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# Educational Family Background and the Realization of Educational Career Intentions – The Participation of German Upper Secondary Graduates in Higher Education over Time

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## **Abstract:**

In this article, we evaluate the impact of social origin on the realisation of educational intentions at the time of becoming eligible for higher education in Germany. In general, we find high persistence of intentions and actual attendance of higher education. However, effects of parental education on the changes of educational intentions increase the existing social inequality with regard to higher education at the time of leaving secondary school. The group which is affected most are those young adults planning to study after vocational training – while the gap between different origin groups does not widen much during other stop-outs from education. This can be explained only partly by previous educational performance. The findings suggest that estimates of educational inequality are attenuated when entry into higher education is approximated by educational intentions of young adults.

## **Keywords:**

educational inequality; social origin; educational expectations and intentions; educational careers.

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## **Introduction**

Numerous studies have reported that the educational decisions of young adults depend on their social origin which leads to differences in educational careers and achievement. For Germany, this finding has been confirmed even for the highly selective group of young adults qualified for higher education and their decision about participation in tertiary education (Mayer, Müller, & Pollak, 2007: 118; Schindler & Reimer, 2010). Social background, such as parental occupational status or parental education, also predetermines participation in multiple educational programmes and educational career patterns (Jacob & Weiss, 2010b). Although social origin does not only influence the level of education which is achieved but also the timing of entry into higher education, the majority of the literature omits this aspect (Carneiro & Heckman, 2003: 118). However, later entry into college results in foregone earnings (Mincer, 1974) and can be an additional dimension of social inequality. On the other hand, a high participation rate of young adults from a lower family background in later enrolment into education could decrease the impact of differences in social origin on educational achievement. Only few quantitative studies on this topic exist and they leave several research questions open. Among these open questions is the development of young adults' intentions to participate in higher education within the period that was initially planned as a temporary stop-out. For example, Brint and Karabel (1989) observe a decline of educational ambition over time when students are not in the stream which prepares them for further studies at a four year college and refer to this phenomenon with the term "cooling out". Changes in young adults' educational intentions for post-secondary education could follow a similar pattern in Germany. Even though community colleges are quite different to any institution in the German system, vocational training or other stop-outs prior to entry into higher education have something in common with them. They delay the decision about higher education and, in the case of vocational training, improve labour market chances – and may thus result in a similar change of educational aspirations as Brint and Karabel have described.

Changes in the intention to enter higher education and how far they are related to social origin (measured as parental education) are the central concerns of this article. We ask the open question, in how far parental education influences enrolment in higher education above and beyond the intentions that young adults have for their future educational career. Social origin differences in intentions are as well-known as in the factual behavioural patterns, but how are they connected? In a second step we ask if these changes occurring in a rather late phase of the educational career can be explained by established theories on educational inequality.

By showing inequality in educational decisions which increases during the stop-out from the educational system we can also show that inequality still emerges during adulthood. We argue a withdrawal from one's own intentions is a particularly strong form of inequality – in particular if it is not based on educational performance. Since the intention to enrol in higher education has been expressed explicitly, there must be other factors than a lack of aspiration for higher education among lower class children.

Beyond, the relevance of this endeavour also derives from a methodological issue. Since educational intentions are sometimes used as an approximation for educational decisions in studies assessing educational inequality (Becker & Hecken, 2009a, 2009b), it is important to know about the relationship of both. By scrutinizing the persistence of these plans, we will evaluate the impact of this practice on the findings of previous studies. Finally, answering this question can help to enlighten the contribution of the German vocational education system – or other similarly attractive stop-out options – to the emergence of educational inequality.

In general, we find that educational intentions are mirrored to a high degree in the actual educational career pattern. However, careers that are inconsistent with previous intentions tend to show more conformity with parental educational achievement, irrespective of the intentions the young adults initially had. A part of these differences remains after keeping secondary school performance constant. Standard mechanisms of educational inequality which are often proposed, such as financial constraints and the status maintenance motive, could not explain class differences either.

### **Explanations of Educational Choices: The Sequential Formation of Educational Careers**

In the following, we will take for granted that young adults with lower educated parents in general have lower educational aspirations or expectations and choose lower tracks, as has been shown by many recent studies in industrialised countries (Shavit, Arum, Gamoran, & Menahem, 2007). A wide range of explanations for the non-participation of lower class children in higher education has been discussed. We focus on four groups of factors, although this list does not claim to be the complete set of reasons for non-participation in higher education of lower class children. We categorise the mechanisms in four groups:

- (1) investment in education (Breen & Goldthorpe, 1997) in order to *maintain parental status*
- (2) the (perceived) limitation due to *financial resources* or *credit constraints*,
- (3) *perceived probability of success* in higher education as well as

(4) lower performance (“*primary effects*”) in the school-leaving exam at upper secondary school (Boudon, 1974).

### ***Status maintenance***

The *status maintenance* argument postulates that families have the motivation to achieve at least the same social position for their offspring as they have themselves (“*relative risk aversion*”). This implies that failure in achieving at least the parental status would be evaluated as a larger loss than forgone benefits from not achieving upward mobility (Boudon, 1974; Breen & Goldthorpe, 1997). Therefore upper-class families will invest more in education in order to avoid social downward mobility. Children with a higher parental educational background can see late enrolment as a chance to overcome intergenerational status demolition. Therefore, a change in educational intentions can be expected to intensify existing educational inequalities further.

### ***Financial resources***

When graduating from upper secondary education, young adults from less wealthy families might not have enough resources to finance higher education or might want to earn their own money as soon as possible. This can be due to a lack of financial resources or in the willingness of lower educated parents to invest in their children's education (Becker & Hecken, 2009a; Breen & Goldthorpe, 1997). An increase in wealth from labour income should change young adults' opportunities and help working-class children to catch up in educational achievement through re-entry into higher education. Hence, if this explanation holds good, we have to expect a higher potential of changes towards participation in higher education for children lower educated parents and also higher enrolment rates among those who initially did not intend to study. However, since there were no tuition fees in Germany for the group we study and students from poor families can get means-tested support for their studies, we do not expect this mechanism to be a major explanation for social differences in the change of educational intentions.

### ***Perceived probability of success***

The *perceived probability of success* is also known to vary with parental education. Young adults whose parents are in the lower educational background category perceive their risk of failing in higher education as higher than those young adults with a higher socioeconomic background (Breen & Goldthorpe, 1997). As Archer and Yamashita (2003) find in a qualitative study, working class students claim often to “know their limits” or do not “feel good enough” for higher education. This could lead to the *intention* to enter less

demanding educational tracks. Furthermore, it could be a motivation to implement a “safety net” in case of failure in higher education (Büchel & Helberger, 1995). We can therefore expect children from less educated families to obtain vocational training more often before entering tertiary education (Hillmert & Jacob, 2003). The achievement of vocational training before starting higher education can reduce the risk of entering the labour market without any completed degree (which is problematic in Germany). On the other hand, if upper secondary graduates leave the educational system without plans to re-enter, they can change their minds and develop the intention to enrol. Oettinger (1993) proposes that this occurs due to changes in the perceived probability of success during one's lifetime. According to his hypothesis, less confident young adults with lower grades in secondary school learn about their abilities through experiences in the labour market. Consequently they gain more confidence about their own educational success and re-enrol more often.

### ***Differences in performance by social origin (“Primary effects”)***

“Primary effects” of social origin are those effects of parental class that can be explained by lower scholastic achievement of children from less educated families (Boudon, 1974). The grade point average achieved in the school-leaving exam, the *Abitur* or *Fachhochschulreife*, is the most important indicator for primary effects in this context. Applicants for selective study programmes are mainly chosen according to this score. Most importantly, the *numerus clausus*<sup>2</sup> system in Germany used to have a “rule of compensation” for lower grades. But as they still play a role for entrance into tertiary education and as the perception of the young adults’ own abilities should still be influenced by high school grades, we expect persisting primary effects to influence revisions of intentions to enter higher education.

### **Institutional Context: The Way to Higher Education in Germany Before the Bologna Reform**

After finishing primary education, most German students receive secondary education in one of three different tracks: *Gymnasium*, *Realschule*, and *Hauptschule*. The *Gymnasium* leads to the *Abitur*, which entitles the student to enter tertiary education. An alternative degree, which entitles students to enter the lower tiers of higher education, is the *Fachhochschulreife*. For example, the *Fachhochschulreife* can be acquired after the *Realschule* leaving certificate through general or vocational high school or apprenticeship training with some additional schooling. While the setup of the secondary educational system has remained fairly

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<sup>2</sup> Enrolment into several study programmes in Germany is limited and candidates are mainly evaluated on the basis of the GPA of the upper secondary school-leaving exam (*Abitur* or *Fachhochschulreife*).

unchanged, the higher education system has changed recently<sup>3</sup>. We chose to analyse cohorts before these reforms (see above) and thus describe the system as it used to be in the early 2000's when these cohorts became eligible for higher education. The tertiary education system is segmented mainly into two tiers: universities and universities of applied sciences (*Fachhochschulen*). Besides tertiary education, vocational schooling – especially apprenticeship training – are relevant alternatives for upper secondary graduates. Apprenticeships consist of in-company training, complemented by part-time vocational schooling. Completing an apprenticeship typically takes 2 to 3 years. After that, a considerable number of graduates enrol in tertiary education.

Universities are the most prestigious institutions and offer the best returns in the labour market (Müller, Brauns, & Steinmann, 2002). They are oriented towards academic research and offer courses in many fields of study. Among universities there is no clear hierarchical order in terms of prestige. Universities of applied sciences (*Fachhochschulen*) were established in Germany in the 1970s and are characterised by more practical and vocationally oriented teaching and a more limited number of fields of study compared to universities. In contrast to apprenticeship and vocational schools, obtaining a degree in the tertiary system takes a relatively long time: the regular length of theoretical studies for most programs at the *Fachhochschule* was four years, at the university five years. Especially in universities this was often exceeded. Even though the higher education system itself has undergone substantial reforms in the course of the European harmonization of the higher education system (Bologna-reforms), we argue that data on the old system are suitable for our analyses. First of all, because we expect that not much would change in general, as the main divide between vocational training and higher education remains the same after and even during the Bologna reforms. The vocational training system was not affected by the reform and therefore has not lost its appeal as a smooth pathway into the labour market – and its role as a provider for stop-out options from education. During the reform period however, the choice between higher education programs was unique and probably often confusing for students. In this relatively short period (in 2010 all study programs had to be converted at the latest), some institutions still offered the old degrees as described above, while others had already implemented a Bachelor-/Master-system. These programs are shorter, but as they were new they were probably perceived as risky choices.

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<sup>3</sup> in the course of the so called “Bologna”-reforms to harmonize the European higher education sector

## Data, Variables and Methods

For our empirical analyses we use the 1999 HIS Panel Study of young adults qualified for higher education ("HIS Studienberechtigtenbefragung", Durrer & Heine, 2001), a mail survey in two panel waves. The first of these was conducted six months after leaving secondary school and the second wave three years later. The study covers educational career intentions in the first wave. In the second wave, retrospective information about the actual pattern of the educational and labour market career is collected. Parental educational achievement is included in the questionnaire as well as a rich set of variables describing the previous educational achievement of the respondent, e.g. type of secondary schooling, school-leaving certificate and grades (GPA). There are 7,374 respondents with completed records for both waves, but after intentionally excluding respondents who had completed an apprenticeship by the time the first wave was conducted<sup>4</sup> (560 cases) and cleaning the sample of missing values, we are left with an analysis sample of 5,893 cases. When interpreting the results of these analyses one should be aware of the right-censoring of the data three and a half years after receiving the upper secondary degree. Although it is generally possible to finish a vocational degree and enter tertiary education in the time frame we are observing, young adults might often interrupt this sequence by working to earn money before they start studying. In this case, we would not observe their entry and underestimate the persistence of plans. In order to test the impact of the right-censoring of the data on our conclusions, we run the central analyses (discrete time logistic regression models) with the 1990 HIS Panel Study, an identical mail survey in three panel waves covering a period more than five years after leaving secondary school. After comparing our results with the 1990 Panel Study we feel confident that the central conclusions are not affected by the right-censoring of the more recent survey.

The first step of our analysis will address the question of social inequality in educational plans. We describe the impact of parental education on the intentions for a certain educational career in comparison to direct entry into tertiary education. In the second step we evaluate the influence of parental education on the persistence of these plans. Furthermore, we aim to evaluate whether the mechanisms discussed above can explain the effect of parental education on the change in educational intentions by using discrete time event history logistic regression models. In order to avoid the problem that coefficients from different models in

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<sup>4</sup> This group was excluded as they are in a completely different situation. To choose entering vocational education first is not a possible option. We would need to analyse them separately, which is not possible with the small number of these young adults in our sample.

binary regression models are difficult to compare, we report y-standardised coefficients. Although this strategy helps, it is suboptimal with regard to model comparison (Mood, 2009). Therefore, we complement the analysis with an analogue set of linear probability models.

For each group with a certain educational intention we run three models.

1. A model that shows the total effect of the academic education of mother and father.
2. A model showing only the net “secondary effects” of parental education, holding performance constant.
3. A model that includes explanatory variables based on subjective indicators.

We measure performance-driven effects (“*primary effects*”) of social origin based on the following characteristics of the school-leaving exam: type, grade point average (centralised in groups by federal state and type of degree), and the type of school (*Gymnasium* vs. others). Furthermore, we control for age, gender, and compulsory service participation (either military or civil service, only males), which lasted about one year in the cohort we study. We exclude compulsory service from the process time, which means that the time during which respondents are in compulsory service is treated as if time had been stopped.

Parental education as the central independent variable has three categories: “both parents have an academic education”, “at least one has an academic education” and “neither of the parents has an academic education”. In table 1 we give an overview of the operationalization of the theoretical concepts from our hypotheses.

Table 1: Operationalization of theoretical constructs.

Theoretical constructs	Question used for operationalization and <i>original version in German</i>
<i>Status Maintenance</i>	<p>“How relevant are the following reasons and motives for the choice of your post-school career? “  <i>“Welche Bedeutung haben die folgenden Gründe und Motive für den von Ihnen gewählten nachschulischen Werdegang?”</i></p> <p>- “to achieve a high social status.”  <i>- “einen hohen sozialen Status erreichen.”</i>                      response possibilities: 1 (very important/sehr bedeutend) to 6 (irrelevant/bedeutungslos)</p>
<i>Financial Resources</i>	<p>- “to be financially independent as soon as possible.”  <i>- “baldige finanzielle Unabhängigkeit.”</i>                      response possibilities: 1 (very important/sehr bedeutend) to 6 (irrelevant /bedeutungslos)</p> <p>- “short duration of training.”  <i>- “kurze Ausbildungsdauer.”</i>                      response possibilities: 1 (very important/sehr bedeutend) to 6 (irrelevant /bedeutungslos)</p>
<i>Perceived Probability of Success</i>	<p>- “I expected good career and income prospects.”  <i>- “meines Erachtens günstige Berufs- und Einkommenschancen.”</i>                      response possibilities: 1 (very important/sehr bedeutend) to 6 (irrelevant/ bedeutungslos)</p> <p>- “it matches my performance.”  <i>- “gute Übereinstimmung mit der eigenen Leistungsfähigkeit.”</i>                      response possibilities: 1 (very important/sehr bedeutend) to 6 (irrelevant/bedeutungslos)</p>
<i>“Primary Effects” of Social Origin (performance)</i>	Grade point average of school-leaving exam

The retrospective nature of the questions about intentions is a methodological limitation. Students were interviewed half a year after attaining the school-leaving certificate qualifying them for higher education, but the questions explicitly refer to the time when they actually received their school-leaving certificate. Although one can assume that upper secondary graduates at a young age are able to recapitulate this important decision, their answer could be biased towards the option they actually choose. We argue that this problem is less serious than it seems at first glance. First, we still find differences between the educational intention and the present enrolment status. There are a considerable number of students for whom the first possible entry into higher education is still ahead, namely all (male) draftees (1,620 respondents in our analysis sample). Military or civil service normally lasts roughly one year for the cohort we study. Although an analysis of the plans and persistence of male respondents in compulsory service showed that they differ somewhat in their educational career compared to male respondents who are not enlisted, we can confirm our findings in table 2. Therefore, we argue that our findings are unaffected by the retrospective nature of the survey.

## **Results**

The differences with regard to educational origin – which are well known for Germany – could also be reproduced with our data. Apart from the fact that young adults with a lower educational background generally less often choose higher education, they also intend more often to delay their entry (Hillmert & Jacob, 2003). In figure 1, we show how persistent these intentions were in our sample and in how far this persistence was related to educational origin. We then scrutinise on several explanations for the intentions and the actual educational careers by using different regression models. We only present the results for our central independent variable, parental education. The full models are documented in the Appendix.

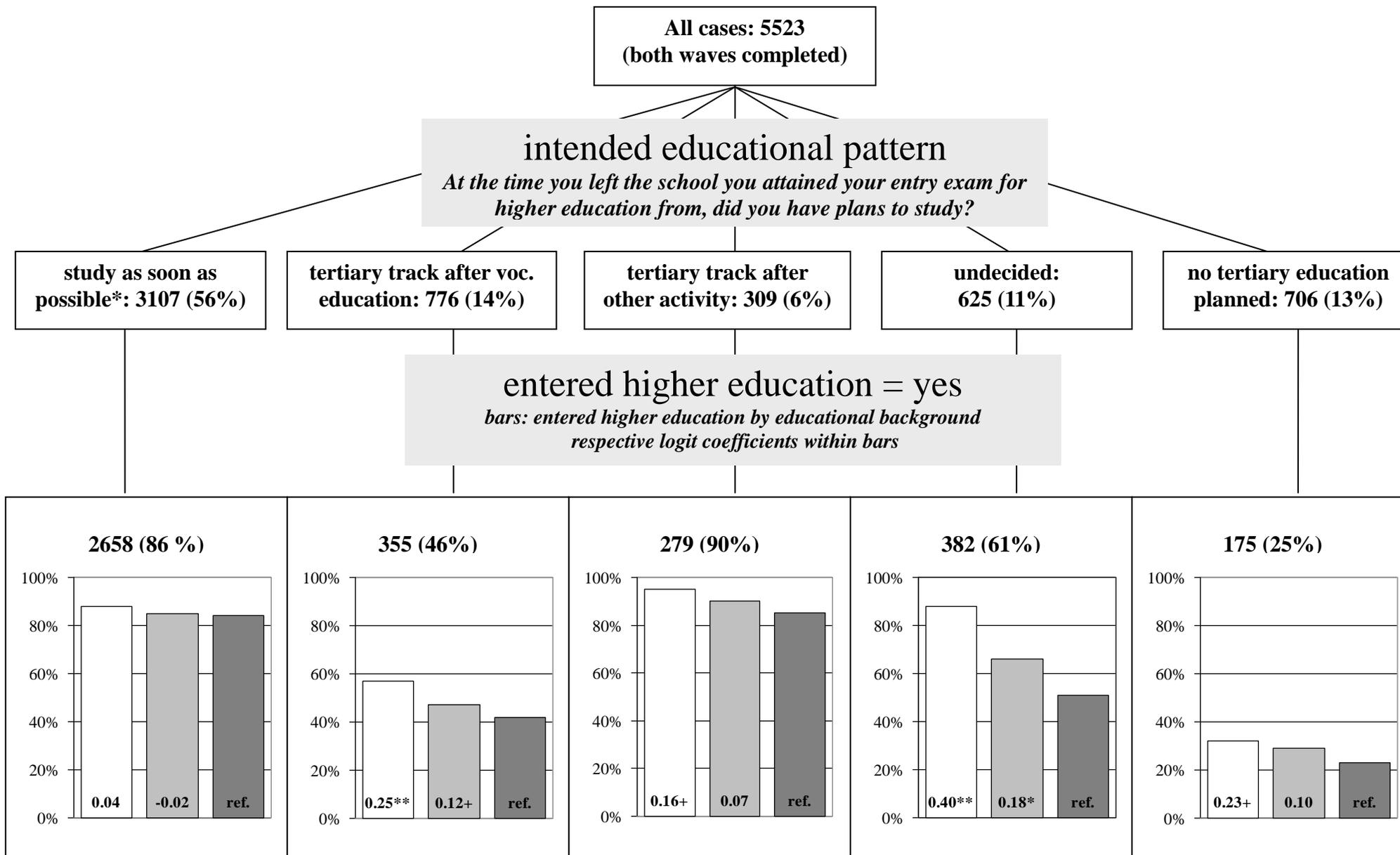
### ***Parental education and educational intentions***

Figure 1 gives an overview of the intentions of all young adults in our sample by social origin. In the upper part of the figure the group sizes are shown. More than half of our sample intends to enter higher education immediately. Another 14 per cent would like to do so after vocational training. A minority of 11 per cent is undecided about their future, and 13 per cent report no intention of entering higher education. The fact that such a high number of students intends to enter tertiary education, raises the question where and at what time the intentions to higher education “cool out”. We discussed a number of explanations above and will turn back to them now.

### ***Parental education and the persistence of educational intentions***

In the lower part of figure 1 we show how persistent intentions for postsecondary educational careers are. The bar charts in the boxes in the lowest row break this further down by parental education. Within the bars we also report the y-standardised coefficients of a logistic regression model with the dependent variable “entered higher education” (1 = yes). These coefficients show the dependence of enrolment into higher education on educational background by intention.

Figure 1: Descriptive overview on transitions into education after achieving university entry qualification in our analysis sample.



\*meaning “immediately after leaving secondary school or after compulsory service”

Data source: HIS panel study of students entitled to higher education, weighted. Own calculations.

There is a notable correspondence between participation in higher education and the intention to do so, with two exceptions. First, more students expressed the intention to enrol in higher education after vocational training than actually do so. Second, among those who do not intend to enter higher education at all, approximately one fourth change their minds. Besides a possible “cooling out” through apprenticeship training, the reason for the first exception could be right-censoring of the data. However, our checks with other datasets suggest that this should not be the case. The second exception, those young adults who report that they do not want to enter higher education at all, does not come as a surprise. The time horizon is, especially compared to those who intend to enter higher education immediately, much longer. The risk of a change in intentions is certainly higher if we observe a person over a longer period of time. Even if the risk might be the same at one moment in time, we will observe more events if the observation period is longer.

The notably high persistence regarding the plan to study as soon as possible is even stronger if we look at who enters higher education at any point in time during our observation period. A surprisingly high share of over 97 per cent of them enrolls. In the table we report only those respondents as persistent who actually enrolled as soon as possible. Hence, the non-persistent respondents in this group are mainly those enrolling later than intended. Only a small minority of them never enter higher education at all.

At the bottom of figure 2 we plot the impact of parental education on the enrolment rates by educational origin for each intention. There is a consistent pattern of a higher enrolment of respondents with a higher parental educational background throughout all intention-groups. The strongest dependence on parental education is found among “undecided” students (shown by the differences between the bars and a standardised logit coefficient of 0.40\*\*). This could again be due to the fact that this is the most heterogeneous group in the affinity to higher education. An alternative explanation could be that indifferent people are particularly likely to follow the example of their parents due to a lack of alternative (more rational) motivation, but we cannot separate these two arguments from each other here.

The more interesting categories consist of those students who express intentions to enter higher education. The vast majority of those who want to enter as soon as possible do realise this. Also, we only find small differences by parental education. Even if we only look at those male respondents who have to complete a one-year compulsory service (military or social service) before enrolling, we find that virtually all of them eventually enrol (97 per cent, independent of service duties). It is interesting that the share is the same among those

(male) respondents who have to complete compulsory service. This leads us to the conclusion that “cooling out”, i.e. giving up the intention to achieve tertiary education, is not merely a question of time. Even those who had the intention to enrol, but were forced to wait for some time, eventually do enrol. This is not the case for those young adults who participate in apprenticeship training. Presumably, the stronger “cooling out” in this group is due to the considerably increased labour market opportunities after completing a vocational degree. This is clearly contradicts Oettinger's hypothesis that young adults discover their potential during phases in the labour market and increase their educational aspirations.

In the next step we address the question of the explanations of these regularities. We will use the initial regression models from figure 1 (which is reported again as model 1 in table 2) and add the variables representing the theoretical mechanisms discussed before in the subsequent models.

Table 2: y-standardised discrete time logistic (log y\*, first row) and linear probability (lpm, second row) regression models of social origin on entering higher education (HE).

<i>(Ref. Cat.: none of parents holding academic degree)</i>	<b>Model 1: total effect</b>		<b>Model 2: M1 + primary effects</b>		<b>Model 3: M2 + indicators for other mechanisms</b>	
	both parents academic degree	one parent academic degree	both parents academic degree	one parent academic degree	both parents academic degree	one parent academic degree
<i>study immediately, started studying as soon as possible</i>	log y*: 0.11+	0.03	0.00	-0.00	0.00	-0.00
Dep. Variable: entered HE as soon as possible	lpm: 0.03+	-0.00	-0.01	-0.02	-0.01	-0.01
N=3362						
<i>study after vocational education</i>	0.24**	0.11x	0.17*	0.08	0.16+	0.06
Dep. Variable: Entered HE	0.18**	0.07+	0.13*	0.04	0.12+	0.03
N=790						
<i>Study after another activity, enrolled in higher education</i>	0.17+	0.09	0.02	0.06	-0.00	0.05
Dep. Variable: Entered HE	0.10*	0.05	0.04	0.04	0.04	0.03
N=374						
<i>undecided, enrolled in higher education</i>	0.41**	0.17**	0.27**	0.17**	0.24**	0.15*
Dep. Variable: Entered HE	0.27**	0.10+	0.18**	0.09+	0.15+	0.06
N=627						
<i>no plans to study in tertiary track, non-persistence: enrolled in higher education</i>	0.23+	0.10	0.16	0.02	0.10	0.01
Dep. Variable: Entered HE	0.12+	0.05	0.08	0.01	0.06	0.01
N=740						

Source: HIS Panel Study of students entitled to higher education, unweighted. Own calculations. N=5893.  
two-sided z- or t- test: significance x p<.10, + p < .05, \* p < .01, \*\* p < .001

Table 2 shows the results of discrete time logistic regression models separately by subsamples reporting a certain intention. As logistic regression coefficients from nested models are incomparable due to unobserved heterogeneity influencing the dependent variable, we report  $\gamma$ -standardised logit coefficients (Mood, 2009) and linear probability models. Model 1 is the “total-effects” model with only parental education as an independent variable. The “net secondary effects” model also contains our indicators for primary effects<sup>5</sup>. In model 2, we introduce explanatory variables operationalizing effects of social origin due to previous performance in the school system. Comparing this with the results of model 1 these indicators explain inequalities for those who had expressed the intention either to study immediately or not to study at all, as well as for those students who planned to study after another activity. However, for the larger inequalities among those young adults planning higher education after vocational training or who are undecided, inequalities can only be partly explained. Altogether, performance-based effects of social origin can explain inequalities in later changes of plans to a large extent. Hence, it can be argued that students implement most of the secondary, decision-based social origin effects in their earlier intentions with regard to their post-secondary education, while changes in their educational intentions depend to a large degree on their previous performance. This might have several reasons. Students with less educated parents might be less able to develop realistic aspirations for their further educational career, taking into account their scholastic performance. Another possibility is that the numerus clausus for several fields of study diverts more students with a lower parental educational background away from higher education due to poor grades, although they had hoped to be accepted.

In most cases, young adults with a lower educational family background will follow their intentions with the same steadfastness as their peers with a higher educational background. This, however, depends on the intention itself and is not true for all students. Among the models in column 2, there are significant coefficients of educational family background left after holding educational performance constant: among young adults who intended to study after vocational education and among those who did not have any expectations about their future educational careers. Among those students who do not want to enter higher education, the coefficient remains as well, although it is not statistically significant (but not trivial in size, it shows a *ceteris paribus* 8 percentage points higher entry rate into higher education for students where both parents have a degree in higher education).

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<sup>5</sup> Measured as grade of upper secondary degree centralised by federal state, type of school where upper secondary degree was obtained, type of upper secondary degree, age at time of the survey

In the third series of models, we further refer to all other explanations discussed above. We introduce all indicators at once, since this is enough to see the essence of the results: the introduction of all of them does not change our results. Effect sizes in the linear probability model are reduced only marginally, none of the substantive findings about parental influence changes.

## **Discussion and Conclusions**

At the beginning of this article we set out to localise the impact of specific sources of educational inequality over a period in the biography of students that is crucial for their entry into post-secondary education. We find a generally high persistence of the actual educational career with the intentions to choose a higher education program. This implies that early decisions are the major source of unequal educational attainment and later corrections of earlier decisions are less important. If, however, the educational career deviates from what was intended when the students left secondary education, the young adults tend to change towards stronger conformity with the parental model, i.e. those young adults with better educated parents more often enrol in higher education. Therefore, we can observe a certain degree of “cooling out” of lower class students when time passes. Most affected are students who intend to study after completing a vocational training in the German dual training system or in a vocational school. Hence, the German educational training system seems to “cool out” the educational ambition of working-class students to some degree. Similar to the findings from US community colleges (Brint & Karabel, 1989), even students who intended to achieve more education often stayed in the labour market. The impact of changes in intentions could though be even stronger if we had considered drop-outs in our analysis, who certainly are another important group of students not persistent in their plans.

With regard to educational inequality in higher education we could show that it occurs even if the intention of enrolling has been expressed explicitly. Performance in secondary school was kept constant and other mechanisms which are often presented as possible explanations for educational inequality could not explain this stronger “cooling out” of working class students either. Hence, neither the early formation of preferences nor lower performance during the earlier school career can fully explain social inequality in higher education participation. This finding suggests that educational inequality is fostered by the strategy of some young adults to complete vocational training before enrolling in higher education – however not among those who stop out involuntarily because they are drawn for military service. For policies aiming at a reduction of inequality in higher education attendance, the vocational education system should thus not be left out. One such policy that

looks appealing at first would be to give graduates from vocational training a bonus in the admission process to higher education. This – however – should not be recommended. A possible effect of such a bonus is that even more students start vocational training instead of entering higher education right away. Preparation for possible further studies within the curriculum of the schooling part of vocational training seems to be an option that could be implemented easily and probably has smaller side effects.

The overall high stability of the plan to enrol shows that the major sources of social origin effects on educational career patterns in Germany (Jacob & Weiss, 2010b) are long-term intentions and plans. Most young adults already know about their future educational career at the time of graduation from upper secondary school. The high consistency of educational careers with previous plans implies that the sources for social origin differences have to be looked for at the time before leaving secondary school – with exception of a nontrivial share of students who enter vocational training first. From what we know about country differences, this could be a German peculiarity. For example, in the US, students are known to move between work and education much more frequently (Jacob & Weiss, 2010a). The rather inflexible German system of higher education and labour market seem to force students to think more carefully about their educational future.

Previous studies have shown social origin differences for the combination of vocational training and higher education. We go beyond confirming these results and start to test several hypotheses about possible mechanisms to explain social inequalities for changes in educational intentions. The main finding here is that the conformity of educational intentions with the actual educational career is to a large extent attributable to the lower school marks of working-class students. This finding comes as a surprise as other studies have shown that the decision to study right after the *Abitur* is dominated by secondary effects of social origin (Schindler & Reimer, 2010). On the contrary, our indicators for secondary effects of parental educational background do not explain differences between origins. In this respect, undecided young adults are the exception. It is unclear if this is due to a reduction of success of lower class children in the educational system and thereafter in the labour market as a result of bad grades, or a result of the *numerus clausus* system. At least part of the students probably cannot meet the requirements to be accepted in their favourite study programme and therefore choose alternatives to higher education. With regard to financial resources, the perceived probability of success, and the status maintenance motive, the indicators we use do not contribute much to the explanation of educational inequality.

One alternative explanation for the comparatively frequent changes in intentions over

a longer term and for the existing inequality within this group are major events in other life course domains. It is likely that such events occur particularly frequently among young adults with a lower parental educational background. This should motivate further research into the question of how the situation of young adults in different stages of life conditions their educational attendance. An alternative interpretation would be that lower-class children form their intentions with less conviction and pursue them with less steadfastness. This explanation is supported by the fact that students with a lower educational background are more often in the category of those who are undecided about their future attendance in higher education.

We also aimed at evaluating the practice of taking intentions, expectations or plans as a proxy for actual attendance of certain educational tracks (e.g. Becker & Hecken, 2009a). Our results are clear-cut: this practice will introduce some bias into the results of these studies, but is very unlikely to alter the substantial conclusions. Furthermore, it leads to conservative estimates in the sense that they will rather underestimate than overestimate the impact of educational origin.

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## Appendix for:

### Weiss, Felix and Hanna-Marei Steininger „Educational family background and the realization of educational career intentions: participation of German upper secondary graduates in higher education over time”

*Higher Education*66 (DOI 10.1007/s10734-012-9598-0)

The following tables refer to Table 2 in the article. They show full models and in each case y-standardised discrete time logistic (log y\*, first row) and linear probability (lpm, second row) regression models for possible educational plans after leaving upper secondary education.

Table 1: Regression models of social origin on persistence of plans to study immediately.

	Model 1: total effect		Model 2: M1 + primary effects		Model 3: M2 + indicators for other mechanisms	
	coefs.	z-value	coefs.	z-value	coefs.	z-value
Both parents academic degree	log y*:					
	0.11**					
One parent academic degree	lpm:					
	0.03**	2.57	-0.01	0.15	-0.01	0.04
Second. school final exam: GPA	0.03	0.69	-0.00	0.06	-0.00	-0.03
	-0.00		-0.02		-0.01	
Sex (male=1)			0.03***	10.71	0.03***	10.18
			0.01***		0.01***	
Type of sec. degree (Abitur=1)			0.25***	2.76	0.25***	2.81
			0.07***		0.07***	
Type of sec. school (Gymnasium=1)			0.38***	4.54	0.39***	4.66
			0.13***		0.13***	
Drawn for compulsory service (males)			0.11**	2.14	0.12**	2.46
			0.03*		0.04**	
Age			-0.39***	-4.24	-0.39***	-4.34
			0.00		0.01	
Status maintenance			0.01	0.71	0.02	1.15
			0.00		0.01	
Financial resources					-0.03**	-2.00
					-0.01	
<i>Financial independence</i>					0.05***	4.37
					0.02***	
<i>Short duration of training</i>					0.01	0.69
					-0.00	
Perceived probability of success						
<i>Expectation of good career opportunity</i>					-0.05**	-3.08
					-0.03***	
<i>Positive congruence with own capability</i>					0.09***	4.47
					0.03***	
Constant	0.856***		0.576***		0.507***	

two-sided z- or t- test: significance \*p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table 2: Regression models of social origin on persistence of study plans after vocational education.

	Model 1: total effect		Model 2: M1 + primary effects		Model 3: M2 + indicators for other mechanisms	
	coefs.	z-value	coefs.	z-value	coefs.	z-value
	log y*:					
Both parents academic degree	0.24***	3.71				
	lpm:		0.17***	2.74	0.16**	2.45
	0.18***		0.13***		0.12**	
One parent academic degree	0.11*	1.80	0.08	1.45	0.06	1.02
	0.07*		0.04		0.03	
Second. school final exam: GPA			0.03***	5.39	0.02***	5.22
			0.02***		0.02***	
Sex (male=1)			0.21**	2.37	0.22**	2.33
			0.11*		0.12*	
Type of sec. degree (Abitur=1)			0.30***	3.11	0.28***	2.89
			0.19***		0.19***	
Type of sec. school (Gymnasium=1)			0.14**	2.04	0.14**	2.03
			0.08*		0.08	
Drawn for compulsory service (males)			0.29***	2.84	0.29***	2.82
			-0.15**		-0.16**	
Age			0.04	1.43	0.03	0.94
			0.01		0.01	
Status maintenance					-0.05**	-2.09
					-0.03**	
Financial resources						
<i>Financial independence</i>					0.07***	3.92
					0.05***	
<i>Short duration of training</i>					-0.06***	-3.92
					-0.03***	
Perceived probability of success						
<i>Expectation of good career opportunity</i>					-0.00	-0.00
					0.01	
<i>Positive congruence with own capability</i>					0.04	1.62
					0.02	
Constant	0.439***		-0.029		0.248	

two-sided z- or t- test: significance \*p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table 3: Regression models of social origin on persistence plans to return to higher education after other activities.

	Model 1: total effect		Model 2: M1 + primary effects		Model 3: M2 + indicators for other mechanisms	
	coefs.	z-value	coefs.	z-value	coefs.	z-value
	log y*:					
Both parents academic degree	0.17**	2.05				
	lpm:		0.02	0.24	-0.00	-0.00
	0.10***		0.04		0.04	
One parent academic degree	0.09	0.96	0.06	0.80	0.05	0.56
	0.05		0.04		0.03	
Second. school final exam: GPA			0.03***	5.00	0.03***	4.69
			0.01***		0.01***	
Sex (male=1)			0.30	1.38	0.30	1.31
			-0.05		-0.02	
Type of sec. degree (Abitur=1)			0.30	1.49	0.33	1.62
			0.14*		0.15**	
Type of sec. school (Gymnasium=1)			-0.14	-1.00	-0.14	-1.00
			-0.08		-0.09*	
Drawn for compulsory service (males)			-0.35	-1.21	-0.35	-1.19
			-0.10		-0.12	
Age			-0.01	-0.26	-0.03	-0.60
			-0.05**		-0.05***	
Status maintenance					-0.03	-0.89
					-0.00	
Financial resources						
<i>Financial independence</i>					0.08***	3.06
					0.03**	
<i>Short duration of training</i>					0.01	0.39
					0.01	
Perceived probability of success						
<i>Expectation of good career opportunity</i>					-0.03	-0.85
					0.00	
<i>Positive congruence with own capability</i>					0.04	1.16
					-0.00	
Constant	0.861***		1.697***		1.824***	

two-sided z- or t- test: significance \*p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table 4: Regression models of social origin on persistence plans being undecided to enter higher education.

	Model 1: total effect		Model 2: M1 + primary effects		Model 3: M2 + indicators for other mechanisms	
	coefs.	z-value	coefs.	z-value	coefs.	z-value
	log y*:					
Both parents academic degree	0.41***	5.70				
	lpm:		0.27***	3.93	0.24***	3.45
One parent academic degree	0.27***		0.18***		0.15***	
	0.17***	2.64	0.17***	2.73	0.15**	2.46
	0.10**		0.09**		0.06	
Second. school final exam: GPA			0.02***	3.75	0.02***	3.48
			0.01***		0.01***	
Sex (male=1)			0.14	1.59	0.18**	2.10
			0.05		0.06	
Type of sec. degree (Abitur=1)			0.64***	5.42	0.63***	5.58
			0.43***		0.41***	
Type of sec. school (Gymnasium=1)			0.01	0.10	-0.03	-0.43
			-0.02		-0.03	
Drawn for compulsory service (males)			0.06	0.06	0.05	0.56
			0.01		0.03	
Age			0.01	0.30	-0.01	-0.15
			-0.00		-0.01	
Status maintenance					-0.07***	-3.03
					-0.03**	
Financial resources						
<i>Financial independence</i>					0.13***	6.17
					0.08***	
<i>Short duration of training</i>					0.01	0.69
					-0.00	
Perceived probability of success						
<i>Expectation of good career opportunity</i>					0.02	0.56
					0.02	
<i>Positive congruence with own capability</i>					0.03	1.36
					0.01	
Constant	0.606***		0.258		0.523	

two-sided z- or t- test: significance \*p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table 5: Regression models of social origin on persistence plans not to enter higher education.

	Model 1: total effect		Model 2: M1 + primary effects		Model 3: M2 + indicators for other mechanisms	
	coefs.	z-value	coefs.	z-value	coefs.	z-value
	log y*:					
Both parents academic degree	0.23**	2.19				
	lpm:		0.16	1.64	0.10	1.00
One parent academic degree	0.12**		0.08*		0.06	
	0.10	1.28	0.02	0.26	0.01	0.15
	0.05		0.01		0.01	
Second. school final exam: GPA			0.03***	4.26	0.03***	4.25
			0.01***		0.01***	
Sex (male=1)			0.37***	3.02	0.30**	2.43
			0.17***		0.14**	
Type of sec. degree (Abitur=1)			0.65***	4.09	0.62***	3.95
			0.21***		0.20***	
Type of sec. school (Gymnasium=1)			0.17*	1.89	0.18*	1.94
			0.09*		0.09*	
Drawn for compulsory service (males)			0.15	1.10	0.17	1.18
			-0.01		-0.00	
Age			0.08*	1.83	0.08*	1.77
			0.04*		0.04*	
Status maintenance					-0.06**	-1.99
					-0.02*	
Financial resources						
<i>Financial independence</i>					0.06**	2.35
					0.03**	
<i>Short duration of training</i>					-0.01	-0.26
					-0.01	
Perceived probability of success						
<i>Expectation of good career opportunity</i>					-0.05	-1.40
					-0.03	
<i>Positive congruence with own capability</i>					0.08**	2.42
					0.04**	
Constant	0.254***		-0.678*		-0.594	

two-sided z- or t- test: significance \*p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table 6: Linear probability regression models of social origin on persistence of study plans for those who are enlisted in compulsory military or civil community service.

<i>(Ref. cat.: none of parents holding academic degree)</i>	<b>Model 1: total effect</b>		<b>Model 2: M1 + primary effects</b>		<b>Model 3: M2 + indicators for other mechanisms</b>	
	Both parents academic degree	One parent academic degree	Both parents academic degree	One parent academic degree	Both parents academic degree	One parent academic degree
<i>Educational intention</i>						
<i>Study immediately, started studying as soon as possible</i> Dep. variable: entered HE as soon as possible N=1175	0.03	0.04x	0.00	0.03	0.00	0.03
<i>Study after vocational education</i> Dep. variable: entered HE N=166	0.15	0.05	0.08	0.01	0.03	-0.04
<i>Undecided, enrolled in higher education</i> Dep. variable: entered HE N=150	0.28*	0.17+	0.25+	0.19+	0.22+	0.18+
<i>No plans to study in tertiary track, non-persistence: enrolled in higher education</i> Dep. variable: entered HE N=104	-0.20	-0.03	-0.24	-0.05	-0.25	0.01

*one-sided z-test: significance x p < 0.10, + p < 0.05, \* p < 0.01, \*\* p < 0.001*