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Cyclic educational transitions and social inequality:

Re-applications after educational rejections

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Abstract

Educational transitions are cyclic processes in which re-applications are an essential but understated part of access. We study social inequalities in re-application behavior to identify the extent to which educational intentions are more constrained among students from the lower social strata. We explore applications to universities in Finland, where student selection takes place at the gates of the institutions. With full population register data and discrete-time event-history models, we show how parental education, previous national examination grades and various life-course changes after the rejection, such as entering the labor market and having children, are associated with re-applications. Net of other differences, children of university-educated parents have a 6 percentage points lower probability to stop applying to university after being rejected compared to their counterparts with lower educated parents. We argue that ability-based intake to educational institutions, which is seen to be meritocratic, is not sufficient for reducing social inequalities if staying in the queue is socially selective.

Introduction

Educational transitions can be conceptualized as consisting of two processes: individuals' applications to educational institutions and the institutional decisions regarding those applications. Application behavior itself relies extensively on educational aspirations, referring to the educational attainment individuals hope to achieve, and expectations, referring to the education individuals expect to achieve. These, in turn, are formed by several individual and structural-level factors such as individuals' educational performance and ambition (Sewell et al. 2004) and institutions' selection criteria (Kerckhoff 1976).

Educational expectations are not constant but may change as a response to academic signals that may engender disbelief about future success along the educational pathway (e.g., Andrew and Hauser 2011; Karlson 2015). The tendency to react to such signals may also vary in socially stratified ways. Previous studies have shown that failures along educational pathways tend to be less negatively consequential for students from high social origins (e.g. Bernardi 2012; Herbaut 2021). This asset, often referred to as compensatory advantage, can be due to poorly performing high social origin students receiving additional support from their families or high social origin students being more generally less responsive to academic signals such as poor grades compared to their low social origin peers (Holm, Hjort-Trolle, and Jæger 2019).

Our contribution to the burgeoning literature on social origin differences in how prior performance or educational false steps differentially impact the ensuing educational pathways of young people is to highlight the role played by re-application behavior after experiencing an educational rejection. We do this by exploring social origin differences in reacting to unsuccessful attempts to enter university degree programmes, in an institutional context in which the number of re-applications is not limited and intake relies heavily on success in

annually renewed, programme-specific intake exams rather than primarily on success at the lower levels of education. We thus focus on young people who we know have a strong intention to study at university (through their application behavior) but who are rejected at least once, and ask whether there are social origin differences in their reaction to this event. Accordingly, we examine whether the educational expectations of students from disadvantaged origins are more strongly influenced by signals of their academic potential than their more advantaged counterparts. Andrew and Hauser (2011) have shown that these signals have to be strong in order to make individuals adapt their educational expectations. We argue that failing in a university entrance exam and being rejected is a feasible example of such a signal and offers a fruitful opportunity to assess whether reacting to a strong signal (namely educational rejection) is more likely among applicants of lower origins.

We also test whether possible social origin differences in continuing to apply despite previous failure can be explained by other overlapping life-course changes that can intervene the cyclic university re-application process. Various life-course events taking place during early adulthood may encourage individuals to stop applying to university after being rejected. These life-course changes include starting studies at lower level higher education institutions, experiencing labor market success, and having children. We test whether these changes explain the possible social origin differences in re-applications and whether the consequences of these life-course changes are similar for low and high social origin applicants.

Using full population register data with annual information on successful and unsuccessful university applications, we study all Finns born in 1987–1990 who applied to university at least once between the years 2006–2013 without gaining entrance (N=53,462). Using discrete-time event history models, we examine re-application behavior in the year immediately following

the (first) rejection and do so for a maximum of four successive years. We find a large social origin gap in re-applications: children whose parents do not have a university degree are more likely to stop applying to university after being rejected compared to children whose parents have a university degree, independent of prior school performance. Low rather than high earnings, having a first child and starting studies at another type of higher education institution (polytechnics in the Finnish case) are associated with a higher probability to stop applying to university. However, life-course changes during the application period do not explain the social origin gap in re-applications. Furthermore, the associations between these life-course events and the probability to stop applying are rather similar for low and high social origin applicants. Altogether, high social origin applicants persist in their applications to university after being rejected, despite the other overlapping changes in their lives, to a greater extent than their low social origin counterparts.

The study setting allows us to examine educational transitions from a cyclic point of view and how this is linked to intergenerational educational inequality. The cyclic nature of educational transition, whereby there are (formally) endless possibilities for re-applying, is a prominent feature of many educational systems yet the phenomenon has largely been neglected in previous sociological literature. It is also likely to have severe consequences for intergenerational social inequality. In the US context, for instance, low-income students have a lower probability to retake SAT exams, leading to a 10 percentage point gap in four-year college enrollment among high school graduates (Goodman, Gurantz, and Smith 2020). Retaking SAT exams is not fully equivalent to university re-applications, which involve participating in a new programme-specific intake exam, as the former does not necessarily follow from being rejected by an educational institution. Nonetheless, this hints at the generalizability of our study beyond our specific context. The sparsity of studies focusing on

failed and repeated applications may be due to the lack of accurate data – few datasets contain information on applications in which educational transitions *did not* take place. Fortunately, the Finnish educational system accompanied with administrative data containing all applications provides us with a unique opportunity to study failed transitions. For understanding the setting of this study, we first present the institutional context.

Applying to university in Finland

After nine years of comprehensive school and three years of general upper secondary or vocational education, students are permitted to apply to higher education (HE). The HE sector consists of two types of institutions: polytechnics and universities. Studying is free at all levels and HE students are eligible to receive state-funded monthly student stipends and loans, which in principle should be sufficiently large to cover living costs. The only requirement for applying to university is an upper secondary qualification and thus applying is formally possible also for those from the vocational track. Nevertheless, this route is rarely used (Kilpi-Jakonen, Erola, and Karhula 2016).

With a centralized application process taking place each spring, students may apply to several university- and field-specific programmes (up to nine in 2006–2013), which each have their own entrance procedures. Students may be admitted to several programmes but can accept only one study place per year. During our observation period, intake was mainly based on entrance exams or a combination of entrance exams and grades from national (matriculation) examinations. More recently, this has been reformed so that around half of students are selected based only on matriculation exam grades, replacing the combination of matriculation exam grades and the entrance exam. Each programme has a predetermined number of study places restricting the number of admitted students (also referred to as *numerus clausus* in Latin). As

the OECD *Investing in Youth* report displayed, "Finland has one of the most selective higher education systems in the OECD, with 67% of applicants rejected each year, compared with an OECD average of 30%" (OECD 2019). In other words, most students do not gain access to university the first time they are applying, leading to a transition process with a high number of rejections and re-applications.

Applying to university can be a resource-consuming process, as preparing for entrance exams (or nowadays retaking matriculation exams) requires time and possibly money. Recent studies have shown that private preparatory courses, which can cost up to several thousand euros and are mostly used by young people from high social origins, have become an essential part of the application process (Kosunen 2018; Kosunen et al. 2021). What is more, study materials for the entrance exams do not change every year, which may favor perseverance and re-applicants. In this way, student selection happens at the gates of the institutions rather than in the previous stages of education. With the exception of having a limited – though nevertheless relatively lengthy – time to complete one's degree, Finnish universities do not force students out of degree programmes after they have been admitted.

Theoretical framework and hypotheses

Individuals' educational aspirations, referring to the educational attainment an individual hopes to achieve, and expectations, referring to the education an individual realistically expects to achieve, tend to go hand-in-hand. However, high educational aspirations do not always lead to high educational expectations. Among students with the same level of educational aspirations, lower-class children are more likely to lower their educational expectations over time compared to upper-class children (Hanson 1994). A recent study by Finger (2021) on the anticipation of admission barriers, showed that high social origin students were more likely to

switch their preferred field of study when faced with competitive access, whereas low social origin students were more likely to give up on their college plans in general. Thus, the anticipation of competitive admission to higher education leads to a stronger aspiration-expectation mismatch among low social origin youngsters compared to their high social origin peers. Regarding other institutional constraints, Finger (2016) has also shown that especially a long distance to the nearest university city may lead to students' self-exclusion from college intentions even if they had had college aspirations at some point during their educational career.

Rather than the process of realizing university aspirations, this study focuses on those with university intentions, as evidenced by their university applications. After realizing educational expectations into concrete university applications, students face access barriers with two potential outcomes: successful access or rejection. At this point, applicants have surpassed all the constraints concerning the decision to apply. If the outcome of an application is rejection, students have to re-evaluate their plans and make the application decision again.

According to the theory of compensatory advantage, "false steps" in educational pathways are less negatively consequential for students from high social origins as they have sufficient resources for overcoming these failures (Bernardi 2012) or their educational decisions are less responsive to academic signals (Holm et al. 2019). Previous studies of compensatory advantage have included, for example, analyses of social origin differences in transitioning to the next educational level or using alternative and less-demanding pathways after poor performance (Bernardi and Triventi 2020; Yastrebov, Kosyakova, and Kurakin 2018), and overcoming academic failure in the first year of HE studies (Herbaut 2021). Explanations of these social origin differences in educational decision-making have largely relied on assumptions of relative risk aversion (Breen and Goldthorpe 1997), which argues that families consider the

costs, benefits and probability of success in educational decisions but prioritize avoiding downward mobility for their offspring over other criteria. Similarly, we expect that applicants from high social origins have a higher incentive to keep applying in order to avoid downward mobility (in this case, achieving lower level education than parents) and are thus less responsive to being rejected compared to lower social origin applicants. In addition, they may have more resources to cover the direct and indirect expenses of the application process, which lowers their threshold for further attempts:

H1: After being rejected and thus failing to enter university, high social origin applicants are less likely to stop applying compared to low social origin applicants.

Differences in application behavior may be explained by factors preceding the application period or events occurring after the first rejection. First, we take into account prior school performance. Those with better prior performance in education are more likely to have better educational skills, thus improving their chances to succeed in the future. Applicants are likely to acknowledge this themselves too, which is why prior success may also work as a subjective encouragement that helps the applicant overcome disappointment after being rejected. Since performance at the national examinations at the end of general upper secondary education, our measure of prior school performance, is also likely to correlate with performance in entrance examinations, this measure is also likely to be indicative of how far away from being admitted the young person was. Since high social origin students tend to perform better at school on average (for Finland: Heiskala, Erola, and Kilpi-Jakonen 2021), we expect that:

H2a: The social origin gap in stopping applying is partly explained by previous school performance.

Second, as we consider this educational decision-making as a dynamic process, it is worth noting that various life-course events taking place *after* the rejection may also engender social origin differences in re-applications. We consider three life-course changes relevant for applicants in their early adulthood: other HE studies, labor market success without a university degree and having a child. Previous studies have shown that in Finland, especially among the well-performing students, polytechnics are an attractive option for low social origin students (Heiskala et al. 2021) and that low social origin students are likely to enter polytechnics as part of their route to university (Kilpi-Jakonen et al. 2016). Thus, we expect low social origin students to enter polytechnics more often compared to high social origin students, explaining part of the social origin gap in university re-applications. In addition, most applicants, and especially those from low social origins, may not have the possibility to spend the gap year preparing for the next exam without working at the same time. Thus many of the rejected applicants enter the labor market, which may attract them away from re-applying to university and limit their possibilities for the time-consuming entrance exam preparation. Third, having children also limits the time that can be used for preparing for entrance examinations, but re-applying can also be seen to postpone family formation. As previous studies have shown, there are large social origin differences in the timing of family formation and early-adulthood life-courses in general, with those from low social origin having children earlier in life (e.g., Nisén et al. 2014; Sirniö, Kauppinen, and Martikainen 2017). These differences may thus explain the social origin gap in re-applications. Altogether, we expect that these various life-course changes may play a role for the social origin differences in re-applications after rejection:

H2b: The social origin gap in stopping applying is partly explained by concurrent life-course changes related to other HE studies, employment and childbearing.

In addition to explaining social origin differences, these factors may also differentially influence the re-application behaviors of students depending on their social origin. The theory of compensatory advantage leads us to expect that the re-application behavior of lower social origin students is more strongly tied to their prior educational performance as high social origin students are likely to stick with their educational expectations regardless of poor school performance (Bernardi and Valdés 2021). The concurrent life-cycle changes may also change the educational expectations of students to a different extent and thus lead to differences in re-applications. More specifically, the dual model of higher education may tempt low social origin students away from higher-threshold institutions by providing an option with generally easier access (polytechnics) and thus ‘cooling out’ their university intentions (Brint and Karabel 1989; Clark 1960). Despite previous research finding lower social origin gradients among students entering universities via polytechnics rather than directly (Kilpi-Jakonen et al. 2016), we expect the more immediate consequence of polytechnic access to reduce re-applications more among low social origin students than their high origin counterparts. This is largely because applying to university is resource-consuming and a polytechnics degree is likely to be sufficient for low social origin students to avoid downward mobility. This also applies to well-paid positions in the labor market: we expect them to also ‘cool-out’ university intentions of low origin applicants who do not necessarily need university education to avoid downward mobility. Altogether, we expect lower social origin students to be more easily diverted away from their continued efforts to enter university and thus that:

H3a: Previous school performance, other HE admission, and success in the labor market moderate the association between social origin and re-applying after rejection so that the social origin gap is larger the lower the school performance, among applicants who have started studies at polytechnics, and the better the success in the labor market.

Finally, even though we expect childbearing to interrupt the cyclic education transition process more often for applicants from lower social origins, we expect it to have similar consequences for all social origin groups. This is because we assume newborns to be equally time consuming for all young parents regardless of social origin – though with notable gender differences:

H3b: There are no social origin differences in the association between childbearing and stopping applying.

Data, sample and methods

We use full population register data from Statistics Finland to test our hypotheses. These data come from administrative datasets that include information on socioeconomic characteristics, including family linkages, matriculation exam data, application registers to universities, and educational enrollment data. High-quality register data are particularly well-suited for exploring this topic as it does not suffer from non-response bias and has information also on unsuccessful applications. We chose four cohorts for this study and started restricting our sample by including all individuals born in 1987–1990 who lived in Finland when they turned eighteen, were alive in 2015, had information on at least one parent in the registers (N=257,138) and applied to university at least once between years 2006–2013 (N=91,111). We further restricted the sample to those who at least once had an *unsuccessful* application to university between years 2006–2013 (23 % of all, N=58,375) and even further to those who graduated with an academic upper secondary (matriculation) degree before their first application to university during our observation period (i.e. we drop vocational upper secondary graduates who don't have a double degree). This constitutes our origin sample (21 % of all, N=53,462).

The data is organized in a person-period format. The metric for time is year as the event is discrete by nature: individuals can apply to university only once a year during late winter/spring. Individuals are followed annually for a maximum of four years between 2006–2014 and the data contains yearly information on whether an individual applied to any university programme in Finland or not. The event of interest (i.e. destination state) is to stop applying to university. The clock starts ticking from the first unsuccessful application to university. Being at risk of making the application decision in year (spring) t is conditional on being rejected in year (spring) $t-1$. Individuals leave the risk set when they get accepted to university or when they stop applying (i.e. experience the event of interest). In other words, an individual who is accepted to university is removed from the risk of stopping applying the following year and is thus censored. We examine only the first transitions, i.e. the first time an individual stops applying to university after being rejected. After one or more gap years in applications, 11 % of individuals in our sample started applying to university again, with no statistically nor substantially significant differences by social origin (see Table A1 and Figure A1 in the Appendix).

In terms of independent and control variables, the following are used in our study:

Parental education (time-constant covariate) is used as our measure of social origin and is the main independent variable of the study. It is a time-constant binary variable which gets the value 1 if either of the parents had a higher education degree (Bachelor level and above) when the child turned 18 and value 0 if neither of the parents had a higher education degree.

Matriculation examination grade (time-constant covariate) is an average of the grades of (usually four) mandatory matriculation exams.¹ Matriculation exams are the first and only central examinations in the Finnish education system. We give numerical values to the seven Latin names with which the matriculation exams are graded (from the lowest to the highest:

improbatur=1, approbatur=2, lubenter approbatur=3, cum laude approbatur=4, magna cum laude approbatur=5, eximia cum laude approbatur=6, laudatur=7).

Started studying in polytechnics (time-dependent covariate) is a binary variable which gets the value 1 when an individual starts studying at a polytechnic in autumn $t-1$ or in spring t . In contrast to the yearly cycle of university applications, polytechnics have application and entrance cycles in both spring and autumn.

Earnings (time-dependent covariate) measures income relative to one's age group and is calculated by dividing an individual's annual earnings with age-specific median earnings. It is based on the sum of wage income and entrepreneurial income and it is inflation adjusted based on the 2014 euro.

First biological child born (time-dependent covariate) is a binary variable which gets the value 1 when the first biological child is born.

In addition to these, we control for sex (male/female), year of birth (1987–1990), unemployment status in year t (received at least 3 months of unemployment benefits in year t or not) and whether the application year $t-1$ was the year the individual graduated from general upper secondary school or not.

Table 1 describes the distribution of the time-constant covariates (for time-dependent covariates see Appendix Table A2). Out of all young people in the included cohorts, 35 % applied to university at least once between the years 2006–2013 and 64 % of them were rejected the first time they applied, underlining the prevalence of rejection. Females are overrepresented among university applicants and especially among those who were rejected the first time they applied. Among those applying to university, children of university-educated parents are overrepresented and they have higher exam grades on average. Those who were rejected the

first time they applied have lower exam grades and fewer of them have university-educated parents compared to all university applicants but more than in the entire cohort. As most vocational upper secondary graduates do not take matriculation exams and they are less likely to apply to university, the grade is missing for more than half of the whole origin sample but only for around 6 % of university applicants. Those who failed to access university the first time they applied have on average lower exam grades than those who gained access, but the difference is only 0.3 on a scale of 1–7.

TABLE 1

We use discrete-time event history models and start by describing the patterns with life tables showing hazard functions, survival functions and cumulative failure functions. As we are interested in social origin differences, we show hazard rates also by parental education. We then continue with logistic discrete-time hazard models. As we have no theoretical assumptions about the shape of the baseline hazard, we use a non-parametric baseline hazard by including a dummy for each application year (excluding the first year and including the constant). We relax the proportional hazards assumption by interacting the time dummies and parental education. We display all the estimates from the logistic discrete-time hazard models as average marginal effects (AMEs) or predicted probabilities for their ease of interpretation and comparability between models.

Results

We start by displaying the life table with hazard rates, survival rates and cumulative failure rates for the full selected sample (Table 2). Being at risk of stopping applying is conditional on being rejected the previous year and thus in the first interval, the risk set includes all of those

who were rejected the first year they applied (N=53,462). After the first rejection, 44 % of individuals stop applying to university (N=23,720). Censored refer to those who accessed university the previous year and thus are removed from the risk set. The hazard rate stays surprisingly stable from year one to year four after the first application. Every year, 42–44 % of individuals who are at risk of stopping applying to university after rejection in the previous year stop applying. After four consecutive rejections, 11% of the original sample are still applying to university for the fifth time. In other words, at this stage 89 % of rejected applicants have stopped applying to university.

TABLE 2

As we are interested in social origin differences in stopping applying, we display the hazard rates by parental education in Table 3. After the first rejection, young people with university-educated parents have a substantially lower (conditional) probability of stopping applying to university (0.38) compared to those without (0.47). We consider this 9 percentage point (pp) difference in re-applications a large gap given that it amounts to approximately a fifth of the total share of re-applications. The differences by parental education are larger after first rejections and the groups become more similar over application years, with no difference in stopping applying after four rejections.

TABLE 3

In Table 4 we test whether this parental education difference can be explained by our main independent variables: matriculation exam grades, polytechnic studies, earnings and birth of the first child. We display the estimates from the logistic discrete-time hazard models as

average marginal effects to be able to compare the coefficients between models. Model 1 presents an ‘empty’ model including parental education, time dummies (not shown in the table) and the control variables (not shown in the table). To see the change in the parental education coefficient, we add each of these independent variables individually in Models 2–5. Model 6 includes all the independent variables. The social origin gradient in conditional probabilities (Table 3) motivated us to relax the proportional hazards assumption for parental education and thus an interaction effect is included between the time dummies and parental education in all the models in Table 4 but it is not shown as the coefficients are converted into average marginal effects. We come back to the differences over time later on. In line with this, the likelihood ratio test comparing models with and without the interaction term assured us to use the relaxed models ($p < 0.001$).

TABLE 4

Model 1 is broadly in line with the descriptive figures discussed above: children of highly educated parents have an 8 pp lower probability to stop applying to university in year t after a rejection in year $t-1$ compared to children of lower educated parents. In other words, children from highly educated families more often re-apply to university after failure(s) to access. The higher the previous exam grades, the lower the probability to stop applying (Model 2): as the matriculation exam average increases by one, the probability to stop applying decreases by 6 pp, adjusting for parental education and the control variables. The association between parental university education and stopping applying is explained only to a relatively minor extent by school performance as the coefficient is reduced by slightly less than 1.5 pp.

Starting to study in polytechnics in autumn $t-1$ or in spring t increases the probability to stop applying to university in spring t by 31 percentage points, adjusting for the other covariates.

The parental education coefficient does not decrease substantially (less than 1 pp) after including studies at polytechnics. What is more, the parental education estimate does not change substantially (the difference still being around 8 pp) when earnings and the birth of the first child are added to the models (Models 4 and 5). The higher the earnings relative to one's age-specific median earnings, the lower the probability to stop applying. In other words, rather than enticing young people away from re-applying to university, labor market success is associated with a stronger commitment to continue applying, in contrast to what we expected. The small increase in the parental education coefficient between Models 1 and 4 (from 7.5 to 8.2 pp) is due to applicants with university educated parents having higher earnings and a lower probability to stop applying. Having a child increases the probability to stop applying to university by 25 percentage points. Contrary to our expectation, early family formation among the rejected applicants does not explain social origin differences as the parental education estimate does not change at all (with no major sex differences in how this influences the social origin gap despite the substantial difference in how this influences application behavior overall, see Tables A3 and A4 in the Appendix). It is worth noting that having a first child after being rejected is a rare event and only very few experience it in our sample (see Appendix Table A2). Consequently, family formation seldom interrupts the cyclic transition process to access university in Finland, but if it happens, it notably increases the probability to stop applying, especially for women.

Finally, in the last model (Model 6), all independent variables are included and the difference between applicants with and without university educated parents is reduced from 8 pp (Model 1) to 6 pp. Thus, our results show persistent social origin differences in re-applications that are explained only to a rather limited extent by differences in school performance and life-course

events taking place during the application years, supporting our *Hypotheses 1 and 2a* as well as *2b* with regard to polytechnic studies but not labor market integration or childbirth.

Table 3 displayed conditional probabilities of stopping applying to university by parental education and showed that differences by parental education groups were substantial in the first and the second year after the failure. Figure 1 confirms these results and shows that the differences between parental education groups during the first years are not due to differences in school performance, polytechnic studies, earnings or childbirth as all of these as well as the control variables are included in the model that this figure is based on (Model 6 from Table 4). The figure displays the estimated marginal effect of having a university educated parent on stopping applying over the consecutive application years. This estimate is 7 pp after the first rejection and the estimate decreases over application years. After four rejections, there are no statistically significant differences in re-application behavior between those with and without university educated parents (confidence interval overlapping zero-line). Nevertheless, it should be remembered that this does not mean that there are no social origin differences in being admitted to university after these four consecutive rejections.

FIGURE 1

Lastly, we explore whether the associations between the independent variables of interest and stopping applying differ by parental education. The four panels in Figure 2 display the results in terms of the predicted probability of stopping applying depending on matriculation exam grades (upper left), polytechnic studies (upper right), earnings (bottom left) and having a child (bottom right). As can be seen, we do not find any substantial differences in the associations by parental education but rather that, on the whole, the associations are similar for both those

with a university educated parent and those without. The better the average grade from matriculation exams (included as both the linear and the square term in the model), the lower the probability to stop applying after rejection, the differences by parental education groups being largest among the average performers, contrary to our expectations concerning compensatory advantage in *Hypothesis 3a*. Starting studies in polytechnics substantially increases the probability to stop applying to university after a rejection. The association is very similar in size for both parental education groups, indicating that there are no substantial social origin differences in using polytechnics as a stepping stone while continuing with university applications as expected in *Hypothesis 3a*. Polytechnic studies increase the likelihood to stop applying by 31 pp for young people with a university educated parent, and by 30 pp for those without.

FIGURE 2

Continuing with the bottom panels, we find that the higher the earnings relative to one's age-specific median earnings (divided into deciles and added as a categorical variable in Figure 2 to capture non-linearities), the lower the probability to stop applying to university (bottom left). The differences by parental education are relatively constant across the earnings range and thus the results are contrary to our *Hypothesis 3a*.

Finally, having a child seems to produce a similar increase in the probability to stop applying by parental education (bottom right) as was expected in *Hypothesis 3b*. As the number of cases for those having a first child during the time observed is very low, the difference between parental education groups in this case is not statistically significant.

Discussion

In cyclic educational transitions, in which re-attempts are an essential part of the process, low social origin applicants have a higher probability to self-exclude themselves after being rejected. Using high-quality Finnish register data with discrete-time event history models, we were able to show that children from higher social origins are more persistent with re-applications and have a lower probability to stop applying after rejection(s), even net of differences in prior school performance and life-course events taking place after the rejection, such as other higher education studies, labor market success and childbearing. If second chances after ‘false steps’ (Bernardi 2012) in educational pathways are mainly used by children from high social origins, an application system including several repeated attempts may even reinforce social inequalities. The socially selective queue, in which all students do not have the same incentives or possibilities to stand waiting, can be seen as a form of institutionalized social exclusion in university admissions.

At worst, non-admittance may lower individuals’ meritocratic beliefs as society encourages individuals “to live up to their dreams” whilst limiting the necessary opportunity structures (Isopahkala-Bouret 2020:373). Analyzing online narratives of Finnish university applicants who have faced educational rejection, Isopahkala-Bouret (2019) has formulated three explanatory story models. The first group, “Never give up on your dreams”, saw rejection as a barrier that just has to be surpassed, and emphasized how much faith their significant others had in them. Isopahkala-Bouret (2019:12) argues that private preparatory course markets are targeted especially for these applicants as they aim to spend their gap year with self-improvement activities. In the second group, “Need to figure out a new plan”, thoughts of alternative options were present: some were applying to polytechnics the following year and some were considering studies abroad. In the last group, “You can’t get everything you want

in life”, there were arguments against formal education and towards the “self-made person” (Ibid.:13), along the lines of “Bill Gates did it, why wouldn’t I?”.

With this research, we extend the literature on educational transitions by focusing on cyclic processes of educational rejections and re-applications. When making an application to university, individuals have come a long way from being eligible to apply in the first place as well as having educational aspirations and expectations high enough to apply. Rather than studying anticipation of admission barriers (Finger 2016; 2021), we explore overcoming these barriers by re-applications. Individuals who have faced failure to access university have at least once tried to realize their educational expectations until access barriers force them to re-evaluate their plans. Andrew and Hauser (2011) have shown that to change adolescents’ educational expectations the *new signal* of academic achievement has to be very strong. We argue that educational rejection is a feasible example of such a strong signal, and what is more, applicants from low social origins are found to be more responsive to this.

Competitive access and high admission barriers have been shown to disproportionately benefit advantaged students (Alon 2009). As anticipating high admission barriers may lead high social origin students to compromise their preferred field of study (Finger 2021), parental compensation could also appear in adapting to rejection by changing the preferred field of study in the cyclic application process. It is also possible that high social origin students are more persistent with their applications to a specific field of study. As our interest has been in stopping applying to university, we have not included the field(s) of studies individuals applied to in our setting. However, cumulative failure rates of stopping applying by fields of study replicate our main findings (Appendix Figure A2). Re-applications are common in all fields of studies, not only in the ones that can be considered as the most prestigious, and especially

among high social origin applicants. Elaborating social origin differences in various navigation strategies into and through higher education will remain a fascinating avenue for future research.

Research ethics statement

Research based solely on register data does not require the consent of the individuals investigated or ethical approval. Good scientific practice and data protection regulations were followed throughout the study. Statistics Finland provided permission to use the anonymized register-based data.

Endnotes

1. Grades from re-sits before graduation are included but after-graduation re-sits are not taken into account. In our study period, students had one attempt to re-sit an approved exam and two attempts to re-sit a failed exam.

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Tables

Table 1. Descriptive statistics of the sample and the time-constant independent variables.

		<i>All: Cohorts 1987–1990 (N=257,138)</i>	<i>Out of whom: Applied to university at least once (N=91,111) 35 % of all</i>	<i>Out of whom: Failed to access university at least once (N=58,375) 64 % of applicants, 23 % of all</i>	<i>Out of whom our analytical sample: (N=53,462) 92 % of “first-time failures” 59 % of applicants 21 % of all</i>
Sex	Female	49 %	58 %	62 %	62 %
	Male	51 %	42 %	38 %	38 %
University educated parent	Yes	21 %	38 %	33 %	34 %
	No	79 %	62 %	67 %	66 %
Matriculation exam grade	Mean (scale 1–7)	4.3	4.6	4.3	4.3
	Missing for:	49 %	6 %	7 %	0 %

Table 2. Life table for stopping applying to university: hazard rates, survival rates and cumulative failure rates.

Years since first application	At risk	Event occurred	Censored	Hazard rates	Survival rates	Cumulative failure rates
1	53462	23720	10554	0.44	0.56	0.44
2	19188	8015	3933	0.42	0.32	0.68
3	7240	3142	1374	0.43	0.18	0.82
4	2724	1139	1585	0.42	0.11	0.89

Table 3. Conditional probability (hazard rates) of stopping applying to university by parental education with 95% confidence intervals.

Years since first application	No university educated parents	University educated parent
1	0.47 [0.4671, 0.4815]	0.38 [0.3748, 0.3928]
2	0.44 [0.4259, 0.4491]	0.38 [0.3658, 0.3955]
3	0.45 [0.4290, 0.4673]	0.41 [0.3838, 0.4334]
4	0.42 [0.3877, 0.4483]	0.42 [0.3798, 0.4609]

Table 4. Stops applying to university in t , conditional on a rejection in $t-1$. Average marginal effects after logistic discrete-time hazard models.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
University educated parent (ref. No)	-0.075*** (0.004)	-0.061*** (0.004)	-0.069*** (0.003)	-0.082*** (0.004)	-0.075*** (0.004)	-0.057*** (0.003)
Matriculation exam grade		-0.062*** (0.002)				-0.066*** (0.002)
Started studying in a polytechnic			0.314*** (0.004)			0.308*** (0.001)
Earnings				-0.043*** (0.002)		-0.027*** (0.001)
First child born					0.246*** (0.018)	0.224*** (0.018)

All models control for sex, year of birth, a dummy for whether an individual received at least 3 months unemployment benefits in the application year and a dummy for whether the previous application year was the year the individual graduated from general upper secondary school. Time dummies not presented in the table.

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Number of individuals: 53,462. Number of person-years: 82,614.

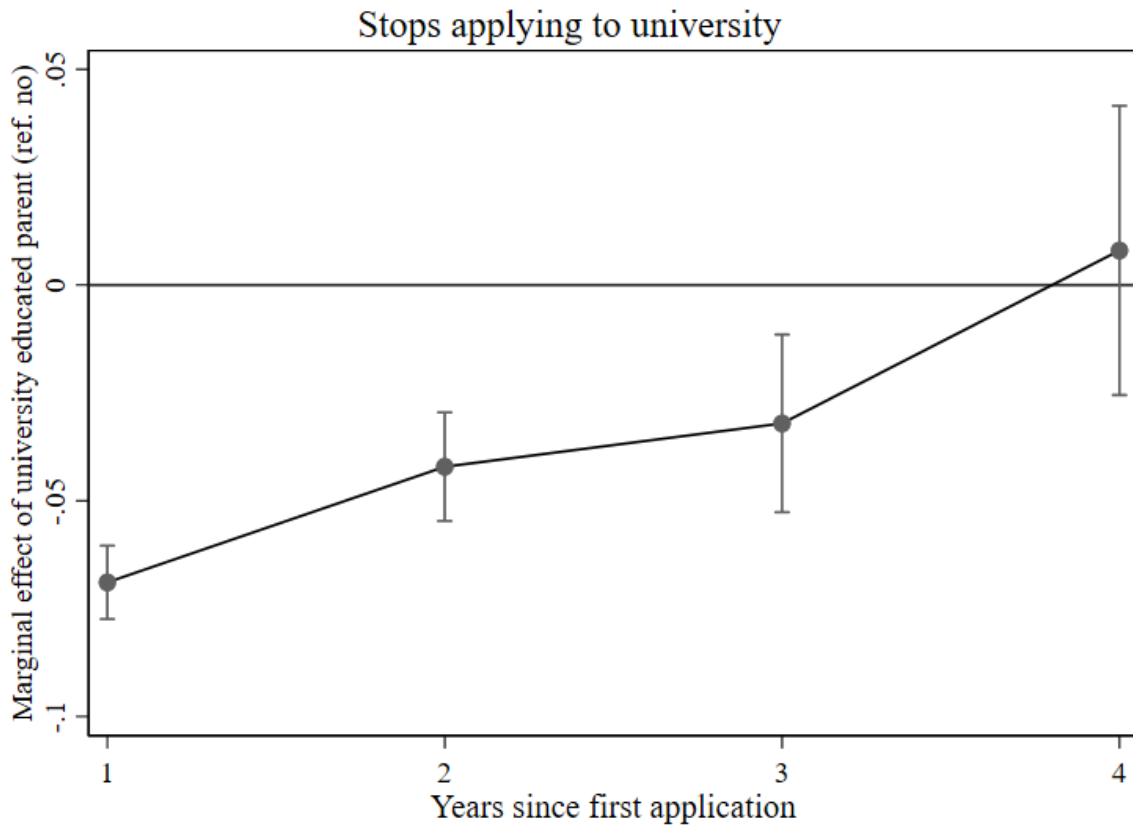


Figure 1. Estimated difference in stopping applying to university between high and low social origin applicants by application year, conditional on rejection in $t-1$. See Model 6 in Table 4 for details. 95 % confidence intervals around the estimates.

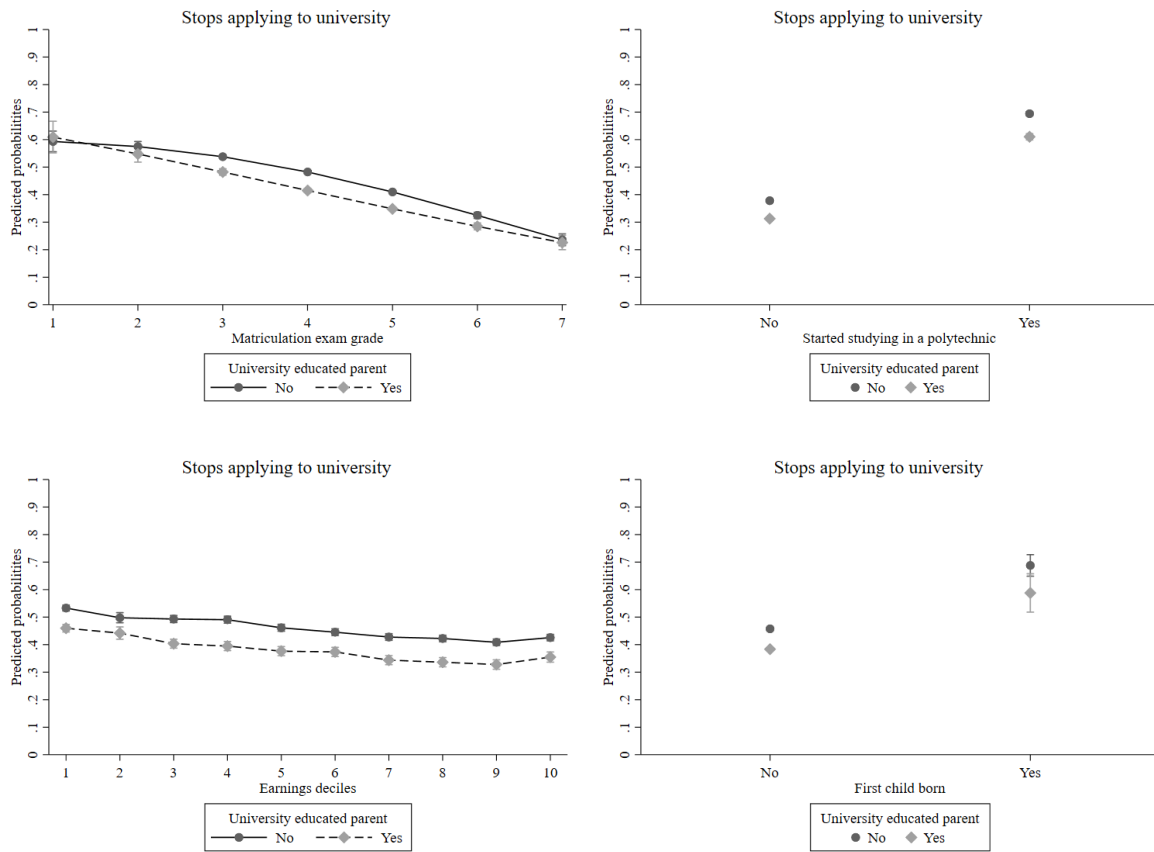


Figure 2. Social origin differences in the way different predictors are associated with stopping applying to university, conditional on rejection in $t-1$. Predicted probabilities based on interactions added to Model 6 (Table 4). 95 % confidence intervals around the estimates.

Online appendices

Table A1. Applying to university after gap year(s) in applications. Average marginal effects after logistic regression (N=85,962).

	AME
University educated parent (ref. No)	-0.00003 (0.002)
Matriculation exam grade (1-7)	-0.036*** (0.001)
Female (ref. Male)	-0.012*** (0.002)

Standard errors in parentheses. *p<0.05, **p<0.01, ***p<0.001

Table A2. Descriptive statistics of the time-dependent categorical covariates. Proportion of those at risk in the specific application year (*N*).

Years since first application	Started studying in a polytechnic	First child born
1	24.8 % (13,258)	0.7 % (398)
2	27.4 % (5,255)	0.9 % (175)
3	24.4 % (1,764)	0.9 % (67)
4	18.6 % (506)	1.1 % (30)

Table A3. Stops applying to university in t , conditional on a rejection in $t-1$. Average marginal effects after logistic discrete-time hazard models. *Females*.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
University educated parent (ref. No)	-0.083*** (0.005)	-0.067*** (0.005)	-0.077*** (0.004)	-0.090*** (0.005)	-0.082*** (0.005)	-0.063*** (0.004)
Matriculation exam grade		-0.058*** (0.002)				-0.066*** (0.002)
Started studying in a polytechnic			0.336*** (0.005)			0.330*** (0.005)
Earnings				-0.048*** (0.002)		-0.027*** (0.002)
First child born					0.276*** (0.020)	0.247*** (0.020)

All models control for year of birth, a dummy for whether an individual received at least 3 months unemployment benefits in the application year and a dummy for whether the previous application year was the year the individual graduated from general upper secondary school. Time dummies not presented in the table.

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Number of individuals: 33,197. Number of person-years: 51,385.

Table A4. Stops applying to university in t , conditional on a rejection in $t-1$. Average marginal effects after logistic discrete-time hazard models. *Males*.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
University educated parent (ref. No)	-0.065*** (0.006)	-0.053*** (0.006)	-0.058*** (0.006)	-0.068*** (0.006)	-0.065*** (0.006)	-0.047*** (0.006)
Matriculation exam grade		-0.068*** (0.003)				-0.068*** (0.003)
Started studying in a polytechnic			0.280*** (0.006)			0.275*** (0.006)
Earnings				-0.025*** (0.003)		-0.013*** (0.003)
First child born					0.116*** (0.044)	0.116*** (0.042)

All models control for year of birth, a dummy for whether an individual received at least 3 months unemployment benefits in the application year and a dummy for whether the previous application year was the year the individual graduated from general upper secondary school. Time dummies not presented in the table.

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Number of individuals: 20,265. Number of person-years: 31,229.

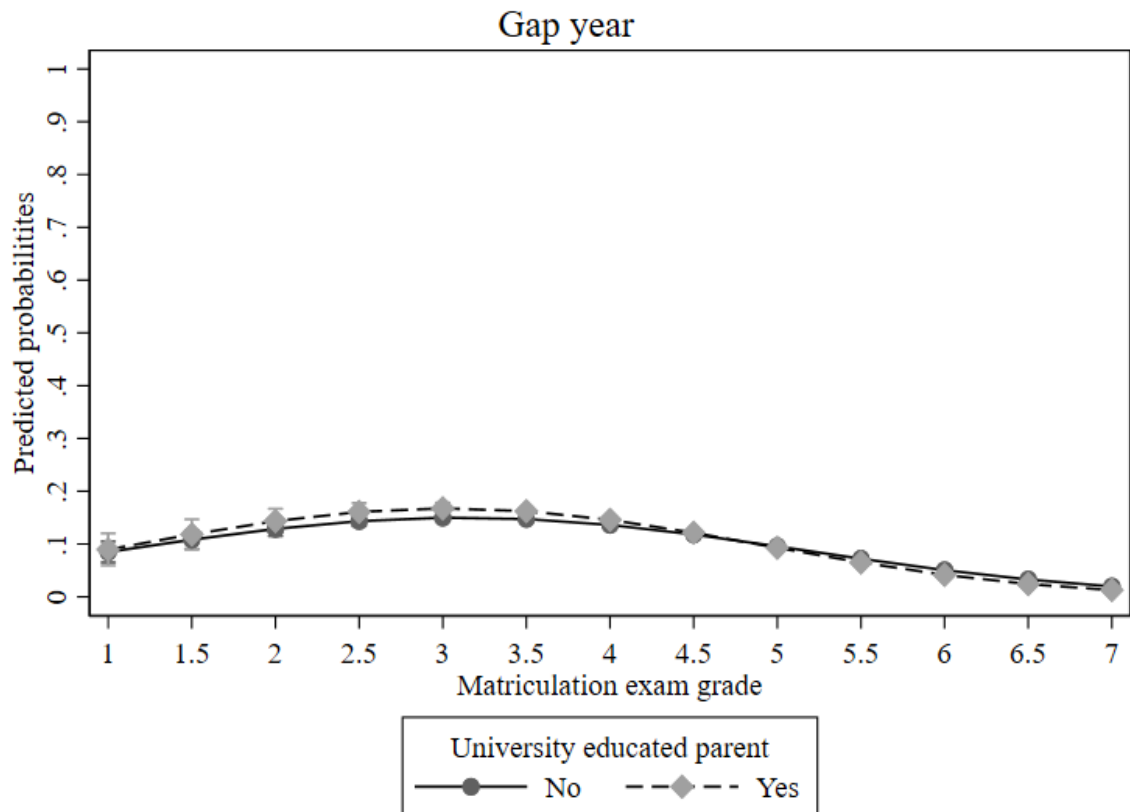


Figure A1. Applying to university after gap year(s) in applications according to matriculation exams grades and parental education (N=85,962). Predicted probabilities after logistic regression. 95 % confidence intervals around the estimates.

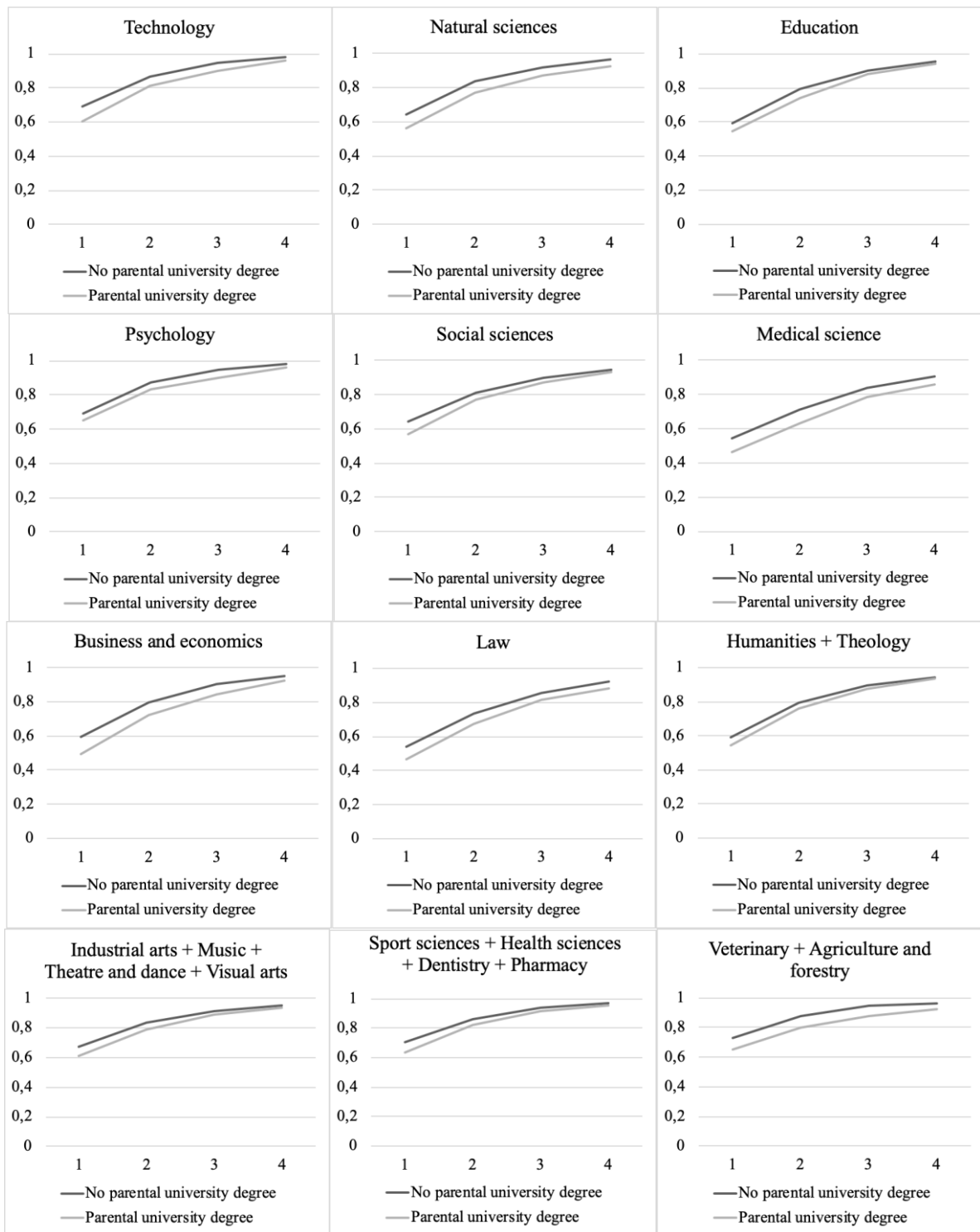


Figure A2. Cumulative failure rates by field of study according to years since first application and parental education.