Costs of Abitur (child)	3.86	1.23	1	5	3.85	3.86	0.934
Utility of Abitur (child)	4.67	0.65	1	5	4.61	4.68	0.252
Utility of Abitur (parents)	4.56	0.57	1	5	4.54	4.56	0.538
Probability of Abitur (child)	4.02	0.87	1	5	3.82	4.05	0.008
Probability of Abitur (parents)	4.47	0.64	1	5	4.34	4.49	0.009
Social capital std (grade 4)	0.12	0.90	− 3.20	1.77	0.048	0.13	0.303
Share of friends with tertiary education	4.38	1.47	1	7	4.41	4.38	0.813
Share of relatives with tertiary education	3.59	1.47	1	7	3.47	3.61	0.385
Extraversion (grade 2)	7.97	1.59	1.50	10	7.93	7.98	0.746
Conscientiousness (grade 2)	6.39	1.65	0	10	6.06	6.44	0.006
Agreeableness (grade 2)	5.89	1.71	0	10	5.85	5.90	0.756
Openness (grade 2)	8.49	1.15	1.50	10	8.25	8.52	0.012
Neuroticism (grade 2)	3.40	1.70	0	9.50	3.48	3.39	0.532
Observations	1522				187	1335	

Source: NEPS SC2, imputed data (M = 55).

HEE Higher educational eligibility, *UAS* University of applied sciences, *UNI* university, *HH* household

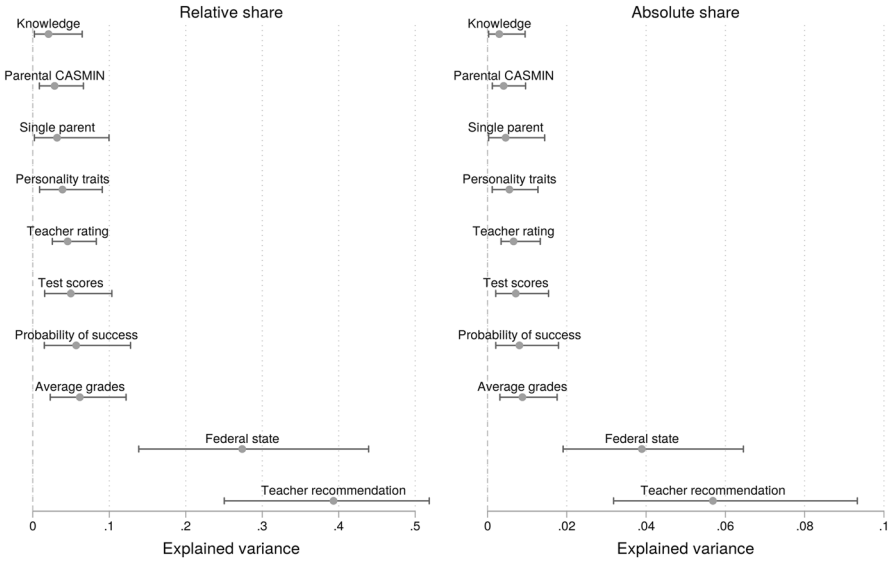

Fig. 1 Relative and absolute variance explained by independent variables. Source: NEPS SC2, imputed data (M = 55). 95% confidence intervals generated using bootstrapping (500 replications). Outcome variable: choosing the academic track or any other track

The total explained variance by all variables is about 0.131, meaning that only a tiny share of the variance can be explained. This is puzzling since there are many highly relevant predictors in the model, as outlined by the theory. Major established theories are apparently not able to predict much variance when a special subsample, families with overall high aspirations, is studied. Nevertheless, especially three variables are of interest: first and foremost, the recommendation by the class teacher, which alone contributes 0.057 points or about 44% of the relative variance. This means that there is a significance of this recommendation, even if the family already holds high aspirations. The second rank goes to the federal state of residence. This means there are apparent differences between states, which can be manifold and cannot be explored in more detail at this point, also due to restrictions regarding confidential information as no single states may be compared. The third rank goes to the average grades of a student. Grades are an indicator of academic performance and can predict track choice to some extent. The influence of all other explanatory variables is so tiny that there is not much meaning in their numbers, as the influence might be close to zero.

Discussion

As the results indicate, there are statistically significant differences between students who have entered the academic school track and students in other tracks. Firstly, the two groups differ with respect to academic performance and grades, and students in the academic track show better performance than students in the other tracks. This makes sense since the academic track has the highest demands with respect to

students' abilities, and it is the aim of the system to select on ability. Note that this concerns both subjective (grades) and more objective (test scores) measurements, underlining the robustness. The single most relevant predictor of track choice is the recommendation of the teacher in grade four. This recommendation can be considered to fall into two categories: on the one hand, it somehow measures the overall performance of the student as perceived by the teacher (meaning that there can be a "measurement" error) but also a social component (as the teacher is a significant other who advises the family). Given these two major influences, it makes sense that it has high predictive power. The second most influential variable is a sociodemographic one, the place of residence. This means that there are some differences between federal states. Potentially, this variable measures the influence of school systems. In Germany, each of the 16 federal states has its own ministry of education and is responsible for the schooling system as no centralized and unified system has been established. Since the dominance analyses take the effect of all other variables into account that could (randomly) differ between states (such as ability level or some sociodemographic variables), it is rather obvious that systematic differences are measured by this variable. However, this can still mean many things: maybe some states have a higher number of academic track schools, the average distance to these schools is smaller, or the overall tendency to attend the academic track is different. Note that the present study cannot pinpoint these exact mechanisms due to a lack of available data. A third set of variables is the expected chance of success in the academic track. As we see, students and parents in the academic track believe that they have a higher probability of being able to achieve the *Abitur* than families in the other tracks. This makes sense as it also relates to the academic performance of the student and the sorting mechanism. After all, families do apparently reason about the decision, even when aspirations are high. Since some families believe that the *Abitur* might not be easily achieved, it makes more sense to choose a lower school track (and potentially rely on sequential upgrading).

What guidance can be given to families facing an imminent track decision and policymakers? As the findings outline, teachers still play a highly significant role, even if their recommendations are formally less influential due to the abolishment of their binding character. Teachers should be aware of their highly relevant role and estimate the prospects of each child with much care. No simple recommendation can be made regarding the federal states and the differences between them. While it is highly relevant to understand that institutionalized differences can affect track choice, more research will be required to disentangle the responsible mechanisms. Since this can be challenging due to the small number of individuals when splitting up the data even further, this aspect can be regarded as important for future research projects.

Finally, the limitations of the analyses should be made transparent. Due to the panel nature of the NEPS, the sample is not perfectly representative of the overall German (student) population. This is also due to the fact that some federal states cannot be included due to the binding character of the teacher recommendation. The variables used to measure particular constructs, such as rational deliberations or significant others, can only be approximations, and a measurement error is likely present to some degree. Especially when some items are reported by the parents (such as personality traits), there can also be bias in how parents perceive their

offspring. Finally, only one parent has been surveyed, which is, in the majority of all cases, the mother. In future surveys, it would be desirable to include both parents.

Conclusion

Usually, families with overall high aspirations choose the academic school track after primary schooling. However, as demonstrated empirically, when families still choose another track, this is rather difficult to explain as only a minority of the overall variance can be explained by two highly influential sociological frameworks. The teacher's recommendation still has a significant influence and structural differences between federal states exist. Nevertheless, more than 85% of the total variance cannot be accounted for. This can mean two things: either the decision is highly contingent and subject to random, tough to measure influences, or the current theoretical frameworks do not adequately capture the decision-making process. It appears necessary to develop current theories further and add new explanations. This challenging endeavor will probably require extensive qualitative studies to better understand these social processes in more detail as quantitative surveys struggle to capture the relevant information. However, since the decision for or against the academic track has long-lasting consequences for the further life course, this question is still highly relevant.

Acknowledgements Special thanks to two anonymous reviewers for helpful comments.

Author's contribution All contributions are by the single author (Felix Bittmann).

Funding Open Access funding enabled and organized by Projekt DEAL. No funding was received for conducting this study.

Data availability Data are available for researchers after registration from www.neps-data.de. The specific dataset used in this study is available from doi:10.5157/NEPS:SC2:9.0.0.

Declarations

Conflict of interest The author has no relevant financial or non-financial interests to disclose. There are no conflicts of interest to declare.

Informed consent and ethical approval The authors declare that they have followed the protocols of their work center on the publication of patient and participant data and that all the patients / participants included in the study have received sufficient information and have given their informed consent in writing to participate in that study. The guidelines of the declaration of Helsinki are upheld and respected.

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