

# Geographical mobility and children's non-completion of upper secondary education in Finland and Germany: Do parental resources matter?

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It is often assumed that families migrate to improve their economic and social prospects, and that these additional resources can benefit the whole family. However, existing research suggests that many children who have experienced (internal) migration underperform compared to their non-migrating peers in terms of different socioeconomic outcomes. In this article, we study the effects of geographical mobility on children's non-completion of upper secondary education in Finland and Germany using Finnish register data and the German National Educational Panel Study. Our findings indicate that moving during childhood is associated with the risk of not attaining any secondary degree in both countries. In Finland, this is mostly explained by negative selection into moving (i.e. those who move are more likely to be disadvantaged). In Germany, however, an independent association between moving and educational attainment remains after taking into account various reasons why families move. Furthermore, for both Germany and Finland, any labour force status or earning gains parents make after a move do not seem to compensate for the negative influence of internal migration on children's educational dropout. Overall, we conclude that geographically mobile children may be a vulnerable subgroup in the inter-generational transmission of inequality, therefore schools have an important role to play in integrating internal migrants—as well as international migrants—into the social networks of the schools they arrive in.

**Keywords:** geographical mobility; inter-generational social mobility; non-completion; social inequality

## Introduction

Among Europeans, around half believe that migrating to a new region or country is a good thing for individuals (European Commission, 2010) and internal migration is commonplace (Bernard, 2017). It is often assumed that families migrate to improve their economic and social prospects, and that these additional resources can benefit the whole family (Mincer, 1978; Massey *et al.*, 1993). However, existing research suggests that many children who have experienced (internal) migration directly (i.e.

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moved from one location to another during childhood) underperform in terms of different socioeconomic outcomes compared to their non-migrating peers (Verropoulou *et al.*, 2002; Tonnessen *et al.*, 2016). Migration is often preceded by potentially disruptive life-course events, such as parental unemployment (DaVanzo, 1978) or separation (Feijten & van Ham, 2007; Wingens *et al.*, 2011; Impicciatore & Panichella, 2018), and these are likely to have an influence on children as well. Furthermore, when families move, something often remains in the location of origin, for instance important relationships, information sources and networks that guide positive behaviour.

While the impact of parental unemployment and separation on children's educational attainment has been examined extensively in social stratification research, their interplay with processes of internal migration has rarely been considered. A main reason for this is that the data requirements for studying the role of geographical mobility in inter-generational inequality transmission processes are high (cf. Tonnessen *et al.*, 2016).

In this article, we study the effects of internal geographical mobility on children's educational dropout. We focus on dropout (non-completion of upper secondary education) because it is the most obvious case of educational disadvantage and linked to various disadvantageous life-course outcomes, including labour market marginalisation. We study these processes in Finland and Germany using Finnish register data and the German National Educational Panel Study (NEPS), respectively. Welfare state support and labour market regulations are likely to influence migration decisions, whereas education systems may influence how moving affects children's educational outcomes. However, our aim is not to compare these countries as such, but rather to provide two case studies of how internal migration is associated with the long-term outcomes among children in different institutional settings.

We consider whether any negative influence of moving on children's educational dropout is due to selection related to coinciding or prior disruptive life-course events, whether these events amplify the negative effects of moving or if there are any gains from moving that can compensate. By doing so, the article aims to go beyond the current state of the art by developing the prevailing understanding of the mechanisms that underlie how childhood environments and events, in particular those linked with internal migration, translate into later-life educational inequalities.

## **Theoretical background and previous empirical results**

The child development literature has provided substantial evidence of the often negative consequences of moving to school-aged children. This literature typically focuses on several child outcomes that coincide or manifest shortly after a move takes place; for example, children's cognitive and psycho-social skills (e.g. Coley & Kull, 2016 for school-aged children; Gambaro & Joshi, 2016 for early childhood), wellbeing (Scanlon & Devine, 2001; Verropoulou *et al.*, 2002), educational attainment and dropout (Tonnessen *et al.*, 2016; Vidal & Baxter, 2018) and health behaviours (Bures, 2003; Busacker & Kasehagen, 2012), among others (Jelleyman & Spencer, 2007; Gasper *et al.*, 2010). There is also a substantial body of literature that focuses on the association between child outcomes and residential mobility between neighbourhoods

(Sampson *et al.*, 2002; Sharkey & Faber, 2014; Andersson & Malmberg, 2015), or which emphasises the potential benefits to poorer children who move to better-quality neighbourhoods (Jencks & Mayer, 1990).

More recently, due to the greater availability of longitudinal data spanning several decades, there has been a growing interest in the longer-term consequences of childhood geographical mobility, with Tønnessen *et al.* (2016) and Verropoulou *et al.* (2002) finding negative and Hango (2006) finding positive effects. Ballarino and Panichella (2015) analyse outcomes of both the 1.5 generation of internal migrants (those children who experience a move) and the second generation (those born in the area their parents relocated to) in Italy. They find that children who experience the move directly are penalised compared to the non-migrating peers of the destination region (in Northern Italy), even though they have some advantages compared to the non-migrating peers of the departure region (in Southern Italy). Several studies examining child outcomes have found that the frequency of moves (how often children move) or the timing of moves (whether or not it happens in childhood or adolescence) can at least partially determine the consequences (Tønnessen *et al.*, 2016; Anderson & Leventhal, 2017; Leventhal, 2018). For example, Tønnessen *et al.* (2016) found that more frequent residential moves (between municipalities) during childhood are associated with negative adult outcomes such as high school dropout, lower adult income and early parenthood.

Several explanations have been given for the reasons why geographical mobility might be harmful (e.g. Astone & McLanahan, 1994; Tønnessen *et al.*, 2016). One that is often discussed is the loss of social networks (school friends and neighbours) and the associated social capital that benefits educational attainment (see e.g. Coleman, 1988). Another is the stress/strain theory, which attributes negative outcomes to the disruption that children experience prior to and during/following a move (Hango, 2006). For example, Simmons *et al.* (1987) identified that children who are forced to cope with several life transitions concurrently (including family disruption, school transition and residential mobility) were at greater risk of negative consequences, such as lower self-esteem and lower grade-point averages. In this case, moving can be considered one possible factor that amplifies other accumulated disadvantages.

As far as the authors are aware, no prior studies have examined if occupational gains to parents resulting from a move can help to compensate for the disruptions children face or taken into account recent insights into the inter-generational transmission of advantages and disadvantages.

### **Prior disruptive life events and geographical mobility**

In the social stratification literature, parental unemployment and separation are often described as disruptive life-course events for children, and both of these are commonly associated with moving. Parental unemployment has been reported to have a negative association with children's adult socioeconomic attainment (Rege *et al.*, 2011; Brand & Thomas, 2014; Lehti *et al.*, 2019). In addition, children from socioeconomically disadvantaged families may experience more unplanned and more frequent moves due to financial crises or threats (see Webb *et al.*, 2016). If moving

occurs because of re-employment, these children could also benefit from a move because of increased socioeconomic resources (see below). Nevertheless, if the quality of the new job is low, in a field where geographical mobility is common and the contracts are short-term, the family may be forced to relocate often.

Union dissolution has been shown to have a negative impact on children's educational attainment, although the exact mechanisms behind this continue to be debated (e.g. Bernardi & Boertien, 2016, 2017). The negative impact has been attributed to loss of available financial resources (partly due to the loss of economies of scale), family conflict and residential relocation (Amato, 2010). If the move is over a longer distance, then children are also likely to lose daily contact with one parent and possibly also siblings. In contrast, in the case of strong family conflicts, children may also benefit from the separation and the geographical mobility.

Therefore, it is perhaps not surprising that when controlling for various pre-existing differences related to these aspects between movers and non-movers, the evidence for the negative consequences for the children of mobile families is more mixed, or often missing entirely (Tønnessen *et al.*, 2016).

Consequently, we would expect that:

*H 1.* The negative association between internal migration and children's educational dropout can be attributed to disruptive life-course events before moving (i.e. parental unemployment and separation) (*disruption hypothesis*).

### **Geographical mobility as part of cumulative disadvantage**

A key question for social stratification research is whether parental resources and life-course events play a role in accumulating disadvantages (Merton, 1968; O'Rand, 2002; DiPrete & Eirich, 2006). Accumulated disadvantage is commonplace in research on health and poverty. For instance, lower socioeconomic status families are more likely to have low birthweight children, who are at increased risk of social disadvantage in adulthood, even compared to other children with a similar social background (Bartley *et al.*, 1997). Similarly, growing up in a low-educated family, facing parental unemployment and receiving social assistance during childhood all increase children's chances of low educational attainment, even in egalitarian institutional contexts (Kallio *et al.*, 2016). In addition to selection related to other negative life events, it was suggested above that the influence of geographical mobility on educational outcomes may also be amplified by these life events taking place after the move (cf. Simmons *et al.*, 1987). Families remaining intact may mitigate the negative influence of internal migration, or parental separation may exacerbate its influence.

We can distinguish between 'inter-family' networks (networks between families and community members) and 'intra-family' networks (relationships within the family) (Coleman, 1988; Tønnesen *et al.*, 2016). Migration tends to result in the loss of the child's and parents' social connections (e.g. through the disruption to relationships with neighbours, teachers and peers). When this is the case, moving disrupts inter-family networks—even if new ones are waiting or built in the area of settlement. If that is further associated with the disruption of intra-family networks, these disadvantages can accumulate. At the same time, if families remain intact during or after a

move, then intra-familial social capital (in terms of parental support) can help compensate for the loss of extra-familial (inter-family) social capital that the child may face (Hagan *et al.*, 1996).

Thus our second hypothesis states that:

*H 2. Parental separation together with internal migration amplify the negative association between internal migration and children's educational dropout (accumulated disadvantage hypothesis).*

### **Sources of compensation for geographically mobile families**

In recent studies on the role that parental resources play in the inter-generational transmission of dis/advantages, it has been found that parents can compensate one resource for another if that resource is low or missing entirely (see Erola & Kilpi-Jakonen, 2017). For example, parents can use their resources to compensate children's disadvantages because of their month of birth (Bernardi & Grätz, 2015), or a highly educated parent can compensate the loss of resources due to the other parent's death (Prix & Erola, 2017). Although moving may often be related to disruptive life events, it is also the case that many people move in search of better socioeconomic opportunities. The relationship between moving and individuals' education levels is described as curvilinear, meaning that both those with greater levels of education and those with very low education have a greater propensity to migrate (Smits, 2001; Pekala, 2003). This indicates that people are moving both for opportunity at the top and potentially as a reaction to more negative circumstances at the bottom, with knock-on consequences for their children. However, the former tend to be younger with fewer children, while the latter are perhaps more likely to be parents (Thomas, 2019).

Therefore, parents may move to overcome financial difficulties or to better their occupational chances. In these cases, the improved parental employment situation may also lead to improvements in children's educational outcomes. Indeed, some studies looking at the longer-term consequences to geographical mobility have found a positive influence of geographical mobility on the educational attainment of children (e.g. Hango, 2006).

Thus, we test the following:

*H 3. Parental socioeconomic gains from internal migration can compensate for the negative association between moving and educational dropout for children of movers (compensation hypothesis).*

### **Cross-national differences in geographical mobility between Finland and Germany**

The mechanisms discussed above should be the same everywhere. The question is whether they should be expected to present in a similar manner in contrasting country settings such as Finland and Germany. While welfare state policies are likely to influence the motivations of people—in particular those with children—to move, it is likely

that the structure of the education system is more consequential when it comes to the effects of moving for children.

As regards geographical mobility patterns, Finland and Germany are contrasting cases. In Finland, the population is small and the spatial areas are large, with greater distances between urban areas than in many other Western European countries. Geographical mobility in Finland in the 1990s concentrated on the five biggest urban regions, especially the Helsinki metropolitan area (Pekkala, 2003). The geographical mobility patterns show both better-educated individuals moving to these urban regions and older or less-educated people relocating back to their regions of origin (Pekkala, 2003). Especially in the case of long-distance moves, more-educated and unemployed people have been found to be more likely to move (Nivalainen, 2004).

In Germany, migration patterns are more complex simply because it isn't equally one-directional as in the case of Finland. The federalised system of *Länder*, as well as more dispersed urban centres, can, on the one hand, encourage commuting to the nearest city while, on the other hand, there are more options to migrate for opportunities in more distant cities. This is likely to create differences in why and what kind of families tend to move. Declining family size, women's increasing labour force participation, the growing dependence of families on childcare facilities, increasing costs of commuting and new-build residential development may also go some way in explaining the growing attractiveness of the core regions as places to live in Germany (Sander, 2014).

Additionally, two waves of east/west migration have been observed during our study period. The first one, 1989–1990, was triggered by the opportunities and uncertainties before reunification; the second one, since 1997, coincides with economic stagnation in the east and improving job prospects in the west (Heiland, 2004). Migration numbers and rates between East and West Germany were not evenly spread over age groups: the departure of persons of family building age between 30 and 49 years, together with their children, was especially characteristic of the first wave until 1993. This was counterbalanced by a high eastward flow of young professionals and civil servants in the 25–29 age group, following the government's move from Bonn to Berlin (Glorius, 2010).

### **The education system in Finland and Germany and geographical mobility outcomes**

Germany and Finland differ substantially in terms of the stratification of their education systems. Finland can be considered part of the Nordic inclusive model of education, whereas the German education system is known for being highly stratified (Blossfeld *et al.*, 2016). Formal tracking does not take place until children are around the age of 16 in Finland, at which point young people continue to either academic or vocational (upper) secondary schools, both of which take approximately 3 years to complete and give access to higher education. Selection at this stage is mainly based on educational achievement and young people's own preferences (Kilpi-Jakonen *et al.*, 2016). In Germany, students are selected after 4 to 6 years of initial primary schooling (at ages 10–12) into three different tracks of secondary schooling: lower secondary school (*Hauptschule*), middle secondary school (*Realschule*) and upper

secondary school (Gymnasium). At the end of primary schooling, teachers make recommendations on which secondary school track is most suitable for each child based on pupils' average grades in German and Mathematics. In some Federal States these are binding, while in others they are recommendations (Buchholz *et al.*, 2016).

The German education system is thus more rigid than the Finnish one, and there is a greater influence of social origin. This may mean that moving itself is not as influential for educational dropout. In contrast, small differences between schools in Finland (OECD, 2018) may mean that migration does not change the young person's educational environment much, in particular as contrasted with migration between Länder in Germany, since this could also involve a change in education systems. The relative openness of the Finnish education system may also mean that there is always a chance to catch up, even if migration leads to a temporary falling behind.

## **Data and methods**

### *Data description, Finland*

We use high-quality Finnish register data for recent cohorts of Finnish children born between 1984 and 1992, where we have approximately 15% of the individuals in these cohorts. The sample is constructed based on a random sample of families in 1980. As there were very few immigrants in Finland in 1980, our results concern almost solely the native population. We exclude children with missing information on geographical mobility (3.1%) and control variables (1.6%). In further models for the children experiencing geographical mobility and analysing the childhood family's situation 2 years before and after the moves, we have to exclude 7.5% of the sample with missing information on childhood conditions in these exact years. Our final analytical samples consist of 101,028 children for the full models and 7,750 children for our further analysis among the geographically mobile.

### *Data description, Germany*

The empirical analysis for Germany is based on micro-level, multi-cohort, retro- and prospective data from the Adult Cohort (SC6) of the NEPS (<https://doi.org/10.5157/NEPS:SC6:6.0.1>; Blossfeld *et al.*, 2011). This dataset includes detailed retrospective information on the educational and professional biography of adults of birth cohorts 1956 to 1986 and their places of residence, as well as information on their children's educational careers, making it ideal for examining the influence of childhood geographical mobility on educational attainment.

Although the original NEPS data is quite sizable, because we have to limit our sample to parents with adult children in order to measure educational attainment, we are left with a substantially reduced number of cases. Our analyses focus on children (of sample members) born between 1977 and 1996. Our final analytical sample consists of 2,532 children, of whom 469 experienced geographical mobility.

While retrospective data on geographical location is less susceptible to attrition and selection bias linked to geographical mobility than panel data, it is nevertheless more vulnerable to recall bias than register data.

*Definition of geographical mobility, Finland*

We focus on moves between economic regions to ensure that migration leads to a loss of direct daily contact with social networks in the location of origin. We study mobility between the 70 economic regions of Finland (*seutukunnat*). These economic regions are defined by Statistics Finland based on the cooperation between the municipalities and employment regions. The regions are more fine-grained compared to, for example, Finnish NUTS (*Nomenclature of Territorial Units for Statistics*) regions that are much larger geographically than, for example, NUTS regions in Germany.

In the Finnish data, we have yearly observations of place of residence based on population registers. In the case of missing information, we have imputed the geographical information from 1 year before and 1 year after, but excluded the children with longer missing spells (3.1%). This missingness is mostly due to spells of residence outside Finland. Slightly over 8% of our Finnish sample moved during the ages of 6–15.

*Definition of geographical mobility, Germany*

As in Finland, we analyse geographical mobility that leads to loss of direct daily contact with social networks in the region of origin. We thus define mobility as a move between the administrative district levels (NUTS2). This classification corresponds most closely to the Finnish economic regions. The NEPS data includes retrospectively surveyed residential spells of respondents (i.e. their places of residence). Thus, the data includes not only the current residence (at the time of the interview), but also the individual relocation history of the parents, which we can then use for their children. Approximately 18% of the German sample experienced mobility during the ages of 5–15.

*Definition of obtaining secondary degree, Finland*

We are interested in whether someone obtains a full secondary level qualification or leaves education without a secondary qualification (or delays substantially). In other words, our dependent variable is a threshold variable that examines the role that geographical mobility plays in what is often termed ‘early school leaving’.

In Finland, we define the outcome as attainment of any upper secondary degree, whether vocational or academic, by the age of 22. Roughly 85% of the population in our cohorts obtain a secondary degree by this age (Kilpi-Jakonen *et al.*, 2016). All the educational information is obtained from the educational registers through Statistics Finland. In the very few cases where someone had a higher education degree, but not a secondary one, we have defined them in the group of secondary degree holders.

*Definition of obtaining secondary degree, Germany*

In the German case, full secondary education refers to basic vocational education (vocational beyond compulsory education or intermediate vocational qualification), a general maturity certificate (*abitur*) and beyond. Failure to complete this level of education includes both incomplete and elementary school education, as well as intermediate general secondary education.



In the NEPS, the age that the child obtained their qualifications is not asked in the survey. We include only those who have, at a minimum, reached the typical age that students complete their abitur/general secondary education (19 years of age). However, in order to increase our sample size as much as possible, we include parental reports on their child's educational attainment until as late as possible. This also means that some children in our sample have more time to obtain their highest level of education than others (to illustrate: those born in 1996 have a much shorter timeframe to reach their highest level of education in 2015 than someone born in 1981). In order to mitigate the effect of this, we also control for the year of birth.

#### *Control variable definitions, Finland*

In the Finnish case, we focus on parental education, parental divorce and separation, parental unemployment and household income. Parental education is measured as the parents' highest level of education when the children are 15. We use the CASMIN classification (König *et al.*, 1988) with three categories: basic education, upper secondary education and higher education.

Parental separation or divorce is measured before age 5 and then again between age 6 and 15. It is defined through the household identification in the data. If the biological parents are living apart for two consecutive years, we define them as separated or divorced.

Parental unemployment is also measured before age 5 and then again between age 6 and 15. Parents are defined as unemployed if they have been unemployed for over 4 months in at least one calendar year. This is done to filter out seasonal and transitory unemployment spells. For our birth cohorts (1984–1992), the population registers in Finland have information on the year 1985 and then yearly from 1987 onwards. As the registers are missing the years 1984 and 1986, and some of the sample children are already born on or before those years, we are missing the unemployment data for these years. The bias is, however, expected to be small as the unemployment rate was low in those years and especially low for families with children (Karhula *et al.*, 2017). We also control for the year of birth, which should further mitigate this problem.

In the case of household income, we measure it first at age 5 and later as an average when a child is age 6–15. The household income is equivalised using the modified OECD scale and divided into income quintiles. We also include controls for gender, year of birth (as mentioned above) and registered (home) language, distinguishing between speakers of national languages (Finnish, Swedish, Same) and others.

#### *Control variable definitions, Germany*

In the German case we use information from the main respondent of NEPS to construct our family background variables of interest. We focus on parental education, family situation (whether or not a partner moved out and divorced), parental unemployment and occupational status. Parental education is measured up to when the child turns 5 using the CASMIN classification with three categories: basic education (including basic vocational), general/vocational intermediate secondary level and abitur and beyond.

Parental separation and divorce is measured before age 5 and again between ages 5 and 15. It is based on all episodes of cohabitation and the partnership spell files of the NEPS. A partnership is assumed to have ended either in a divorce or if a partner moved out of the child's home.

Parental employment histories are constructed and episodes split according to the recommendations of Rompczyk and Kleinert (2017). Unemployed parents are defined as those who experienced any unemployment spell or interruption of greater than 2 months, whereas the reference group consists of those consistently employed up to when their child was age 5 and similarly between age 5 and 15.

Parental occupational status is measured using the International Standard Classification of Occupations 2008, which has been converted to ISEI-08 (The International Standard Classification of Occupations, 2012). We measure ISEI-08 at age 5 and again at age 15. We also include controls for gender, year of birth (as mentioned above) and being born abroad.

### *Modelling strategy*

To analyse the association between moves and educational dropout, we use logistic regression models and present our results with average marginal effects (AMEs). The AMEs can be interpreted as percentage changes in the probability of obtaining a secondary degree. Because our data is based on samples of parents and thus also includes siblings, we take this into account with cluster robust standard errors.

We build our models stepwise and include the parental variables in the models from two separate time periods to make distinctions between events taking place before and at the time of geographical mobility.

In order to analyse whether disruptive life events cause accumulated disadvantage, we test an interaction between parental relationship status and geographical mobility. We then go further into examining how potential gains (or losses) related to mobility are associated with educational dropout by focusing on children experiencing mobility and measuring their family/parental characteristics 2 years before and 2 years after a move, and how these are related to dropout.

Our modelling strategy captures much of the selection behind geographical mobility. However, there is a possibility of uncontrolled selection that could have been accounted for with more causal setup (for an overview, see Garboden *et al.*, 2017). For future research, approaches using optimal matching (e.g. Anderson & Leventhal, 2017), fixed effects models (e.g. Gasper *et al.*, 2010) and instrumental variables (e.g. Cordes *et al.*, 2019) could be applied to better test for the causality of the associations.

## **Descriptive results: movers and non-movers in Finland and Germany**

There is a negative association between moving during childhood and educational dropout in Finland (Table 1). The children experiencing mobility during school age are from poorer families: almost a third are in the lowest quintile of family income in both early and later childhood. In mobile families, fathers and mothers have experienced unemployment more often. Rates of parental divorce or separation are greater

Table 1. Descriptive statistics based on experience of area mobility in childhood (age 6–15) in Finland

	Non-mobile (%)	Mobile (%)
Secondary degree (age 22)	86.3	78.8
Parental education		
Primary	6.9	7.1
Secondary or post-secondary non-HE	69.2	62.8
Higher education (polytechnic or university)	23.8	30.1
Family income before age 5		
1. Quintile (lowest)	18.3	31.0
2. Quintile	20.0	20.9
3. Quintile	20.5	16.7
4. Quintile	20.7	14.9
5. Quintile (highest)	20.4	16.5
Parental divorce or separation before age 5	12.4	27.4
Father's unemployment before age 5	21.1	31.3
Mother's unemployment before age 5	23.7	37.0
Family income between age 6 to 15		
1. Quintile (lowest)	18.5	31.5
2. Quintile	20.2	19.2
3. Quintile	20.6	15.9
4. Quintile	20.7	14.8
5. Quintile (highest)	20.1	18.6
Parental divorce or separation before age 15	29.3	58.4
Father's unemployment between age 6 and 15	24.3	37.0
Mother's unemployment between age 6 and 15	33.1	58.1

*N* = 101,028 (92,652 non-movers and 8,376 movers).

at ages 5 and 15 in mobile families, and the growth in the proportion who separated between these ages is also higher in mobile families. When it comes to parental education, mobile families are slightly more highly educated.

In our German sample, there is a small difference between movers and non-movers in the proportion who complete upper secondary education (Table 2). Parental education levels are relatively similar for movers and non-movers. The percentage of individuals who experience a parental divorce or separation is much lower in the German case than the Finnish one, both before the age of 5 and between ages 5 and 15. However, similar to Finland, those who are geographically mobile are more often divorced/separated. Movers in Germany are also more at risk of experiencing parental unemployment and have a slightly higher average ISEI-08 score with slightly greater variation in general at age 15.

### Results: the association between residential moves at school ages and educational dropout

In Table 3 we present five logistic regression models focusing on the association between geographic mobility and educational dropout in Finland. When controlling for sex, birth year and registered language, we can observe the negative association between moving and achieving the secondary degree that was seen in the descriptive

Table 2. Descriptive statistics based on experience of area mobility in childhood (age 5–15) in Germany

	Non-mobile	Mobile
	Mean (SD) or %	Mean (SD) or %
Full secondary qualification (age 19 and older)	86.2%	83.2%
Parental education		
Primary/basic education	14.2%	14.7%
Secondary or post-secondary non-HE	38.6%	39.7%
Higher education (polytechnic, Bachelor, Master or higher)	47.2%	45.6%
Born abroad	4.7%	9.2%
Parental occupational mobility between age 5 and 15		
No change	66.0%	49.9%
Downward mobility	17.6%	23.1%
Upward mobility	16.3%	27.0%
Parental partner moved out before age 5	4.8%	8.7%
Parental unemployment before age 5	11.7%	12.3%
Parental partner moved out age 5–15	9.9%	17.7%
Parental unemployment age 5–15	17.8%	27.3%
Parental average ISEI-08 age 5 (SD)	51.6 (20.6)	52.3 (22.0)
Parental average ISEI-08 age 15 (SD)	51.9 (20.6)	54.0 (21.2)

*N* = 2,532 (2,063 non-movers and 469 movers).

results in Table 2. When controlling for parental education in M1, this association remains equally strong. However, when controlling for parental union dissolution, parental employment status and parental household income before children reach school age (M2), the association is significantly reduced, but still clear and statistically significant: mobile children were 5 percentage points less likely to obtain a secondary degree. The next model includes disruptive life events during the time that we also measure mobility (M3)—for some these come before a move and for some after. We can see that the AME of the move is reduced to 2 percentage points. Our final model adds childhood income (M4), capturing potential gains from mobility for the household. This does not change the association between mobility and dropout. This indicates that even after extensive controls, we observe a negative association between parental moves and attainment of any secondary degree.

The results for Germany in Table 4 also indicate that there is a negative association between moving during childhood and secondary school completion. When controlling for parental education, year of birth and sex of the child, as well as being born abroad, childhood geographical mobility is associated with a 5 percentage point increase in the probability of dropout (M6). The association remains relatively stable when parental union dissolution, parental employment status and parental occupational status before children reach school age (M7) is considered, and when familial situation during/after a move is taken into account (M8). Adding parental occupation at age 15 (M9) does not seem to lead to any gains that outweigh the negative association between mobility and dropout. In comparison with Finland, it thus seems that

the association between geographical mobility and dropout is less related to other disruptive life-course events that children face, and that there is more of an independent association between moving and educational outcomes in the German case.

Models 3 and 8 already indicate that some of the association between mobility and dropout is due to other disruptive life-course events, particularly in Finland. To test whether there is further amplification between these, we added an interaction between parental relationship status and geographical mobility. Contrary to our expectations, the penalty from moving is greater for those families who remain together after a move. The result for Finland is displayed in Figure 1. In Germany we do not find a significant interaction due to too few cases, however, results appear to be in the same direction as those in Finland.

### **Results: changes in parental status 2 years before and 2 years after a move**

In order to further disentangle the effects of geographical mobility from selection and to establish if a move can in certain circumstances have a positive impact, we examine parental characteristics 2 years before and 2 years after a move, and their association with children's dropout. Descriptive statistics of these variables are presented in Tables S1 and S2 in the online Supplementary Material. In both countries, the majority of children experience stability in parental characteristics. By and large, almost equal numbers see improvements as declines in parents' characteristics.

How these are related to the child's educational dropout is studied in Table 5 for Finland and Table 6 for Germany. In Finland, the educational dropout of those children whose parents are mobile on the labour market (in addition to being geographically mobile) is between those whose parents are continuously employed/not unemployed and those whose parents are continuously not employed/unemployed. In terms of earnings, only a drop in parental earnings is associated with increased dropout in comparison to earning stability (3 percentage points). Parents' separation over the course of this period is associated with increased dropout in comparison with those whose parents remain together (5 percentage points), but those whose parents were already separated 2 years prior to mobility continue to be worse off (10 percentage points). Interestingly, the outcomes of the few young people whose parents move together again over this period are almost equal to those of young people whose parents remain separated.

In the German case (Table 6), the differences are by and large not significant, though most of the coefficients are in the expected direction. What does seem to be clear is that a parent's change from being active on the labour market to being inactive is associated with substantially greater risk of educational dropout in comparison with stability, either as active (18 percentage points) or inactive. Interestingly, remaining inactive is not associated with worse outcomes compared to remaining active—though this may have something to do with the relatively heterogeneous categories of active and inactive that we have had to use due to small case numbers.

What these results tend to show us is that improvements don't significantly reduce educational dropout in comparison with stability in a good situation. However, changes (whether improvements or deterioration) tend to be associated with higher educational attainment in comparison with stability in a bad situation, at least in Finland.

Table 3. Logistic regression model with AMEs for the association between moves at school ages and secondary degree at age 22 in Finland

	M0. Mobility + gender, year of birth and registered language	M1. M0 + parental education	M2. M1 + family control variables before age 5	M3. M2 + family control variables between ages 6 and 15	M4. M3 + family income 6–15
Geographical mobility	−0.077*** (0.005)	−0.085*** (0.005)	−0.046*** (0.004)	−0.025*** (0.004)	−0.025*** (0.004)
Parental education (ref. primary)					
Secondary or post- secondary non-HE		0.149*** (0.006)	0.106*** (0.005)	0.096*** (0.005)	0.093*** (0.005)
Higher education (polytechnic, Bachelor, Master or higher)		0.239*** (0.006)	0.175*** (0.006)	0.160*** (0.006)	0.154*** (0.006)
Family income before age 5 (ref. 1 quintile (lowest))					
2. Quintile			0.032*** (0.004)	0.029*** (0.004)	0.022*** (0.003)
3. Quintile			0.043*** (0.004)	0.036*** (0.004)	0.026*** (0.004)
4. Quintile			0.056*** (0.004)	0.048*** (0.004)	0.036*** (0.004)
5. Quintile (highest)			0.065*** (0.004)	0.056*** (0.004)	0.042*** (0.005)
Parental divorce or separation before age 5 (ref. together)			−0.074*** (0.004)	−0.014*** (0.003)	−0.018*** (0.004)
Father's unemployment before age 5			−0.043*** (0.003)	−0.023*** (0.003)	−0.023*** (0.003)
Mother's unemployment before age 5			−0.034*** (0.003)	−0.020*** (0.003)	−0.019*** (0.003)
Parental divorce or separation before age 15 (ref. together)				−0.079*** (0.003)	−0.070*** (0.003)
Father's unemployment between age 6 and 15				−0.027*** (0.003)	−0.024*** (0.003)
Mother's unemployment between age 6 and 15				−0.023*** (0.003)	−0.020*** (0.003)

Table 3. (Continued)

	M0. Mobility + gender, year of birth and registered language	M1. M0 + parental education	M2. M1 + family control variables before age 5	M3. M2 + family control variables between ages 6 and 15	M4. M3 + family income 6–15
Family income between age 6 and 15 (ref. 1 quintile (lowest))					
2. Quintile					0.024*** (0.003)
3. Quintile					0.034*** (0.004)
4. Quintile					0.031*** (0.004)
5. Quintile (highest)					0.039*** (0.005)
Observations	101,028	101,028	101,028	101,028	101,028

Standard errors in parentheses.

\*\*\* $p < 0.001$ .

\*\* $p < 0.01$ .

\* $p < 0.05$ , controlling for year of birth, sex and registered language.

### Robustness checks

We carried out a number of robustness checks. For Germany, we used the smaller regional boundaries (Kreis). While approximately 18% of the German sample experienced regional mobility between municipalities, 27% of our sample moved between Kreis. Results were similar, with a slightly weaker negative effect (see Tables S3 and S4 in the online Supporting Material). It is also important to acknowledge the role that reunification played in the geographical mobility of Germans during the time period under observation. Therefore, we checked our results restricting the sample to West Germany. These results were similar to our full population (see Table S5 in the online Supporting Material). While a proper treatment of cultural and historical context of the role that reunification played in geographical mobility is beyond the scope of this study, further research in this direction could take into account differences between the first and second generation of migrants from East Germany in a research design similar to that of Ballarino & Panichella (2015).

Additional analyses were carried out to examine if the age at which a child experienced geographical mobility mattered. We found that children in Finland are more harmed by the move when the educational transition to secondary education is usually made (around the age of 15) than at other times (results available from the authors on request). For Germany, our sample size did not allow us to fully decompose the results by age, but there were no indications that mobility prior to tracking would be particularly disadvantageous.

### Discussion

In a classic of stratification research, Blau and Duncan (1967) found that the labour market returns to post-war migrants in the USA were superior to those of non-

Table 4. Logistic regression model with AMEs for the association between moves at school age and attainment of secondary education in Germany

	M5. Mobility + gender, year of birth and born abroad	M6. M5 + parental education	M7. M6 + family control variables before age 5	M8. M7 + family control variables between ages 5 and 15	M9. M8 + parental occupation status at age 15
Geographical mobility	-0.052** (0.018)	-0.056** (0.017)	-0.052** (0.017)	-0.045** (0.017)	-0.047** (0.017)
Parental education level (ref. basic education incl. basic vocational)					
Intermediate/vocational		0.107*** (0.029)	0.096*** (0.028)	0.099*** (0.028)	0.091*** (0.028)
Abitur and above		0.202*** (0.026)	0.181*** (0.029)	0.179*** (0.029)	0.167*** (0.029)
Partner moved out (div/sep) before age 5			-0.131*** (0.037)	-0.123*** (0.036)	-0.122*** (0.036)
Parental unemployment before age 5			-0.011 (0.020)	0.004 (0.020)	0.006 (0.020)
Parental occupational status at age 5			0.005 (0.004)	0.005 (0.004)	-0.003 (0.006)
Partner moved out (div/sep) age 5–15				-0.041 (0.022)	-0.043 (0.023)
Parental unemployment age 5–15				-0.036 (0.019)	-0.037* (0.019)
Parental occupational status at age 15					0.011 (0.006)
Observations	2,532	2,532	2,532	2,532	2,532

Robust standard errors in parentheses.

\*\*\* $p < 0.001$ .

\*\* $p < 0.01$ .

\* $p < 0.05$ , controlling for year of birth, sex and born abroad.

migrants and concluded that migration was an essential mechanism furthering social mobility. This is still often expected. However, the literature on child outcomes of geographical mobility suggests that geographically mobile children often do worse than their non-migrating peers.

We hypothesised that the negative association between geographical mobility and educational dropout could be at least partially attributable to parental unemployment or separation before moving (disruption hypothesis). This was supported by the Finnish data. However, for Germany, selection failed to account for the negative association. We also examined whether socioeconomic gains from moving could compensate for the remaining negative association (compensation hypothesis). We did not find support for this in either country. Previous studies of parental intra-generational mobility (during the child's childhood) have also found lingering influences of prior socioeconomic disadvantage, even for children whose parents reach an advantageous socioeconomic position later on (Plewis & Bartley, 2014; Byrne *et al.*, 2018).

In understanding the negative consequences of childhood internal migration, there is a distinction to be made between children's social connections and those of their



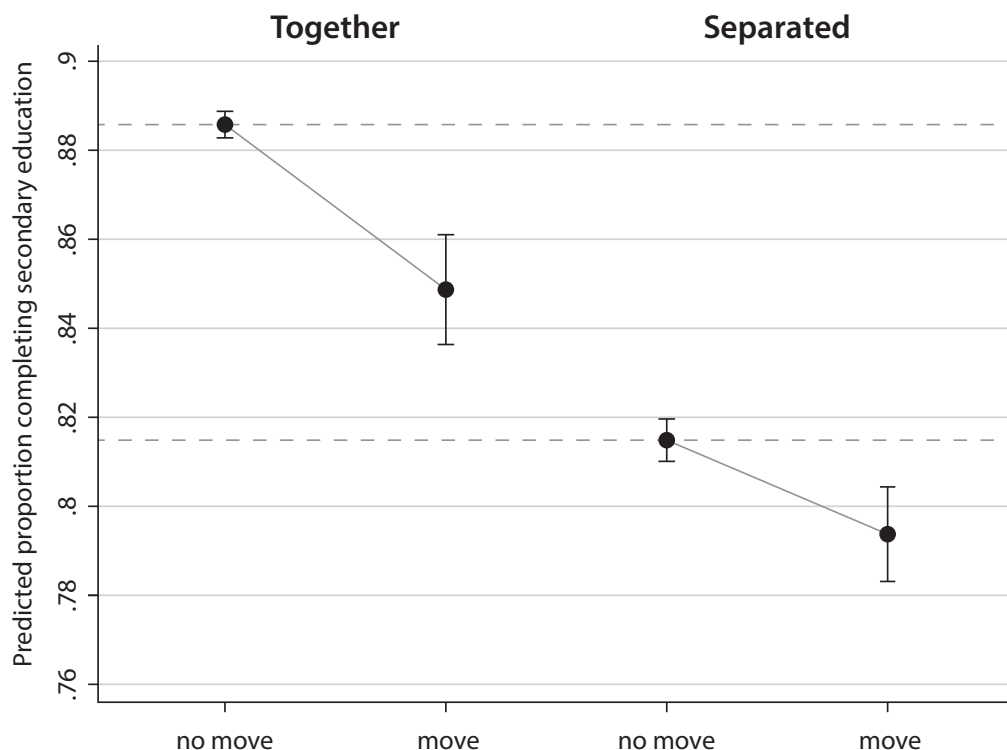


Figure 1. Interaction between divorce or separation and moving between economic regions at school age—Finland.

Source: Own calculations based on Finnish register data.

parents. Generally speaking, the social capital perspective assumes that moving interrupts social relations with others in the broader context. Norms regarding school performance are stronger in communities with more ties and among families closely linked to others (Coleman, 1988). Moving negatively affects school performance because within-family ties become stressed and within-community ties (with other parents, teachers) are lost (Pribesh & Downey, 1999). At the same time, children experience a loss of connection to their own peer networks in schools, potentially impacting their wellbeing (Tuominen & Haanpää, 2020). When considering the long-term consequences of moving to children, parents may face a tradeoff between a gain in economic resources, which could benefit children in the long run, and their children's wellbeing in the short term.

The rate of parental divorce/separation is almost double among mobile families than immobile ones in both Germany and Finland. We hypothesised that parents separating during childhood might amplify the negative influence of mobility (accumulated disadvantage hypothesis). This was not found to be the case. Indeed, in Finland the opposite was the case: children in separated families were not as negatively affected by the move compared to those whose parents stayed together. However, it should also be remembered that even among movers, children whose parents remained together did have the highest educational attainment—and the lowest level

Table 5. Logistic regression of the change in unemployment, employment, earnings or family status from 2 years before to 2 years after the move on obtaining any secondary education in Finland: results as average marginal effects

		Unemployment	Employment	Earnings	Divorce or separation
Change in unemployment ( <i>ref. Not unemployed</i> )	Not unemployed before, but unemployed after the move	-0.071*** (0.014)			
	Unemployed before the move, but not after	-0.073*** (0.014)			
	Unemployed both before and after the move	-0.107*** (0.015)			
Change in employment ( <i>ref. Employed</i> )	Employed before, but not after the move		-0.043** (0.014)		
	Not employed before the move, but employed after		-0.034** (0.013)		
	Not employed before or after the move		-0.089*** (0.012)		
Change in earnings ( <i>ref. No change</i> )	Downward change (at least 20 percent)			-0.037** (0.013)	
	Upward change (at least 50 percent)			0.016 (0.013)	
	Upward change (at least 50 percent) of one parent and downward change (at least 20 percent) of the other			0.001 (0.016)	
	Parental Earnings			0.002*** (0.001)	
Change in family status ( <i>ref. Together</i> )	Mother's earnings before move			0.002*** (0.000)	
	Father's earnings before move			0.002*** (0.000)	
	Divorced or separated, but move together again				-0.061 (0.039)
	Together before, but divorced or separated after the move				-0.049*** (0.013)
	Divorced or separated				-0.099*** (0.011)
	N	7,750	7,750	7,750	7,750

Standard errors in parentheses.

\*\*\* $p < 0.001$ ,

\*\* $p < 0.01$ ,

\* $p < 0.05$ , controlling for sex, year of birth, parental education, registered language.

Table 6. Change in occupational and LFS from 2 years before to 2 years after a move on chances to obtain any education: Germany

	ISEI	LFS
Parental occupational status		
ISEI 2 years before a move	0.007 (0.013)	0.001 (0.010)
ISEI 2 years after a move	−0.012 (0.014)	
Parental labour market status (ref. active to active)		
Active to inactive		−0.188* (0.085)
Inactive to active		−0.018 (0.054)
Inactive to inactive		0.019 (0.054)
N	440	432

Standard errors in parentheses.

\*\*\* $p < 0.001$ .

\*\* $p < 0.01$ .

\* $p < 0.05$ , controlling for sex, year of birth, born abroad and parental education.

of attainment was for those who were already living with only one of their biological parents before the move. Therefore, experiencing parental separation during the mobility period (from 2 years prior to the move to 2 years after it) did not lead to lowered educational attainment in comparison with experiencing it before the move. Even if geographically mobile children face more disruptive life events during their childhoods than their immobile peers, with the associated negative consequences on educational attainment, these life events don't amplify each other. In this sense, advantaged children—at least in terms of parental relationship status—have more to lose from geographical mobility.

Education systems may have consequences for how influential internal migration is for educational dropout. At face value, our results suggest that all other things considered, mobility is more harmful in Germany than in Finland. However, our results come from very different kinds of datasets (one retrospective and the other based on registers), and we control for slightly different parental characteristics in each country. This conclusion therefore remains rather tentative. Nevertheless, this result could be related to the relative openness and equality of the Finnish education system, and the fact that internal migrants within Germany sometimes have to adapt to a different education system in the case of moves between some Länder.

Due to the co-occurrence of geographical mobility with other life-course events, large-scale register data, which is less prone to problems of attrition and selection than survey data, is needed in order to be able to disentangle what effect, if any, moving has in mitigating/accumulating negative effects on the children of mobile families (see Tønnessen *et al.*, 2016). According to Garboden *et al.* (2017, p. 258), an ideal mobility module would 'collect full residential and school trajectories of children, including any instigating events and contemporaneous changes in family structure'. Nevertheless, many panel survey datasets suffer from problems of attrition, part of which are closely related to geographical mobility. These may be overcome with high-quality retrospective surveys, such as the NEPS, where we can link parental residential, partnership and occupational trajectories with children's long-term outcomes.

To conclude, despite internal migration being considered advantageous—and sometimes necessary—for labour market opportunities, there appear to be few compensatory effects for children who move. We find that geographically mobile children may be a particularly vulnerable subgroup in the inter-generational transmission of inequality. We speculate that this is the case not only because of the relationship between geographical mobility and the reasons why parents move (either as a reaction to stressors/disruptions or opportunities), but also because of the child's own experience of moving. Therefore, there is also an important role for schools to play in integrating internal migrants—as well as international migrants—into the social networks of the schools they arrive in. Further work, including information on how children's relationships with peers change after moving, would also provide a more child-centred approach to understanding the role that geographical mobility plays in the reproduction of inequality.

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### **Ethical guidelines**

Ethics approval was not required for this research.

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### **Conflict of interest**

As far as the authors are aware, there is no conflict of interest in the work reported here.

### **Data availability statement**

The NEPS data (<https://doi.org/10.5157/NEPS:SC6:6.0.1>) was collected from 2008 to 2013 as part of the Framework Programme for the Promotion of Empirical Educational Research, funded by the Federal Ministry of Education and Research (BMBF). Since 2014, NEPS has been funded by the Leibniz Institute for Educational Courses

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The Finnish data used in this article is based on Finnish administrative registers, accessed through Statistics Finland. This data is available to registered users after an application process ([www.stat.fi/tup/mikroaineistot/index\\_en.html](http://www.stat.fi/tup/mikroaineistot/index_en.html)).

Data sharing is not applicable to this article as no new data was created or analysed in the study.

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## SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

**Table S1.** Changes in parental circumstances from 2 years before a move to 2 years after a move in Finland.

**Table S2.** Change in occupational status and labour force status 2 years before to 2 years after a move in Germany.

**Table S3.** Geographical mobility in childhood by region and by Kreis.

**Table S4.** Association between moving Kries at school age and attainment of any general secondary education (ref. incomplete or basic education), results as average marginal effects.

**Table S5.** Logistic regression: the association between moves (\*) at school age and attainment of any general secondary qualification (ref. incomplete or basic education), results as average marginal effects (West German residency spells only).