

The roots of ambition: Explaining the immigrant advantage in
educational aspirations and choices in Western Europe

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Summary

In most Western European countries, the children of immigrants generally have a lower educational performance than children of native origin. Yet controlling for performance, they tend to make more ambitious educational choices. While the first phenomenon is largely explained by the disadvantaged socioeconomic situation of most immigrant families, the reasons for the second phenomenon remain unclear. In this doctoral dissertation, I explore some of the mechanisms that could account for the high educational ambitions of the children of immigrants in Western Europe. The dissertation comprises an introductory chapter followed by three empirical chapters.

Chapter 2 focuses on the effects of cross-nativity parentage on the likelihood of enrolling in academic upper secondary school in England, Germany, the Netherlands and Sweden. Transnational children (those with a first-generation and a second-generation immigrant parent) display the high educational ambition of children with two immigrant parents in most regards. In contrast, mixed children (those with a first-generation immigrant parent and a native-origin parent) closely resemble children with two native parents.

In chapter 3, I examine the relationship between children's sources of information on future education and their realistic educational aspirations. I analyze how this relationship differs between natives and the children of immigrants in England and Sweden. The results indicate that for natives in both countries, and for the children of immigrants in England, information is positively related to realistic educational aspirations. However, information does not seem to affect the aspirations of the children of immigrants in Sweden and, for foreign-born children who immigrated before age 6, the relationship seems to be negative.

Finally, in chapter 4, I explore ethnic differences in intergenerational educational mobility in Germany, focusing on the comparison between native-origin youth, Turkish-origin youth and the children of native German immigrants from Central and Eastern Europe and the former Soviet Union. I find that immigrant-origin youth are more likely to be upwardly mobile in terms of educational attainment, and that they are less affected by their parents' educational attainment than natives. Moreover, I find a moderating role of age of immigration. I discuss possible explanations for my findings, including contextual differences in the substantive meaning of educational attainment.

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List of Abbreviations

AME Average Marginal Effects

AUSS Academic Upper Secondary School

CASMIN Comparative Analysis of Social Mobility in Industrial Nations

CILS4EU Children of Immigrants Longitudinal Study in Four European Countries

HAVO Dutch Senior general secondary education

ISCED International Standard Classification of Education

ISEI International Socio-Economic Index of Occupational Status

LPM Linear Probability Models

OECD Organisation for Economic Cooperation and Development

PISA Programme for International Student Assessment

SES Socioeconomic status

SUF Scientific Use File

VWO Dutch Preparatory scientific (pre-university) education

Chapter 1

General introduction

1.1 Context and motivation

International immigration is transforming the ethnic and cultural composition of Western Europe. In most countries in the region, the share of immigrants and their descendants in the total population has increased continuously in recent decades (Heath and Brinbaum, 2014). The trend toward increasing ethnic diversity is especially visible in large cities, which concentrate a disproportionate share of the immigrant stock of the region (Crul and Mollenkopf, 2012). Indeed, major Western European cities such as London, Brussels, Paris and Amsterdam are already majority-minority cities in which natives without an immigration background¹ are no longer the dominant ethnic group (Crul, 2016).

Because most immigrants are young, and because immigrant women in Western Europe have a higher average fertility rate than native women (Sobotka, 2008), ethnic diversity is greater in younger age groups. In 2019, 40% of the German population under the age of 5 had an immigration background, compared to 33% of those aged 25 to 35 years and 17% of those aged 55 to 65 years (Statistisches Bundesamt, 2019a). Similarly, in England and Wales, non-whites represented over 20% of the population below the age of 14 in 2011, but only 10% of those aged 45 to 59 years (Race Disparity Unit, 2020).²

¹Throughout this dissertation, the concept of “natives”, or “native-origin”, refers to people without an immigration background, in other words, being native-born to two native-born parents. People with an immigration background (or of immigrant origin) are those who are foreign-born or who have at least one foreign-born parent.

²These figures for Germany and England and Wales are, strictly speaking, not comparable. The German statistical office collects information on immigration background (i.e., whether a person, or at least one of her or his parents, is foreign-born) but not on ethnicity. In contrast, the statistical office of England and Wales collects information on ethnicity (categorized as “white,” “mixed,” “Asian,” “black,” and “other”) but not on immigration background. Because many immigrants to England and Wales are white (e.g., from other European countries), the proportion of immigrants and their descendants is likely higher than the proportion of non-whites in the population.

In this context, one of the major long-term challenges for Western European societies is how to guarantee the economic, cultural and social integration of immigrants and their descendants. While labor market participation is central for the integration of adult first-generation immigrants, education will largely determine the life chances of their children (Heath and Brinbaum, 2007; Heath and Brinbaum, 2014). Yet in most Western European countries, immigrant-origin children have lower achievement than their native peers (Dronkers et al., 2011; Dustmann et al., 2012; Levels et al., 2008; Marks, 2005).

These differences are largely explained by the lower **Socioeconomic status (SES)** (in terms of education, income and occupational status) of first-generation immigrant (i.e., foreign-born) parents vis-à-vis native parents, although in some cases, a residual disadvantage remains that might be due to migration-specific factors (i.e., parents' lack of familiarity with the host-country language or its education system) (Borgna and Contini, 2014; Heath et al., 2008; Rothon, 2007).

The lower academic performance of immigrant-origin youth in Western Europe stands in contrast to their high educational aspirations and ambitious educational choices: Controlling for performance, immigrant-origin youth are more likely than native-origin youth to express high idealistic *and* high realistic educational aspirations (Salikutluk, 2016; Becker and Gresch, 2016; Modood, 2004; Nauck and Genoni, 2019) and more likely to opt for the academic tracks of secondary education (Jackson, 2012; Rudolphi, 2011; Werfhorst and Tubergen, 2007; Fernández-Reino, 2016; Dollmann, 2017; Boado, 2011). The roots of the educational ambition of immigrant-origin children remain unclear; immigrant selectivity on unobserved characteristics, discrimination and information biases are among the possible theoretical mechanisms (see Salikutluk 2016; Tjaden and Hunkler 2017).

The main motivation for this doctoral dissertation is to explore some of the mechanisms that might account for the ambitious educational choices of immigrant-origin youth in Western Europe. While the three main chapters differ from one another in terms of research questions, countries considered, methods and specific theoretical frameworks, each chapter provides insights into certain mechanisms that might account for ethnic differences in educational aspirations, educational decisions, and educational outcomes. The dissertation is not comprehensive in its scope; I focus on a few mechanisms at the expense of others and circumscribe my research aims in each chapter accordingly.

The remainder of this introductory chapter is structured as follows. In the next section, I discuss the main theoretical concepts that guide my empirical research. Next, I lay out the general concepts that I use throughout the dissertation to refer to the population groups that are the focus of my analysis, with their respective scope and limitations. I then provide a brief overview of each of the three empirical chapters and, finally, point out the main limitations of my research and some avenues for future research that would address these limitations.

1.2 Main theoretical concepts

Although each empirical chapter comprises a theory section in which the concepts most relevant to the research questions at hand are discussed, there are also a few overarching theoretical ideas that appear, in implicit or explicit form, in every chapter. In this section, I introduce the elements of this overarching theoretical framework, which underpins many of the assumptions and mechanisms that appear in the empirical chapters.

1.2.1 Determinants of educational attainment

Throughout this dissertation, I rely on the classic theoretical perspective of educational attainment as the result of the interplay of individual and familial motivations and resources, on the one hand, and institutional opportunities and constraints, on the other (Diehl et al., 2016a; Breen and Goldthorpe, 1997; Erikson and Jonsson, 1996). Motivations encompass educational aspirations and attitudes to education and to the learning process more generally, in all of which parents are thought to play a very important role (Diehl et al., 2016a, p.8). Educational aspirations are regarded as a major predictor of educational attainment in the Wisconsin status attainment school (Sewell et al., 1970; Haller and Portes, 1973), the social reproduction tradition (Bourdieu, 1986) and the rational choice perspective (Boudon, 1974; Erikson and Jonsson, 1996).

Educationally relevant resources are both tangible (i.e., economic) and intangible. The former are important for creating a material environment conducive to learning as well as for covering education-related costs, including opportunity costs. Meanwhile, the relevant intangible resources comprise the skills and knowledge of parents, which are often referred to as “human capital” (see Becker 2008; Barone 2006), but also behavioral and attitudinal traits (e.g., values, norms, perceptions of what is socially expected) that are often grouped under the umbrella term “cultural capital” (Barone, 2006) and that are thought to be closely tied to social class origin (Bourdieu et al., 1977; Ichou, 2014; Fernández-Kelly, 2008)³. Parenting practices and the time allocation of parents are further intangible resources that influence educational outcomes (Nauck and Lotter, 2016; Guryan et al., 2008).⁴

In this conceptual paradigm, individual and family-level motivations and resources interact with the concrete institutional opportunities available to determine educational outcomes. Institutional opportunities are largely determined by the structure, quality and coverage of the education system. They include macro-level characteristics (i.e., pertaining to the

³However, some have argued that human capital and cultural capital are inextricably linked. For instance, Farkas (1996, p.11) argues that “parental skills, habits and styles determine the very early cognitive skills of their children, and these influence the child’s habits and styles via his/her estimation of the success they can expect from hard effort at tasks that both require and increase cognitive skill.” Barone (2006) makes a similar argument.

⁴In the Wisconsin model of status attainment, educational aspirations may be considered as motivational resources (Feliciano and Lanuza, 2016; Blau and Duncan, 1967; Sewell et al., 1970). In this perspective, educational motivations and resources are not two distinct inputs, but rather, motivations are a type of resource.

system as a whole, such as the degree of stratification and age of tracking) as well as micro-level ones (i.e., pertaining to specific schools). Of particular importance in this regard are teachers, whose quality, commitment and decisions shape the educational opportunities facing children and youth considerably (Diehl et al., 2016a, p.8).

1.2.2 How social background affects educational attainment: Primary and secondary effects

A second important theoretical element of this dissertation is the notion, introduced by Boudon (1974), that the conversion of group-level differences in educational motivations, resources and opportunities into group-level differences in educational attainment occurs on two separate “dimensions” or channels. On the one hand, inequalities in the former will result in inequalities in the learning process itself (i.e., in the acquisition and mastery of knowledge and skills). On the other hand, they will result in group-level differences in the decision-making processes of children—and their parents—at educational transitions.

In his seminal study of class differentials in educational attainment in France, Boudon (1974) called the effects of social class on educational performance “primary effects”, whereas their effects on educational choices were termed “secondary effects”. He argued that social class differentials in educational attainment resulted not just from the lower educational performance of socially disadvantaged children, but also from their less ambitious decisions at educational transitions: Given the same level of performance, upper-class children were more likely to opt for the academic track than working-class children (Boudon, 1974).

But how exactly are primary and secondary effects generated? Regarding primary effects, in this dissertation, I take the consensus view that social origin affects educational performance primarily via parental socialization (Heath and Rethon, 2014, p.75). That is to say that while economic resources (i.e., parental income) do matter, the intangible resources of parents (both cognitive and non-cognitive, as described above) are probably even more important.

This is the reason why, in my analyses, I always include not just current parental occupational status (as a time-varying proxy for income) but also parental educational attainment (as a proxy for parental intangible resources, such as human capital and cultural capital, which are assumed to be more or less stable for adults). While the two measures are correlated (see Barone 2006; Farkas 1996), it is well-known that most immigrants experience downward occupational mobility so that their post-migration occupational status may not reflect their educationally relevant resources (Heath and Rethon, 2014, p.75) nor their pre-migration social and occupational status (Gans, 2009).

As regards the generation of secondary effects, I rely on the rational choice perspective, which assumes that children, together with their parents, aim to make rational choices concerning their education based on three parameters: the direct as well as opportunity

costs of different educational alternatives, the probability of succeeding in them and the value, or benefits, associated with completing them (Diehl et al., 2016a; Erikson and Jonsson, 1996; Boudon, 1974; Breen and Goldthorpe, 1997). Formally, this can be expressed in the following way, devised by Erikson and Jonsson (1996):

$$U = (B - C)P - C(1 - P) \tag{1.1}$$

which can be simplified to:

$$U = PB - C \tag{1.2}$$

where P stands for the expected probability of success in a given course of study, C the expected costs, B the expected benefits and U the expected net utility. How families assess the costs, benefits and probabilities of success of different educational paths is, in turn, dependent on the factors mentioned at the beginning of this chapter: personal and familial motivations and resources, on the one hand, and institutional opportunities, on the other. Indeed, the combination of resources and institutional opportunities defines the set of feasible educational alternatives, since some may be out of reach for financial reasons or due to academic requirements (Jonsson, 1999; Elster, 1979). What is important for families is being able to rank different educational alternatives and choose from their set of feasible options the one with the highest expected utility.

It is worth clarifying that costs and benefits need not be solely material: They can be conceived in terms of social prestige, too. For instance, Boudon (1974) argued that one reason why upper-class children are more likely to opt for academic tracks than working-class children with the same educational performance is that families often attach a high value to preserving social status, which means matching or exceeding the educational attainment of the parents. Thus, for upper-class children, not attending university may be associated with a loss of status (a subjective cost), while this may not be the case for working-class children (who might be able to preserve their parents' social status by pursuing vocational education; see Boudon 1974; Diehl et al. 2016a).

The rational choice perspective does not imply that families possess perfect information regarding the values of C , B and P . Instead, information is regarded as one type of resource: Some families might have more reliable information on their children's performance and thus might be better able to assess their chances of success (P) in different educational alternatives. Differences in information about the job market may likewise result in biases in the estimation of the benefits of certain educational alternatives (B), while differences in knowledge of the education system could bias the assessment of the costs (C).

1.2.3 Ethnic primary and secondary effects

Most empirical evidence shows that much of the performance disadvantage of immigrant-origin youth is explained by their often precarious socioeconomic circumstances and their parents' limited education (Levels et al., 2008; Marks, 2005; Dronkers et al., 2011; Heath and Brinbaum, 2014; Diehl et al., 2016a). In most Western European countries, however, there remain ethnic achievement “penalties” that are not explained by social background, although they vary significantly across countries and ethnic groups (Borgna and Contini, 2014; Rothon, 2007; Heath et al., 2008).

While the exact nature of these ethnic achievement penalties remains uncertain, one migration-related cause is language. Immigrant parents may be less able to effectively assist their children with their schoolwork if they do not master the language of the host country (Jackson et al., 2012). For first-generation immigrant children, limited language proficiency at the start of their school careers might directly affect their performance (Glick and White, 2003; Heath and Brinbaum, 2014). Other possible mechanisms for ethnic penalties in performance include cultural differences and information gaps (Jackson et al., 2012, p.160) and ethnic discrimination in performance assessments by teachers (Tyrefors Hinnerich et al., 2015; Tyrefors Hinnerich et al., 2011), as well as more broadly, both in school or outside of it (Diehl and Fick, 2016).

In recent years, the distinction between primary and secondary effects has increasingly been used to analyze ethnic differences in educational attainment (see, for instance, Heath et al. 2008; Heath and Brinbaum 2014; Diehl et al. 2016a; Kristen and Dollmann 2010). Thus, “primary ethnic effects” refer to differences in educational performance (e.g., grades, standardized test scores, ability) that are not explained by socioeconomic background but rather by ethnicity and the consequences of immigration.

Meanwhile, “ethnic secondary effects” refer to ethnic differences in educational decision-making that are not explained by educational performance and socioeconomic background. An example of ethnic secondary effects is the higher transition rates to [Academic Upper Secondary School \(AUSS\)](#) of immigrant-origin youth in most Western European countries (Lessard-Phillips et al., 2014). The root of these effects is not fully clear, although there is some evidence that they may be partially explained by the high educational aspirations of some immigrant groups (Kao and Tienda, 1995; Fernández-Reino, 2016; Salikutluk, 2016; Dollmann, 2017; Dustmann et al., 2012).

Some studies emphasize the idea that immigration is often conceived of as a social mobility project that can only be achieved if children succeed academically: Immigrant families mobilize their resources to invest in their children's education in order to ensure that they achieve the social mobility that often eludes first-generation immigrants (Teney et al., 2013; Heath et al., 2008; Modood, 2004; Zéroulou, 1988; Zanten, 1997). In other words,

immigrant-origin children might make more ambitious educational decisions due to different motivations vis-à-vis native-origin children. Motivations and educational aspirations play an important role in [chapter 2](#), which focuses on the secondary effects of two distinct groups of with an immigration background: children with a first-generation immigrant parent and a native-origin parent (henceforth “mixed children”), and children with a first-generation and a second-generation immigrant parent (henceforth “transnational children”).

There are other theoretical mechanisms besides educational aspirations that could produce ethnic secondary effects. One that was already mentioned concerns differences in information: It is conceivable that immigrant families are less knowledgeable about the education system of the host country than their native peers, since their exposure to it is likely to be null or very limited. Furthermore, limited proficiency in the host-country language also complicates the acquisition of reliable information. Thus, immigrant parents—and their children—may formulate less accurate assessments of the benefits, costs and probabilities of success of different educational alternatives, which then influences their choices. This is a topic that I explore in [chapter 3](#), which focuses on broad ethnic differences (i.e., by immigration background) in the relationship between information and realistic educational aspirations (which are assumed to reflect the perceived probability of success in the set of educational alternatives; see Becker and Gresch [2016](#), pp.79–80).

Another theoretical mechanism that could explain ethnic secondary effects, which I do not explore in this dissertation, is the “blocked opportunities” paradigm: the idea that discrimination (or the anticipation thereof) influences minorities’ assessment of the value of certain educational qualifications in terms of expected labor market outcomes, such that these options are now perceived to be blocked and no longer feasible (Kao and Tienda, [1995](#); Salikutluk, [2016](#)).

This might, however, lead to two possible responses. On the one hand, members of ethnic minorities might aim for the highest academic qualifications in an attempt to shield themselves from discrimination (Sue and Okazaki, [1990](#)). On the other hand, members of certain minorities might, at some point in their educational careers, become skeptical about the value of educational qualifications altogether, aiming instead to leave the education system (Ogbu, [1991](#)). However, there is no evidence that anticipated discrimination influences minority students’ educational decisions in Western Europe (Salikutluk, [2016](#); Diehl and Fick, [2016](#); Tjaden and Hunkler, [2017](#); Fernández-Reino, [2016](#); Modood, [2004](#)).

1.3 Classification of origins and generational status

In the empirical chapters of this dissertation, I explore ethnic differences in upper secondary school enrollment (chapters 2 and 4) and in realistic educational aspirations before the transition to upper secondary school (chapter 3). In this context, the meaning of ethnic differences, and the general system that I employ to categorize children by their ethnic origins and generational status, needs to be discussed.

Any empirical analysis of ethnic stratification requires classifying individuals into conceptually and analytically meaningful groups. This is a challenging balancing act. On the one hand, a good classification system should be complex and multidimensional in order to accommodate the diversity of a population in terms of ethnic and national origin but also generational status. At the same time, the practical constraints of empirical research, such as the quality and quantity of the data, and the need for analytical parsimony call for a reduction of complexity and thus a loss of granularity in the analysis. These opposing needs for detail and abstraction result in *ad hoc* methodological compromises that are bound up with specific limitations and caveats.

This dissertation is not exempt from the tension between detailed classification and abstraction. Whenever possible, I have relied on the extensive classification methodology of Dollmann et al. (2014), with certain simplifications to obtain sufficiently large categories for empirical analysis. However, since each empirical chapter focuses on different population groups, and since these groups are not always mutually exclusive, I employ different classification systems in each chapter, according to their specific research objectives and to the characteristics of the relevant datasets. In the particular, the specific meaning of “migrant” varies between chapters 2 and 3.

Thus, in chapter 2 I distinguish between native-born youth with two native-born parents (“natives”), youth with two foreign-born parents, regardless of whether they born in the host country or immigrated before the age of 6 (“migrants”), and youth with one native-born and one foreign-born parent⁵. Among this last group, I further distinguish between those whose native-born parent has an immigration background (in which case their children are denominated “transnational children”, following Kalter et al. (2018)) and those whose native-born parent has no immigration background (whose children are then called “mixed children”)⁶.

⁵Of course, children born in the host country to two foreign-born parents are, strictly speaking, native-born too. However, since the core of the analysis are the differences in educational attainment that attributable to their immigration background, I use the term “migrant” to refer to them as well. Meanwhile, the term “native” is used exclusively to refer to the native-born of native origin, meaning born in the country under consideration and with two native-born parents.

⁶This group is also commonly called “children of intermarriage” or “inter-ethnic second-generation children” (see Kalmijn 2015, and Dollmann et al. 2014, respectively).

In chapter 3, the emphasis is on the comparison between the native-origin youth and the immigrant-origin youth, broadly defined. Thus, the former group is denominated “natives” and defined in the same way as in chapter 2 whereas the latter, which comprises all children with one or two foreign-born parents who were either born in the host country or who immigrated before age 6, are denominated “migrants”. This means that the definition of “migrants” in chapter 3 includes the “mixed” and “transnational” children defined in chapter 2. The reader should thus bear in mind that the term “migrant” is used in a slightly looser way in 3 compared to 2.

In chapter 4, the sample size is large enough to distinguish among different ethnic groups, and not just between broad categories of “migrants” and “natives”. Thus, in this chapter I consider four groups: the group of native-origin youth, with two native-born parents, are termed “natives” just as in the two other empirical chapters. The “migrants”, which in this chapter comprise exclusively children with two foreign-born immigrants, are classified, according to the nationality at birth of their parents, as either Turkish, *Aussiedler* (i.e., ethnic German with parents born in Central or Eastern Europe or in the former Soviet Union), or “other” (a heterogeneous category with all other ethnicities). All “migrant” youth in chapter 4 were either born in the host country (i.e., are second-generation immigrants) or immigrated before age 6.

Throughout the dissertation, the terms “(im)migration background” and “immigrant-origin” are used interchangeably: they used to refer to people who were either born abroad or who have at least one parent who was born abroad. In chapter 3, the label “migrant” is coterminous with “immigrant-origin” and with the condition of having an “immigration background”. In 2, where “migrant” is defined more narrowly, the “mixed children” and “transnational children” would also fall under the category of “immigrant-origin” youth or youth with an “immigration background”. As to the “immigrant parents”, throughout the dissertation this term refers to foreign-born parents who immigrated themselves to the host country (i.e., first generation immigrants). “Native” parents, in contrast, are those who were born in Germany (as in chapters 2 and 3) or who were born in Germany with German citizenship (as in chapter 4).

1.4 Overview of the three empirical chapters

The overarching research question of this doctoral dissertation is: What might account for the high educational aspirations and ambitious educational choices of immigrant-origin children during secondary education in the four Western European countries analyzed (England, Germany, the Netherlands and Sweden)? In other words, what is the root of the positive secondary ethnic effects of immigrant-origin youth in these countries? Each of the three main chapters tackles this question from a different angle and offers insights into distinct mechanisms that might explain some of the ethnic inequalities in secondary education and beyond.

A common thread across these chapters is the focus on ethnic inequalities in the transition from lower secondary education to upper secondary education, which occurs around the age of 15 or 16 in the four countries considered. The decisions made at this point have important long-term effects on children’s educational and occupational prospects (Heath and Brinbaum, 2014; Diehl et al., 2016a; Werfhorst et al., 2014) for two reasons. The first is that this transition coincides with the end of compulsory schooling and thus presents children—and presumably their parents, too—with the question of whether to continue with upper secondary education, or whether to terminate their educational careers.

The second reason is that children who wish to continue their schooling often have to decide at this point whether to enroll in (or continue with) AUSS, which prepares children for tertiary education (research-oriented universities and, in Germany and the Netherlands, lower-tier universities of applied sciences), or whether to pursue vocational and technical training. These choices are, of course, constrained by prior performance in specific ways in each of the countries; this topic is discussed in [chapter 2](#).

In this dissertation, I combine and simplify these two choices (whether to stay in school or to leave, and whether to enroll in the academic or the vocational track) into a dichotomy: whether or not to enroll in AUSS. Which side of this dichotomy children fall on has major implications for their long-term educational and occupational perspectives: The academic track leads to higher education, which in turn opens the door to the most prestigious and well-paid professional and managerial jobs (Heath and Brinbaum, 2014, p.149).

Of course, whether children complete or not their vocational education also has major long-term implications for their occupational perspectives, so the “further education versus dropping out” dichotomy also deserves attention. But the focus of this dissertation is on the factors that contribute to ethnic inequalities in educational success, rather than their contribution to educational failure (i.e., non-continuation after compulsory education), even though this last question is arguably just as interesting and consequential.

Below, I briefly discuss the motivations, research questions and main results of the three empirical studies in the order in which they appear in this dissertation. Each chapter corresponds to a paper (see the list of papers in [appendix D](#)). The chapters are complemented by methodological details, descriptive statistics and additional results presented in [appendices A, B and C](#).

1.4.1 Overview of [chapter 2](#): In between natives and immigrants? The educational attainment of mixed and transnational children in England, Germany, the Netherlands and Sweden

In [chapter 2](#), I ask whether children with one native-born and one foreign-born parent display similar behavior at academic transitions as do children with two foreign-born parents, or whether they are more similar to natives in this respect. More specifically, I am

interested in whether cross-nativity children enjoy a double advantage: namely, whether they display the high ambitions that are characteristic of children with two immigrant parents while also benefiting from the social and cultural resources associated with having a native-born parent. Theoretically, I rely mainly on the framework of “immigrant optimism” of Kao and Tienda (1995): the idea that immigrants are self-selected on character traits (such as ambition and drive) that influence the educational aspirations of their children.

Among children with one native-born and one foreign-born parent, I further distinguish between mixed children—meaning those whose native-born parent does not have an immigration background (i.e., has two native-born parents)—and transnational children, whose native-born parent *does* have an immigration background (i.e., has one or two foreign-born parents). The contrast between these two groups is interesting, because the integration trajectories of immigrants who marry natives without an immigration background (as in the case of mixed partnerships) are likely to be rather different from those of immigrants who marry second-generation immigrants (often from the same ethnic background).

The motivation for [chapter 2](#) stems from the fact that most empirical research on ethnic inequalities in education focuses, implicitly or explicitly, on the comparison between the majority population (natives) and second-generation immigrants plus the 1.75 generation (i.e., foreign-born youth who immigrated to the host country before age 6 – see Dollmann et al. 2014). This is unsurprising, since children with two foreign-born parents constitute the bulk of immigrant-origin children. Yet mixed and transnational children together represent around about 9% of youth in secondary education in the four countries analyzed (Kalter et al., 2018, p.65).

To answer the research question of this chapter empirically, I examine data from waves 1 through 3 of the [Children of Immigrants Longitudinal Study in Four European Countries \(CILS4EU\)](#) (Kalter et al., 2016a; Kalter et al., 2016b; Kalter et al., 2016c). Because of the small sample sizes of mixed and transnational children, I am unable to distinguish by the country of origin of the foreign-born parent (however, in some analyses, I focus only on mixed children of non-Western origin, following Kalmijn 2015). Moreover, in the main analysis, I pool the data for all four countries, even though I also replicate the analysis at the country level (see [appendix A](#)).

The main result of [chapter 2](#) is that mixed children and transnational children are quite different from one another in terms of their primary and secondary ethnic effects. Mixed children are rather similar to native children in most respects, including socioeconomic background and educational performance. I do not find evidence for secondary effects of mixed parentage. As for transnational children, my analysis reveals that their socioeconomic

background and educational performance are slightly higher than those of children with two foreign-born parents, possibly as a result of the greater structural integration of transnational children's native-born parent.

Remarkably, the educational aspirations of transnational children, and their secondary effects at the transition to upper secondary school, are as high as those of children with two foreign-born parents. This is to say that the phenomenon of immigrant optimism seems to be as relevant for transnational children as it is for children with two foreign-born parents. In the final section of the chapter, I discuss these results in light of the different selection processes that might result in the formation of mixed and transnational partnerships.

1.4.2 Overview of chapter 3: Do differences in information sources contribute to immigrants' high educational aspirations? Evidence from Sweden and England

In this chapter, I examine the relationship between access to information on future education and the realistic educational aspirations of youth in the last year of lower secondary education in Sweden and England. One of the possible explanations for the ambitious educational choices of immigrant-origin children (in this case, their higher likelihood, conditional on performance, to opt for the academic track of upper secondary education) is that these choices are, to some extent, the result of information deficits (Becker and Gresch, 2016; Salikutluk, 2016).

In most rational choice models of education (see for instance Breen and Goldthorpe 1997; Breen and Jonsson 2005; Erikson and Jonsson 1996), it is assumed that children and their parents make educational decisions after assessing the expected utilities of various alternatives (i.e., their "value", weighted by the probability of success, minus the associated costs, including opportunity costs). This assessment of expected utilities is then reflected in the realistic educational aspirations of children (Becker and Gresch, 2016).

The question that arises in light of the "aspirations–achievement" paradox (Salikutluk, 2016) is whether immigrants have less reliable education-related information than natives (e.g., concerning their probability of success in the academic track of secondary school or in tertiary education, or the true costs and returns of academic qualifications as opposed to vocational ones), or whether they interpret and weight this information differently than natives (e.g., viewing their current grades as less reflective of their future academic potential).

However, little empirical research has explored how, or whether, children's realistic educational aspirations are associated with their level of information on future education. What I do in chapter 3 is examine this relationship for youth on the threshold of upper secondary education in Sweden and England. In these countries, this is the first educational transition, and there is much at play: The academic track prepares children for longer

school careers conducive to university studies and knowledge-intensive jobs, while the vocational tracks and related training promise a shorter path to the labor market. In this context, information is likely to play an important role in the assessment of the costs and benefits of either alternative. The question is not so much whether there are differences in information, but whether information affects the realistic educational aspirations of native-origin children and immigrant-origin children in similar ways.

As in chapter 2, I use data from [CILS4EU](#) to answer my research question empirically. Information is operationalized as the number of different information sources that children report in connection to future education. This is an important limitation, since the number of information sources is not necessarily telling of the quality or reliability of that information. However, since there are no feasible alternatives in the data, I use this measure nonetheless. Another caveat of the analysis is that it is cross-sectional, as realistic educational aspirations and information sources are measured concurrently. More appropriate, however, would be a longitudinal design in which the evolution over time of aspirations could be linked to the level of information that children possess.

Despite these caveats, my empirical analysis reveals two interesting insights. The first is that overall, the number of information sources is a significant predictor of realistic educational aspirations in both countries. In England, it seems as though differences in information mask socioeconomic differences. However, in Sweden, the effect of information sources is highly significant even after including all controls. The second finding is that the effect of information on aspirations does differ between native-origin and immigrant-origin children. In Sweden, immigrants' realistic educational aspirations are largely unaffected by information, whereas in England, the effect of information on aspirations is markedly stronger for immigrants than it is for natives (see [Figure 3.1](#)).

On closer inspection, these contrasting results for the two countries are primarily driven by the 1.75 generation (i.e., the foreign-born who immigrated before age 6). The relationship between information and realistic educational aspirations does not differ in a significant way between native-origin and immigrant-origin children in either of the countries. But the results for the 1.75 generation are intriguing. In England, there is a very strong positive relationship between information and educational aspirations for the 1.75 generation. In contrast, it appears that in Sweden, *ceteris paribus*, better-informed 1.75-generation immigrants hold lower educational ambitions than those with less information do (see [Figure B.2](#)). Toward the end of the chapter, I discuss the implications of these results with regard to theories of information bias and the role of information in the formation of realistic educational aspirations.

1.4.3 Overview of chapter 4: Is parental educational attainment less important for the education of the children of immigrants? Evidence from Germany

The last chapter of this dissertation focuses on the question of whether the educational careers of immigrant-origin children are less influenced by the educational attainment of their parents, compared to native children. I discuss various reasons why this might be the case, with a particular focus on the mechanisms described by Luthra and Soehl (2015), Feliciano and Lanuza (2017) and Ichou (2014) concerning the contextual nature of the relationship between parental educational attainment and the educationally-relevant resources of parents (i.e., their cognitive skills as well as their cultural capital; see Nauck and Lotter 2016; Bourdieu 1986).

The motivation for this study is twofold. On the one hand, Germany is a country with a very strong transmission of education, which implies that parental educational attainment is generally very closely correlated with children's educational attainment (Woessmann, 2004; Hanushek and Wößmann, 2006). Since most immigrants in Germany have a low educational attainment by German standards, an important empirical question is whether their children will experience more or less upward social mobility than comparable native children.

On the other hand, this study also tests an assumption often made in empirical studies on ethnic inequalities in educational attainment, but seldom scrutinized: namely, that parental educational attainment, together with parental occupational status, captures reasonably well the skills and intangible resources that parents invest in their children's education. As Luthra and Soehl (2015) argue, "controlling" for parental education may result in bias if there are systematic ethnic differences in the relationship between parental education and the relevant resources for which parental education serves as a proxy.

Besides testing for ethnic differences in the effect of parental education on children's education, I also expand the contextual attainment framework to incorporate the role of age of immigration. If the context in which immigrant parents attended school matters for the transmission of education, it is reasonable to expect the age of immigration to matter as well, since—at least in the German context—many first-generation immigrants may have received some education in the host country if they arrived at a young age. Yet prior research on ethnic differences in the intergenerational transmission of education does not consider the role of age of immigration.

My empirical strategy is straightforward: I focus on the interaction effects of ethnicity and parental educational attainment on the likelihood that children are enrolled in the *Gymnasium* (German academic secondary education), as opposed to being enrolled in the vocationally-oriented tracks or not being in school at all. In contrast to the other

two main chapters, in chapter 4, I do not use data from CILS4EU (Kalter et al., 2016a; Kalter et al., 2016b; Kalter et al., 2016c) but rather from the German Microcensus (Forschungsdatenzentren, 2013), a yearly survey of 1% of German households in which participation is mandatory. I focus on children aged 12 to 18 years, since information about parents can only be linked if they live in the same household as their children.

One advantage of the Microcensus, compared to CILS4EU, is its much greater sample size. This allows me to distinguish immigrants analytically by ethnic group, something that is not possible in the other chapters. I focus on Germany's two largest ethnic minorities: the Turkish-origin population, on the one hand, and (*Spät*)*Aussiedler* (ethnic German immigrants from Central and Eastern Europe and the former Soviet Union), on the other. I discuss how the contrasting educational and economic contexts in the countries of origin of Turkish and *Aussiedler* immigrants might translate into differences in the transmission of education to their children in Germany.

I also compare these groups to both natives (i.e., those without an immigration background) and a heterogeneous category comprising all other immigrants. The three immigrant-origin groups comprise exclusively second-generation and 1.75-generation immigrant children, since the process of social reproduction is likely to be different for third-generation children, and mixed and transnational children, among others. In all the analyses, I consider the effect of maternal and paternal education separately, rather than taking the highest value of the two.

The results of my analysis show that in line with previous research, the transmission of education is significantly weaker for immigrant-origin children than for native children (see Figure 4.2). This implies a greater intergenerational educational mobility for immigrants (and in particular, a higher likelihood of upward mobility). Moreover, the transmission of education seems to be slightly weaker for Turks than for *Aussiedler*, although the differences are not statistically significant. Regarding the role of age of immigration, the results indicate that parental education does play a minor role in children's educational outcomes when parents immigrated at a young age—a result that is consistent with the mechanisms of contextual educational attainment and human and cultural capital that I discuss in the theoretical part of the chapter (see section 4.2).

I conclude this chapter with a discussion of possible improvements to existing measurements of immigrants' SES, such as measures of relative educational attainment (see Ichou 2014; Feliciano and Lanuza 2017; Luthra and Soehl 2015). The main limitation of the chapter is that I do not include alternative measures of pre-migration SES, which may explain my findings. As Engzell and Ichou (2020) argue, it is possible that the “immigrant advantage” at educational transitions, as well as the greater upward social mobility of immigrant-

origin children, results from not adequately considering the pre-migration socioeconomic position of immigrants, which may not be reflected in their educational qualifications if they originate from countries with restricted educational opportunities.

1.5 Limitations and avenues for future research

The three empirical chapters of this dissertation provide insights into some of the mechanisms that might explain the high educational aspirations and ambitious educational decisions of the children of immigrants in Western European countries. However, the chapters also present important limitations, which must be discussed in order not only to better understand the internal and external validity of my results, but to also identify potential areas of opportunity for future work.

A major limitation is that the entire dissertation focuses on one specific stage of children's educational careers: lower secondary school and, in chapters 2 and 4, the transition to upper secondary school. The dissertation hence lacks a sequential, longer-term perspective on ethnic inequalities that takes into account how inequalities increase or decrease at each educational stage and at each transition (Diehl et al., 2016a).

Thus, although I show in chapters 2 and 4 that immigrant-origin youth are more likely than native youth with the same performance and socioeconomic background to enroll in AUSS, I do not explore the consequences of such ambitious decisions for their success at this stage (a topic addressed in a recent paper by Dollmann and Weißmann 2020)—nor do I analyze ethnic secondary effects at the transition to tertiary education (Kristen et al., 2008).

Similarly, my analysis does not reveal the root of negative ethnic primary effects, that is, the reasons why many children of immigrants have a lower academic performance and ability than comparable natives (Borgna and Contini, 2014; Rothon, 2007). Research by Becker (2011) has shown that ethnic inequalities are already present in preschool. In sum, my analysis only sheds light on ethnic inequalities at one stage in the educational career, and my findings need to be contextualized accordingly. The study of ethnic primary and secondary effects at various points in the educational career remains a promising area for research.

Another limitation, which I addressed in section 1.3, concerns the fact that I am unable to distinguish by ethnic group in chapters 2 and 3. Instead, I rely on pan-ethnic generational status categories (second-generation and 1.75-generation immigrant children, mixed children, transnational children and children without an immigration background).

Thus, my results might mask large ethnic differences. For instance, in chapter 2, it is conceivable that mixed children with certain ethnic backgrounds display stronger secondary effects than others. In chapter 3, it might also be that the relationship between information

and educational aspirations depends on the size of the ethnic community. Unfortunately, in both cases, the reduced sample sizes made it unfeasible to use a more detailed classification of ethnic origin and generational status, as the resulting groups would have been too small for any significant results to be produced.

An important limitation specific to [chapter 3](#) is the operationalization of the key exploratory variable: information on future education. The proxy variable that I use, number of information sources, is an imperfect measure that can be improved upon in future research. One way to do so would be to measure directly students' knowledge of the education system (e.g., to test their knowledge of the entry requirements for tertiary education or the structure of the vocational training system) or of the average economic returns of different educational alternatives.

A further limitation of [chapter 3](#) is that I do not explore the role of social networks. How well-informed students are about educational opportunities probably depends not just on whether they exchange relevant information with friends and acquaintances; the ethnic composition of their social networks might matter, too. Thus, the extent to which the children of immigrants have contact with the “majority society” might affect the type of information they receive and thus their realistic educational aspirations. Similarly, I also do not explore the role of language proficiency, which might also impact the capacity of the children of immigrants (at least, for those who do not speak the host-country language at home) to obtain information from several sources.

As for [chapter 4](#), its main limitation is that while I argue that parental *absolute* educational attainment (i.e., their highest educational qualification) and post-migration SES may not account adequately for their educationally relevant resources (i.e., their human and cultural capital), I do not present an alternative measure of such resources. In this regard, one possibility for future research would be to include in the analysis a measure of *relative* educational attainment (i.e., a person's educational rank in the country of origin, measured as the proportion of the population with less or equivalent education; see Feliciano and Lanuza 2017; Ichou 2014; Engzell and Ichou 2020). Another possibility would be to ask immigrants to describe or categorize their pre-migration SES. Either of these options might better capture the “skills, habits and styles” of parents that influence their children's educational outcomes (Farkas, 1996, p.21).

Chapter 2

In between natives and migrants? The educational attainment of mixed and transnational children

2.1 Introduction

In nearly all Western European countries, a significant gap in educational attainment between native-origin and immigrant-origin children persists (Drouhot and Nee, 2019; Heath and Brinbaum, 2014; Heath et al., 2008; Levels et al., 2008; Werfhorst and Heath, 2019). To analyze these inequalities, many scholars have relied on the framework introduced by Boudon (1974), who distinguished between the effects of social origin on educational performance (primary effects), on the one hand, and its effects on educational choices (secondary effects), on the other.

This literature has produced two consistent findings. The first is that immigrant-origin children are disadvantaged with regard to most resources that affect educational performance (e.g., SES, host-country language skills and contact with natives). The second is that they generally make more ambitious educational choices than natives, particularly after accounting for performance (Dollmann, 2017; Heath and Brinbaum, 2007; Jackson, 2012). This implies, for instance, that immigrant-origin children are more likely to opt for the academic track rather than the vocational track of secondary school.

While the exact mechanisms behind this phenomenon are not entirely clear, there is substantial evidence that high aspirations play an important role (Dollmann, 2017; Heath and Rethon, 2014; Heath et al., 2008; Jonsson and Rudolphi, 2011). Some scholars have proposed that immigrant children's high educational aspirations reflect their parents' aspiration for social mobility (Cebolla-Boado and Soysal, 2018; Kao and Tienda, 1998; Kao

and Tienda, 1995; Zéroulou, 1988). According to this argument, immigrants tend to be selected on traits such as ambition, drive and optimism, and social mobility is often a key motivation for migration.

To the extent that children internalize their parents' educational ambitions, they tend to perform better and make ambitious choices at educational transitions (Kao and Tienda, 1995; Kao and Tienda, 1998). However, since performance is constrained by other factors (such as family income, parental host-country language skills, parental human capital, etc.), this mechanism of immigrant optimism has a more decisive effect on choices than on performance (Jonsson and Rudolphi, 2011).

Immigrant optimism is often used to account for the ambitious educational choices of children with two foreign-born parents. Yet few studies have examined whether the immigrant optimism mechanism is relevant for children with one native-born and one foreign-born parent. In Western Europe, there are two distinct population groups with cross-nativity parentage: mixed children, who have a native-born parent without an immigration background, and transnational children, who have a native-born parent with an immigration background (i.e., the native-born parent is a second-generation immigrant).

In this study, I compare the educational choices of mixed and transnational children—each as a separate category—to those of children without an immigration background (natives) and those of children with two immigrant parents (henceforth, migrants) at the end of compulsory education in England, Germany, the Netherlands and Sweden (around ages 15–16).¹ In England and Sweden, this is the first educational transition, and children are largely free to choose between academic and vocational educational. In Germany and the Netherlands, tracking occurs much earlier, but children enrolled in the vocationally-oriented tracks may switch to the academic track during secondary school if certain performance conditions are met (Dollmann, 2017, p.21). This means that children in all four countries face a transition at this point. Because the populations of interest are very small, I pool the data for all four countries. Data comes from the CILS4EU project (Kalter et al., 2016a; Kalter et al., 2016b; Kalter et al., 2016c).

My results suggest that mixed children closely resemble natives in terms of socioeconomic background, educational performance and educational choices. In contrast, transnational children are most similar to migrants on those same dimensions. Thus, the main empirical contribution of this study is to show that mixed and transnational children are rather different population groups that, whenever possible, ought not to be treated as a single group. A sounder solution, when a detailed differentiation is not possible, would be to consider mixed children as natives and transnational children as migrants, as some scholars have done (see for instance Mood 2018).

¹The terms migrant, as used in this study, comprises both second-generation immigrants (i.e., native-born children with two foreign-born parents) and 1.75-generation immigrants (i.e., foreign-born children who immigrated before the age of 6).

Despite its many limitations—in particular, those related to the pooling of data for all four countries and the inability to distinguish among ethnic groups—my analysis provides novel insights into the educational decision-making patterns of two under-studied population groups. While mixed and transnational children are relatively small population groups, as residential mobility becomes commonplace in the context of globalization, the significance of these groups will continue to increase (Lucassen and Laarman, 2009; Wang, 2012). It is therefore important to examine them separately from the larger—and more intensively studied—group of second-generation immigrants.

2.2 Theory

2.2.1 Explaining ethnic inequalities in educational attainment: Primary and secondary effects

Most European studies on ethnic inequalities in education rely on Boudon's (1974) distinction between primary and secondary effects. First, Boudon posited that social background strongly determines the array of tangible and intangible (i.e., knowledge, values, attitudes to education, parenting skills, social networks) resources on which children can rely for their learning process, thereby affecting their educational performance (Jackson et al., 2007). For instance, children with more highly educated parents can depend on parental knowledge and support more than children with less educated parents can; they are also more likely to have a home environment that is suitable for studying.

In contrast, secondary effects refer to the influence of social background on educational decisions. Boudon (1974) argued that independent of academic performance, there are marked group differences in the assessment of the costs, benefits and probabilities of success of different educational alternatives. One reason for this is social reproduction: Normative notions of what constitutes an acceptable educational attainment might be strongly related to social class, and this is likely to influence educational choices (Diehl et al., 2016a).

While Boudon's primary and secondary effects were conceived to analyze the effects of social class differentials on educational attainment, in recent years, these concepts have been adapted to study ethnic inequalities in educational attainment as well (Heath et al., 2008; Heath and Brinbaum, 2007; Brinbaum and Heath, 2014; Kristen and Dollmann, 2010; Werfhorst and Tubergen, 2007; Diehl et al., 2016a). Thus, ethnic primary effects refer to the ethnic inequalities in educational achievement net of SES, while ethnic secondary effects refer to inequalities in educational attainment net of both SES and educational achievement. The empirical evidence on these ethnic primary and secondary effects will be discussed in the next section.

2.2.2 Empirical evidence on ethnic inequalities in educational attainment in Western Europe: Performance versus choices

Most studies on the educational attainment of immigrant-origin children in Western Europe have found this group to perform worse in school than natives (i.e., negative ethnic primary effects) while at the same time making more ambitious educational decisions than natives after controlling for performance (i.e., positive ethnic secondary effects) (Dollmann, 2017; Heath and Brinbaum, 2007; Jackson, 2012; Kristen and Dollmann, 2010). The negative primary effects are to some extent understandable: Immigrant parents often have a limited understanding of the host country's educational system and may have a limited proficiency in the host-country language – both factors may hinder the educational performance of their children (Brinbaum and Heath, 2014; Heath and Rethon, 2014; Heath et al., 2008).

Far more perplexing is the consistent finding of positive secondary effects, which have been detected in many European countries, including Germany (Dollmann, 2017), Sweden (Jonsson and Rudolphi, 2011), England (Jackson, 2012), France (Brinbaum and Cebolla-Boado, 2007), Switzerland (Tjaden and Scharenberg, 2017) and the Netherlands (Werfhorst and Tubergen, 2007). What this means is that immigrant-origin children are more likely than native children to attend the academic tracks of secondary as well as tertiary education, after controlling for prior performance.

While the precise nature of this mechanism has not yet been fully unraveled, there is substantial evidence that the high educational aspirations of immigrants throughout the Western world play an important role (Dollmann, 2017; Kao and Tienda, 1995; Kao and Tienda, 1998; Salikutluk, 2016). According to the immigrant optimism hypothesis, immigrants tend to be self-selected on positive traits such as optimism, ambition and the drive to achieve social mobility (Cebolla-Boado and Soysal, 2018; Heath and Brinbaum, 2007). These traits are sometimes regarded as motivational resources, which immigrant parents might transmit to their children in the form of high educational aspirations (Heath et al., 2008; Modood, 2004). The key role of parental educational aspirations in their children's own educational aspirations is a classic motif in the literature on social mobility and social reproduction (Sewell et al., 1970; Boudon, 1974).

At educational transitions, these aspirations translate into ambitious choices (Dollmann, 2017). While there are other hypotheses for the ambitious educational choices of this group (such as information deficits or anticipated discrimination), empirical evidence for them is limited (Kao and Tienda, 1995; Kao and Tienda, 1998; Fernández-Reino, 2016; Salikutluk, 2016; Tjaden and Hunkler, 2017). In general, the vast majority of empirical research on ethnic inequalities in educational choices and attainment focuses on children with two foreign-born parents. Far less attention has been devoted to mixed children and transnational children, two small but rapidly growing population groups.

2.2.3 Mixed children at educational transitions

Mixed children typically result from intermarriage, which is generally understood to occur when a foreign-born person marries a person of native origin (Kalmijn, 2015), although they may also result from non-marital unions between natives and foreigners. Intermarriage has long been a topic of interest for scholars in the field of migration and integration (see, for instance, Gordon 1964). In classic assimilation theory, intermarriage was regarded as “the final stage of assimilation among immigrant racial and ethnic minorities” (Qian and Lichter, 2001, p.291).

This point is further highlighted in “new assimilation theory,” which predicts that intermarriage will tend to increase as the social and cultural distance between native and immigrant groups decreases (Alba and Nee, 2009; Lucassen and Laarman, 2009). Intermarriage does not only signal an advanced degree of assimilation or integration on the part of immigrants; it is also a catalyst for further integration, since immigrants with native spouses are likely to have more contact with natives and to improve their host-country language skills (Kanas et al., 2012).

In other words, while integration increases the odds of intermarrying, intermarriage further accelerates integration. The most enduring legacy of intermarriage is, however, not the integration of those immigrants who intermarry, but rather the integration of the children of intermarriage (i.e., mixed children). Such children are essential for the weakening or blurring of ethnic and racial boundaries over successive generations, a process that might be conducive to greater social inclusion and a decline in discrimination as the meaning of ethnicity is diluted (Alba, 2005; Davis, 1991; Qian and Lichter, 2007). Therefore, as intermarriage becomes more common throughout the Western world (Lucassen and Laarman, 2009; Wang, 2012), understanding how intermarriage affects the integration of children from these unions vis-à-vis children with two immigrant parents is more relevant than ever.

In this context, a useful framework to assess the integration outcomes of mixed children is the one provided by Kalmijn (2015), who proposes three paradigms: (1) an integration paradigm, in which mixed children assimilate with children with two native parents (“natives”), (2) a stigmatization and separation paradigm, in which mixed children converge with children with two immigrant parents (i.e., with the “second generation” immigrants) and (3) additive parental influence paradigm in which mixed children are more or less equidistant from both second-generation immigrants and natives. These paradigms can be used to conceptualize different integration outcomes, including educational choices and attainment.

In general, the empirical evidence on the educational attainment of mixed children is somewhat contradictory, underlining the ambivalent effects of intermarriage on children. There is evidence that mixed children typically perform better in school than children with two foreign-born parents (Becker, 2011; Levels et al., 2008; Segeritz et al., 2010). This better educational performance on the part of mixed children has different causes. First, immigrant parents in mixed partnerships are positively selected and tend to be better educated and wealthier than immigrant parents married to other immigrants (Emonds and Tubergen, 2015; Kalmijn, 2015; Segeritz et al., 2010). These favorable socioeconomic conditions have a positive effect on children's learning processes (Levels et al., 2008).

The second reason is that mixed children tend to possess more host-country cultural capital than immigrant children. For instance, mixed children tend to be more proficient in the host-country language and have more cross-ethnic social ties due to the influence of their native parent (Emonds and Tubergen, 2015; Kalmijn, 2010; Kalmijn, 2015). This also has a positive influence on performance.

However, intermarriage can also affect performance negatively via a higher risk of partnership dissolution: Cross-nativity partnerships are known to be less stable. Thus, mixed children are more likely to experience their parents' divorce and (or) grow up with only one parent (Bratter and King, 2008; Emonds and Tubergen, 2015; Kalmijn, 2015; Platt, 2012; Zhang and Hook, 2009). These circumstances can hinder educational performance and attainment (Bernardi and Radl, 2014).

Most studies show that mixed children are somewhere in between natives and immigrants with regard to educational ability and performance, although there is no clear pattern as to which group they are closer to (Becker, 2011; Emonds and Tubergen, 2015; Kalmijn, 2015; Segeritz et al., 2010). For instance, Levels et al. (2008) found the educational ability of mixed children to be close to that of immigrant children in 13 Western European countries, whereas Azzolini and Barone (2013) found that in Italy, mixed children are closer in educational performance to native children than to immigrant children.

Meanwhile, empirical evidence on the educational decision-making of mixed children is scant. To date, no study has examined this issue in the European context. In the context of the United States, Furtado (2009) found that mixed children are more likely than immigrant children to drop out of high school. However, what is known about mixed children on both sides of the Atlantic is that they tend to have lower educational aspirations and less positive attitudes to education than immigrant children (Emonds and Tubergen, 2015; Golash-Boza, 2005; Kao and Tienda, 1998).

Following the immigrant optimism hypothesis, it is reasonable to expect mixed children to exhibit less strong secondary effects than children with two immigrant parents. Assuming that each parent exerts a similar degree of influence on a child's attitude to education

and that immigrant parents tend to have higher educational aspirations for their children than native parents (controlling for performance), it is to be expected that the secondary effects of mixed children will be about half as large as those of children with two immigrant parents. In light of this mechanism, Hypothesis 1 (H1) can be formulated as follows:

Hypothesis 1 *Mixed children are more likely to enroll in AUSS than native children, but less likely than children with two immigrant parents, reflecting the additive effects of each parent on children's attitudes to education.*

The alternative outcomes are (1) that mixed children resemble native children (i.e., that there are no secondary effects for them, since natives are the reference group) and (2) that mixed children resemble migrant children and thus display secondary effects of the same magnitude.

2.2.4 Transnational children at educational transitions

One of the challenges of studying mixed children is that there is no single definition of this group; subtle differences in how the group is defined often result in the conflation of very different groups. In particular, defining mixed children by only taking into account the birthplaces of their parents (i.e., defining mixed children as having one foreign-born and one native-born parent, as some studies have done; see Furtado 2009; Ramakrishnan 2004) obscures the fact that the native-born parents of mixed children might themselves have an immigration background.

In other words, according to such a definition, the child of a first-generation immigrant and a second-generation immigrant would also be counted as a mixed child. This could mean that the parents are co-ethnic and that the immigrant parent was an “import bride or groom” (Becker, 2011, p.435). Thus, rather than being indicative of the integration of the first-generation immigrant parent, such cases are more likely to indicate the cultural reorientation of the second-generation immigrant parent toward the country of origin of the parents (by choosing a marriage partner from their country) and possibly the stagnation of the assimilation process (Segeritz et al., 2010).

For these reasons and more, the children of such unions—referred to in this dissertation as transnational children—deserve to be considered separately from mixed children, whose native-born parent does not have an immigration background.” The rationale for this is that “those of the second generation who choose to form a family with an immigrant are overall less likely to be integrated themselves, and less likely to expose their children to the receiving-country culture” (Kalter et al., 2018, p.14).

To date, very few studies have examined mixed children and transnational children side-by-side. Becker (2011) found German–Turkish mixed children in Germany to score better on cognitive and language skills than both immigrant children and transnational children

of Turkish origin. Meanwhile, Kalter et al. (2018) found transnational children to be quite similar, on the whole, to both second- and 1.5-generation immigrant children in terms of cultural and social integration (e.g., values, ethnic identity, religiosity). However, to date, no study to date has examined how transnational children perform at educational transitions compared to both mixed children and immigrant children. On account of the evidence available, I expect this group to be rather similar to immigrant children. Thus, Hypothesis 2 (H2) can be formulated as follows:

Hypothesis 2 *After considering prior achievement and family background, transnational children are as likely as children with two immigrant parents to enroll in AUSS.*

The main alternative outcome is that transnational children are rather similar to mixed children, since both groups have one native-born and one foreign-born parent.

2.2.5 Aspirations as a driver of the educational choices of mixed and transnational children

The third hypothesis that I will test is whether educational aspirations account, to a large extent, for the secondary effects of mixed and transnational children. In other words, are the secondary effects of these groups significantly reduced when educational aspirations are controlled for? As per the immigrant optimism framework, this should be the case; the secondary effects of children with two immigrant parents are mostly explained in terms of their high educational aspirations (Dollmann, 2017; Jackson et al., 2012; Jonsson and Rudolphi, 2011). I expect this mechanism to be valid for mixed and transnational children, too. Accordingly, Hypothesis 3 (H3) can be formulated in the following way:

Hypothesis 3 *Educational aspirations account for the positive secondary effects of both mixed children and transnational children to a large extent.*

An alternative result is that educational aspirations do not account, in any meaningful way, for the positive secondary effects of those population groups.

2.3 Research design

2.3.1 Data

I test my three hypotheses using data from waves 1, 2 and 3 of the CILS4EU (Kalter et al., 2016a; Kalter et al., 2016b; Kalter et al., 2016c). This survey was conducted simultaneously in England, Germany, the Netherlands and Sweden. A stratified multistage sampling strategy was used. In the first stage, schools were divided into strata according to the share of pupils with an immigration background in order to ensure that around 50% of children in the sample had an immigration background. Schools were then sampled randomly within each stratum, and classes were sampled within schools. In the first wave, children were

surveyed at school, while in waves 2 and 3, a combination of school-based, telephone-based and internet-based surveys was used, as many children had changed schools or finished their education.

Panel attrition between waves 1 and 3 was significant: 10,738 of the 18,716 youth participated in all three waves. After performing a list-wise deletion of observations with missing values in the variables of interest, the final sample size for the analysis is 8,466. However, the extent of panel attrition bias due to selectivity in participation in wave 3 of the survey is very modest. As I show in [Table A.4](#) in the appendix, children who dropped out of the survey are quite similar, in terms of socioeconomic background and ability, to children who stayed in the survey but did not enroll in AUSS. However, the same analysis reveals that panel continuation is slightly more likely for females, children living with both parents and younger children.

Since mixed and transnational children are proportionally small groups (with sample sizes of 553 and 334, respectively), I pool all four countries together to achieve a sufficiently large sample size of mixed children that allows for the identification of statistical associations. The ethnic origins of all immigrant-origin children are displayed in [Table A.1](#) in the appendix.

2.3.2 Measures

Dependent variable: Student status in wave 3

By the third wave of CILS4EU and unless they had repeated a grade, children in the four countries considered had transitioned from lower secondary school to either AUSS, vocational upper secondary school or the vocational training system, or were no longer enrolled in school. This means that in all four countries, an academic track is distinguishable from all other educational alternatives, even though tracking occurs much earlier in Germany and the Netherlands than in Sweden and England.

Based on this distinction, I created a dichotomous dependent variable that indicates whether a child is enrolled in AUSS by wave 3 (or has already completed such an educational program). The successful completion of AUSS qualifies students for university admission in the four countries. AUSS primarily means studying for the A levels in England (i.e. sixth form education), for the *Abitur* or *Fachabitur* in Germany, being enrolled in Dutch Preparatory scientific (pre-university) education (VWO), the *Gymnasium* or Dutch Senior general secondary education (HAVO) in the Netherlands, or being enrolled in the academic track of upper secondary school in Sweden. A methodological note on the classification of student status in wave 3 is provided in [Table A.8](#) in the appendix. As [Table 2.1](#) shows, roughly half of all children were in the academic track by wave 3.

Immigration background

The key explanatory variable is immigration background, as I aim to identify its effect on the likelihood of reaching AUSS after controlling for performance and possible confounders. Adapting the categories laid out by Dollmann et al. (2014), I distinguish among four types of immigration background: native children, migrant children, mixed children and transnational children. The groups are defined in the following way:

- **Native children** are children with two native-born parents, both of whom have, in turn, native-born parents.
- **Migrant children** are those with two foreign-born parents. The children were either born in the host country or immigrated to it before age 6.
- **Mixed children** are those with a foreign-born parent and a native-born parent who has, in turn, two native-born parents. The children were either born in the host country or immigrated to it before age 6.
- **Transnational children** are those with a foreign-born parent and a native-born parent who has, in turn, one or two foreign-born parents². The children were either born in the host country or immigrated to it before age 6.

Control variables

I include different control variables in each of the four empirical models. Country and sampling stratum (the percentage of children with an immigration background in the school) are included as controls in all models. Country dummy variables enable me to control for unobserved country-specific characteristics that might confound the relationship between ethnicity and educational attainment.

To control for sociodemographic characteristics, I include gender, age and family structure (whether or not the child lives with both biological parents). Prior research has found females to have an advantage over males in educational aspirations, performance and attainment (Feliciano and Rumbaut, 2005; Fleischmann and Kristen, 2014; Dollmann, 2017; Segeritz et al., 2010). Age indirectly controls for grade repetition in the past, since children are in the same grade. Family structure is important, as lone parenthood and divorce are associated with lower academic performance and lower overall educational attainment of children (Francesconi et al., 2010; Dronkers, 1994; Sun and Li, 2011).

The SES of children is measured through two variables: parental occupational status and parental educational attainment. Parental occupational status is operationalized as the highest International Socio-Economic Index of Occupational Status (ISEI) score (on a 0 to

²In other words, a transnational child has one first-generation immigrant parent and one second-generation immigrant parent. See Dollmann et al. (2014)

100 scale, where 100 indicates the maximum status) of either parent.³ Parental educational attainment represents the highest educational certificate obtained by either parent. It is operationalized as a categorical variable with four levels: basic education or less, secondary education, tertiary education or unknown.

In some models, I also control for ability and educational performance. Cognitive and language ability is measured through standardized tests administered to students in the first wave of the survey.⁴ Both measures were transformed, for ease of interpretation, into a 0 to 1 scale, where 1 indicates the maximum score. Meanwhile, the variable grade represents the average grade in the previous school year in math, English and the native language of the country (which means that for England, only math and English were averaged). Since each country uses a different grading scale, grades were also converted to a 0 to 1 scale, with 1 indicating the maximum grade.

An important control variable is track in wave 1. This is a categorical variable with four levels: Upper track, middle track, lower track, and no track or unknown track. In Germany and the Netherlands, which have stratified education systems, classification is relatively straightforward, since there are three main streams of secondary school (academic, higher vocational and lower vocational). For England and Sweden, which have comprehensive education until the end of compulsory schooling, course-by-course ability tracking is nonetheless common. For these two countries, I use children's math ability group as a measure of track level, since it has been found to be a strong predictor of final educational attainment (Chmielewski et al., 2013).

The full classification system for student status in wave 1, which is based on the analysis by Geven (2019), is shown in Table A.7 in the appendix. While between-schools tracking in stratified systems is arguably much more rigid than ability tracking in comprehensive systems, tracking performs a similar role in either case: to group students with similar ability levels and prepare them for different educational trajectories (Brabander, 2000; Geven, 2019). The relationship between track in wave 1 and educational outcomes by wave 3 are shown for each country separately in Table A.6.

In one of the models, I include two measures of educational aspirations as potential mediators: idealistic aspirations, which correspond to the educational degree that students *wish* to achieve (without regard for actual constraints), and realistic aspirations, which correspond to what students *expect* their highest degree to be (considering constraints and thus the likelihood of different alternatives materializing). Both are dichotomous: Aspirations are marked as high when students express the wish, or expectation, to attend university, and as low otherwise. I expect educational aspirations to account for much of

³The ISEI was created by the CILS4EU team using the methodology of Ganzeboom et al. (1992).

⁴The cognitive test was puzzle-based and comprised 27 items, while the language test required students to find synonyms and had 25 items in Germany and England and 30 items in the Netherlands and Sweden.

the immigrant advantage in enrollment in AUSS, as posited by the immigrant optimism hypothesis (Dollmann, 2017; Heath and Brinbaum, 2007; Kao and Tienda, 1995; Kao and Tienda, 1998; Becker and Gresch, 2016).

2.3.3 Summary statistics

Summary statistics for the variables used in the analysis are provided in Table 2.1 for each of the four immigration backgrounds considered as well as for the entire sample. For continuous variables, the mean and standard deviation are displayed (standard deviation in parentheses). For categorical variables, the table shows the number of cases for each level of the variable as well as the proportion of cases that each level represents with respect to the group total.

Mixed and transnational children are the groups most likely to be enrolled in AUSS by wave 3. This is especially striking in the case of transnational children, since their SES is lower than that of natives. Moreover, this group also trails natives in cognitive and language ability. However, transnational children express the highest idealistic and realistic aspirations. Although this is only descriptive evidence, it already suggests that the causes of the high enrollment of transnational children in AUSS are not to be found in their academic achievement or family background, but rather in behavioral and attitudinal traits.

The high enrollment of mixed children in AUSS is, on the other hand, hardly surprising, considering their favorable contextual characteristics. Of the four groups, mixed children have the highest SES and the most highly educated parents (with around half of them having at least one parent with complete tertiary education). This supports the notion that parents who enter mixed partnerships are a positively selected group (see Platt 2012; Kalmijn 2015; Kalmijn 2010; Qian and Lichter 2007; Smith et al. 2012).

Moreover, mixed children have the same academic ability as native children and also report the same grades. The only clear disadvantage of mixed children vis-à-vis natives is their higher propensity to grow up in single-parent households (60% versus 72%, respectively). This is not surprising, given the evidence that mixed partnerships tend to be less stable than co-ethnic ones (Bratter and King, 2008; Zhang and Hook, 2009).

Mixed children also outperform natives in both measures of educational aspirations: They are about five percentage points more likely than natives to express the wish to attend university and display a similar advantage when it comes to assessing the likelihood of such an outcome actually materializing (i.e., in terms of realistic aspirations). Yet mixed children do not outperform the other immigrant-origin groups (i.e., immigrant children or transnational children) in educational aspirations, despite their more advantageous

Table 2.1: Unweighted summary statistics by group

	Native (N=5412)	Migrant (N=2153)	Mixed (N=562)	Transnat. (N=339)	Total (N=8466)
<i>Track in W3</i>					
Academic	2818 (52.1%)	1104 (51.3%)	314 (55.9%)	198 (58.4%)	4434 (52.4%)
Other	2594 (47.9%)	1049 (48.7%)	248 (44.1%)	141 (41.6%)	4032 (47.6%)
<i>Sex</i>					
Male	2530 (46.7%)	1004 (46.6%)	253 (45.0%)	149 (44.0%)	3936 (46.5%)
Female	2882 (53.3%)	1149 (53.4%)	309 (55.0%)	190 (56.0%)	4530 (53.5%)
<i>Family type</i>					
Two-parent	3890 (71.9%)	1638 (76.1%)	335 (59.6%)	243 (71.7%)	6106 (72.1%)
Single-parent	1522 (28.1%)	515 (23.9%)	227 (40.4%)	96 (28.3%)	2360 (27.9%)
<i>Age in W1</i>					
Mean (SD)	14.40 (0.59)	14.53 (0.72)	14.36 (0.58)	14.41 (0.59)	14.43 (0.63)
<i>Parental ISEI</i>					
Mean (SD)	59.23 (18.97)	45.88 (21.57)	59.83 (19.49)	51.10 (21.72)	55.55 (20.66)
<i>Parental education</i>					
Basic or less	354 (6.5%)	351 (16.3%)	35 (6.2%)	36 (10.6%)	776 (9.2%)
Secondary	2476 (45.8%)	810 (37.6%)	223 (39.7%)	156 (46.0%)	3665 (43.3%)
Tertiary	2302 (42.5%)	737 (34.2%)	282 (50.2%)	117 (34.5%)	3438 (40.6%)
Unknown	280 (5.2%)	255 (11.8%)	22 (3.9%)	30 (8.8%)	587 (6.9%)
<i>Average grade</i>					
Mean (SD)	0.66 (0.16)	0.62 (0.19)	0.66 (0.17)	0.65 (0.18)	0.65 (0.17)
<i>Cognitive ability</i>					
Mean (SD)	0.74 (0.14)	0.68 (0.16)	0.73 (0.14)	0.70 (0.14)	0.72 (0.15)
<i>Language ability</i>					
Mean (SD)	0.63 (0.16)	0.50 (0.19)	0.63 (0.16)	0.57 (0.19)	0.59 (0.18)
<i>Idealistic aspirations</i>					
Low	2467 (45.6%)	833 (38.7%)	228 (40.6%)	121 (35.7%)	3649 (43.1%)
High	2945 (54.4%)	1320 (61.3%)	334 (59.4%)	218 (64.3%)	4817 (56.9%)
<i>Realistic aspirations</i>					
Low	3427 (63.3%)	1295 (60.1%)	329 (58.5%)	195 (57.5%)	5246 (62.0%)
High	1985 (36.7%)	858 (39.9%)	233 (41.5%)	144 (42.5%)	3220 (38.0%)
<i>Track in W1</i>					
High	1607 (29.7%)	505 (23.5%)	165 (29.4%)	84 (24.8%)	2361 (27.9%)
Mid	1622 (30.0%)	639 (29.7%)	156 (27.8%)	127 (37.5%)	2544 (30.0%)
Low	1295 (23.9%)	614 (28.5%)	129 (23.0%)	78 (23.0%)	2116 (25.0%)
None/Missing	888 (16.4%)	395 (18.3%)	112 (19.9%)	50 (14.7%)	1445 (17.1%)
<i>Country</i>					
England	1115 (20.6%)	464 (21.6%)	100 (17.8%)	141 (41.6%)	1820 (21.5%)
Germany	1655 (30.6%)	855 (39.7%)	198 (35.2%)	102 (30.1%)	2810 (33.2%)
The Netherlands	1471 (27.2%)	251 (11.7%)	115 (20.5%)	35 (10.3%)	1872 (22.1%)
Sweden	1171 (21.6%)	583 (27.1%)	149 (26.5%)	61 (18.0%)	1964 (23.2%)

Source: Own elaboration, with data from CILS4EU waves 1, 2 and 3 (Kalter et al., 2016a; Kalter et al., 2016b; Kalter et al., 2016c).

socioeconomic position and their higher grades and ability. This suggests that immigrant optimism may not be as strong among mixed children as it is among other immigrant-origin children.

In sum, [Table 2.1](#) indicates that mixed children are quite similar to native children in terms of [SES](#), educational achievement and transition to [AUSS](#). Transnational children more closely resemble migrant children in that they are both socioeconomically disadvantaged groups that trail native children in performance and ability, but who nevertheless hold very high educational aspirations and have very high rates of enrollment in [AUSS](#).

2.3.4 Methods and analytical strategy

I estimate four logistic regression models in which the dependent variable is whether the child is enrolled in [AUSS](#) in wave 3, and add covariates in a stepwise fashion to gain insights into the interplay of the dependent variable, the explanatory variable of interest (immigration background) and possible confounders such as gender, family structure, [SES](#), ability and performance. In all models, I control for track in wave 1, country and stratum, but the coefficients for these covariates are not shown, as they are not the focus of this contribution. The models can be described as follows:

- **Model 1** offers raw estimates on how the three different types of immigration background (i.e., migrant, transnational and mixed) are associated with different likelihoods of enrolling in [AUSS](#) before controlling for confounders. This model is not directly relevant to my research hypotheses, but provides a good overview of the gross disparities in educational attainment.
- In **Model 2**, I add family and child characteristics, both sociodemographic and socioeconomic, that might affect the likelihood of enrolling in [AUSS](#). The effects of the different immigration backgrounds on the dependent variable cannot be interpreted as secondary effects, since performance has not been controlled for. Rather, they can be interpreted as the overall effect of immigration background on attainment.
- In **Model 3**, academic ability and performance are added. This model aims to capture the true effect of having an immigration background on the likelihood of reaching [AUSS](#), once potential confounders have been controlled for. This means that the coefficients for the different types of immigration background are to be interpreted as secondary effects (Dollmann, 2017). This model is used to test H1 and H2. According to H1, the choice effect of mixed children should be half as large as that of migrant children. On the other hand, according to H2, the choice effect of transnational children should be as large as that of migrant children.

- In **Model 4**, idealistic and realistic educational aspirations are included. I expect educational aspirations to mediate the relationship between immigration background and educational choices: Immigrant optimism should convert into more ambitious choices at educational transitions (Dollmann, 2017; Kao and Tienda, 1995). To test H3, I observe whether the choice effect of mixed children remains significant after controlling for educational aspirations.

2.4 Results

The results of the four logistic regression models as **Average Marginal Effects (AME)** are shown in [Table 2.2](#). The key results are the **AME** of the three types of immigration background under the different model specifications, with natives as the reference category (these are shown graphically in [Figure 2.1](#)). As the results of Model 1 show, even before including sociodemographic and achievement controls, the three groups of immigrant origin are more likely than natives to enroll in AUSS. Of course, this is a global result that may mask large country differences (see [Table A.2](#) in the appendix for country-level models). However, the results already show that immigrant-origin children have an advantage over natives at educational transitions, as has been noted elsewhere (Heath and Brinbaum, 2014; Heath et al., 2008; Alba and Holdaway, 2013).

As sociodemographic and socioeconomic characteristics are added in Model 2, the **AME** of being a migrant child or a transnational child increase substantially (from 0.05 and 0.07, respectively, to 0.11). This probably reflects the disadvantageous social position of migrant and transnational children vis-à-vis both mixed and native children, as shown above in [Table 2.1](#). As for mixed children, **AME** associated with this type of background decreases in Model 2 compared with Model 1 and cease to be significant at the 5% level.

As measures of academic ability and performance are added in Model 3, the **AME** of migrant children and transnational children increase further to 0.17 and 0.16, respectively, while the **AME** of mixed children remains largely unchanged. Model 3 includes measures of the main theoretical determinants of educational attainment, with the exception of educational aspirations (since it is assumed that aspirations mediate the link between immigration background and educational attainment). Thus in Model 3, the **AME** of immigration background should reflect the net effect of immigration background on educational attainment (i.e., ethnic secondary effects). A key result from Model 3 is that migrant and transnational children are nearly identical in terms of the magnitude of their secondary effects. Mixed children, in contrast, are not significantly more likely than natives to enroll in AUSS after controlling for background characteristics, attainment and ability.

In Model 4, educational aspirations are added to the model to test H3. Educational aspirations are the theoretical mediator of the relationship between immigration background and educational attainment: As per the immigrant optimism hypothesis (Kao and Tienda, 1995;

Table 2.2: Average Marginal Effects on AUSS: Main models

	<i>Dep. var.: AUSS in W3</i>			
	(1)	(2)	(3)	(4)
Migration background (ref: Native)				
Migrant	0.047** (0.020)	0.112*** (0.021)	0.170*** (0.021)	0.130*** (0.021)
Transnational	0.072** (0.034)	0.105*** (0.035)	0.157*** (0.038)	0.122*** (0.040)
Mixed	0.053** (0.025)	0.047* (0.026)	0.044 (0.029)	0.037 (0.029)
Socio-demographic controls				
Female (ref: Male)		0.085*** (0.014)	0.092*** (0.017)	0.089*** (0.017)
One-parent family (ref: Two-family)		-0.094*** (0.016)	-0.076*** (0.017)	-0.076*** (0.017)
Age (in years)		-0.108*** (0.012)	-0.029** (0.013)	-0.031** (0.013)
Parental ISEI		0.004*** (0.000)	0.002*** (0.000)	0.001*** (0.000)
<i>Parental education (ref: Basic or less)</i>				
Secondary		0.062*** (0.022)	0.021 (0.026)	0.018 (0.026)
Tertiary		0.184*** (0.024)	0.118*** (0.031)	0.091*** (0.031)
Unknown		0.035 (0.029)	0.032 (0.036)	0.040 (0.036)
Achievement and ability controls				
<i>Track in W1 (ref: High)</i>				
Middle			-0.201*** (0.024)	-0.181*** (0.023)
Low			-0.610*** (0.026)	-0.572*** (0.027)
None/Missing			-0.136*** (0.027)	-0.127*** (0.027)
Grade			0.881*** (0.071)	0.747*** (0.070)
Cognitive score			0.234*** (0.058)	0.232*** (0.058)
Language score			0.523*** (0.060)	0.451*** (0.059)
Educational aspirations				
Idealistic aspirations				0.134*** (0.018)
Realistic aspirations				0.110*** (0.019)
Observations	8466	8466	8466	8466
McFadden's Pseudo-R ²	0.0866	0.1388	0.3188	0.3340

Note: Country and sampling stratum controls included but not shown. Clustered standard errors in parentheses (cluster: schools). Significance level: *** p < 0.01, ** p < 0.05, * p < 0.1.

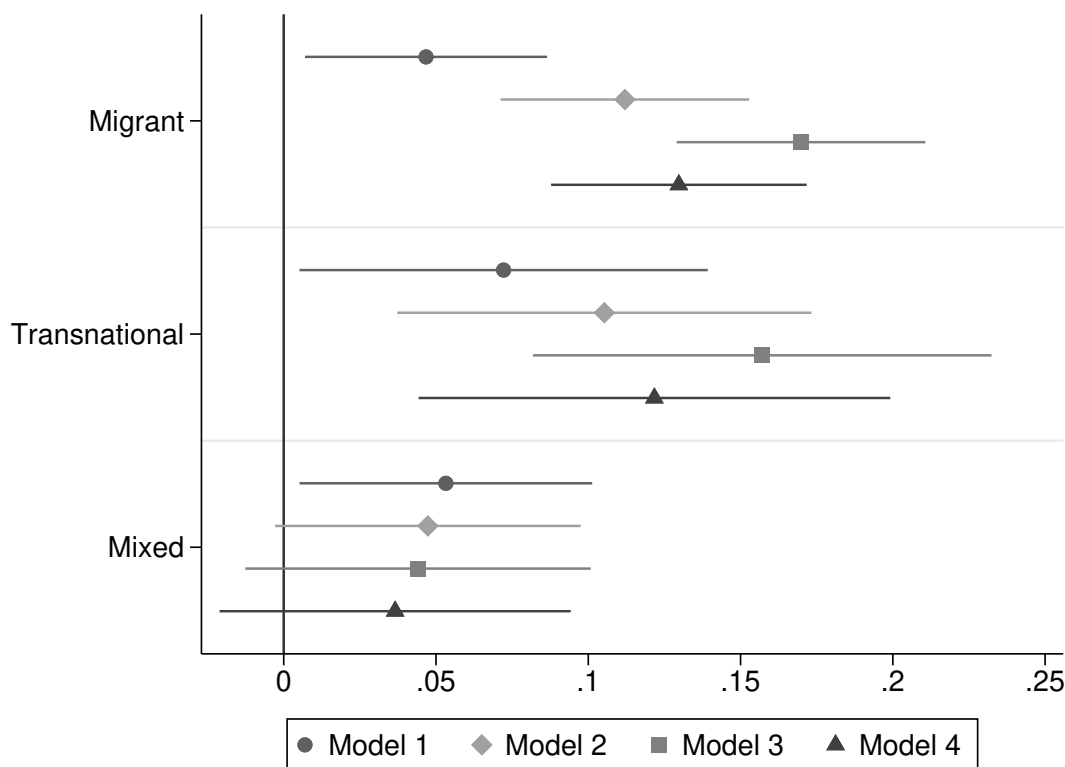
Kao and Tienda, 1998; Salikutluk, 2016), the high educational aspirations of immigrants and their children often materialize in ambitious educational choices, such as opting for AUSS rather than vocational alternatives. What can be seen in the results of Model 4 is that educational aspirations do account for some, but by no means all, of the secondary effects of immigrant-origin children: The AME of migrant children and transnational children decrease by around one fourth (i.e., from 0.17 to 0.13, and from 0.16 to 0.12) when idealistic and realistic educational aspirations are added in Model 4, compared to Model 3.

On the other hand, the AME of mixed children does decrease slightly when educational aspirations are added in Model 4, compared to Model 3 (i.e., from 0.044 to 0.037), although none of these results is statistically significant. In sum, the results of Model 4 lend partial support to H3: Aspirations do seem to account for some of the ethnic secondary effects of transnational children, although most of the effect persists even after controlling for both realistic and educational aspirations. Perhaps educational aspirations are only one dimension of immigrant optimism and do not fully account for all relevant behavioral and attitudinal traits that may characterize immigrant-origin students. For mixed children, on the other hand, H3 is no longer meaningful, since no secondary effects were detected for this group.

A graphical display of the AME of the three immigrant-origin categories in each logistic regression model is provided in Figure 2.1, with point estimates and 95% confidence intervals. This figure suggests that the results for migrant children are very similar to those for transnational children: For both groups, the ethnic secondary effects are quite modest in Model 1 but increase as SES is controlled for in Model 2 and, yet again, once performance and ability are controlled for in Model 3. The main difference between these groups is that the estimates of AME for transnational children have much larger confidence intervals, reflecting the greater uncertainty inherent in the analysis of small subpopulations. As for mixed children, they display the opposite pattern: Secondary effects are only meaningful in the gross differences model, Model 1, and diminish (thereby losing statistical significance) once controls are introduced in Models 2 and 4.

Thus far, in my analysis I do not distinguish between mixed children with a native father and an immigrant mother, and those with a native mother and an immigrant father. However, previous research has shown that these two subgroups might differ from each other in manifold ways, with implications for children's educational outcomes. On the one hand, mixed children with a native father tend to have a higher SES and are more likely to live with both parents (see Kalmijn 2015). On the other hand, mixed children with a native mother might acquire better native language skills due to the more important role of mothers in children's socialization (Nauck and Lotter, 2016). This could give mixed children with a native mother an advantage, as van Ours and Veenman (2010) found for Moluccan mixed children in the Netherlands.

Figure 2.1: Average Marginal Effects on transition to AUSS



Note: Natives are the reference category.

To explore these differences and their effect on mixed children's educational choices, in Table A.3 in the appendix, I re-estimate the models shown in Table 2.2 but distinguish by the gender of the native parent of mixed children. The results, shown graphically in Figure A.2, indicate that there are no large differences between mixed children with a native father and those with a native mother. In neither case are significant secondary effects detected. However, in the gross differences model (Model 1), mixed children with a native father outperform natives, while those with a native mother do not.

I also replicate the analysis but exclude mixed children of Western origin (i.e., those with a parent born in North and Western Europe, North America or Australia). Previous research (notably Kalmijn 2015, who also examined CILS4EU data) has made this distinction due to the alleged similarity between majority children in Western European countries and mixed children of Western origin. The results, shown in Table A.5 in the appendix, are largely identical to those shown above in Table 2.2.

2.5 Discussion

This chapter has compared the educational choices of mixed children and transnational children with those of native children and migrant children (i.e., those with two first-generation immigrant parents) in Western Europe. For this purpose, I pooled data for England, Germany, the Netherlands and Sweden from the CILS4EU project (Kalter et al., 2016a; Kalter et al., 2016b; Kalter et al., 2016c). While pooling data for multiple countries is far from ideal, it is necessary given the small sample sizes for mixed and transnational children, which make it difficult to conduct country-level analyses (I nevertheless carry these out; see Table A.2 in the appendix). The main question that I have tried to answer is whether these groups are comparable to natives or to migrants, or whether they constitute middle categories, halfway between the other two.

The starting point of my analysis is the well-established empirical finding that migrant children are more likely than natives to opt for the academic track, conditional on performance (Dollmann, 2017; Griga and Hadjar, 2013; Heath and Brinbaum, 2007; Jonsson et al., 2014; Heath et al., 2008). There is little evidence on whether this also applies to mixed and transnational children, and this research gap is what motivated my analysis. Moreover, I was also interested in exploring the differences between these two groups, as oftentimes they are regarded as a single group, given that both are characterized by having a foreign-born and a native-born parent (see, for instance, Ramakrishnan 2004; Kalmijn 2015; Emonds and Tubergen 2015; Oropesa and Landale 1997).

In this context, I made three empirical predictions for mixed and transnational children, combining the immigrant optimism framework of Kao and Tienda (1995) with the model of additive parental influences developed by Kalmijn (2015). The first hypothesis (H1) is that mixed children exhibit secondary effects that are half as large as those of migrant children, given that only one of their two parents is a source of immigrant optimism. The second hypothesis (H2) is that transnational children exhibit similar secondary effects as migrant children, since they are influenced by the immigrant optimism of both parents. This could be an indication that second-generation immigrant parents have roughly similar educational aspirations for their children as first-generation immigrant parents do. Finally, H3 tests whether educational aspirations mediate the relationship between the two types of immigration background of interest (i.e., mixed and transnational children) and educational choices.

The results of my analysis do not support H1. Contrary to my expectations, mixed children are not halfway between natives and migrant children in terms of their likelihood of enrolling in AUSS. Mixed children do have a slight edge over natives in educational attainment, but this is entirely explained by their more advantageous socioeconomic background. Once

this is considered, a small residual advantage remains that is not, however, statistically significant. This does not change when mixed children of Western origin are excluded from the analysis (see [Table A.5](#) in the appendix).

Thus, overall I do not find support for the model of additive parental influences proposed by Kalmijn (2015, p.262), who posits that “the socioeconomic and cultural characteristics of fathers and mothers have strong and independent influences on a variety of child outcomes.” However, when analyzing each country separately, I do find evidence of strong secondary effects of mixed children in England (see [Table A.2](#) and [Figure A.1](#)).

As for H2, the results indicate that transnational children exhibit positive secondary effects that are quite similar to those of migrant children. This result is in line with the findings from Kalter et al. (2018, p.28) and Mood (2018) that transnational children are, on the whole, quite similar to migrant children, while mixed children are rather similar to native children (i.e., children without an immigration background). Net of confounders, transnational children make more ambitious choices than mixed children, possibly due to the influence of two parents with an immigration background, rather than one. At the same time, the socioeconomic situation of mixed children is more favorable than that of transnational children, and the former also have better grades and stronger cognitive and language skills than the latter (as shown in [Table 2.1](#)).

With regard to H3, which asked whether the positive secondary effects of mixed and transnational children are explained by the high educational aspirations of these groups, the results are inconclusive. For mixed children, the hypothesis turned out to be irrelevant, since they do not exhibit positive secondary effects. For transnational children, secondary effects remain significant even after accounting for educational aspirations and only decrease slightly (by around one fourth). Aspirations seem to explain about the same fraction of the advantage of transnational children as they do for that of children with two immigrant parents.

The main empirical contribution of this study is to show that mixed children and transnational children are very different population groups in terms of family context, ability, educational performance and educational choices. Mixed children resemble natives quite closely, whereas transnational children are mostly similar to migrants. This finding is in line with the other studies, which emphasize the different integration processes that lead to these types of union: transnational unions as a sign of the reorientation of a second-generation immigrant to the culture of the country of origin of her or his parents, and mixed unions as a sign of assimilation on the part of a first-generation immigrant (Segeritz et al., 2010).

Thus, merging together mixed and transnational children may not be advisable. Whenever possible, it is recommended to analyze mixed children and transnational children as separate categories. If this is not feasible (e.g., due to sample size restrictions), an alternative approach would be to consider mixed children as part of the majority population, and transnational children as part of the second-generation immigrant population (see, for instance, Mood 2018).

2.5.1 Limitations and opportunities for further research

An important limitation of my analysis is that in order to achieve sufficiently large sample sizes of mixed children and transnational children for regression analyses, the data of the four countries (England, Germany, the Netherlands and Sweden) had to be pooled. One downside of this strategy is that, since both the immigrant-origin populations of these countries (“origin effects”) and their institutional and social contexts (“destination effects”) are very different, country-level analyses would be more appropriate to reveal possible ethnicity-specific findings.

However, due to the small population of mixed children in each country, it is very difficult to conduct a meaningful country-level longitudinal analyses of mixed and transnational children using the CILS4EU dataset.⁵ This can be seen in the appendix in Table A.2, in which Model 3 from Table 2.2 is estimated for each of the four countries: Positive secondary effects are significant for mixed children only in England. Unfortunately, few datasets are both large and detailed enough to allow for country-level longitudinal analyses of mixed and transnational children.

Another downside is that the education systems of these countries are also quite different: Germany and the Netherlands have stratified education systems with early tracking and traditionally strong vocational training systems (Allmendinger, 1989; Tjaden and Hunkler, 2017), whereas England and Sweden have comprehensive education systems in which a form of soft tracking (i.e., course-by-course ability grouping) takes place (Geven, 2019; Jackson, 2012; Jonsson and Rudolphi, 2011). In Germany and the Netherlands, access to academic education is rather selective, whereas in England and Sweden, the academic track of upper secondary school constitutes the mainstream (Engzell and Jonsson, 2015; Heath and Brinbaum, 2014).

Thus, it may be argued that the transition to AUSS is not fully comparable across these four countries. Nevertheless, the fact remains that in all four countries, students are presented with a choice as they reach the end of compulsory schooling, namely whether to enroll in

⁵In the first wave, the subsample of mixed and transnational children is large enough to conduct meaningful analyses by country (see, for instance, Kalmijn 2015), but the sample size is much smaller when only complete longitudinal observations (wave 1 through wave 3) are considered.

academic education (leading to the acquisition of university entrance qualifications) or to do something else. My analysis is built around this premise of comparability of the choice of upper secondary school in the four countries.

Despite the limitations of my empirical approach, the results that I have shown represent an original contribution to the literature on ethnic inequalities in education, as this is the first study to explore how two little-studied immigration backgrounds (mixed and transnational) are associated with different probabilities of transition into AUSS, compared to children without an immigration background and children with two immigrant parents. The most substantive finding of this study is that children with one native-born parent also exhibit the immigrant advantage at educational transitions that has previously been found for second-generation immigrants and roughly conform to the halfway pattern (in between natives and migrants) described by Kalmijn (2015).

In this regard, a promising direction for future research is the analysis of the educational selectivity of immigrants who enter into partnerships with natives (i.e., mixed partnerships) and those who marry second-generation immigrants of the same ethnic origin (i.e., transnational partnerships). As Ichou (2014) and Feliciano (2005) have pointed out, immigrant selectivity might be very important to the explanation of the educational advantage of the children of immigrants.

Chapter 3

Do information deficits influence immigrants' educational aspirations? Evidence from Sweden and England

3.1 Introduction

One of the best-established empirical findings in the literature on ethnic inequalities in education in the Western world is that the children of immigrants tend to have higher educational aspirations than natives, especially after considering their prior academic achievement (Dollmann, 2017; Engzell, 2019; Feliciano and Lanuza, 2016; Feliciano and Rumbaut, 2005; Heath and Brinbaum, 2007; Jackson et al., 2012; Kao and Tienda, 1995; Tjaden and Hunkler, 2017). This finding is significant because educational aspirations have long been known to be an important determinant of educational performance and attainment (Beal and Crockett, 2010; Kirui and Kao, 2018; Sewell et al., 1970).

For many children of immigrants in Western countries, educational aspirations are especially valuable as a motivational resource to overcome the disadvantages that are often associated with immigrant households, such as low parental education and low SES (Feliciano and Lanuza, 2016). A significant body of literature has found that the children of immigrants often make more ambitious choices than native children at academic transitions and that this is to a large extent explained by their higher educational aspirations (Dollmann, 2017; Jackson, 2012; Jackson et al., 2012).

While in Western Europe the children of immigrants tend to have higher educational aspirations than their native-origin peers, they also tend to perform worse than the latter (Brinbaum and Cebolla-Boado, 2007; Dustmann et al., 2012; Heath et al., 2008; Levels et al., 2008). The contrast between immigrants' high aspirations and their less-than-stellar performance has often been characterized as the aspirations–attainment paradox (Engzell, 2019; Kao and Tienda, 1995; Salikutluk, 2016). Various explanations for this paradox

have been proposed by scholars, each of them relying on different assumptions about the nature of educational aspirations and the considerations that are relevant for educational decision-making in immigrant households.

One of these explanations, often called the “information deficits” or “information bias” hypothesis, posits that immigrants' high *realistic* educational aspirations (i.e., their educational goals, taking constraints into consideration) could be to some extent the result of biased or insufficient information regarding their probabilities of success in different educational tracks and the payoffs associated with them (Relikowski et al., 2012; Salikutluk, 2016; Tjaden and Hunkler, 2017).

Such information deficits could arise in immigrant households if immigrant parents are insufficiently familiarized with the education system of the host country or if their children lack access to reliable sources of information (e.g., peers, relatives, teachers) on the education system. While this explanation is relatively simple and unambiguous, it has seldom been tested empirically. Moreover, the few studies to test this theory have focused on countries with stratified education systems, such as Germany (Becker and Gresch, 2016; Gresch et al., 2012; Relikowski et al., 2012; Salikutluk, 2016; Tjaden and Hunkler, 2017).

In this study, I assess the validity of the information deficits hypothesis as an explanation for the high realistic educational aspirations of immigrant-origin children at the transition from lower to upper secondary school in England and Sweden. The focus of the empirical analysis, which relies on CILS4EU data (Kalter et al., 2016a; Kalter et al., 2016b), is the interaction between immigration background, information on future education and educational aspirations. The level of information on future education that children possess is operationalized as the number of different sources of information on future education that they report.

Admittedly, this measure is not ideal, since the quantity of information sources that children report does not necessarily speak to the quantity of information that children receive—or to the quality and reliability of the information. It is, however, reasonable to assume that children who obtain information on future education from a wide range of sources will tend to be, on average, better informed than those who rely on fewer information sources.

The results show that on the whole, immigrants' high educational aspirations are by no means explained by their access to information sources. There are, however, very important country differences in the role of information sources. In England, information sources are a strong predictor of the educational aspirations of both natives and immigrants but play an even more important role in immigrants' aspirations. In Sweden, immigrants' realistic educational aspirations are very high and uncorrelated with the number of information

sources that they report. However, on closer inspection, these results seem to be driven by the 1.75 generation, for whom information sources do seem to have a negative effect on educational aspirations (in line with the information deficits hypothesis).

The main contribution of this study is to show that the relationship between information, ethnicity and educational aspirations is complex and nuanced: The contrasting results for the two countries, differences between native and immigrant-origin youth, and differences by generational status suggest that more research is needed in order to formulate a more robust verdict on the information deficits hypothesis. What my results indicate is that immigration background does moderate the relationship between information sources and realistic educational aspirations, but that the moderating effect is contradictory between the two countries—a puzzling result for which no satisfactory explanation is currently available.

3.2 Theory

This chapter draws mostly on two strands of literature: the literature on the nexus of educational aspirations and educational attainment, on the one hand, and that on immigration and educational aspirations, on the other. The origins of the first one can be traced back to the Wisconsin model of status attainment of the 1960s (Sewell et al., 1970; Blau and Duncan, 1967), which documented the importance of adolescents' educational aspirations as a determinant of actual educational attainment. Since then, a large body of literature has confirmed the link between aspirations and outcomes, while at the same time shedding light on the processes that shape aspirations (Becker and Gresch, 2016; Feliciano and Lanuza, 2016; Feliciano and Rumbaut, 2005; Gresch et al., 2012; Heath and Brinbaum, 2014; Heath et al., 2008). While aspirations are correlated with achievement, they are especially important as predictors of educational choices at educational transitions (Dollmann, 2017; Fernández-Reino, 2016; Jackson and Jonsson, 2013; Becker and Gresch, 2016).

An important distinction found in the literature is that between idealistic and realistic educational aspirations. Idealistic educational aspirations can be conceptualized as students' wishes regarding their educational attainment, unconstrained by actual possibilities (Feliciano and Lanuza, 2016; Salikutluk, 2016). In the tradition of the Wisconsin model, they are usually regarded as affected primarily by the values and norms of the family (and the immediate social environment) and constituting a central element of the mechanism of “status maintenance” (Sewell et al., 1970; Becker and Gresch, 2016).

In contrast, realistic educational aspirations, which are often referred to as educational expectations, represent not just a person's educational goals but also the feasibility of their goals in terms of the costs, benefits and probabilities of success associated with various educational alternatives. The concept of realistic educational aspirations is thus important

in rational choice models of education, which assume that individuals assess, implicitly or explicitly, the most convenient decisions to take at educational transition points, given the resources and constraints faced (Becker and Gresch, 2016; Breen and Goldthorpe, 1997; Breen and Jonsson, 2005; Erikson and Jonsson, 1996).

Within the rational choice framework, information is assumed to be a central input for the formation of realistic educational aspirations because without adequate information on educational alternatives (and their associated costs, benefits and probabilities of success), it is difficult to make reasonable educational choices. Thus, while both types of educational aspirations—idealistic and realistic—may be traced back to the same set of background characteristics, and while the distinction between them is not always easy to demonstrate empirically (Beal and Crockett, 2010; Feliciano and Lanuza, 2016), the distinction is very important conceptually. Idealistic aspirations are largely assumed to be stable, while realistic aspirations may shift (upward or downward) as new information concerning the costs, benefits and probability of success of educational alternatives becomes available over the course of one's educational career (Becker and Gresch, 2016; Ditton and Krüsken, 2009).

Another important distinction is that between parents' and children's educational aspirations. The two are related: In the Wisconsin model of status attainment, Blau and Duncan (1967) proposed that children's educational aspirations are shaped primarily by those of their parents, as well as by those of "significant others" in their lives. Empirically, there is substantial evidence that parents' educational aspirations have a major effect on their children's educational aspirations (Goyette and Xie, 1999; Hao and Bonstead-Bruns, 1998). However, the main effect of parental aspirations on the educational attainment of their children is indirect, via the educational aspirations of the children. This chapter will focus on children's educational aspirations, acknowledging that the aspirations of children and those of their parents tend to be mutually reinforcing (Zhang et al., 2011).

3.2.1 Unraveling the aspirations–attainment paradox

The educational careers of the children of immigrants in Western Europe are often characterized by the contrast between a highly optimistic and ambitious outlook for the future, on the one hand, and academic underperformance, on the other (Jonsson and Rudolphi, 2011; Werfhorst and Tubergen, 2007; Fernández-Reino, 2016; Dollmann, 2017). One of the longest-standing and most consistent empirical facts from the scientific literature on ethnic inequalities in education is that immigrants, and their children, tend to express higher educational aspirations than their native-origin peers in both the US (Feliciano and Lanuza, 2016; Kao and Tienda, 1995) and Western Europe (Heath and Rethon, 2014; Heath et al., 2008).

Educational aspirations matter because they are an important predictor of educational attainment, primarily through their effect on educational choices at transition points (Dollmann, 2017; Jackson et al., 2012; Jonsson and Rudolphi, 2011; Becker and Gresch, 2016). At the same time, immigrant-origin youth generally perform below the level of native youth in most Western European countries and have a lower final educational attainment, despite their often ambitious educational choices (Dustmann et al., 2012; Heath and Brinbaum, 2014; Heath et al., 2008; Werfhorst and Tubergen, 2007).

In recent years, scholars have attempted to unravel the aspirations–attainment paradox, as some have dubbed the contrasting finding of immigrants' high aspirations and low attainment (Engzell, 2019; Kao and Tienda, 1998; Salikutluk, 2016). Several mechanisms could explain this contrast. The blocked opportunities approach, for instance, posits that immigrants' high educational aspirations could be a rational response to perceptions of discrimination in the labor market. Groups that perceive obstacles to upward mobility in jobs unrelated to education might thus opt to acquire additional education in order to circumvent such discrimination and enter the job market at a higher rung on the employment ladder (Heath and Brinbaum, 2007; Kao and Tienda, 1998; Sue and Okazaki, 1990; Salikutluk, 2016).

Thus, in the blocked opportunities framework, immigrants' high educational aspirations derive from a cost–benefit analysis: The expected payoff of entering the workforce early is perceived as low due to discrimination, and therefore the option of pursuing tertiary education comes to be seen as more attractive. However, it is also plausible that the expectation of discrimination motivates immigrant-origin youth to cut short their educational careers if they believe that the costs of further education will not outweigh the benefits.

In this regard, the blocked opportunities approach is ambiguous, as it is not clear how, or in what circumstances, immigrants' expectations of discrimination will result in them investing less or more in education than it would otherwise be the case. There is, however, scant empirical evidence that fears of future discrimination play a significant role in the formation of the educational aspirations of immigrant-origin youth, or in their educational choices (Dollmann, 2017; Fernández-Reino, 2016; Tjaden and Hunkler, 2017).

3.2.2 Immigrant optimism, selectivity and “aspiration squeeze”

Another set of explanations for the high educational aspirations of the children of immigrants concerns the mechanisms of self-selection of their parents (i.e., the first-generation immigrants) within their countries of origin. One strand of literature emphasizes the selectivity of immigrants on character traits such as ambition, motivation and drive; this immigrant optimism hypothesis (see Kao and Tienda 1998; Kao and Tienda 1995) is difficult to verify empirically because such character traits are difficult to measure.

Another strand of literature emphasizes the positive selection of first-generation immigrants on pre-migration socioeconomic characteristics combined with the difficulty of accurately accounting for this background empirically. While it has long been pointed out that first-generation immigrants tend to be positively selected on education (Chiswick, 1999)—and this is probably still the case today in most Western nations (Werfhorst and Heath, 2019)—some scholars have warned that this selectivity ought to be understood in relative terms: First-generation immigrants who were positively selected on educational attainment in their country of origin may still have a relatively low level of education by the standards of the host country (Ichou, 2014; Feliciano and Lanuza, 2017; Engzell, 2019).

Feliciano and Lanuza (2017) have argued that in such cases, first-generation immigrants' apparently high educational aspirations may largely reflect the mismatch between their pre-migration and post-migration SES: Their high aspirations may have been congruent with their pre-migration social class, but upon migration, they may find themselves in a lower *relative* socioeconomic position (e.g., due to limited transferability of skills and educational certificates, or lack of host-country language skills; see Bauer and Zimmermann 1999; Gans 2009; Engzell 2019) associated with lower educational aspirations. Thus, according to this hypothesis, immigrants' high educational aspirations might be explained away by their pre-migration social class background, which is seldom measured in surveys (Feliciano and Lanuza, 2017). In other words, immigrant optimism may result from the underestimation of immigrants' subjective social status.

3.2.3 Information deficits

A third potential explanation for the aspirations–attainment paradox has to do with potential native–immigrant differences in levels of information concerning the education system: If immigrant-origin children (and their parents) are less knowledgeable about the education system (e.g., the costs, benefits and probabilities of success of different educational paths), they may not be able to formulate reasonably realistic educational aspirations and may in consequence over- or underestimate their chances (Relikowski et al., 2012; Salikutluk, 2016; Tjaden and Hunkler, 2017).

Theoretically, it is plausible that immigrant-origin children are less well-informed about the education system than their native peers for various reasons. For instance, they may obtain less information from their parents, since the latter are likely to have received education in their country of origin and thus be less familiar with the host country's education system (Kao and Tienda, 1998). Similarly, they may obtain less information through their social contacts, as many of their friends and relatives might have the same ethnic origin and thus be limited in their knowledge of the education system. For the same reason, they may also be less well acquainted with events that may be relevant for the collection of reliable information on future studies, such as university open days and study fairs.

Previous studies have found some evidence of migration-related information deficits in educational matters, especially at the parental level. Gresch et al. (2012) found that immigrant parents often overestimate their children's performance, while Relikowski et al. (2012) found that in Germany, immigrant parents are generally less knowledgeable about the education system than native parents are. Regarding information gaps among the children of immigrants, the evidence is scant: Salikutluk (2016) failed to find evidence that the children of immigrants' understanding of Germany's vocational training system affects their educational aspirations, while Tjaden and Hunkler (2017) found that immigrant-origin students' lack of knowledge of vocational training and systematic overestimation of their own performance do not explain their ambitious academic choices.

While the information deficits hypothesis is plausible, a counter-argument—namely, that information should increase educational aspirations—can also be made. For native and immigrants alike, collecting more information about the education system, in particular on access to higher education, could bolster realistic educational aspirations, since information is a valuable resource for setting educational goals and devising the optimal strategies to achieve them. For children and parents with limited information about future education, an increase in the level of information could thus result in either an increase or decrease in educational aspirations, depending on whether the original aspirations seem more or less plausible in light of the new information.

To date, there is no evidence that the high educational aspirations of the children of immigrants stem from low levels of information about the education system. On the contrary, there is some evidence from the US that having additional information about the education system, specifically information about funding opportunities for higher education, increases the likelihood that students—whether of native or immigrant origin—will aspire to attend university (Martinez and Cervera, 2012; Plank and Jordan, 2001).

This study seeks to fill a gap in the literature on ethnic inequalities in educational attainment by exploring the interplay of immigration background, information on education and educational aspirations. More specifically, I will test the information deficits hypothesis: the idea that one of the causes of immigrants' high educational aspirations is that they have less information on the barriers to accessing higher education, their chances of success therein and the expected payoffs. Since prior studies on the role of information in educational aspirations have focused on countries with stratified education systems, such as Germany, I will focus instead on two countries with comprehensive, choice-driven education systems: England and Sweden.

3.2.4 The English and Swedish contexts

The Swedish and English education systems are comparable in many dimensions. Both are choice-driven systems with comprehensive schools and mass education at the secondary and tertiary levels (Jackson and Jonsson, 2013). In both countries, students are first tracked into either academic or vocational upper secondary school at the end of compulsory schooling (i.e., around the age of 15). In both countries, the transition to AUSS (called “sixth form” in England and preparatory programs in Sweden) is choice-based as long as certain performance requirements are met (Jackson et al., 2012).

Transition rates to AUSS—and after that, to tertiary education—are very high in both countries: 43% and 46% of the working-age populations of Sweden and England, respectively, hold a tertiary degree (OECD, 2019). While in England, in contrast to Sweden, tuition at universities is not free, the availability of student loans makes higher education affordable for students regardless of their background (Murphy et al., 2017). Thus, with regard to the structure of the education system and to equity in access to higher education, England and Sweden are comparable.

However, Sweden and England are very different in terms of their immigrant populations. While both countries have sizable immigrant populations that go back at least to the post-war era, these populations differ in terms of their ethnic composition, skill profiles and channels of migration. In Sweden, labor migration directly after the Second World War was followed by very large refugee inflows and family migration (Kalter et al., 2018, p.40). Whereas labor immigrants from the post-war period were mostly of Nordic and Southern European origin, since the 1970s, the majority of immigrants have stemmed from non-Western countries, especially those in the Middle East, Africa, and South and East Asia (Jonsson and Rudolphi, 2011, p.491). Today, the vast majority of second-generation immigrants in Sweden have parents stemming from non-Western countries, where average education levels are typically well below those of native Swedes (Engzell, 2019).

In England, immigration flows since the Second World War have mostly originated in former British colonies such as Ireland, India, Pakistan and the West Indies (Wadsworth, 2011). The United Kingdom encouraged immigration in order to address labor shortages in the aftermath of the war and granted citizens of Commonwealth nations extensive rights to settle in the country until the 1962 Commonwealth Immigrants Act. While immigration policies gradually became more restrictive in the following decades, England has continued to receive significant numbers of labor immigrants, including high-skilled ones. Central and Eastern Europe has become a very important region of origin of immigrants to England and the entire UK since the 2004 and 2007 enlargements of the European Union (Okólski and Salt, 2014), although it is still too early to observe the educational careers of the children of such immigrants.

In comparison with Sweden, immigrants to England are more selective in terms of education. Whereas in England, immigrants with teenage children have, on average, a higher level of education than natives, the opposite is the case in Sweden (Kalter et al., 2018). Another important difference is that since a large proportion of England's immigrants originate in Commonwealth nations where English is widely spoken, knowledge of the host-country language among immigrants is higher in England than in Sweden. These conditions confer immigrants in England integration advantages compared to immigrants in Sweden, to the benefit of their children's educational attainment.

3.2.5 Hypotheses

The first hypothesis (H1) concerns the overall effect of information on future education on educational aspirations. Generally, students with access to more information sources are likely to be more motivated to attend university and hence will express higher educational aspirations.

Hypothesis 1 *The number of information sources is positively associated with expressing high realistic educational aspirations, even after controlling for family background, ability and academic achievement.*

The second hypothesis (H2) tests for differences in the effect of information on educational aspirations between immigrant- and native-origin children. The information deficits hypothesis posits that migrant children's high educational aspirations and ambitious educational choices result, to some extent, from a lack of knowledge about the education system and in particular about the requirements for attending higher education (Salikutluk, 2016; Tjaden and Hunkler, 2017). If this were the case, obtaining information about the education system from more sources would result in a decrease in educational aspirations as students realize that they initially overestimated their chances of gaining admission to academic post-secondary education.

Hypothesis 2 *For immigrant-origin children, the number of sources of information on future education is negatively associated with educational aspirations.*

Finally, the third hypothesis (H3) focuses on potential country differences in the relationship between information on future education and educational aspirations. As noted in the previous section, immigrant parents in England are generally better educated and have better language skills than those in Sweden. A large share of immigrants to England originate from countries where English is an official language (for instance, Ireland, India, Bangladesh, Pakistan, Jamaica, Nigeria and Kenya; see Kalter et al. 2018, p.77).

In contrast, since Swedish is not widely spoken outside of Sweden, immigrants to Sweden will almost invariably lack familiarity with the Swedish language. As a result, it is plausible that the information sources of the children of immigrants in England will be more similar

to those of their native peers than is the case in Sweden. Thus, the interaction effect of immigration background and information sources on educational aspirations is likely to be weaker in England than in Sweden.

Hypothesis 3 *The moderating effect of immigration background on the relationship between information on future education and educational aspirations is stronger in Sweden than in England.*

3.3 Research design

3.3.1 Data

The data are drawn from waves 1 and 2 of the English and Swedish sections of CILS4EU (Kalter et al., 2016a; Kalter et al., 2016b). CILS4EU collected nationally representative samples of teenagers in England, Germany, the Netherlands and Sweden, oversampling schools with a high share of immigrant-origin pupils. Within schools, classes were sampled at random. For the first wave, children overwhelmingly aged 14–15 years were sampled from Year 10 classes in England and 8th grade classes in Sweden. In that wave, 4,159 children in England and 4,804 in Sweden participated.

Due to panel attrition between waves 1 and 2 (affecting around 20% of observations in England and 14% in Sweden), as well as list-wise deletion of observations with missing data in variables relevant for the analysis, the final sample sizes are 2,604 for England and 3,591 for Sweden. However, panel attrition bias is not a significant issue for this analysis, since the characteristics of children who participated in waves 1 and 2 do not differ significantly from those of children who dropped out of the survey after wave 1. In particular, children who participated in wave 2 and expressed having low educational aspirations are quite similar to children who did not participate in wave 2.

Moreover, the determinants of panel attrition do not seem to vary between migrants and natives. An analysis of panel attrition for England is shown in the appendix in Table B.1, and the corresponding analysis for Sweden is to be found in Table B.2. In general, the results of the panel attrition analysis suggest that the external validity of my results is not compromised by selective non-participation in wave 2.

3.3.2 Measures

The dependent variable is students' realistic educational aspirations in wave 2. It is dichotomous: Aspirations are marked as high if a student's answer to the question "What is the highest level of education that you think you will actually get?" is "University." Students who indicated a lower educational degree or who said that they did not know were marked as having low educational aspirations. In the questionnaire, this item appeared

immediately after the item on idealistic educational aspirations (i.e., what students wish to achieve). Given the contrast between the two, it is unlikely that students conflated realistic aspirations with idealistic ones.

The two explanatory variables are immigration background and sources of information on future education. Immigration background is dichotomous: A student is marked as having an immigration background if at least one of her or his parents was born abroad, and as not having one if both of her or his parents were born in the host country. For the sake of parsimony, students with an immigration background are referred to henceforth in this chapter as migrants, while those without one are referred to as natives. Individuals marked as migrants were either born in the host country (i.e. are second-generation immigrants), or were born abroad and immigrated to the host country before age 6 (i.e. are 1.75 generation immigrants - see Dollmann et al. 2014).

Information sources on future education is measured as the number of different sources a student relies on to obtain information about future education. Students were asked to choose from among 12 different sources and could select some, all or none of them. The information sources that students could mark in the survey were: parents, siblings, other relatives, classmates, other friends, study counselors, teachers, the internet, newspapers, open days, career fairs and "other way" (see Table B.1 in the appendix for the percentage of children, by immigration background, who indicated obtaining information from each source in each country).

Admittedly, this is not an ideal measure to test the hypothesis of information deficits: The quantity of sources of information that a child possesses may not correspond exactly to the quantity of information itself, or to the accuracy and usefulness of the information. Low quality of information sources could be especially relevant for migrant children who lack significant others (e.g., parents, siblings, friends) with sound information on the education system.

And yet the number of information sources is, for both natives and migrants, a reasonable proxy of information held by children. All else being equal, children who obtain information on future education through multiple sources are likely to have a more accurate and balanced perspective on the educational opportunities ahead than those who have fewer information sources. A plurality of sources makes it possible to compare and contrast information, thereby enabling children to identify and disregard unreliable advice. It is thus feasible that the quantity of information sources is associated with the level of information of children, even though this relationship cannot be verified with CILS4EU data.

I also include several control variables. Besides the child's gender and age, I include a dichotomous variable of family structure indicating whether or not a child lives with both biological parents in one household. To account for family SES, I include a measure of

parental occupational status and a measure of parental educational attainment. The former is operationalized as the highest parental ISEI value, in normalized form (i.e., with mean 0 and a standard deviation of 1). Meanwhile, parental educational attainment indicates the highest educational certificate obtained by either parent. This is a categorical variable with four levels: basic education or less, secondary education, tertiary education, or unknown (since a significant proportion of students were unable to answer this question).

To account for educational ability, I include two measures: cognitive ability and language ability. Cognitive ability was measured through a 27-item standard cognitive ability test comprising exclusively graphical problems to preclude the possibility of cultural or language biases. Language ability was assessed through a multiple-choice test –comprising 25 items in England and 30 in Sweden- in which pupils had to identify antonyms. These tests were administered to pupils in schools during wave 1. Just as with ISEI, the ability measures were normalized for ease of interpretation.

Academic achievement is operationalized as the students' grades in math, English and Swedish (for Sweden) and math and English (for England). Achievement is measured on a 1 to 4 scale, where 4 is the highest possible mark and 1 the lowest. In Sweden, an older grading scheme (phased out for incoming cohorts in 2011) was still in place at the time of the survey; I converted the grades excellent (MVG) to 4, very good (VG) to 3, good (G) to 2 and fail (IG) to 1. For England, I converted the grades A/A* to 4, B/C to 3, D/E/F/G to 2 and U to 1. Finally, I also include dummies for the ability groups in the subjects considered. While both Sweden and England have comprehensive education systems, many schools place pupils in different ability groups to reduce within-class ability variance.

3.3.3 Methods

I estimate *Linear Probability Models (LPM)* for England and Sweden. The model is rolled out in stepwise fashion, starting with a model without control variables to assess the raw effects of immigration background and information sources on educational aspirations. I then add the socio-demographic and socioeconomic controls in Model 2 and controls for achievement and ability in Model 3.

In all models, I include an interaction term of immigration background and information sources to assess whether the effect of information sources on educational aspirations is moderated by immigration background. This is important for testing H2: Per the information deficits explanation of immigrant optimism, I anticipate that educational aspirations will decrease for migrants as the number of information sources increases. For natives, however, I expect a positive relationship between information sources and educational aspirations to prevail. In all models, standard errors are clustered in schools in order to account for the clustered sampling strategy (i.e., students having been sampled within schools).

Further models are shown in the appendix. In [Table B.3](#) and [Table B.4](#), I show the results of the models for England and Sweden, respectively, but using idealistic—rather than realistic—educational aspirations as the dependent variable. Finally, in [Table B.5](#) and [Table B.6](#), I show the results of the models with a more detailed immigration background variable that distinguishes between the 1.75 generation and the second generation.

3.4 Results

3.4.1 Descriptive results

Before estimating the LPMs, it is worth examining how migrants differ from natives in each country in terms of the dependent, explanatory and control variables. Unweighted summary statistics for the English sample are provided in [Table 3.1](#), and for Sweden in [Table 3.2](#). The right-most column indicates the p-value of the χ^2 test for group differences. The first finding is that migrants in both countries are more likely than natives to hold high educational aspirations, which is consistent with theory and with prior empirical findings for England and Sweden (Engzell, 2019; Fernández-Reino, 2016; Jackson et al., 2012; Jonsson and Rudolphi, 2011).

As regards information sources, it is surprising that in England, migrants report a slightly higher number than natives, which already casts doubt on the relevance of the information deficits hypothesis for this country. In Sweden, there is a slight, but statistically significant, native advantage in information sources: On average, natives have access to around 0.29 more information sources than do migrants, out of a maximum of 12. A more detailed analysis of the percentage of children who ticked each information source is provided in [Table B.1](#) in the appendix.

In terms of the control variables, the higher propensity of migrants to grow up in two-parent households –compared to natives– is confirmed, while there are no significant gender or age imbalances. While natives in both countries have a higher SES than migrants, the gap is much smaller in England than in Sweden (4 versus 10 ISEI points, respectively). Native–migrant gaps in language and cognitive ability are also much more pronounced in Sweden than in England, which is unsurprising given the fact that immigrants in England, as noted earlier, tend to be more positively selected than those in Sweden. In England, migrant-origin children are 0.1 standard deviations behind native children in cognitive ability, while in Sweden, the gap is 0.37 standard deviations.

Interestingly, there are no achievement differences between natives and migrants in England, while in Sweden, there is a slight native advantage in achievement consistent with the native advantage in ability. All in all, the descriptive statistics corroborate the fact that

Table 3.1: Unweighted summary statistics by group for England

	Native (N=1615)	Migrant (N=1033)	Total (N=2648)	p value
<i>Educational expectations</i>				<0.01
Low	812 (50.3%)	355 (34.4%)	1167 (44.1%)	
High	803 (49.7%)	678 (65.6%)	1481 (55.9%)	
<i>Information sources</i>				0.13
Mean (SD)	4.72 (2.25)	4.86 (2.48)	4.78 (2.34)	
<i>Age</i>				0.29
Mean (SD)	14.36 (0.49)	14.34 (0.49)	14.35 (0.49)	
<i>Gender</i>				0.69
Male	819 (50.7%)	532 (51.5%)	1351 (51.0%)	
Female	796 (49.3%)	501 (48.5%)	1297 (49.0%)	
<i>Family type</i>				<0.01
Two-parent	1013 (62.7%)	735 (71.2%)	1748 (66.0%)	
One-parent	602 (37.3%)	298 (28.8%)	900 (34.0%)	
<i>ISEI</i>				<0.01
Mean (SD)	0.07 (0.97)	-0.11 (1.04)	-0.00 (1.00)	
<i>Parental education</i>				<0.01
Basic or less	286 (17.7%)	125 (12.1%)	411 (15.5%)	
Secondary	497 (30.8%)	260 (25.2%)	757 (28.6%)	
Tertiary	593 (36.7%)	451 (43.7%)	1044 (39.4%)	
Unknown	239 (14.8%)	197 (19.1%)	436 (16.5%)	
<i>Cognitive ability</i>				<0.01
Mean (SD)	0.04 (0.98)	-0.07 (1.02)	0.00 (1.00)	
<i>Language ability</i>				<0.01
Mean (SD)	0.11 (0.89)	-0.18 (1.13)	0.00 (1.00)	
<i>Math grade</i>				0.09
Mean (SD)	3.04 (0.72)	3.08 (0.74)	3.05 (0.73)	
<i>English grade</i>				0.78
Mean (SD)	3.12 (0.67)	3.11 (0.66)	3.12 (0.66)	
<i>Ability group - Math</i>				0.04
High	488 (30.2%)	351 (34.0%)	839 (31.7%)	
Middle	744 (46.1%)	477 (46.2%)	1221 (46.1%)	
Low	68 (4.2%)	29 (2.8%)	97 (3.7%)	
No group/Unknown	315 (19.5%)	176 (17.0%)	491 (18.5%)	
<i>Ability group - English</i>				0.03
High	447 (27.7%)	249 (24.1%)	696 (26.3%)	
Middle	529 (32.8%)	385 (37.3%)	914 (34.5%)	
Low	43 (2.7%)	18 (1.7%)	61 (2.3%)	
No group/Unknown	596 (36.9%)	381 (36.9%)	977 (36.9%)	

Source: Own elaboration, with data from CILS4EU (Kalter et al., 2016a; Kalter et al., 2016b).

Table 3.2: Unweighted summary statistics by group for Sweden

	Native (N=2176)	Migrant (N=1477)	Total (N=3653)	p value
<i>Educational expectations</i>				<0.01
Low	802 (36.9%)	387 (26.2%)	1189 (32.5%)	
High	1374 (63.1%)	1090 (73.8%)	2464 (67.5%)	
<i>Information sources</i>				<0.01
Mean (SD)	5.43 (2.61)	5.14 (2.63)	5.31 (2.62)	
<i>Age</i>				<0.01
Mean (SD)	14.01 (0.19)	14.04 (0.33)	14.02 (0.26)	
<i>Gender</i>				0.46
Male	1079 (49.6%)	714 (48.3%)	1793 (49.1%)	
Female	1097 (50.4%)	763 (51.7%)	1860 (50.9%)	
<i>Family type</i>				0.62
Two-parent	1493 (68.6%)	1002 (67.8%)	2495 (68.3%)	
One-parent	683 (31.4%)	475 (32.2%)	1158 (31.7%)	
<i>ISEI</i>				<0.01
Mean (SD)	0.17 (0.93)	-0.25 (1.05)	-0.00 (1.00)	
<i>Parental education</i>				<0.01
Basic or less	57 (2.6%)	148 (10.0%)	205 (5.6%)	
Secondary	575 (26.4%)	326 (22.1%)	901 (24.7%)	
Tertiary	1251 (57.5%)	723 (49.0%)	1974 (54.0%)	
Unknown	293 (13.5%)	280 (19.0%)	573 (15.7%)	
<i>Cognitive ability</i>				<0.01
Mean (SD)	0.15 (0.93)	-0.22 (1.05)	-0.00 (1.00)	
<i>Language ability</i>				<0.01
Mean (SD)	0.27 (0.89)	-0.40 (1.02)	-0.00 (1.00)	
<i>Math grade</i>				<0.01
Mean (SD)	2.60 (0.80)	2.45 (0.81)	2.54 (0.81)	
<i>Swedish grade</i>				<0.01
Mean (SD)	2.70 (0.73)	2.56 (0.74)	2.64 (0.74)	
<i>English grade</i>				0.71
Mean (SD)	2.71 (0.78)	2.70 (0.84)	2.71 (0.81)	
<i>Ability group - Math</i>				0.12
High	483 (22.2%)	334 (22.6%)	817 (22.4%)	
Middle	270 (12.4%)	217 (14.7%)	487 (13.3%)	
Low	135 (6.2%)	75 (5.1%)	210 (5.7%)	
No group/Unknown	1288 (59.2%)	851 (57.6%)	2139 (58.6%)	
<i>Ability group - Swedish</i>				<0.01
High	324 (14.9%)	293 (19.8%)	617 (16.9%)	
Middle	151 (6.9%)	154 (10.4%)	305 (8.3%)	
Low	25 (1.1%)	21 (1.4%)	46 (1.3%)	
No group/Unknown	1676 (77.0%)	1009 (68.3%)	2685 (73.5%)	
<i>Ability group - English</i>				<0.01
High	400 (18.4%)	379 (25.7%)	779 (21.3%)	
Middle	213 (9.8%)	146 (9.9%)	359 (9.8%)	
Low	59 (2.7%)	34 (2.3%)	93 (2.5%)	
No group/Unknown	1504 (69.1%)	918 (62.2%)	2422 (66.3%)	

Source: Own elaboration, with data from CILS4EU (Kalter et al., 2016a; Kalter et al., 2016b).

migrants are highly optimistic about their future education in both countries, despite being disadvantaged with respect to SES and ability. But, contrary to my expectations, there is no information gap in England, and it is only moderate in Sweden.

3.4.2 Multivariate analysis

The results of the LPMs are shown in Table 3.3 (England) and Table 3.4 (Sweden). The relationship between educational aspirations, information and immigration background in the two countries is also shown graphically in Figure 3.1. For England, the number of information sources is a significant predictor of high realistic educational aspirations in Models 1 and 2, but it ceases to be meaningful once covariates of achievement and ability are introduced in Model 3. This suggests that pupils with better grades and higher ability also tend to have more sources of information on future education.

In all models, the interaction term of immigration background and information sources is positive, indicating a stronger effect of information on the educational aspirations of migrants compared to natives. Thus, there is no indication that in England, the high realistic educational aspirations of migrants are in any way the result of having access to fewer information sources about future education. On the contrary, migrants' high educational aspirations are even more positively influenced by information than those of their native peers. This finding is surprising, as it runs contrary to the information deficits hypothesis.

The results for England are inconclusive with regard to H1, since the number of information sources is only a significant predictor of realistic educational aspirations when educational achievement is not controlled for (i.e., in Models 1 and 2). On the other hand, the results contradict H2, since immigration background does moderate the relationship between information and educational aspirations, but in the opposite direction as expected: The number of information sources is associated with higher realistic educational aspirations for migrants, but not for natives. In the models with a more detailed immigration background variable, shown in the appendix (see Figure B.2), it can be seen that the strong interaction effect is largely driven by the 1.75 generation, whose educational aspirations seem to be much more strongly related to information sources than those of the other groups.

The results for Sweden are quite different from those for England. In Sweden, the number of information sources is positively associated with high realistic educational aspirations for natives, but not for migrants. This can be seen clearly in Figure 3.1 and in the appendix, Table B.5. Thus, for Sweden, H1 is valid only for natives. However, the results do not support H2 either: The number of information sources is not negatively associated with migrants' realistic educational aspirations. In fact, the results suggest that migrants' realistic educational aspirations (which are very high) are unaffected by information sources. Yet the information deficits hypothesis cannot be ruled out for Sweden, because in the

Table 3.3: Linear Probability Models for England

	<i>Dep. var.: High realistic educational aspirations</i>		
	(1)	(2)	(3)
Information sources	0.023*** (0.007)	0.014** (0.006)	0.006 (0.005)
Migrant (ref: Native)	0.077 (0.056)	0.075 (0.046)	0.068* (0.040)
Migrant × Information	0.016* (0.009)	0.017** (0.008)	0.012* (0.007)
Socio-demographic controls			
Female (ref: Male)		0.062*** (0.022)	0.044** (0.018)
Age in wave 1		0.010 (0.019)	-0.001 (0.016)
One-parent family (ref: Two-parent)		-0.093*** (0.021)	-0.035* (0.018)
Parental ISEI		0.077*** (0.010)	0.026*** (0.010)
<i>Parental education (ref: Basic or less)</i>			
Secondary		0.092*** (0.031)	0.062** (0.029)
Tertiary		0.215*** (0.031)	0.115*** (0.029)
Unknown		-0.041 (0.033)	-0.006 (0.029)
Achievement and ability controls			
Math grade			0.171*** (0.016)
English grade			0.137*** (0.015)
Cognitive ability			0.015 (0.010)
Language ability			0.021** (0.009)
Constant	0.390*** (0.043)	0.183 (0.272)	-0.559** (0.250)
Observations	2648	2648	2648
R-squared	0.046	0.157	0.329

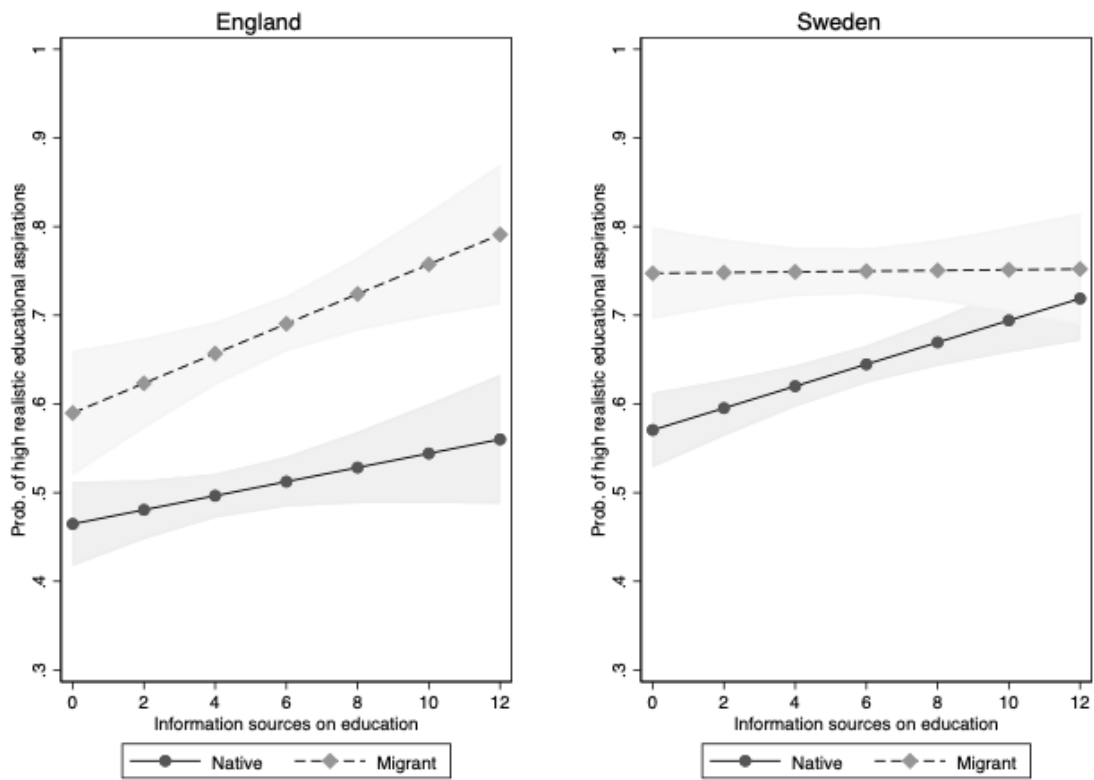
Note: Controls for math and English ability groups and sampling stratum included but not shown. Clustered standard errors in brackets (cluster: schools). Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3.4: Linear Probability Models for Sweden

	<i>Dep. var.: High realistic educational aspirations</i>		
	(1)	(2)	(3)
Information sources	0.034*** (0.004)	0.024*** (0.004)	0.013*** (0.004)
Migrant (ref: Native)	0.182*** (0.035)	0.219*** (0.034)	0.220*** (0.034)
Migrant × Information	-0.013** (0.006)	-0.012** (0.006)	-0.012** (0.006)
Socio-demographic controls			
Female (ref: Male)		0.134*** (0.017)	0.117*** (0.015)
Age in wave 1		-0.114*** (0.026)	-0.012 (0.025)
One-parent family (ref: Two-parent)		-0.091*** (0.015)	-0.056*** (0.014)
Parental ISEI		0.082*** (0.009)	0.039*** (0.008)
<i>Parental education (ref: Basic or less)</i>			
Secondary		-0.019 (0.037)	-0.035 (0.030)
Tertiary		0.072* (0.036)	0.051* (0.030)
Unknown		-0.072* (0.039)	-0.054 (0.033)
Achievement and ability controls			
Math grade			0.107*** (0.011)
Swedish grade			0.073*** (0.012)
English grade			0.048*** (0.012)
Cognitive ability			0.005 (0.008)
Language ability			0.016* (0.009)
Constant	0.448*** (0.039)	2.014*** (0.136)	0.075 (0.259)
Observations	3591	3591	3591
R-squared	0.038	0.122	0.249

Note: Controls for math and English ability groups and sampling stratum included but not shown. Clustered standard errors in brackets (cluster: schools). Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure 3.1: Effect of information sources and immigration background on likelihood of holding high educational aspirations, by country



models with a detailed immigration background variable (see [Figure B.2](#) and [Table B.6](#)), it can be seen that information sources are negatively associated with the educational aspirations of the 1.75 generation, whereas the relationship is positive for all other groups.

As regards H3, which concerns country differences in the moderating role of immigration background in the relationship between information and educational aspirations, the evidence is unclear because the countries show opposite patterns (as can be seen in [Figure 3.1](#)). In England, there is no strong interaction effect of immigration background and information sources: Migrants are simply more optimistic than natives regarding their chances of attending university, at all levels of information (and controlling for all else).

In Sweden, however, migrants are only more optimistic than natives at low levels of information. Pupils who report high levels of information are very optimistic, regardless of whether they have an immigration background or not. It is worth noting that when idealistic, rather than realistic, educational aspirations are considered, the results remain largely unchanged for Sweden, while for England, the interaction effect of immigration background ceases to be significant (see [Figure B.1](#) in the appendix).

3.5 Discussion

This study has explored the role of information about future education in the formation of students' educational aspirations before the transition to upper secondary school in England and Sweden. More specifically, I have investigated the interplay of immigration background, access to information about future education and realistic (i.e., considering resource and skills constraints) educational aspirations in those two countries.

The motivation for this study is the empirical examination of the information deficits hypothesis: the idea that, to some extent, immigrants' educational aspirations derive from qualitative or quantitative differences in the information that they can access regarding the costs, benefits and probabilities of success of different educational pathways. To date, only a handful of papers had explored the role of information deficits in educational ambitions (i.e., in idealistic and realistic educational aspirations), and mostly in the context of stratified education systems such as Germany (Becker and Gresch, 2016; Relikowski et al., 2012; Salikutluk, 2016; Tjaden and Hunkler, 2017).

This study, in contrast, focuses on countries with comprehensive education systems, where tracking occurs only at the end of compulsory schooling (at around the age of 15). Since it is difficult to directly measure children's level of information on future education, I use a proxy that captures the number of different sources of information on future education that a child has. While the measure is far from ideal, the empirical results show that it is nevertheless a relevant predictor of educational aspirations in both countries.

From a descriptive standpoint, an important finding of this study is that no native–migrant gaps in access to sources of information on future education were detected in England, and only slight gaps were detected in Sweden. Thus, my analysis does not support the view that immigrant-origin children are significantly less well-informed about future education than their native peers, although this does not exclude the possibility that such information gaps might exist at the parental level (which might also matter for the educational aspirations, choices and overall educational attainment of their children).

The main result of the study is that, in England and Sweden, the number of sources of information on future education on which the children of immigrants rely is not negatively related to their educational aspirations. On the contrary, in England, a higher number of information sources is associated with higher educational aspirations among migrants. Meanwhile, in Sweden, the number of sources of information on future education does not seem to affect migrants' educational aspirations after controlling for potential confounders.

Yet I have also shown that, when using a detailed immigration background variable (as in [Figure B.2](#) in the appendix), information sources are associated with lower educational aspirations for the 1.75 generation. This represents some partial evidence for the information deficits hypothesis, although it is not clear why the mechanism may be relevant for the 1.75 generation and not for the other groups second-generation immigrants.

The study does have some limitations that need to be discussed. The main one is the dependent variable, which is not an ideal measure of information deficits. The number of sources of information on future education that children report is not necessarily revealing of how well-informed they are. Unfortunately, with the data at hand, no better measure of information deficits could be constructed. Despite this limitation, I have shown that the measure of information sources that I use does hold some explanatory power with regard to educational aspirations. *ceteris paribus*, it is reasonable to assume that children who have diversified sources of information on their future education will be, on average, better informed than their peers who have access to fewer sources of information.

Another important limitation concerns the simultaneity of the measurement of educational aspirations and information sources (both are measured in wave 2). In principle, information sources should influence children's realistic educational aspirations, and not the other way around: realistic aspirations are assumed to reflect all information that children have at hand, regarding their educational perspectives. However, the possibility that highly motivated and ambitious children will seek out more information sources cannot be ruled out. This would create a problem of endogeneity and introduce bias into the estimates.

Empirically, the assumption that information influences educational aspirations, but not vice versa, cannot be tested with cross-sectional data. A way to get around this problem would be to ensure that the measurement of information sources takes place before that

of educational aspirations. However, this is not possible with the data at hand, since information sources is only measured in wave 2. In any case, such reverse causality is not theoretically warranted: information is assumed to be an input for the elaboration of realistic educational aspirations, but not the other way around.

These limitations aside, this study makes a contribution to the literature on immigrants' educational aspirations by showing that, by and large, information about future education is a valuable resource that tends to boost children's realistic educational aspirations. At the same time, the contrasting results for England and Sweden, and the differences when distinguishing by generational status (as in [Figure B.2](#) in the appendix), suggest that the interplay between information, educational aspirations and immigration background is complex and ambivalent.

Future studies on the role of information in educational aspirations and educational choices should attempt to measure directly students' level of knowledge about future education, rather than relying on proxies, as I have done. Similarly, it would be interesting to relate group-level differences in information levels to group-level differences in the perceived costs and benefits of different educational and occupational paths.

A final suggestion for future research would be to distinguish in the analysis, whenever possible, between the main ethnic groups of each country, as it is conceivable that the relevance of information deficits is not the same for all groups (as factors such as the size and 'quality' of ethnic networks might play a role). It may also be worth exploring the differences in the role of information between second-generation immigrants and the 1.75 generation, since my results suggest that, at least for Sweden, generational status might matter for the effect of information on educational aspirations.

Chapter 4

Is parental educational attainment less important for the children of immigrants? Evidence from Germany

4.1 Introduction

In recent decades, Germany has become one of the world's leading destinations for international migration. As of 2018, its foreign-born population was 13.2 million, equivalent to 16% of the total population (OECD, 2019). Meanwhile, an additional 6.2 million people were native-born with an immigration background (i.e., born in Germany, but having at least one foreign-born parent) (Statistisches Bundesamt, 2019b). Immigrants and their descendants are poised to outnumber those without an immigration background in German cities in the coming decades (Crul and Mollenkopf, 2012; Crul, 2016). One of the key challenges that Germany will continue to face is, therefore, how to ensure the economic, social and cultural integration of people with an immigration background.

In Germany, as elsewhere, the most important institution to ensure the integration of people with an immigration background is the education system, since education not only determines occupational opportunities in adulthood but also plays a major role in the formation of social networks and facilitates participation in civic, social and cultural life (Blossfeld et al., 2016; Heath et al., 2008; Esser, 2001; Shavit and Muller, 1998).

However, children's educational pathways are strongly influenced by their socioeconomic background—in particular, by their parents' educational attainment (Heath et al., 2008; Belzil and Hansen, 2003). The intergenerational transmission of education, as the effect of parental education on children's education is often called (see Luthra and Soehl 2015; Bauer and Riphahn 2007; Doorn et al. 2011; Piopiunik 2014; Burger 2016), is particularly strong in Germany, compared to in other industrial countries (Woessmann, 2004).

In this context, an important empirical question is whether social reproduction processes within immigrant families resemble those in native families. By and large, immigrants to Germany (and especially Turks, the largest ethnic minority) have a lower educational attainment than natives (Olczyk et al., 2016; Kalter and Granato, 2001; Kristen and Granato, 2007; Heath et al., 2008; Heath and Brinbaum, 2014). In consequence, a strong intergenerational transmission of education in immigrant families might result in low upward social mobility and substantial ethnic stratification, with important repercussions for integration and social harmony (Segeritz et al., 2010; Crul and Mollenkopf, 2012; Pott, 2001; Relikowski et al., 2012). As Kalter et al. (2018, p.33) argue, low intergenerational social mobility might slow down not just structural but also cultural and social integration.

To date, only a handful of studies have analyzed ethnic differences in the transmission of education in Germany. Most studies assume, implicitly or explicitly, that this process is homogeneous across ethnic groups. This is an assumption that merits scrutiny. In empirical studies, parental educational attainment is assumed to be a reliable indicator of the educationally-relevant resources (i.e., human and cultural capital) that parents possess, and which they can employ to influence their children's education.

However, the strength of the relationship between the indicator (parental educational attainment) and the concept of interest (educationally-relevant resources) might vary between natives and immigrants, and among different ethnic groups due to the contextual nature of educational attainment, as explained by Luthra and Soehl (2015, p.547). This would result in group-level variations in the relationship between parental educational attainment and children's educational outcomes, as the latter are assumed to be influenced by the unobserved educationally-relevant skills for which parental educational attainment serves as proxy.

In this study, I examine how ethnicity moderates the effect of parental educational attainment on children's likelihood of enrolling in the academic track of secondary school, the *Gymnasium*. The analysis is performed on data from the 2013 German Microcensus (Forschungsdatenzentren, 2013). I focus on the children of Germany's two largest immigrant groups—Turks and *Aussiedler* (ethnic German immigrants from Central and Eastern Europe and the former Soviet Union)—and compare them to natives and a heterogeneous category comprising all other immigrant-origin youth. Moreover, I also analyze whether age of immigration affects the influence of parental education on children's education, a hitherto unexplored issue that might offer insights into processes of social reproduction in immigrant families.

The main empirical contribution of this study is twofold. First, I provide evidence of ethnic differences in the role of parental education on children's educational choices, which is in line with findings from earlier studies (Gang and Zimmermann, 2000; Luthra, 2010; Kristen and Granato, 2007). Second, I show that age of immigration also moderates the

relationship between parental education and children's education: Parental education seems to play a more important role in children's educational careers when parents immigrated at a young age. Even though a large proportion of first-generation immigrants in Germany arrived as children or teenagers, the role of age of immigration in the educational outcomes of their children has received little empirical attention.

The main limitation of my study is that since I do not have information on the final educational attainment of children, I am unable to provide estimates on the transmission of education (i.e., the correlation between parents' and children's educational attainment). Nevertheless, whether or not children attend academic secondary school in Germany is a very important decision with long-term implications for children's educational and occupational perspectives (Baumert and Maaz, 2012; Brinbaum and Heath, 2014; Siegert and Olszenka, 2016).

In the final part of the study, I contextualize my findings within the larger discussion on the role of immigrant selectivity in the integration outcomes of second-generation immigrants and the empirical challenges of adequately accounting for the socioeconomic background of immigrants. As Luthra and Soehl (2015) argue, conventional measures of parental educational attainment might underestimate the cognitive and non-cognitive skills of immigrants, and this would explain—at least to some extent—the observed immigrant advantage in upward educational mobility.

4.2 Theory

4.2.1 Transmission of education from parents to children

The intergenerational transmission of education can be defined as the correlation between parents' and children's educational attainment (Fessler et al., 2012). A strong transmission implies that the educational attainment of a child is closely related to that of his or her parents. Thus, a strong transmission implies low intergenerational educational mobility, and vice versa. It is important to note, however, that when educational transmission is weak—and by implication, when educational mobility is high—both types of mobility are more common: upward (i.e., children surpassing their parents in educational attainment) and downward (i.e., children falling short of their parents' attainment).

Parental educational attainment has long been identified as the key predictor of children's educational attainment in both the economics literature (Belzil and Hansen, 2003; Haveman and Wolfe, 1995) and the social stratification literature (Blau and Duncan, 1967; Breen, 2010; Breen and Jonsson, 2005). Given the paramount importance of education in shaping occupational opportunities (Piopiunik, 2014), the strength of educational transmission in a population is indicative of the extent of inequality in educational opportunity at large (Breen and Jonsson, 2005).

Although the empirical association between parents' and children's educational attainment is well-documented, the mechanisms that underpin this relationship are complex and manifold. Clearly, children do not directly inherit their parents' years of education (Luthra and Soehl, 2015, p.547). Rather, parental educational attainment is assumed to be a proxy for a wide range of educationally-relevant resources. These can be broadly divided into cognitive skills (i.e., abstract reasoning, writing skills, knowledge) and non-cognitive skills (e.g., values, ambition, attitudes to education, parenting practices). The former are usually referred to as human capital (Luthra and Soehl, 2015; Becker, 2008), and the latter as cultural capital (Bourdieu, 1986; Nauck and Lotter, 2016).

Cultural capital and human capital are two closely related concepts (Throsby, 1999; Farkas, 1996), and although a broad understanding of cultural capital may indeed include cognitive skills (Barone, 2006), there is a crucial distinction. Cultural capital tends to be seen as a constitutive element of social class belonging (Fernández-Kelly, 2008; Sullivan, 2001; Werfhorst and Hofstede, 2007), while human capital stands for a far narrower set of skills that are often related to social class (in fact, class belonging often determines one's opportunities to accumulate human capital; see Gerhards et al. 2017) but independent from it. Cultural capital emphasizes cultural codes, which are class-specific, whereas human capital emphasizes the role of cognitive abilities (Barone, 2006, p.1041).

In the theoretical literature on the social reproduction and intergenerational transmission of education, there is no consensus as to whether parental human capital or cultural capital plays a more decisive role in shaping children's educational outcomes, and the question is hard to settle empirically (Farkas, 1996; Barone, 2006). For the purposes of this study, the question of which one matters more is not crucial; more important is to note that parental educational attainment serves as a proxy for both human capital (cognitive skills) and cultural capital (non-cognitive, educationally-relevant skills). Assuming that a fraction of these skills is transferable, they may be used by parents to influence their children's educational performance and choices. However, this mechanism also hinges on the assumption that parental educational attainment is a good indicator of human and cultural capital—an assumption that may not always hold, as I argue in the next section.

4.2.2 Ethnic differences in the transmission of education

Why might the effect of parental educational attainment on children's educational attainment differ across ethnic groups? As Luthra and Soehl (2015, p.563) observe, most studies on ethnic inequality in educational attainment actually control for parental educational attainment under the assumption that the process of the transmission of education is essentially homogeneous across ethnic groups (i.e., the influence of parental educational attainment on children's attainment is constant). This also assumes that the relationship

between human and cultural capital, on the one hand, and educational attainment, on the other, is constant for all groups. Yet there are at least three theoretical reasons to question this assumption in contexts in which people have diverse ethnic origins.

First, there is the issue of accurately measuring the educational attainment of immigrants, a non-trivial task given considerable international differences in education systems, certificates and standards. While in recent decades some methodologies to improve the international comparability of educational degrees have been developed, such as the [Comparative Analysis of Social Mobility in Industrial Nations \(CASMIN\)](#) and [International Standard Classification of Education \(ISCED\)](#), their empirical validity is unclear when comparing only advanced countries, which often have similar education systems (Schneider, 2010). Nominally equivalent educational degrees may differ in terms of duration, difficulty, quality and conditional opportunities for further education. This means that measures of educational attainment for individuals who grew up in different countries will comprise a non-negligible level of measurement error.

Second, there is the context of reception. The institutional and social context that immigrant families face might affect the ability of highly-educated parents to transmit their human and cultural capital to their children (Luthra, 2010; Luthra and Soehl, 2015; Luthra and Waldinger, 2013). Transferability of human and cultural capital may be limited by specific conditions such as an uncertain legal status, discrimination or lack of integration policies. Evidence on the role of the context of reception is, however, scarce (Luthra, 2010).

A third reason for ethnic differences in the transmission of education is that the strength of the link between parental educational attainment (an observable indicator) and human and cultural capital (the unobservable concepts of interest) is likely to be highly contextual. Because countries differ widely in the extent of educational opportunities available, the educational attainment of a person may not be very informative about her or his cognitive and non-cognitive skills.

For instance, in developing countries, even individuals with high cognitive ability may find themselves with a low educational attainment (Bauer and Riphahn, 2007, p.125). In such contexts, it is common for educational opportunities to be severely restricted, which means that final educational attainment may not be strongly correlated with cognitive skills and educational performance. Even when education is accessible and free, many children in developing countries cut their educational careers short in order to work and provide financial support to their families (Betcherman et al., 2004; Post, 2018). This, once again, weakens the link between cognitive skills and educational attainment. In contrast, in developed countries, low educational attainment is more likely to reflect low aptitude and poor performance, rather than exogenous barriers to further education.

A consequence of these differences in educational opportunity and the link between aptitude and attainment is that in developed countries, low-educated adults are likely to be more negatively selected on cognitive skills than equally low-educated immigrants from developing countries, as pointed out by (Luthra, 2010, p.16). This immigrant advantage in parental cognitive skills—controlling by parental educational attainment—should translate into an immigrant advantage over native children in educational achievement, *ceteris paribus*.

A similar argument is made by Feliciano and Lanuza (2017) and Ichou (2014), who emphasize the problem of underestimating not the cognitive skills of immigrants (by using educational attainment as a proxy) but their socioeconomic background, which in Bourdieu's (1986) perspective is closely tied to cultural capital. Due to international differences in educational opportunity, the educational attainment of immigrants may not be a good indicator of their pre-migration SES: In developing countries, even the middle and upper classes may have, on average, fewer years of education than their peers in highly developed countries. Moreover, their post-migration status is unlikely to be the same as their pre-migration status, due to the downward social mobility that most immigrants experience as a result of a lack of country-specific skills and experience (Gans, 2009; Pong and Landale, 2012; Louie, 2012).

Yet the pre-migration SES of immigrants might influence the educational attainment of their children because it is likely to shape elements of their cultural capital (e.g., their attitudes to education, educational aspirations, parenting style, subjective social status and class-based notions of expected behavior) that will affect their children's educational attainment (Feliciano and Lanuza, 2017; Ichou, 2014). The corollary of this argument is that if pre-migration SES is not well measured by parental educational attainment, the relationship between parental educational attainment and children's educational attainment will be weak, because SES goes hand-in-hand with non-cognitive skills that influence children's educational attainment.

Whether one considers the human capital perspective of the transmission of education or the cultural capital one, the empirical predictions are the same. The children of immigrants from less developed countries should display higher rates of upward educational mobility compared to natives (in the context of a developed country), due to the effect of unobserved advantages in human and cultural capital. Among immigrant ethnic groups, those from countries with fewer educational opportunities should exhibit greater upward educational mobility than those from countries with a higher number of educational opportunities (Luthra and Soehl, 2015). These are two predictions that I will test empirically in this study.

Recognizing the contextual nature of educational attainment, a number of scholars have argued in recent years that relative educational attainment—a person’s position in the educational attainment distribution in her or his country of origin¹—may be a better measure of the human and cultural capital of immigrants than their absolute educational attainment (Feliciano and Lanuza, 2017; Engzell, 2019; Ichou, 2014; Luthra and Soehl, 2015). I will refer to this theoretical perspective, which emphasizes the contextual differences in the substantive meaning of educational attainment (and their implication for the transmission of education) as the “contextual attainment framework”. Yet this is still a relatively new field of research, and its implications for the German case have not been discussed at length.

4.2.3 How age of immigration affects the transmission of education

The mechanisms described rely on the idea that educational attainments acquired in countries with different distributions of education are not commensurate, since the substantive meaning of education (in terms of cognitive and non-cognitive skills) is highly contextual. Thus, the validity of educational attainment as a proxy for the human and cultural capital of adults who completed their educational careers in vastly different countries is called into question. The empirical result is an (apparent) low transmission of education.

A logical extension of this reasoning is that immigrants who move at a young age (i.e., before the end of compulsory education) from a country with few educational opportunities to a country with more educational opportunities are more likely to attain a level of education that better reflects their cognitive skills and educational ambition. As a result, for these immigrants, educational attainment will be a more valid proxy for the educationally-relevant resources that might one day influence the educational careers of their children. In other words, the transmission of education within immigrant families should be stronger (and similar to that of native families) when the parents immigrated to the host country at a young age, compared to when they immigrated at a later point in life. This is a third prediction that I will test empirically.

4.2.4 Ethnic differences in the transmission of education in Germany

In Germany, the transmission of education within families is generally very strong compared to other industrial countries (Hanushek and Wößmann, 2006; Burger, 2016; Entorf and Minoiu, 2005; Woessmann, 2004; Baumert et al., 2003). Analyzing results of the 1995 Trends in International Mathematics and Science Study, an international achievement test in 18 Western industrial countries, Woessmann (2004) found the number of books at home (a proxy for parental education) to be most strongly correlated with children’s test scores in Germany and Britain.

¹Of course, more specific operationalizations of relative distribution are possible, too (e.g., distinguishing by year, birth cohort, gender, region, size of community). Depending on the context, these more precise operationalizations may be more useful.

Similarly, using data from the 2000 Programme for International Student Assessment (PISA) of the Organisation for Economic Cooperation and Development (OECD), Entorf and Minoiu (2005) found the effect of parental socioeconomic background on test scores to be strongest in Germany, the UK and the US from among nine Western industrial countries. The robust transmission of education in German families has remained constant in recent decades, as Heineck and Riphahn (2009) showed in their analysis of the educational attainment of the 1929–1978 German birth cohorts.

In this context of strong transmission of education, few studies with a focus on Germany have explored whether such transmission differs by ethnic group. One of the earliest such studies is by Gang and Zimmermann (2000), who, using data from the German socioeconomic Panel, found zero transmission of education between “classic” labor immigrants (Turks, Greeks, Spaniards, Portuguese, Italians and Yugoslavs) and their children. In contrast, a strong transmission was detected for Germans without an immigration background.

However, the measure of parental educational attainment in Gang and Zimmermann (2000) is far from ideal, as it only distinguished between parents with basic education or less, on the one hand, and those with more than basic education, on the other. Since labor immigrants were, on average, negatively selected on education (Dronkers and Heus, 2009), with many having dropped out of basic education, the finding of zero transmission of education in immigrant families may be due to the fact that the vast majority of children of labor immigrants overachieved their parents in education simply by completing compulsory schooling in Germany.

More recently, Kristen and Granato (2007) also compared the educational attainment of the children of classic labor immigrants with that of natives, pooling data from the German Microcensus from 1991 to 2004. They found the transmission of education to be weaker for all immigrant groups—albeit statistically significant only for Turkish-origin children—and concluded that “higher parental education does not improve the chances of their children reaching the *Abitur* [university entrance qualification] as much for immigrants’ descendants as it does for their German peers” (Kristen and Granato, 2007, p.353).

Yet by focusing on the higher downward educational mobility of Turks, the authors leave unmentioned another substantive implication of their result: namely, that immigrants’ chances of reaching the *Abitur* are less adversely affected by their parents’ low educational attainment, since a low transmission of education implies greater educational mobility in both directions. Indeed, since the average educational attainment of Turkish immigrants in Germany has traditionally been low, Turkish-origin children are much more likely to experience upward rather than downward educational mobility (Crul et al., 2017; Heath et al., 2008; Pott, 2001).

The third empirical paper that analyzes ethnic differences in the transmission of education in Germany is that by Luthra (2010), who used data from the 2005 and 2006 Microcensus. In contrast with the two other studies, Luthra (2010) did not focus on the children of classic labor immigrants but rather considered all immigrant-origin children, classified into 17 origin categories. This is also one of the first papers to consider the role of educational selectivity in ethnic differences in the transmission of education. Luthra (2010) argues that native parents with low educational attainment are “likely more negatively selected across unobserved characteristics that are likely to impact their children’s education” compared to immigrant parents with the same educational attainment (Luthra, 2010, p.16). These unobserved characteristics can be both cognitive (i.e., human capital) and non-cognitive (i.e., cultural capital). The results support this hypothesis: The children of immigrants are less affected by their parents’ low educational attainment than native children and hence are more upwardly mobile (Luthra, 2010, p.4).

The results for Germany are consistent with those from other countries: A weaker transmission of education in immigrant families has also been found in the US (Luthra and Soehl, 2015; Feliciano and Lanuza, 2017), Switzerland (Bauer and Riphahn, 2007), the Netherlands (Wolbers and Driessen, 1996), Norway (Fekjaer, 2007), Australia (Cobb-Clark and Nguyen, 2010) and Canada (Aydemir et al., 2013). Yet other studies have not found ethnic differences in the transmission of education (see Rothon 2007; Phalet et al. 2007; Brinbaum and Cebolla-Boado 2007; Werfhorst and Tubergen 2007 for studies on England, Belgium, France and the Netherlands, respectively). One study from Austria even found the inverse relationship: stronger educational transmission for immigrants than for natives (Schneebaum et al., 2016).

4.2.5 The children of Turkish and *Aussiedler* immigrants in Germany

Since the 1990s, the two largest immigrant groups in Germany have been those of Turkish and *Aussiedler* origin (Kalter et al., 2018; Worbs et al., 2013; Schührer, 2018). Large-scale Turkish immigration to Germany goes back to the bilateral labor recruitment scheme of 1961–1973. Since the 1980s, however, Turkish migratory flows have been primarily driven by family reunification (including marriage migration) and refugee inflows (of ethnic Kurds, mostly) (Sirkeci et al., 2012; Schührer, 2018). In the late 1990s, migration flows from Turkey to Germany decreased substantially and, from 2006 to 2014, they were negative in net terms (Schührer, 2018, p.16).

Historically, Turks have been Germany’s most disadvantaged immigrant group in terms of educational and occupational attainment (Heath et al., 2008, p.220). Unsurprisingly, this disadvantage has affected the second generation, who also lag behind other groups in education, employment and income (Kalter and Granato, 2001; Kalter et al., 2007; Heath and Brinbaum, 2014; Diehl et al., 2016b). Turkish immigrants were also affected by

a relatively adverse context of reception: Integration policies for labor immigrants were scarce, and naturalization was not an option until the 2000 citizenship reform (Mueller, 2006; Ersanilli and Koopmans, 2010).

Despite these cumulative disadvantages, in recent years, Turkish-origin children have been characterized by very high educational aspirations and ambitious academic choices, especially when compared to natives with similar grades and family background (Dollmann, 2017; Dollmann and Weißmann, 2020; Salikutluk, 2016; Luthra, 2010). Moreover, the vast majority of Turkish second-generation immigrants achieve upward social mobility with respect to their parents (Heath et al., 2008; Thomson and Crul, 2007). Recent research has also shown that contemporary Turkish immigrants to Germany are positively selected on educational attainment, compared to those who remain in Turkey (Werfhorst and Heath, 2019, p.359), whereas the earlier labor immigrants were negatively selected (Dronkers and Heus, 2009).

The other major immigrant group in Germany are the *Aussiedler*, who mostly originate from Poland, Romania and the former Soviet Union (particularly Russia and Kazakhstan) and who settled in Germany overwhelmingly in the late 1980s and throughout the 1990s (Worbs et al., 2013; Luthra, 2010). The *Aussiedler* are different from the Turks in two crucial ways. The first one is the legal context of reception that they faced. Uniquely among immigrants, *Aussiedler* are recognized by the German state as German nationals, regardless of whether or not they hold the German citizenship². As such, the *Aussiedler* were granted the right to settle permanently in Germany, to naturalize automatically as German citizens, to receive state support toward their integration (including integration courses and German lessons), and to enjoy full social protection.

The other key difference with respect to first-generation Turkish immigrants in Germany is that the *Aussiedler* are also characterized by relatively high levels of education. About half of them have post-secondary, lower tertiary or tertiary education (Konietzka and Kreyenfeld, 2001; Kogan, 2011; Salikutluk, 2016), and many have a good command of the German language upon arrival (Haug and Sauer, 2007). Moreover, the foreign educational degrees of *Aussiedler* are for the most part recognized by German authorities (Konietzka and Kreyenfeld, 2001; Worbs et al., 2013).

This combination of favorable institutional conditions and relatively high human capital levels has set the *Aussiedler* apart from other immigrant groups, especially the Turks, in terms of their integration trajectory. *Aussiedler* are more likely to be employed and less likely to receive social transfers than most other immigrant groups (Höhne and Buschoff, 2015, p.349), and their children are more likely to attend the *Gymnasium* than other immigrant-origin children (Söhn, 2011, p.4). However, most *Aussiedler* are still

²Per Art. 116(1) of the German Constitution and Art. 4 of the German Federal Law of Displaced People, *Aussiedler* are Germans even when they have not naturalized, and are eligible for immediate naturalization

socially disadvantaged compared to Germans without an immigration background, and they tend to hold less prestigious and lower-paying jobs than natives with similar educational qualifications (Worbs et al., 2013; Panagiotidis, 2020). Likewise, the children of *Aussiedler* are still slightly less likely to attend the *Gymnasium* than native children without an immigration background (Höhne and Buschoff, 2015, p.349).

In the second decade of the twenty-first century, school-age children and youth of Turkish and *Aussiedler* origin represent around 35–40% of the immigrant-origin school-age population in Germany (see Olczyk et al. 2016, for a detailed analysis of the ethnicities of immigrant-origin youth). In this contribution I focus solely on these two groups, as they represent contrasting cases of integration due to both their pre-migration characteristics (such as educational attainment; see Table C.2 in the appendix) and the context of reception they faced (Luthra, 2010). Moreover, the timing of their migration was also very different, with Turkish migration stretching over a longer time period and the vast majority of *Aussiedler* having immigrated in the late 1980s and throughout the 1990s.

4.2.6 The transition to secondary school in Germany

In Germany, education is mainly the responsibility of the 16 states. However, due to historical reasons and a considerable degree of institutional coordination at the federal level, the education systems of the states are rather similar in structure. As a whole, education in Germany is highly stratified: Children are assigned to vocational or academic tracks earlier than in most other European countries (Allmendinger, 1989; Hanushek and Wößmann, 2006; Autorengruppe Bildungsbericht, 2018). Tracking occurs after elementary school, which lasts four years in 13 of the 16 German states, and six years in the remaining three (Berlin, Brandenburg³ and Mecklenburg-Vorpommern⁴).

Traditionally, tracking was mostly performance-based, as per teachers' recommendations. However, in recent decades, most states have made these recommendations non-binding. This means that parents now have the final say in the choice of secondary school track for their children (Sekretariat der Kultusministerkonferenz, 2015).

In the last two decades, the traditional three-tier model of German secondary education comprising separate lower, middle and upper secondary schools (the *Hauptschule*, *Realschule* and *Gymnasium*, respectively) has been phased out in most federal states and replaced by a two-tier system (middle and upper tracks) dominated by the *Gymnasium* and schools with multiple educational programs (the *Gesamtschule*) (Autorengruppe Bildungsbericht,

³An early transition to the *Gymnasium* after grade 4 is possible in some schools in Berlin and Brandenburg, provided that certain performance criteria are met.

⁴Technically, elementary school (*Grundschule*) lasts four years in Mecklenburg-Vorpommern. However, grades 5 and 6 are orientation grades (*Orientierungsstufe*) in which children are taught comprehensively, and the transition to secondary school occurs after grade 6. For this reason, the orientation grades may be considered, in practical terms, an extension of elementary school.

2018). Currently, only the states of Bavaria, Baden-Württemberg, Hesse, Lower Saxony and North Rhine-Westphalia maintain the traditional three-tier model (Autorengruppe Bildungsbericht, 2018, p.94).

A feature of German secondary education that has remained unchanged amid the reforms of the last decades is the central role played by the transition to secondary school in the long-term educational and occupational opportunities of children (Lessard-Phillips et al., 2014). Given the decline of the three-tier system and the sustained expansion of enrollment in the *Gymnasium* (now the secondary school of choice for 44% of children), the transition to secondary school in Germany can be described largely as a dichotomous choice between the *Gymnasium* and the other schools (Baumert and Maaz, 2012).⁵ This is why I also focus on this dichotomous choice in this study.

4.3 Research design

4.3.1 Data

I use the *Scientific Use File (SUF)* of the 2013 edition of the German Microcensus (Forschungsdatenzentren 2013), a yearly survey of 1% of German households. Since the households are randomly selected and participation in the survey is compulsory, the information gathered is representative of the population as a whole (Schimml-Neimanns, 1998). The *SUF* contains a random sample of 70% of the households sampled by the Microcensus. Hence, the results obtained by analyzing the file are also representative of the population.

The *SUF* of the 2013 Microcensus contains data on 525,787 individuals in 288,910 families. However, given the focus of this contribution on secondary school attendees, I restrict my sample to youth aged 12 to 18 years and living with two parents.⁶ Since I am primarily interested in the relationship between parental educational attainment and children's school type in secondary school, children living with one parent are excluded, as information on their other parent is missing (i.e., information is only collected for family members living in the household).

Given that lone parenthood is generally associated with lower educational performance and attainment (Bernardi and Boertien, 2017; Jonsson et al., 2014), excluding children in single-parent homes limits the external validity of the analysis: The results are, strictly speaking, only relevant for children living with both parents. I also exclude from the

⁵While in many German federal states, it is now possible to obtain the university entrance qualification (*Abitur*) at schools other than the *Gymnasium*, in practice, the demand for the *Gymnasium* has continued to grow even in such states (see Autorengruppe Bildungsbericht 2018, p.94).

⁶Since the position of family members is inferred from their relation to the reference person (*Bezugsperson*), I am unable to distinguish biological parents from stepparents. (It is possible to identify the children of the reference person, but that does not mean that they are also the biological children of the spouse of the reference person.)

sample all immigrant children who arrived in Germany at the age of 6 or later, since they face distinct educational challenges (Glick and White, 2003; Heath and Brinbaum, 2014). After reducing the sample in the way described above and performing list-wise deletion of subjects with missing or invalid answers in variables relevant to my analysis, I arrive at a final sample size of 19,359 youth aged 12 to 18 years and living with both parents.

4.3.2 Measures

The dependent variable is binary and indicates whether or not children attend academic secondary school (*Gymnasium*). While some studies also distinguish between the two lower branches of secondary school, I focus on the academic track versus “other” dichotomy, as it is the most important predictor of both final educational attainment and occupational trajectories (Baumert and Maaz, 2012; Brinbaum and Heath, 2014; Olczyk et al., 2016). The vast majority of children who enroll in the *Gymnasium* complete the program in eight years (which leads to the acquisition of the German university entrance qualification, the *Abitur*), although a significant proportion drop out or fail to complete it within that timeframe (Dollmann and Weißmann, 2020; Schneider, 2008).

The key explanatory variables are children’s immigration background and the educational attainment of each parent. Children’s immigration background is a categorical variable with four levels that combine ethnicity and generational status. The focus is on the comparison between native-origin children and the two largest second-generation immigrant groups, as well as a heterogeneous category of “other” second-generation immigrants. The groups are defined in the following way:

- **Natives** are children born in Germany to two native-born parents, both of whom also have two native-born parents.
- **Aussiedler** are children whose parents immigrated to Germany under the official (*Spät*)*Aussiedler* denomination (see Worbs et al. 2013).⁷ in order for his or her These children were either born in Germany or immigrated to Germany before the age of 6.
- **Turks** are children with two Turkish-born parents. These children were either born in Germany or immigrated to Germany before the age of 6.⁸
- **Other** is a heterogeneous category comprising all children with two foreign-born parents who do not classify into the previous categories. As in the case of Turks and *Aussiedler*, the children in this category were either born in Germany or immigrated to Germany before the age of 6.

⁷I also include under the category of *Aussiedler* children with one parent who immigrated under the official (*Spät*)*Aussiedler* denomination and one parent who may not have had this denomination but nonetheless immigrated from the same country.

⁸Children with one first-generation immigrant parent and one second-generation immigrant parent—often called transnational children (Kalter et al., 2018)—are therefore not included.

I exclude from the sample children with other types of immigration background (i.e., mixed children, transnational children and children with foreign-born grandparents, often referred to as third-generation immigrants). The reason is that the sample sizes for these groups are too small for any meaningful analysis to be possible. This means that the comparison group (natives) comprises exclusively native-born Germans without an immigration background, whereas the three immigrant-origin groups comprise exclusively second-generation immigrants and foreign-born children who immigrated at a young age.

Germans without an immigration background comprise about 80% of the sample, children with an *Aussiedler* or a Turkish background about 5% each, and the “other” category the remaining 10%. As can be seen in [Table C.1](#) in the appendix, the main countries of origin of the *Aussiedler* parents in my analysis sample are Kazakhstan, Russia, Poland and Romania, which is consistent with data for the *Aussiedler* population at large (Worbs et al., 2013).

Parental educational attainment comprises two measures: paternal and maternal educational attainment, operationalized as the highest educational certificate obtained. Some studies simply include the higher of the two (see, for instance, Luthra 2010; Bauer and Riphahn 2007). However, it has been shown that when parents have different levels of educational attainment, the parent with the lower educational attainment also exerts an important influence on the child (Doorn et al., 2011; Korupp et al., 2002). Moreover, including the educational attainment of mothers and fathers separately makes it possible to compare the relative influence of each parent, since it is unclear whether their influences are roughly equivalent (Kalmijn, 1994; Doorn et al., 2011) or different (Pronzato, 2012; Amin et al., 2015; Daouli et al., 2010).

The measure comprises five levels, adapted from the nine-level [CASMIN](#) methodology (Brauns and Steinmann, 1999). The levels, with their substantive meanings and corresponding [CASMIN](#) denominations, are listed below (adapted from Lechert et al. 2006, and Kristen and Granato 2007).

1. **Less than basic education:** Incomplete general elementary education ([CASMIN level 1a](#)).
2. **Basic education:** Completed general elementary education ([CASMIN level 1b](#)) or basic vocational training above and beyond compulsory schooling ([CASMIN 1c](#)). In Germany, this corresponds mostly to the *Hauptschule* and one-year apprenticeships.
3. **Secondary education:** Completed academic or general tracks at the secondary intermediate level, intermediate general education, intermediate vocational qualification, or secondary programs in which general intermediate schooling is combined with vocational training ([CASMIN 2a](#) and [2b](#)). In Germany, this corresponds mostly to the *Realschule* and two- to three-year apprenticeships.

4. **Upper secondary education:** Vocational or general maturity certificates (CASMIN *2c_voc* and *2c_voc*). In Germany, this corresponds to the general university entrance qualification (*Abitur*) or the vocational qualification for admission to universities of applied sciences (*Fachhochschulreife*, also known as the *Fachabitur*).
5. **Tertiary education:** Degrees at a traditional, research-oriented university or university of applied sciences (*Fachhochschule*) and equivalent institutions of lower tertiary education (CASMIN levels *3b* and *3a*).

In the regression analysis, this variable is treated as a continuous variable (on a 1 to 5 scale) rather than as an ordinal categorical variable, under the assumption that the effect of a one-unit increase in parental educational attainment on the likelihood that the child will attend the *Gymnasium* is roughly constant (see, for instance, Kristen and Granato 2007) and that the variable has a normal distribution (Rhemtulla et al., 2012).

Age of immigration is measured separately for fathers and mothers through a three-level categorical variable that indicates whether the parent immigrated before the age of 16, between the ages of 16 and 25, or after the age of 25. The reference category is before the age of 16. Since this variable is only meaningful for children with foreign-born parents, it is only included in the third stage of the empirical analysis, which involves only the immigrant-origin subsample. Age of immigration also correlates closely with year of immigration; the distribution of these variables for Turkish and *Aussiedler* immigrant parents is displayed in section C.6.

I also include some controls that could confound the relationship between the independent variables of interest and the dependent variable. The controls include the age of the child, gender, number of siblings in the household, each parent's occupational status and reliance on social transfers. Age is important because in Germany, it is possible to switch to the *Gymnasium* from other school forms at the end of lower secondary education (*Sekundarstufe I*), provided that some performance requirements are fulfilled (Bellenberg, 2012). Previous research has shown that many children with an immigration background in particular change to the *Gymnasium* after grades 9 or 10 (Dollmann, 2017, p.25).

The occupational status of each parent is measured as a categorical variable with four levels: inactive (retired, unemployed or not in the workforce), public servants and white-collar workers (*Angestellte*), blue-collar workers (*Arbeiter*) and family helpers, and self-employed. This variable captures the social position of parents in a reasonably accurate way (Luthra, 2010; Kristen and Granato, 2007; Müller and Pollak, 2004). While for natives, occupational status is closely related to educational attainment, for many immigrants, occupational status may not correspond to their education (or their pre-migration SES) due to the limited transferability of certain occupational skills (Gans, 2009).

Lastly, I include a variable to indicate whether one or more members of the household receive social transfers such as housing aid (*Wohngeld*), long-term unemployment benefits (*Arbeitslosengeld II*, also known as *Hartz IV*) or social support of other types (*Sozialhilfe*). Thus, this variable serves as an indicator for low family income, which may have effects on children's educational attainment independent from those of parental educational attainment or parental occupational status (with which it is presumably correlated).

4.3.3 Methods

The analysis is divided in three stages. In the first, I provide summary statistics on all the covariates and show two charts portraying the relationship between parental educational attainment and children's enrollment in the *Gymnasium*. In the second stage, I estimate Linear Probability Models (LPMs) in step-wise fashion to assess the ethnic differences in the transition to secondary school, in gross terms and after accounting for background characteristics. Model 1 explores gross ethnic differences in access to the *Gymnasium*; Model 2 assesses the extent to which these ethnic differences are explained by parental education (with mother's and father's education measured separately); and Model 3 includes all other factors identified by theory as relevant for educational attainment. Finally, in Model 4, I introduce interaction terms of ethnic origin and parental educational attainment.

In the third section of the analysis, I estimate a single LPM on the subsample of immigrant-origin children in order to explore how age of immigration moderates the effect of parental education on child's education. The choice of LPMs rather than Logit or Probit models for stages 2 and 3 of my empirical analysis derives from the fact that the interpretation of interaction effects involving continuous variables in non-linear models is notoriously difficult (Norton et al., 2004). Since interaction effects are a core element of my empirical analysis, LPM is the better choice.

4.4 Results

4.4.1 Descriptive results

Table 4.1 displays summary statistics on relevant socio-demographic and socioeconomic characteristics of the children in the sample. Differences in the "outcome" variable, the type of secondary school, are large: Natives are more than twice as likely as Turkish-origin children to enroll in the *Gymnasium*, whereas the disadvantage of *Aussiedler* and "other" immigrants is much smaller (about six percentage points). At the same time, Turkish-origin children are uniquely disadvantaged in terms of the educational attainment of their parents: About 84% of Turkish mothers and 74% of Turkish fathers have less than secondary education. This confirms prior empirical findings on the precarious social background of Turkish immigrants to Germany (Kogan, 2011; Kalter and Granato, 2001; Diehl and Schnell, 2006; Kristen and Granato, 2007).

Ethnic differences in parental occupational status mirror the differences in parental educational attainment: Native parents are most likely to have white-collar jobs, while Turkish parents are most likely to be unemployed or to have blue-collar jobs. As in the case of educational attainment, the two other immigrant groups (*Aussiedler* and the undifferentiated “other”) are roughly in between natives and Turks. However, the conversion of parental educational attainment into occupational status is not homogeneous for all groups: At any given level of educational attainment, native parents are more likely to occupy white-collar positions than immigrant parents, and among immigrants, Turks are least likely to be self-employed or to have an office job (see Table C.4 for a cross-tabulation of the educational attainment and occupational status for the fathers in the sample).

The descriptive findings shown in Table 4.1 portray the large differences in social background among the ethnic groups considered. But how does the likelihood that a child will enroll in the academic track of secondary school (the *Gymnasium*) depend on the educational attainment of her or his parents? And how does the answer to this question depend on ethnic background? These are the questions that Figures 4.1a and 4.1b help to answer on a descriptive level. Unsurprisingly, children with better-educated parents are more likely to attend the *Gymnasium*. For all groups, an increase in the level of parental education is always associated with a higher likelihood of enrolling in the *Gymnasium*.

Yet the returns to parental education vary among the groups. Children without an immigration background have the steepest “slopes”: They have a 10% chance of enrolling in the *Gymnasium* if their parents did not complete basic schooling, but a 70% chance of doing so if either parent attended university. For children with *Aussiedler* and Turkish parents, the relationship between parental educational attainment and enrollment in the academic track of secondary school is somewhat weaker: When parents have very low levels of education, children with Turkish or *Aussiedler* backgrounds have a better chance at attending the *Gymnasium* than natives.⁹ The opposite is true when considering children with highly educated parents: Native children with university-educated parents are around 10 percentage points more likely to attend the *Gymnasium* than children of Turkish or *Aussiedler* origin with equally educated parents.

This analysis is purely descriptive and is not informative about the influence of each parent’s educational attainment on children’s educational attainment, since background characteristics have not yet been considered. However, it confirms prior findings on a low influence of parental education on children’s educational careers in Germany (Luthra, 2010; Gang and Zimmermann, 2000; Kristen and Granato, 2007) and also shows that child–father and child–mother influences are roughly equal.

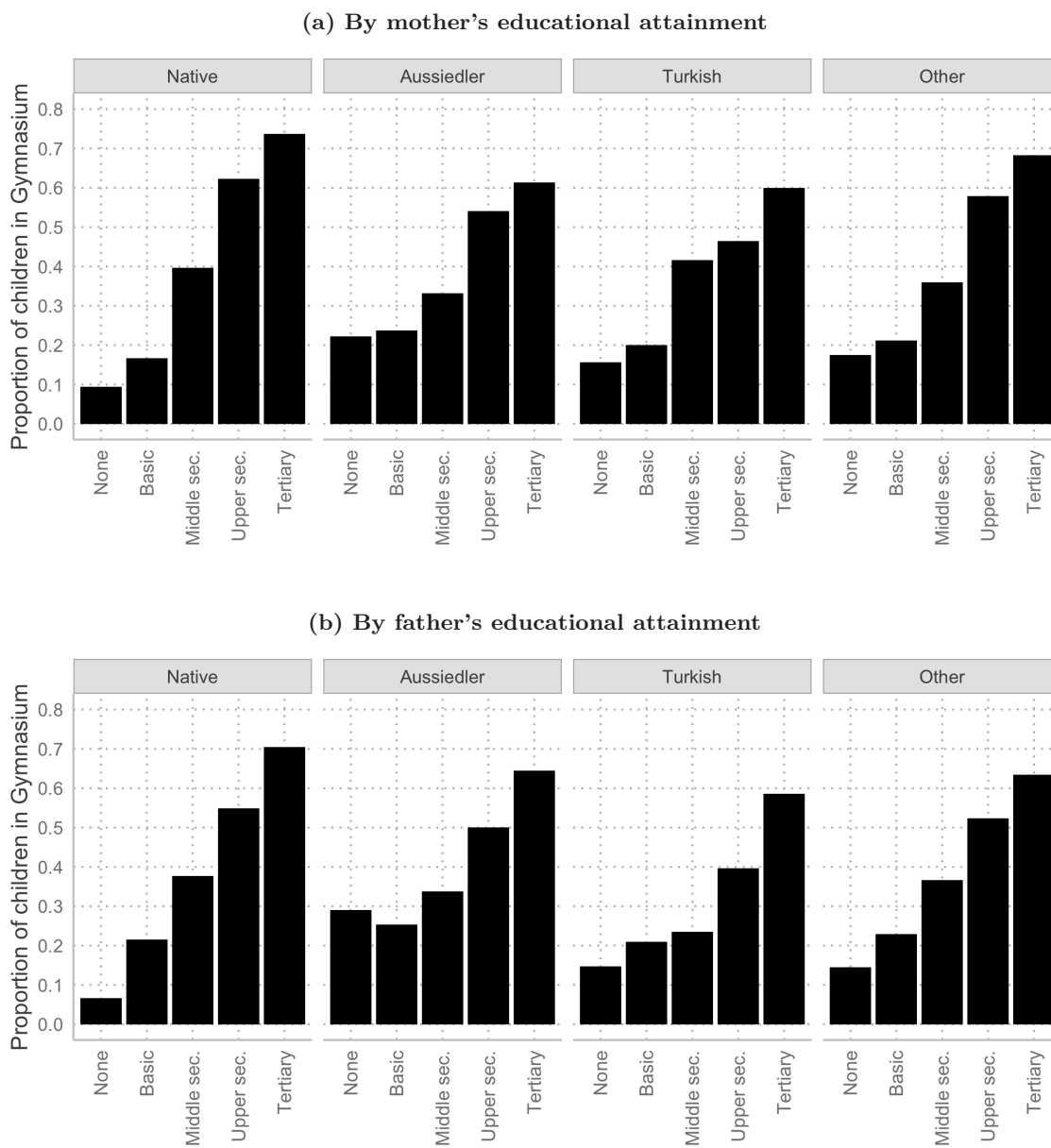
⁹However, very few German parents have this level of attainment (around 0.6%), versus 24% and 35% of Turkish fathers and mothers, respectively.

Table 4.1: Summary statistics by ethnic background

	Native German (N=15484)	Aussiedler (N=1074)	Turkish (N=1086)	Other (N=1715)	Total (N=19359)
<i>Child's school</i>					
Not Gymnasium	8789 (56.8%)	702 (65.4%)	844 (77.7%)	1124 (65.5%)	11459 (59.2%)
Gymnasium	6695 (43.2%)	372 (34.6%)	242 (22.3%)	591 (34.5%)	7900 (40.8%)
<i>Mother's education</i>					
None	96 (0.6%)	27 (2.5%)	384 (35.4%)	319 (18.6%)	826 (4.3%)
Basic	3439 (22.2%)	375 (34.9%)	529 (48.7%)	551 (32.1%)	4894 (25.3%)
Middle sec.	7194 (46.5%)	449 (41.8%)	120 (11.0%)	423 (24.7%)	8186 (42.3%)
Upper sec.	2187 (14.1%)	122 (11.4%)	43 (4.0%)	214 (12.5%)	2566 (13.3%)
Tertiary	2568 (16.6%)	101 (9.4%)	10 (0.9%)	208 (12.1%)	2887 (14.9%)
<i>Father's education</i>					
None	75 (0.5%)	31 (2.9%)	264 (24.3%)	249 (14.5%)	619 (3.2%)
Basic	4645 (30.0%)	419 (39.0%)	586 (54.0%)	602 (35.1%)	6252 (32.3%)
Middle sec.	5039 (32.5%)	433 (40.3%)	132 (12.2%)	409 (23.8%)	6013 (31.1%)
Upper sec.	1564 (10.1%)	84 (7.8%)	63 (5.8%)	195 (11.4%)	1906 (9.8%)
Tertiary	4161 (26.9%)	107 (10.0%)	41 (3.8%)	260 (15.2%)	4569 (23.6%)
<i>Mother's immigr. age</i>					
15 or younger	NA	154 (14.4%)	428 (40.3%)	277 (16.5%)	859 (22.5%)
16-25	NA	624 (58.3%)	539 (50.7%)	882 (52.5%)	2045 (53.6%)
26 and older	NA	293 (27.4%)	96 (9.0%)	520 (31.0%)	909 (23.8%)
<i>Father's immigr. age</i>					
15 or younger	NA	145 (13.5%)	481 (45.4%)	217 (13.3%)	843 (22.4%)
16-25	NA	521 (48.5%)	399 (37.7%)	723 (44.4%)	1643 (43.7%)
26 and older	NA	408 (38.0%)	179 (16.9%)	690 (42.3%)	1277 (33.9%)
<i>Mother's occupation</i>					
Inactive	2890 (18.7%)	274 (25.5%)	611 (56.3%)	734 (42.8%)	4509 (23.3%)
Worker	1762 (11.4%)	367 (34.2%)	279 (25.7%)	380 (22.2%)	2788 (14.4%)
Self-employed	1145 (7.4%)	44 (4.1%)	13 (1.2%)	67 (3.9%)	1269 (6.6%)
Employee	9687 (62.6%)	389 (36.2%)	183 (16.9%)	534 (31.1%)	10793 (55.8%)
<i>Father's occupation</i>					
Inactive	759 (4.9%)	86 (8.0%)	223 (20.5%)	307 (17.9%)	1375 (7.1%)
Worker	3434 (22.2%)	629 (58.6%)	559 (51.5%)	605 (35.3%)	5227 (27.0%)
Self-employed	2625 (17.0%)	82 (7.6%)	100 (9.2%)	236 (13.8%)	3043 (15.7%)
Employee	8666 (56.0%)	277 (25.8%)	204 (18.8%)	567 (33.1%)	9714 (50.2%)
<i>Receive transfers</i>					
No	14972 (96.7%)	973 (90.6%)	817 (75.2%)	1328 (77.4%)	18090 (93.4%)
Yes	512 (3.3%)	101 (9.4%)	269 (24.8%)	387 (22.6%)	1269 (6.6%)
<i>Sex</i>					
Male	7951 (51.3%)	562 (52.3%)	580 (53.4%)	856 (49.9%)	9949 (51.4%)
Female	7533 (48.7%)	512 (47.7%)	506 (46.6%)	859 (50.1%)	9410 (48.6%)
<i>Age</i>					
Mean (SD)	14.96 (1.98)	14.83 (1.98)	15.12 (2.00)	14.76 (1.96)	14.94 (1.98)
<i>Number of siblings</i>					
0	3613 (23.3%)	202 (18.8%)	78 (7.2%)	236 (13.8%)	4129 (21.3%)
1	8115 (52.4%)	498 (46.4%)	377 (34.7%)	655 (38.2%)	9645 (49.8%)
2	2932 (18.9%)	235 (21.9%)	357 (32.9%)	472 (27.5%)	3996 (20.6%)
3 or more	824 (5.3%)	139 (12.9%)	274 (25.2%)	352 (20.5%)	1589 (8.2%)

Source: Own elaboration, with data from the 2013 German Microcensus (Scientific Use File).

Figure 4.1: Probability of enrollment in *Gymnasium*, by parental education



4.4.2 Ethnic differences in intergenerational educational mobility

I estimate four LPMs in which enrollment in the *Gymnasium* is the dependent variable. Model 1 estimates the raw ethnic differences in *Gymnasium* enrollment (i.e., before controlling for socioeconomic background and demographic characteristics). In Model 2, each parent's educational attainment is included as a continuous measure (where 1 indicates no completed education and 5 indicates tertiary education). In Model 3, several controls (age, gender, number of siblings, parental occupational status and reliance on social transfers) are included. Finally, in Model 4, I add interactions for immigration background and parental education in order to test for a moderating role of immigration background on the effect of parental education on the likelihood of enrolling in the *Gymnasium*. The results of the four models are shown in Table 4.2.

Model 1 shows that all immigrant-origin groups are less likely to transition to the *Gymnasium* than natives are, confirming the pattern of educational disadvantages of immigrant-origin children found in prior studies (Kristen and Granato, 2007; Luthra, 2010; Dollmann, 2017). Particularly striking, however, is the more than twofold difference in the magnitude of this disadvantage for Turks compared to *Aussiedler* and "other" immigrants (i.e., Ordinary Least Squares coefficients of -0.21 compared to less than -0.9 for the latter two groups). This confirms the uniquely disadvantaged position of Turks, which was already reflected in the summary statistics presented in Table 4.1.

When parental education is added in Model 2, the disadvantage of all immigrant groups disappears. This means that differences in parental educational attainment completely explain the ethnic differences in transition to the *Gymnasium*. In fact, controlling for parental education, Turks are around 7% more likely than natives to reach the *Gymnasium*. This may be related to the very high educational aspirations of this group (see, for instance, Salikutluk 2016; Kristen and Dollmann 2010), which unfortunately are not measured in the German Microcensus. Another important insight from Model 2 is the fact that the influence of fathers and mothers on children's transition to secondary school is roughly equal: *Ceteris paribus*, a one-unit increase in parental education—whether a mother's or father's—is associated with a 10–11% increase in the likelihood of enrolling in the *Gymnasium*.

The Ordinary Least Squares coefficients for parental educational attainment change little in Model 3, where controls for age, gender, number of siblings, parental occupational status and reliance on social transfers are added. Of these, only the coefficients for parental occupational status are displayed (full results available upon request).¹⁰ Children with

¹⁰The coefficients for the control variables that are not displayed indicate that (1) girls are more slightly more likely to enroll in the academic track than boys; (2) older children are more likely to be in the *Gymnasium*, as it is possible to transfer upstream from the *Realschule* after grade 10 (see Dollmann 2017; Dollmann and Weißmann 2020) and (3) children with two or more siblings are less likely to enroll in the *Gymnasium*.

Table 4.2: Linear Probability Models predicting transition to *Gymnasium*

	<i>Dependent variable:</i>			
	Probability of Gymnasium			
	(1)	(2)	(3)	(4)
<i>Ethnic origin (ref: Native)</i>				
Aussiedler	-0.086*** (0.015)	0.001 (0.014)	0.046*** (0.014)	0.291*** (0.049)
Turkish	-0.210*** (0.015)	0.066*** (0.015)	0.127*** (0.015)	0.356*** (0.040)
Other	-0.088*** (0.012)	0.030*** (0.011)	0.076*** (0.012)	0.283*** (0.031)
Mother's education		0.113*** (0.004)	0.106*** (0.004)	0.115*** (0.004)
Father's education		0.099*** (0.003)	0.089*** (0.003)	0.097*** (0.004)
<i>Mother's occupation (ref: Not employed)</i>				
Worker			-0.020 (0.015)	-0.016 (0.015)
Self-employed			0.049*** (0.016)	0.051*** (0.016)
Employee			0.043*** (0.015)	0.043*** (0.015)
<i>Father's occupation (ref: Not employed)</i>				
Worker			-0.010 (0.011)	-0.007 (0.011)
Self-employed			0.044*** (0.015)	0.040*** (0.015)
Employee			0.043*** (0.009)	0.044*** (0.009)
Receive transfers			-0.035** (0.015)	-0.041*** (0.015)
<i>Interactions</i>				
Mother's education × Aussiedler				-0.039** (0.017)
Mother's education × Turkish				-0.052*** (0.018)
Mother's education × Other				-0.032*** (0.012)
Father's education × Aussiedler				-0.044*** (0.017)
Father's education × Turkish				-0.052*** (0.016)
Father's education × Other				-0.039*** (0.012)
Constant	0.432*** (0.004)	-0.261*** (0.012)	-0.380*** (0.032)	-0.438*** (0.033)
Controlling for age	No	No	Yes	Yes
Controlling for gender	No	No	Yes	Yes
Controlling for siblings	No	No	Yes	Yes
Observations	19359	19359	19359	19359
R ²	0.012	0.183	0.199	0.203

Note: Table created with R package *Stargazer* (Hlavac, 2018).

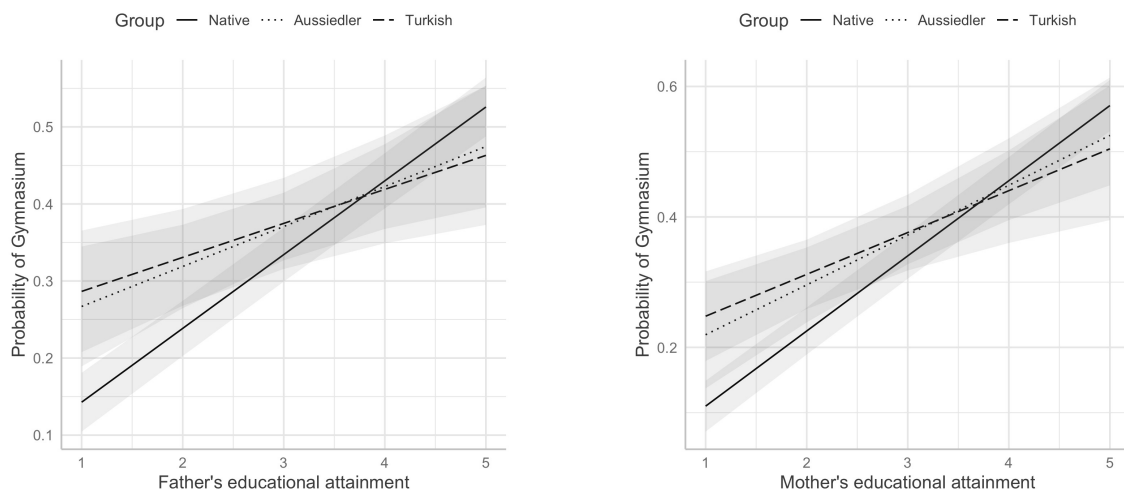
Standard errors in parentheses. Significance level: *p<0.1; **p<0.05; ***p<0.01

parents who are self-employed or have a white-collar job are 4–5% more likely to make it to academic secondary school than children with blue-collar or inactive parents, even after controlling for parental education. The results of this model show that the effect of parents' educational attainment on children's educational success is largely independent of their SES (as measured by the two parental occupation measures). Lastly, children from families that receive social transfers are around 3% less likely to enroll in the *Gymnasium*.

While Models 1, 2 and 3 provide valuable insights into the determinants of enrollment in the *Gymnasium*, the primary model to analyze the interplay of immigration background, parental educational attainment and children's school track is Model 4. The results show that the effect of paternal education on children's school track is weaker for all immigrant groups than for natives. Moreover, the intergenerational transmission of education seems to be somewhat weaker within Turkish families than within *Aussiedler* families (especially from mothers to children), although these differences are not statistically significant (see Table C.5 in the appendix).

The interactions are displayed graphically in Figure 4.2. The greater educational mobility of immigrants cuts both ways. Immigrant-origin children with less-educated parents are more likely than natives with comparably educated parents to reach the *Gymnasium*, but for children with highly educated parents, the situation is reversed: Native children with highly educated parents have higher chances of reaching the academic track than immigrant-origin children with equally highly educated parents.¹¹

Figure 4.2: Effect of parental education on probability that child will enroll in the *Gymnasium*, by gender and ethnic origin



¹¹It should be noted that the empirical basis for some of the interactions is small. As shown in Table 4.1, very few natives have the lowest level of educational attainment, whereas very few Turkish immigrants have the highest level.

4.4.3 The effect of parents' age of immigration on the transmission of education in immigrant families

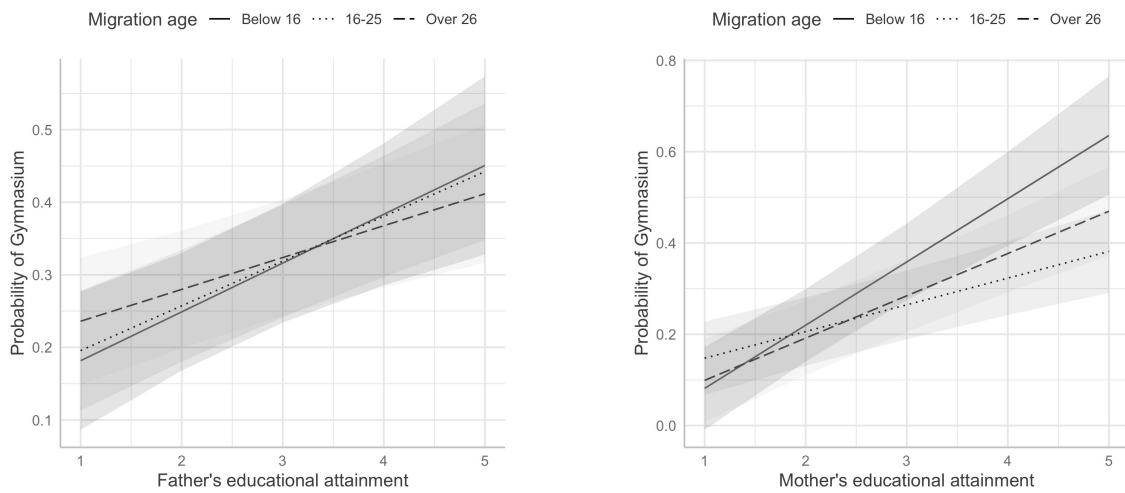
The contextual attainment framework discussed in [subsection 4.2.2](#) largely assumes that immigrant parents completed their educational careers in their countries of origin. This is also an implicit assumption in empirical studies on ethnic differences in the transmission of education that emphasize the idea of immigrant selectivity (Luthra and Soehl, 2015; Luthra, 2010; Ichou, 2014; Engzell, 2019; Feliciano and Lanuza, 2017). However, this assumption is problematic when analyzing a significant proportion of second-generation immigrants in Germany, because many of their parents immigrated as children or teenagers. This is particularly true for the Turkish-origin children in my analysis sample: The median age of immigration of their parents is 17, while for *Aussiedler* it is 23 (more details in [Table C.6](#)).

Theoretically, the effect of age of immigration on the likelihood that children will enroll in the *Gymnasium* is twofold. On the one hand, immigrant parents who have spent more time in Germany may have accumulated more country-specific skills (e.g., language skills, knowledge of the education system) that they can use to help their children academically. This would predict a positive main effect of a low age of immigration.

On the other hand, less-educated immigrants who moved at a young age are likely to be more negatively selected on unobserved cognitive skills than those who immigrated as adults, since at least some of the former group had the opportunity to benefit from the German education system. Thus, I expect second-generation immigrant children to be more affected by parental educational attainment (i.e., less likely to achieve upward educational mobility) when their parents immigrated at a young age.

For this analysis, I focus on the subsample of immigrant-origin children. As in the models reported in [Table 4.2](#), I regress the dichotomous outcome variable (enrollment in the *Gymnasium*) on ethnicity, parental educational attainment, parental occupational status and other socio-demographic characteristics. However, I now add dummy variables indicating the age of immigration of each parent. I also include interaction terms of these variables and parental educational attainment. (I only interact paternal age of immigration with paternal education, and maternal age of immigration with maternal education.)

The results of the interactions are shown in [Figure 4.3](#). The influence of both paternal and maternal education is weaker when the respective parent immigrated after the age of 20. For the interaction of paternal education, the effect is statistically significant at the 5% level. However, the coefficients for the two interaction terms are nearly identical. These results are in line with the theoretical mechanism described in [section 3.2](#). The full results of this analysis are shown in [Table C.6](#) in the appendix.

Figure 4.3: Relationship between parental education and child’s likelihood to attend the *Gymnasium*, by age of immigration and gender of parent

It must be noted that with the data at hand, it is not possible to determine whether the differences in the transmission of education by the age of immigration are truly due to the effect of the age of immigration itself, or whether they are instead compositional effects due to unobserved differences in the endowment of educationally-relevant resources. In the case of Turkish immigration to Germany, it is likely that those who immigrated at a young age are very different from those who immigrated as adults. The former are, most likely, the children of labor immigrants, while the latter might represent mainly a combination of asylum seekers and “marriage immigrants” (Sirkeci et al., 2012; Wolf, 2016; Aybek, 2015). It is therefore conceivable that these groups are different in unobserved characteristics that impact the transmission of education.

4.5 Discussion

In this study, I have explored ethnic differences in the influence of parental educational attainment on children’s chances of reaching academic secondary school (the *Gymnasium*) in Germany. While empirical analyses of the transmission of education in Western countries have often found that immigrants are more educationally mobile than natives (see Heath et al. 2008, for an overview of the literature), the precise mechanisms that explain such differences are far from clear.

My results confirm prior findings, in particular those of Luthra (2010): In Germany, the transmission of education is weaker for immigrants than for natives and, within immigrants, it appears to be weaker for immigrants from countries with more limited educational opportunities (such as Turkey) compared to immigrants from countries that are more similar to Germany in education (such as Central and Eastern European countries).

Moreover, I also showed that the age of immigration also affects the transmission of education: Among immigrants, the effect of parental educational attainment on children's education is stronger when parents immigrated at a young age. This is a novel empirical result that warrants some attention, as the role of age of immigration had previously been neglected in the literature on the transmission of education. Generally, it is assumed that first-generation immigrants have received their education in their countries of origin (Heath and Brinbaum, 2014), but I have shown that this may not be the case for a significant share of first-generation immigrants who may have received some education in Germany.

While this contribution is mostly of an exploratory nature, as I do not test any concrete mechanisms, my empirical results are consistent with the theoretical predictions of what I have called the “contextual attainment” hypothesis (Feliciano and Lanuza, 2017): the idea that because of international differences in educational opportunity, the link between parental educational attainment and the educationally-relevant resources of parents (i.e., human and cultural capital) is highly contextual.

In countries with plentiful educational opportunities (such as Germany), people with a low educational attainment are likely to be more negatively selected on unobservable characteristics (cognitive and non-cognitive skills) than people with the same level of education who grew up in countries with limited educational opportunities (see Table C.2 in the appendix) for a comparison of educational attainment in Germany and the main countries of origin of immigrants). This would explain, for instance, why *Aussiedler* and Turkish-origin children of parents with low educational attainment are more likely to enroll in the *Gymnasium* than native children with equally less-educated parents (see Figure 4.2).

The stronger transmission of education in *Aussiedler* families, compared to Turkish ones, is also consistent with the contextual attainment hypothesis: Educational attainment in the main countries of origin of *Aussiedler* was much higher than in Turkey (see Table C.2). This means that when comparing the transmission of education of these two groups, the argument described above also applies: For Turks, educational attainment is likely to be a weaker predictor of “cultural capital” than for *Aussiedler*. Likewise, the results of the analysis of age of immigration are also consistent with the contextual attainment hypothesis because people who immigrated at younger ages might have been able to benefit from the more extensive educational opportunities in Germany. In consequence, their final educational attainment may reflect their cultural skills more accurately than in the case of those who immigrated as adults.

Overall, my analysis suggests that the transmission of education differs systematically between natives and immigrants and calls into question the substantive meaning of controlling for parental education when studying the educational attainment of children whose parents stem from countries with different degrees of educational opportunity, as Luthra and Soehl (2015) warn.

4.5.1 Limitations and potential for future research

One of the major limitations of my analysis is that in contrast with other researchers (e.g., Feliciano and Lanuza 2017; Engzell 2019; Luthra and Soehl 2015; Ichou 2014), I do not include a measure of relative education (in terms of the distribution of educational attainment in the country of origin) in the analysis, and hence I cannot test for the role of educational selectivity by educational transmission. Determining the rough equivalence of the categories of educational attainment of the Educational Attainment Dataset of Barro and Lee (2011) and those of the German Microcensus and CASMIN (Lechert et al., 2006) is a complex methodological task that exceeds the scope of this study.

Another important limitation is that the dependent variable does not measure educational attainment but rather educational status (i.e., whether or not children are enrolled in the *Gymnasium*). Measuring final educational attainment would be ideal to estimate the transmission of education, rather than the influence of parental educational attainment on children's school type in secondary education. However, the German Microcensus only permits linking children's information to that of their parents' when they live together, which is why I opted to focus on 12- to 18-year-olds (almost all of whom are enrolled in secondary school and live with their parents). Nevertheless, enrollment in the *Gymnasium* is a strong predictor of final educational attainment (Baumert and Maaz, 2012; Siegert and Olszenka, 2016), even though a significant proportion of children enrolled in the *Gymnasium* (especially those with an immigration background; see Dollmann and Weißmann 2020) will not obtain the maturity certificate (i.e. the *Abitur*).

A final limitation is that the Microcensus does not contain data on performance, which prevents me from distinguishing empirically between the effects of social background on performance (i.e., primary effects) and those on choices (i.e., secondary effects), as is common in research in educational inequality (Boudon, 1974; Heath et al., 2008). It is a well-known empirical fact that immigrant-origin children tend to perform below the level of natives in Germany but also make more ambitious educational choices at transitions (Dollmann, 2017; Kristen and Dollmann, 2010). This means that the immigrant advantage at the transition to secondary school that I observe in my analysis would probably be larger had I been able to control for performance.

Despite these limitations, my analysis provides robust evidence of ethnic differences in the transmission of education in Germany. This finding violates “the uniformity assumption underpinning the use of both aggregate data and parental background ‘controls’ in studies of immigrant intergenerational change” (Luthra and Soehl, 2015, p.563). I also showed that age of immigration matters for the transmission of education as well, with second-generation immigrants with parents who were adults at the time of immigration displaying higher rates of upward educational mobility than those whose parents immigrated as children.

A logical step for further research on ethnic differences in the transmission of education would be to develop better measures of the educationally-relevant non-monetary resources that immigrants bring with them (i.e., their human and cultural capital). One option would be the relative education measure of Ichou (2014) and Feliciano and Lanuza (2017), but this could be complemented with other measures (e.g., pre-migration occupational status or income decile). It is possible that immigrants' high educational aspirations (Salikutluk, 2016) and ambitious educational choices (Dollmann, 2017) are explained by positive selection on human and cultural capital that is hard to measure by conventional measures of educational attainment and post-migration SES. Indeed, a recent study found that most immigrant ethnic groups in Western Europe are positively selected on education (Werfhorst and Heath, 2019).

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Appendices

Appendix A

Appendix to chapter 2

A.1 Region of origin of immigrant-origin children

Table A.1: Region of origin of immigrant-origin children

Region of origin	Background			Total (n=3054)
	Migrant (n=2153)	Mixed (n=562)	Transnat. (n=339)	
Northern Europe & North America	98 (4.6%)	170 (30.2%)	58 (17.1%)	326 (10.7%)
Southern Europe	82 (3.8%)	64 (11.4%)	33 (9.7%)	179 (5.9%)
Eastern Europe	475 (22.1%)	90 (16.0%)	35 (10.3%)	600 (19.6%)
Latin America & the Caribbean	108 (5.0%)	61 (10.9%)	22 (6.5%)	191 (6.3%)
Middle East & North Africa	761 (35.3%)	57 (10.1%)	71 (20.9%)	889 (29.1%)
Sub-Saharan Africa	208 (9.7%)	50 (8.9%)	16 (4.7%)	274 (9.0%)
Central & South Asia	291 (13.5%)	21 (3.7%)	86 (25.4%)	398 (13.0%)
East Asia	105 (4.9%)	42 (7.5%)	15 (4.4%)	162 (5.3%)
Unknown	25 (1.2%)	7 (1.2%)	3 (0.9%)	35 (1.1%)

Source: Own elaboration, with data from CILS4EU wave 1 (Kalter et al., 2016a). Regions adapted from the original country-level “ethnic origin” variables (`y1_countorig_en`, `y1_countorig_ge`, `y1_countorig_nl`, `y1_countorig_sw`). For a list of the countries that belong to each region, see the CILS4EU classification in Dollmann et al. (2014, pp. 40–43). The category of “Migrant” encompasses children with two foreign-born parents who were either born in the host country or having immigrated before the age of 6 (i.e. the 1.75 generation; see Dollmann et al. 2014).

A.2 Country models

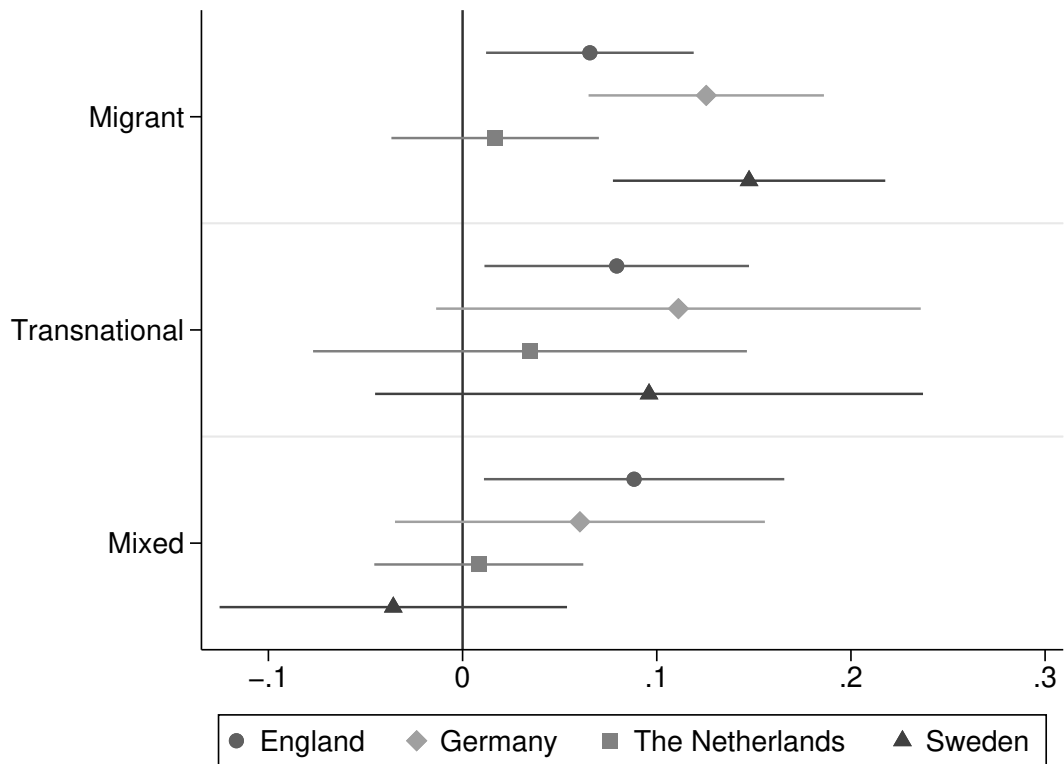
Table A.2 displays the results of the four country models as AME. The models contain the same covariates as in Model 3, displayed in Table 2.2. A graphical display of the AME of the different immigration background types (with natives as the reference category) is provided in Figure A.1.

Table A.2: Average Marginal Effects on AUSS: Country models

	<i>Dep. var.: AUSS in W3</i>			
	(1) England	(2) Germany	(3) Netherlands	(4) Sweden
Migration background (ref: Native)				
Migrant	0.066** (0.028)	0.125*** (0.031)	0.017 (0.027)	0.147*** (0.036)
Transnational	0.078** (0.035)	0.111* (0.064)	0.035 (0.057)	0.096 (0.072)
Mixed	0.097** (0.040)	0.059 (0.049)	0.008 (0.027)	-0.041 (0.045)
Socio-demographic controls				
Female (ref: Male)	0.089*** (0.034)	0.036 (0.026)	0.055*** (0.020)	0.036 (0.025)
One-parent family (ref: Two-parent)	-0.074*** (0.020)	-0.067** (0.027)	-0.010 (0.017)	-0.035 (0.028)
Age (in years)	-0.005 (0.019)	-0.040** (0.017)	-0.013 (0.012)	0.024 (0.050)
Parental ISEI	0.002*** (0.001)	-0.001 (0.001)	0.000 (0.000)	0.001** (0.001)
<i>Parental education (ref: Basic or less)</i>				
Secondary	0.036 (0.030)	0.002 (0.039)	-0.009 (0.059)	0.031 (0.049)
Tertiary	0.065** (0.033)	0.097* (0.051)	0.015 (0.066)	0.138*** (0.053)
Unknown	0.027 (0.034)	0.037 (0.085)	-0.013 (0.079)	0.072 (0.058)
Achievement and ability controls				
<i>Track in W1 (ref: High)</i>				
Middle	-0.013 (0.022)	-0.455*** (0.033)	-0.129*** (0.049)	-0.022 (0.039)
Low	-0.074* (0.043)	-0.694*** (0.030)	-0.764*** (0.031)	-0.069 (0.080)
None/Missing	-0.086** (0.041)	-0.408*** (0.111)	-0.397*** (0.108)	0.044 (0.034)
Grade	0.621*** (0.103)	0.850*** (0.117)	0.442*** (0.158)	0.861*** (0.075)
Cognitive score	0.239*** (0.077)	0.133 (0.094)	-0.014 (0.058)	0.159* (0.081)
Language score	0.471*** (0.089)	0.332*** (0.091)	0.236*** (0.085)	0.214** (0.092)
Observations	1819	2807	1872	1963
McFadden's Pseudo-R ²	0.2521	0.3024	0.5879	0.1649

Note: Sampling stratum controls included but not shown. Clustered standard errors in parentheses (cluster: schools). Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure A.1: Average Marginal Effects on transition to Academic Upper Secondary School - Country models



Note: Natives are the reference category.

A.3 Models with detailed mixed children category

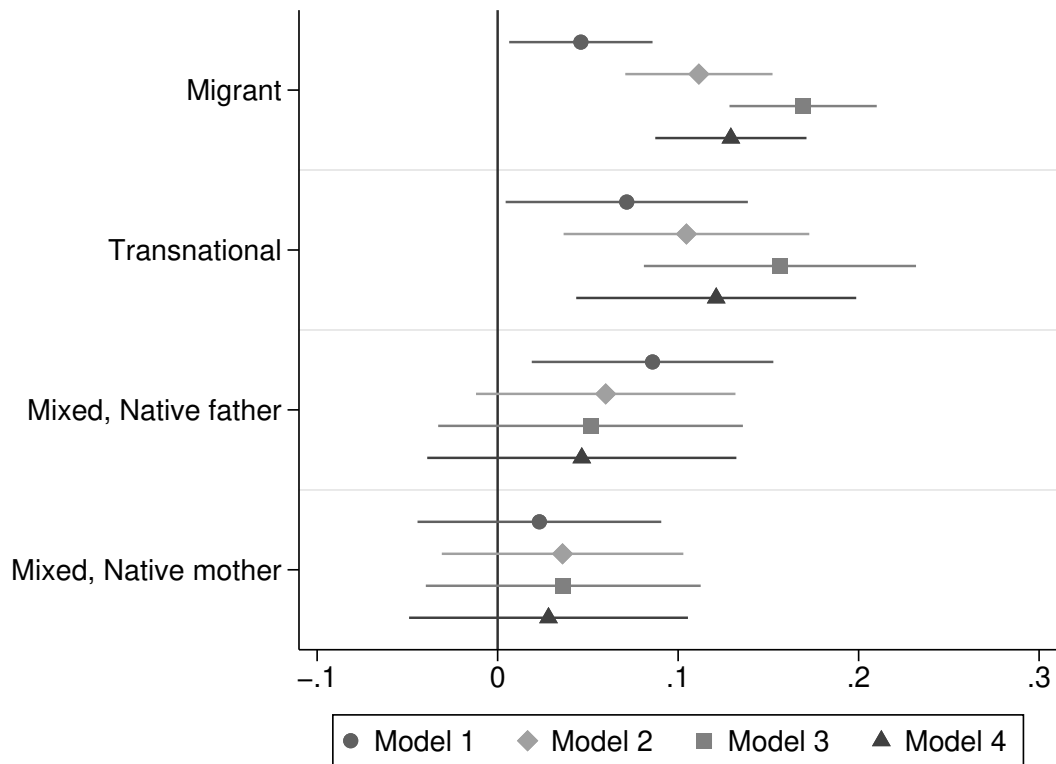
Some studies (notably van Ours and Veenman 2010) have found that the gender of the native parent of mixed children might be relevant for the educational attainment of this group. To check whether this is the case, I re-estimate Model 3, as shown in Table 2.2, but this time distinguish between mixed children with a native father and an immigrant mother, and those with the opposite combination. The results are shown in Table A.3, and a graphical depiction of the AME of immigration background is displayed in Figure A.2.

Table A.3: Average Marginal Effects on AUSS: Distinguishing by the gender of the native parent of mixed children

	<i>Dep. var.: AUSS in W3</i>		
	(1)	(2)	(3)
Migration background (ref: Native)			
Migrant	0.046** (0.020)	0.112*** (0.021)	0.178*** (0.021)
Transnational	0.072** (0.034)	0.105*** (0.035)	0.162*** (0.038)
Mixed - Native father	0.086** (0.034)	0.060 (0.037)	0.053 (0.042)
Mixed - Native mother	0.023 (0.034)	0.036 (0.034)	0.047 (0.039)
Socio-demographic controls			
Female (ref: Male)		0.084*** (0.014)	0.091*** (0.017)
One-parent family (ref: Two-parent)		-0.094*** (0.016)	-0.075*** (0.017)
Age (in years)		-0.108*** (0.012)	-0.035*** (0.012)
Parental ISEI		0.004*** (0.000)	0.002*** (0.000)
<i>Parental education (ref: Basic or less)</i>			
Secondary		0.063*** (0.022)	0.024 (0.027)
Tertiary		0.185*** (0.024)	0.121*** (0.031)
Unknown		0.035 (0.029)	0.032 (0.036)
Achievement and ability controls			
<i>Track in W1 (ref: High)</i>			
Middle			-0.198*** (0.025)
Low			-0.568*** (0.027)
None/Missing			-0.144*** (0.028)
Grade			0.832*** (0.071)
Cognitive score			0.240*** (0.058)
Language score			0.556*** (0.060)
Observations	8461	8461	8461
McFadden's Pseudo-R ²	0.0867	0.1470	0.3188

Note: Sampling stratum controls included but not shown. Clustered standard errors in parentheses (cluster: schools). Significance level: * p < 0.1, ** p < 0.05, *** p < 0.01.

Figure A.2: Average Marginal Effects on transition to Academic Upper Secondary School - Distinguishing by the gender of the native parent of mixed children



Note: Natives are the reference category.

A.4 Analysis of panel attrition

Of the 18,716 children who participated in the first wave of [CILS4EU](#), only 10,738 also participated in wave 3. Due to missing responses to certain items, my final sample size is 8,466. This attrition raises the question of whether there is positive selection into the analytical sample, and if so, how strong such selection is. Needless to say, a strong panel attrition bias would limit the external validity of my results. Another concern is whether selectivity into the analytical sample differs between groups, a possibility that cannot be ruled out *ex-ante*, as panel attrition may be explained by unobservable features associated with specific immigration backgrounds.

To verify the extent of panel attrition bias, I estimate multinomial logistic regression models for each of the four immigration background types: native, immigrant, mixed and transnational. The dependent variable indicates whether the child did not participate in wave 3 (i.e., panel drop-out) or whether she or he did—and if the latter, whether she or he is enrolled in [AUSS](#) by wave 3. The results are shown in [Table A.4](#). In all cases, the base outcome is non-participation in wave 3.

The results are given as relative risk ratios, which have a similar interpretation as odd ratios. (Values above 1 indicate that a variable is associated with an increase in the likelihood of the alternative outcome occurring, a value of 1 indicates no change in the relative odds, and values under 1 indicate a decrease in the likelihood of the alternative outcome.)

The results of the four multinomial logit models suggest that children who dropped out of the survey are very negatively selected compared to those who stayed in the survey and enrolled in AUSS. However, panel drop-outs are not negatively selected compared to panel “remainders” who did not enroll in AUSS. For instance, neither SES (as measured by the ISEI normalized score) nor the measures of cognitive and language ability are significant predictors of whether a child will drop out of the survey compared to a child staying in the survey but not choosing AUSS. In other words, children who dropped out of the survey are likely to be similar to those who stayed but did not do well academically.

The only variables that do predict non-participation in the survey are gender (females being less likely to drop out of the survey), age (older children being more likely to drop out) and family structure (those living with only one parent being more likely to drop out). I conclude from this analysis that panel attrition does not represent a threat to the external validity of my analysis.

Table A.4: Relative Risk Ratios of Multinomial Logit Models by immigration background

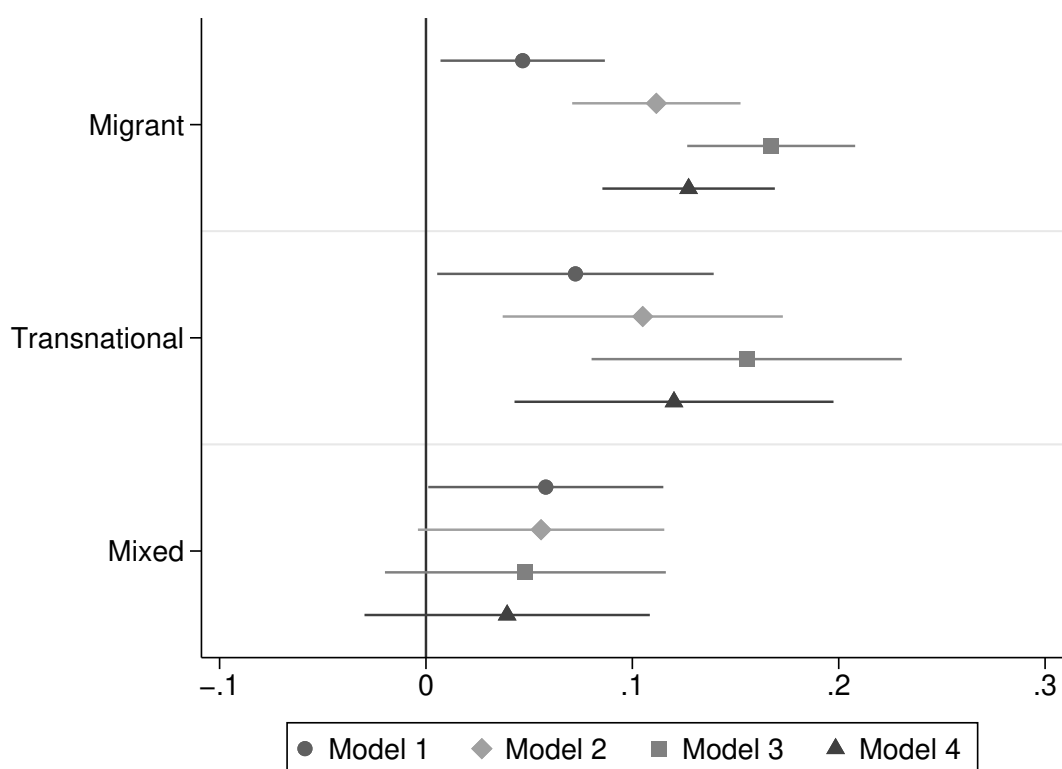
	Native			Migrant			Transnational			Mixed		
	Alternative outcomes:			Base outcome: <i>Non-participation in wave 3 of survey</i>								
	Not AUSS	AUSS		Not AUSS	AUSS		Not AUSS	AUSS		Not AUSS	AUSS	
Socio-demographic controls												
Female (ref: Male)	1.296*** (0.088)	1.887*** (0.140)	1.282** (0.124)	1.725*** (0.158)	1.382 (0.339)	2.596*** (0.635)	1.377 (0.273)	2.373*** (0.473)				
One-parent family (ref: Two-parent)	0.867** (0.057)	0.642*** (0.048)	1.117 (0.120)	0.809* (0.094)	0.909 (0.251)	0.637* (0.173)	0.773 (0.158)	0.568*** (0.125)				
Age (in years)	0.966 (0.061)	0.814*** (0.058)	0.949 (0.069)	0.784** (0.075)	0.623*** (0.144)	0.899 (0.210)	0.710 (0.166)	0.698 (0.153)				
Parental ISEI	1.002 (0.002)	1.015*** (0.002)	1.001 (0.002)	0.999 (0.002)	0.983** (0.006)	1.005 (0.007)	1.006 (0.006)	1.011** (0.006)				
<i>Parental education (ref: Basic or less)</i>												
Secondary	0.688*** (0.093)	0.948 (0.153)	0.976 (0.128)	0.915 (0.132)	1.063 (0.448)	0.817 (0.348)	0.842 (0.299)	3.673*** (1.708)				
Tertiary	0.608*** (0.086)	1.198 (0.206)	0.787 (0.119)	1.090 (0.166)	0.918 (0.434)	1.018 (0.462)	0.665 (0.260)	3.027** (1.385)				
Unknown	0.409*** (0.064)	0.522*** (0.088)	0.706** (0.125)	0.708* (0.125)	0.708 (0.383)	0.402* (0.209)	0.427* (0.205)	0.619 (0.357)				
Achievement and ability controls												
<i>Track in W1 (ref: High)</i>												
Middle	1.815*** (0.243)	0.630*** (0.078)	1.575*** (0.273)	0.797 (0.121)	1.815 (0.683)	1.100 (0.398)	1.873* (0.662)	0.657 (0.210)				
Low	2.038*** (0.283)	0.124*** (0.029)	1.449** (0.262)	0.224*** (0.044)	1.063 (0.391)	0.171*** (0.067)	1.901* (0.689)	0.198*** (0.082)				
None/Missing	1.593*** (0.222)	0.821* (0.098)	1.476** (0.272)	0.856 (0.133)	1.094 (0.554)	0.500* (0.193)	1.329 (0.538)	0.602 (0.198)				
Cognitive score	1.033 (0.249)	5.009*** (1.436)	1.162 (0.370)	4.516*** (1.518)	1.585 (1.375)	4.219* (3.620)	1.563 (1.086)	14.312*** (10.668)				
Language score	1.169 (0.309)	24.742*** (7.732)	0.361*** (0.121)	5.772*** (2.031)	0.569 (0.587)	4.174 (3.875)	0.983 (0.788)	31.884*** (25.898)				
Observations		7701		3249		494		817				
Pseudo-R ²		0.1970		0.1481		0.1713		0.2176				

Note: Controls for country and sampling stratum included but not shown. Clustered standard errors in brackets (cluster: schools). Significance level: * p < 0.1, ** p < 0.05, *** p < 0.01.

A.5 Analysis without Western mixed children

In his analysis of the cultural, social and economic integration of mixed children using wave 1 of the CILS4EU dataset, Kalmijn (2015) excludes mixed children of Western origin due to their similarity to the native population. In the results that I present in Table 2.2, I do not exclude mixed children of Western origin. However, it is worth examining the results when Western mixed children (defined as children with a native parent and an immigrant parent stemming from North and Western Europe, North America or Australia) are excluded from the analysis. The results, shown in Table A.5, are nearly identical to those shown previously in Table 2.2. Whether mixed children have a Western or non-Western foreign-born parent does not seem to play an important role in their educational decisions.

Figure A.3: Average Marginal Effects on Enrollment in Academic Upper Secondary School - Models excluding Western-origin mixed children



Note: Natives are the reference category.

Table A.5: Average Marginal Effects on AUSS, excluding Western mixed children

	<i>Dep. var.: AUSS in W3</i>			
	(1)	(2)	(3)	(3)
Migration background (ref: Native)				
Migrant	0.047** (0.020)	0.112*** (0.021)	0.176*** (0.021)	0.135*** (0.021)
Transnational	0.072** (0.034)	0.105*** (0.035)	0.161*** (0.038)	0.126*** (0.039)
Mixed	0.058** (0.029)	0.056* (0.030)	0.055 (0.034)	0.045 (0.035)
Socio-demographic controls				
Female (ref: Male)		0.084*** (0.014)	0.091*** (0.017)	0.088*** (0.017)
One-parent family (ref: Two-parent)		-0.094*** (0.016)	-0.075*** (0.017)	-0.076*** (0.017)
Age (in years)		-0.109*** (0.012)	-0.036*** (0.012)	-0.039*** (0.013)
Parental ISEI		0.004*** (0.000)	0.002*** (0.000)	0.001*** (0.000)
<i>Parental education (ref: Basic or less)</i>				
Secondary		0.059*** (0.022)	0.019 (0.027)	0.015 (0.026)
Tertiary		0.182*** (0.024)	0.118*** (0.031)	0.090*** (0.031)
Unknown		0.029 (0.030)	0.028 (0.037)	0.037 (0.037)
Achievement and ability controls				
<i>Track in W1 (ref: High)</i>				
Middle			-0.198*** (0.026)	-0.178*** (0.025)
Low			-0.570*** (0.027)	-0.531*** (0.028)
None/Missing			-0.147*** (0.029)	-0.139*** (0.028)
Grade			0.829*** (0.071)	0.698*** (0.071)
Cognitive score			0.242*** (0.059)	0.240*** (0.060)
Language score			0.545*** (0.059)	0.471*** (0.059)
Educational aspirations				
Idealistic aspirations				0.136*** (0.019)
Realistic aspirations				0.111*** (0.019)
Observations	8296	8296	8296	8296
McFadden's Pseudo-R ²	0.0854	0.1456	0.3178	0.3328

Note: Country and sampling stratum controls included but not shown. Clustered standard errors in parentheses (cluster: schools). Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

A.6 Educational status of students in waves 1 and 3

Table A.6 shows the proportion of students, by country and status in wave 1 (i.e., track in Germany and the Netherlands, math ability group in England and Sweden), who were enrolled in AUSS by wave 3. The operational definitions of status in wave 1 and wave 3 of CILS4EU are provided in tables Table A.7 and Table A.8, respectively.

Table A.6: Status of students in wave 1 and wave 3

Country	Track/Ability group in W1	Status in W3			
		AUSS		Not in AUSS	
		Count	Proportion	Count	Proportion
England	High	624	83.6%	122	16%
	Middle	534	70.9%	219	29%
	Low	78	66.7%	39	33%
	None/Missing	115	56.4%	89	44%
Germany	High	542	86.3%	86	14%
	Middle	481	36.9%	822	63%
	Low	93	10.8%	765	89%
	None/Missing	7	33.3%	14	67%
The Netherlands	High	452	81.9%	100	18%
	Middle	241	63.1%	141	37%
	Low	4	0.4%	920	100%
	None/Missing	5	35.7%	9	64%
Sweden	High	301	69.2%	134	31%
	Middle	132	51.8%	123	48%
	Low	23	33.8%	45	66%
	None/Missing	802	66.5%	404	33%

A.7 Operationalization of student status in waves 1 and 3

Table A.7: Classification of track level in wave 1

Country	Track level W1	Relevant school track(s) or ability groups
England	High	Highest math ability group
	Middle	2nd- to 5th-highest math ability group
	Low	Lowest to 4th-lowest math ability group
	None/Missing	If none of the above apply
Germany	High	Upper secondary school (<i>Gymnasium</i>) in W1 or in the academic track in schools with multiple tracks
	Middle	Middle secondary school (<i>Realschule</i>), Waldorf school, comprehensive school or in the middle track in schools with multiple tracks
	Low	Lower secondary school (<i>Hauptschule</i>) or in the lower track in schools with multiple tracks
	None/Missing	If none of the above apply
The Netherlands	High	Preparatory scientific education (VWO) and equivalent academic-oriented secondary programs (e.g. International Baccalaureate)
	Middle	Higher general continued education (HAVO)
	Low	Preparatory Middle-level Vocational Education
	None/Missing	Transitiongrades (<i>Brugklas</i>)
Sweden	High	Highest math ability group
	Middle	Middle math ability group
	Low	Lowest math ability group
	None/Missing	If none of the above apply

Note: For England, Sweden and the Netherlands, I use the classification methodology of Geven (2019).

Table A.8: Classification of student status in wave 3

Country	Operationalization of AUSS in wave 3
England	Studying for A levels, AS levels or A2 levels
Germany	Studying for the general maturity certificate (<i>allgemeine Hochschulreife</i> , usually known as <i>Abitur</i>) or the subject-specific maturity certificate (<i>Fachhochschulreife</i> , generally known as <i>Fachabitur</i>), which provides access to universities of applied sciences (<i>Fachhochschulen</i>). Students enrolled in the 11th grade of secondary education are also considered (since the vocational tracks finish in 10th grade).
The Netherlands	Enrolled in the upper academic tracks (i.e. VWO, <i>Gymnasium</i>) or in higher vocational tracks preparing for lower tertiary education (i.e. HAVO).
Sweden	Enrolled in the academic track of upper secondary school (<i>högskoleförberedande</i>).

Appendix B

Appendix to chapter 3

B.1 Information sources on future education

Table B.1: Information sources on future education, by migration background and country

Information source	England		Sweden	
	Native	Migrant	Native	Migrant
Parents	74.3%	69.6%	73.9%	69.1%
Siblings	30.7%	37.0%	36.2%	41.0%
Other relatives	30.6%	38.2%	31.6%	31.3%
Classmates	43.7%	46.6%	44.8%	44.0%
Other friends	28.8%	37.0%	42.0%	39.5%
Study counselor	46.3%	46.7%	68.6%	65.2%
Teachers	72.1%	72.7%	37.5%	43.1%
Internet	64.7%	66.3%	59.8%	56.0%
Newspapers	8.3%	9.9%	30.8%	22.2%
Open days	50.3%	41.3%	63.3%	48.0%
Career fairs	18.5%	18.0%	51.8%	50.4%
Other	3.9%	3.9%	3.9%	5.2%
None	2.6%	2.5%	3.1%	3.4%

Source: Own calculations, with data from CILS4EU (Kalter et al., 2016a; Kalter et al., 2016b).

B.2 Analysis of panel attrition

Table B.1 shows the effect of the variables measured in wave 1 on the likelihood of three outcomes: non-participation in wave 2 of CILS4EU, participation in wave 2 and low realistic educational aspirations, and participation in wave 2 and high realistic educational aspirations. Non-participation in wave 2 is the reference outcome. The analysis is conducted for natives and immigrants separately in order to assess whether the biases (in terms of panel attrition) are comparable between the groups. The results are given as relative risk ratios. The analysis for England is shown in Table B.1 and the analysis for Sweden in Table B.2.

The results suggest that the bias due to panel attrition is very modest. By and large, children who did not participate in wave 2 are quite similar to those who did participate and held low educational aspirations. In both countries, participants who dropped out seem to be more positively selected than those who had low aspirations in wave 2, but slightly negatively selected compared to those who had high aspirations in wave 2.

Table B.1: Relative Risk Ratios of multinomial logistic regression models for England

<i>Alternative outcomes:</i>	Natives		Migrants	
	<i>Base outcome: Non-participation in wave 2 of survey</i>			
	Low Asp.	High Asp.	Low Asp.	High Asp.
Female (ref: Male)	0.774*	1.234	0.724	1.020
	(0.117)	(0.203)	(0.265)	(0.376)
Age in wave 1	1.027	0.993	0.995	1.119
	(0.118)	(0.124)	(0.188)	(0.192)
One-parent family (ref: Two-parent)	0.877	0.616***	0.962	0.664*
	(0.124)	(0.102)	(0.206)	(0.140)
Parental ISEI	1.001	1.016***	0.996	1.005
	(0.003)	(0.004)	(0.004)	(0.004)
<i>Parental education (ref: Basic or less)</i>				
Secondary	0.993	1.286	0.912	1.612
	(0.174)	(0.245)	(0.250)	(0.497)
Tertiary	0.802	1.882***	0.574*	1.429
	(0.145)	(0.354)	(0.166)	(0.428)
Unknown	1.290	0.748	0.863	1.083
	(0.207)	(0.164)	(0.294)	(0.340)
Cognitive ability	0.619	14.121***	0.099**	0.810
	(0.401)	(10.827)	(0.100)	(0.878)
Language ability	0.673	73.166***	0.824	13.314***
	(0.400)	(47.338)	(0.569)	(9.966)
Constant	2.240	0.004***	16.422	0.072
	(3.746)	(0.007)	(40.033)	(0.158)
Observations	2264	2264	1378	1378
Pseudo-R ²	0.1112	0.1112	0.0688	0.0688

Note: Controls for sampling stratum included but not shown. Clustered standard errors in brackets (cluster: schools). Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B.2: Relative Risk Ratios of multinomial logistic regression models for Sweden

<i>Alternative outcomes:</i>	Natives		Migrants	
	Low Asp.	High Asp.	Low Asp.	High Asp.
Female (ref: Male)	0.513*** (0.065)	1.224* (0.139)	0.594*** (0.094)	0.938 (0.117)
Age in Wave 1	1.250 (0.423)	0.560 (0.235)	0.940 (0.185)	0.741* (0.126)
One-parent family (ref: Two-parent)	0.884 (0.112)	0.607*** (0.072)	1.039 (0.157)	0.627*** (0.077)
Parental ISEI	0.991*** (0.003)	1.014*** (0.004)	1.000 (0.004)	1.008** (0.003)
<i>Parental education (ref: Basic or less)</i>				
Secondary	1.861* (0.684)	1.386 (0.472)	1.237 (0.371)	1.414 (0.365)
Tertiary	0.769 (0.283)	1.227 (0.403)	0.709 (0.217)	0.921 (0.232)
Unknown	1.250 (0.453)	0.851 (0.304)	1.018 (0.314)	0.878 (0.212)
Cognitive ability	1.047 (0.462)	3.384*** (1.391)	0.841 (0.372)	2.362** (0.878)
Language ability	0.299** (0.171)	6.739*** (4.184)	0.514 (0.274)	2.007 (0.883)
Constant	0.416 (2.010)	562.796 (3,409.091)	5.679 (16.552)	67.423* (171.033)
Observations	2582	2582	1867	1867
Pseudo-R ²	0.1162	0.1162	0.0360	0.0360

Note: Controls for sampling stratum included but not shown. Clustered standard errors in brackets (cluster: schools). Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

B.3 Models with idealistic educational aspirations

Table B.3: Linear Probability Models for England: Idealistic educational aspirations

	<i>Dep. var.: High idealistic educational aspirations</i>		
	(1)	(2)	(3)
Information sources	0.024*** (0.006)	0.018*** (0.005)	0.007 (0.005)
Migrant (ref: Native)	-0.149*** (0.049)	-0.149*** (0.043)	-0.159*** (0.039)
Migrant × Information	-0.006 (0.008)	-0.006 (0.007)	-0.002 (0.006)
Socio-demographic controls			
Female (ref: Male)		0.079*** (0.019)	0.068*** (0.017)
Age in wave 1		0.000 (0.016)	-0.008 (0.014)
One-parent family (ref: Two-parent)		-0.054*** (0.020)	-0.011 (0.018)
Parental ISEI		0.051*** (0.009)	0.011 (0.009)
<i>Parental education (ref: Basic or less)</i>			
Secondary		0.099*** (0.029)	0.077*** (0.027)
Tertiary		0.182*** (0.029)	0.109*** (0.029)
Unknown		-0.043 (0.032)	-0.013 (0.029)
Achievement and ability controls			
Math grade			0.124*** (0.017)
English grade			0.097*** (0.015)
Cognitive ability			0.025*** (0.009)
Language ability			0.026*** (0.009)
Constant	0.715*** (0.038)	0.631*** (0.233)	0.119 (0.223)
Observations	2648	2648	2648
R-squared	0.050	0.135	0.259

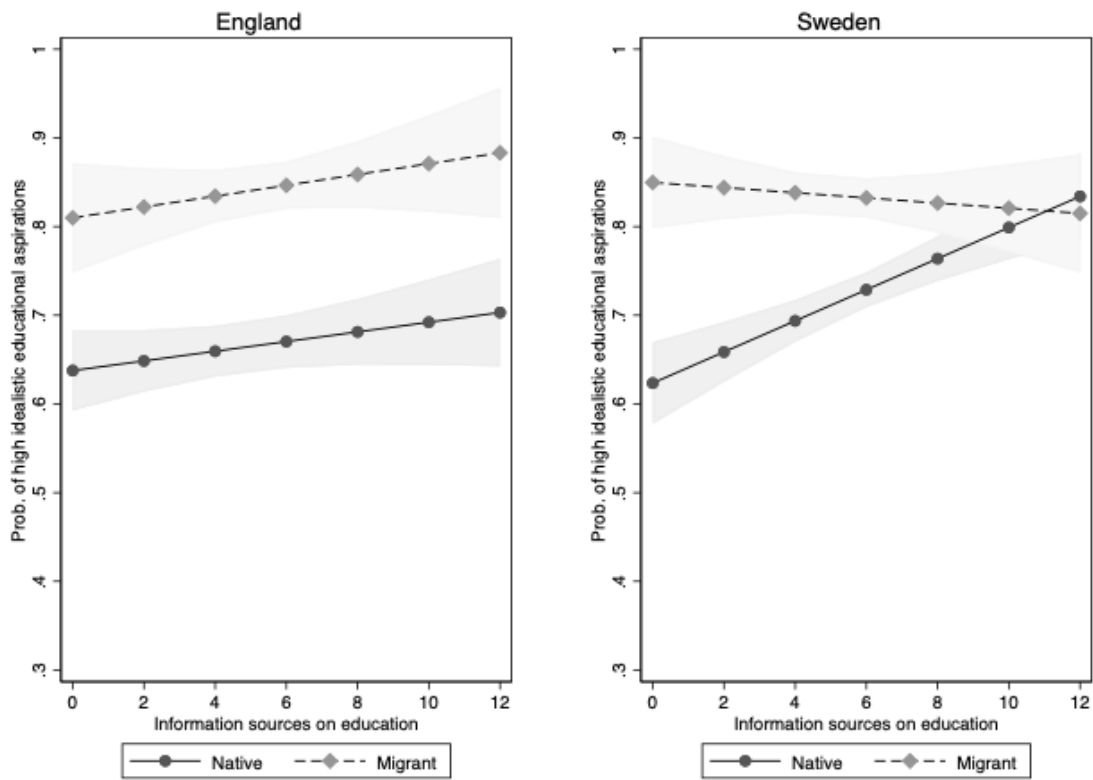
Note: Controls for math and English ability groups and sampling stratum included but not shown. Clustered standard errors in brackets (cluster: schools). Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table B.4: Linear Probability Models for Sweden: Idealistic educational aspirations

	<i>Dep. var.: High idealistic educational aspirations</i>		
	(1)	(2)	(3)
Information sources	0.036*** (0.004)	0.028*** (0.004)	0.018*** (0.004)
Migrant (ref: Native)	0.218*** (0.033)	0.244*** (0.034)	0.233*** (0.036)
Migrant × Information	-0.020*** (0.005)	-0.019*** (0.006)	-0.019*** (0.006)
Socio-demographic controls			
Female (ref: Male)		0.123*** (0.015)	0.108*** (0.014)
Age in wve 1		-0.119*** (0.024)	-0.032 (0.025)
One-parent family (ref: Two-parent)		-0.062*** (0.015)	-0.037** (0.014)
Parental ISEI		0.061*** (0.009)	0.027*** (0.008)
<i>Parental education (ref: Basic or less)</i>			
Secondary		-0.003 (0.031)	-0.015 (0.027)
Tertiary		0.023 (0.031)	0.007 (0.029)
Unknown		-0.082** (0.036)	-0.065** (0.032)
Achievement and ability controls			
Math grade			0.069*** (0.011)
Swedish grade			0.061*** (0.011)
English grade			0.055*** (0.011)
Cognitive ability			0.008 (0.008)
Language ability			0.019** (0.008)
Constant	0.522*** (0.025)	2.178*** (0.338)	0.517 (0.366)
Observations	3658	3658	3658
R-squared	0.046	0.114	0.211

Note: Controls for math, Swedish and English ability groups and sampling stratum included but not shown. Clustered standard errors in brackets (cluster: schools). Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure B.1: Effect of information sources and migration background on the likelihood of holding high idealistic educational aspirations, by country



B.4 Models with detailed generational status variable

Table B.5: Linear Probability Models for England: Detailed generational status variable

	<i>Dep. var.: High realistic educational aspirations</i>		
	(1)	(2)	(3)
Information sources	0.025*** (0.007)	0.016*** (0.006)	0.008* (0.005)
Migration background (ref: None)			
1.5 generation	-0.031 (0.062)	0.006 (0.059)	0.075 (0.058)
Second generation	0.187*** (0.071)	0.175*** (0.058)	0.135*** (0.051)
Interactions			
1.5 generation × Information	0.038*** (0.009)	0.033*** (0.010)	0.021** (0.010)
Second generation × Information	-0.002 (0.011)	0.003 (0.010)	0.003 (0.008)
Socio-demographic controls			
Female (ref: Male)		0.063*** (0.022)	0.046** (0.018)
Age in wave 1		0.011 (0.019)	0.000 (0.016)
One-parent family (ref: Two-parent)		-0.086*** (0.022)	-0.031* (0.018)
Parental ISEI		0.004*** (0.000)	0.001*** (0.000)
<i>Parental education (ref: Basic or less)</i>		0.088***	0.059**
Secondary		(0.031)	(0.029)
Tertiary		0.213*** (0.030)	0.113*** (0.028)
Unknown		-0.048 (0.033)	-0.012 (0.029)
Achievement and ability controls			
Math grade			0.170*** (0.016)
English grade			0.136*** (0.015)
Cognitive ability			0.110 (0.067)
Language ability			0.211*** (0.076)
Constant	0.383*** (0.040)	-0.058 (0.274)	-0.871*** (0.252)
Observations	2648	2648	2648
R-squared	0.050	0.163	0.335

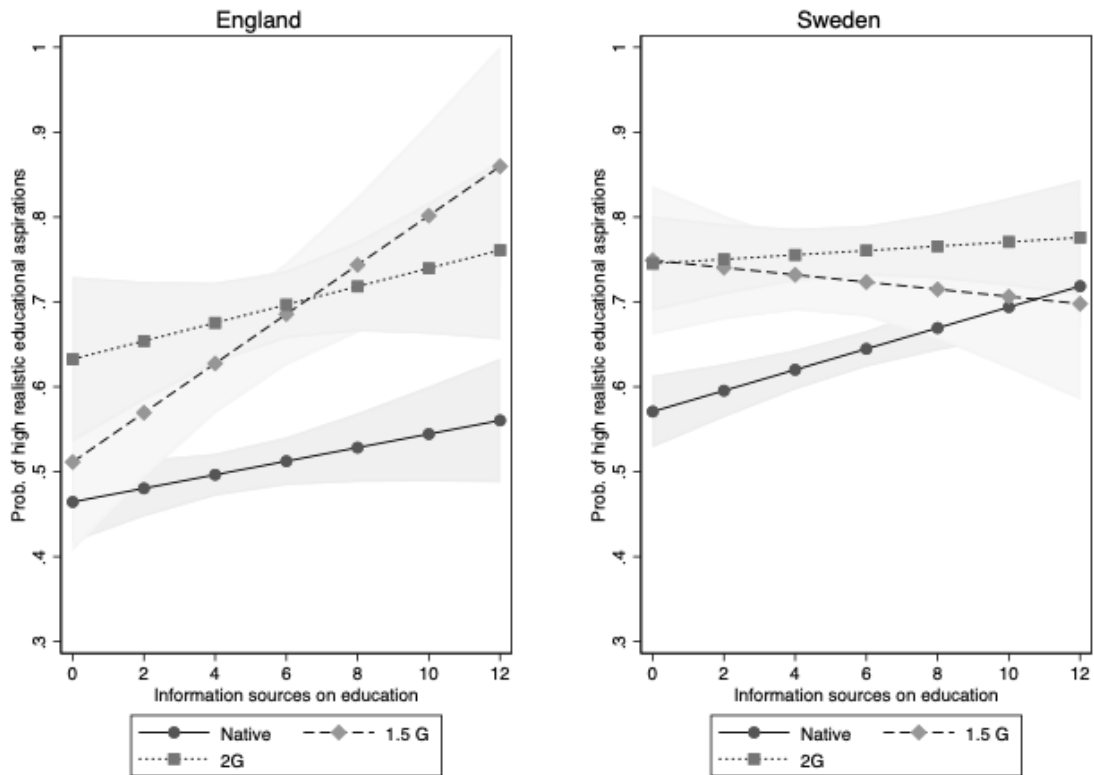
Note: Clustered standard errors in brackets (cluster: schools). Significance level: * p < 0.1, ** p < 0.05, *** p < 0.01.

Table B.6: Linear Probability Models for Sweden: Detailed generational status variable

	<i>Dep. var.: High realistic educational aspirations</i>		
	(1)	(2)	(3)
Information sources	0.033*** (0.004)	0.023*** (0.003)	0.012*** (0.003)
Migration background (ref: None)			
1.5 generation	0.190*** (0.053)	0.257*** (0.048)	0.289*** (0.048)
Second generation	0.182*** (0.039)	0.213*** (0.040)	0.237*** (0.037)
Interactions			
1.5 generation × Information	-0.016* (0.009)	-0.015* (0.009)	-0.017* (0.009)
Second generation × Information	-0.010* (0.006)	-0.008 (0.006)	-0.010* (0.006)
Socio-demographic controls			
Female (ref: Male)		0.133*** (0.017)	0.114*** (0.015)
Age in wave 1		-0.126*** (0.026)	-0.024 (0.026)
One-parent family (ref: Two-parent)		-0.081*** (0.015)	-0.045*** (0.014)
Parental ISEI		0.004*** (0.000)	0.002*** (0.000)
<i>Parental education (ref: Basic or less)</i>			
Secondary		-0.016 (0.037)	-0.034 (0.030)
Tertiary		0.073** (0.036)	0.051* (0.030)
Unknown		-0.072* (0.038)	-0.055* (0.032)
Achievement and ability controls			
Math grade			0.104*** (0.011)
English grade			0.075*** (0.011)
Swedish grade			0.051*** (0.012)
Cognitive ability			0.029 (0.045)
Language ability			0.141** (0.054)
Constant	0.459*** (0.024)	1.961*** (0.363)	0.044 (0.366)
Observations	3653	3653	3653
R-squared	0.040	0.139	0.263

Note: Clustered standard errors in brackets (cluster: schools). Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure B.2: Effect of information sources and migration background on the likelihood of holding high realistic educational aspirations, by country (detailed generational status variable)



Appendix C

Appendix to chapter 4

C.1 Countries of origin of *Aussiedler* in the sample

Aussiedler have diverse geographical origins. Because information on country of origin was not asked in the 2013 German Microcensus, I relied instead on nationality at birth to locate their country of origin. As Table C.1 shows, the vast majority were born with one of the following nationalities: Kazakh, Russian, Polish or Romanian. A significant proportion of the *Aussiedler* were born abroad but have had German citizenship since birth and thus cannot be located geographically. Others indicated having had Soviet citizenship at birth.

Table C.1: Country of birth of *Aussiedler* parents in sample

Country of origin	Mothers	Fathers	Combined	% of <i>Aussiedler</i> total
Kazakhstan	247	279	526	24.49%
Russian Federation	244	219	463	21.55%
Poland	184	181	365	16.99%
Unknown (German citizenship since birth)	146	154	300	13.97%
Romania	74	67	141	6.56%
Soviet Union	53	53	106	4.93%
Other	126	121	247	11.50%
Total	1074	1074	2148	100.00%

Source: Own elaboration, with data from the 2013 German Microcensus (Scientific Use File).

C.2 Distribution of educational attainment in origin country and relative educational attainment

C.2.1 Distribution of educational attainment in Germany and the main countries of origin of immigrants in 1990

1990 is used as a reference year because 1991 is the median year of immigration of the parents of the children in my sample, and the Barro-Lee Educational Attainment Dataset (Barro and Lee, 2011) provides estimates of historical educational attainment in 5-year increments.

Table C.2: Estimates of the distribution of educational attainment of population aged 25 and above in Germany, Turkey and main countries of origin of *Aussiedler* in 1990

	None	Primary	Secondary	Upper Sec.	Tertiary
Turkey	33.3	47.3	8.5	3.8	7.1
Poland	2.0	47.4	43.5	2.4	4.5
Romania	5.4	24.4	63.2	2.23	4.7
Russian Federation	7.7	15.2	43.1	19.8	14.3
Kazakhstan	7.7	29.2	50.7	4.1	8.3
Germany	3.3	47.8	35.9	4.6	8.5

Source: Own calculations, with data from the Barro-Lee Educational Attainment Dataset (Barro and Lee, 2011). The estimates for “upper secondary school” correspond to the percentage of the population who indicated having incomplete tertiary attainment and thus may be underestimated (since not all people with an upper secondary school diploma enroll in tertiary education).

C.2.2 Estimates of relative educational attainment percentile by country of origin

With the information shown in Table C.2, I estimate the position (as percentile) that a person would occupy in the distribution of educational attainment in her or his country of origin. Relative educational attainment represents the proportion of people of the same origin who had a lower educational attainment, plus half the proportion of people with the same educational attainment (Ichou, 2014). The reference year is 1990. The group of reference are adults aged 25 years and older. In contrast with Ichou (2014), I do not distinguish by gender or age cohort.

An example of how the relative education estimates are to be interpreted is as follows: In 1990, a person in Russia with secondary education would have been at the 45th percentile of the educational distribution, but a person in Turkey with the same level of education would have had more education than 85% of the population at the time.

Table C.3: Estimates of relative educational attainment in the country of origin, for each level of absolute educational attainment

	None	Primary	Secondary	Upper Sec.	Tertiary
Turkey	16.6	56.9	84.9	91.0	96.5
Poland	1.0	25.8	71.3	94.2	97.7
Romania	2.7	17.6	61.4	94.1	97.6
Russian Federation	3.9	15.3	44.5	75.9	92.9
Kazakhstan	3.9	22.3	62.3	89.7	95.9
Germany	1.6	27.1	69.0	89.2	95.8

Source: Own calculations, with data from the Barro-Lee Educational Attainment Dataset (Barro and Lee, 2011), adapting the methodology of Ichou (2014).

C.3 Paternal education and occupational status

Table C.4 shows the cross-tabulation of educational attainment and occupational status of the fathers of children in the sample. The results indicate that immigrants are less likely to perform jobs commensurate with their educational attainment. For instance, 44% of Turks with higher education are manual workers or are inactive, while this is only the case for 3% of natives.

Table C.4: Paternal occupation, by level of paternal educational attainment and ethnicity

Education	Ethnic origin	Inactive	Worker	Independent	Employee
None	Native	33%	47%	9%	11%
	Aussiedler	16%	71%	6%	6%
	Turkish	36%	48%	7%	9%
	Other	35%	39%	6%	20%
Basic	Native	7%	40%	14%	38%
	Aussiedler	11%	66%	5%	19%
	Turkish	17%	56%	9%	18%
	Other	18%	46%	11%	24%
Middle sec.	Native	5%	28%	15%	52%
	Aussiedler	4%	64%	6%	25%
	Turkish	10%	53%	9%	28%
	Other	11%	36%	16%	37%
Upper sec.	Native	3%	6%	23%	68%
	Aussiedler	7%	40%	10%	43%
	Turkish	13%	38%	17%	32%
	Other	17%	29%	16%	37%
Tertiary	Native	2%	1%	21%	76%
	Aussiedler	11%	18%	21%	50%
	Turkish	15%	29%	17%	39%
	Other	12%	11%	21%	57%

Source: Own elaboration, with data from the Scientific Use File of the 2013 German Microcensus (Forschungsdatenzentren, 2013). The category “employee” includes civil servants. Percentages add to 100% row-wise.

C.4 Analysis of Turkish–*Aussiedler* differences in the transmission of education

In order to assess whether the transmission of education is stronger in *Aussiedler* families than in Turkish ones, I re-estimate Model 3 on a subsample of only these two groups. Now *Aussiedler* are the reference group. The results are shown in Table C.5. The interaction terms of maternal and paternal education with ethnicity are not significant.

Table C.5: Linear Probability Models on subsample of Turkish and *Aussiedler* children

	<i>Dependent variable:</i>
	Probability of <i>Gymnasium</i>
<i>Ethnicity (ref: Aussiedler)</i>	
Turkish	0.044 (0.060)
Mother's education	0.075*** (0.016)
Father's education	0.057*** (0.016)
<i>Mother's occupation (ref: Not employed)</i>	
Worker	−0.023 (0.031)
Self-employed	0.024 (0.044)
Employee	0.015 (0.036)
<i>Father's occupation (ref: Not employed)</i>	
Worker	0.012 (0.024)
Self-employed	0.106* (0.060)
Employee	0.080*** (0.027)
Receive transfers	0.023 (0.029)
<i>Interactions</i>	
Mother's education × Turkish	−0.010 (0.024)
Father's education × Turkish	−0.003 (0.022)
Constant	−0.200** (0.097)
Controlling for age	Yes
Controlling for gender	Yes
Controlling for siblings	Yes
Observations	2160
R ²	0.106

Note: Table created with R package *Stargazer* (Hlavac, 2018).
Standard errors in parentheses.
Significance level: *p<0.1; **p<0.05; ***p<0.01.

C.5 Effect of age of immigration on educational mobility

I re-estimate Model 3 from Table 4.2 and add a dichotomous variable of age of immigration of each parent (before or after 20 years of age) and its interaction with parental education.

Table C.6: Linear Probability Models on subsample of immigrant-origin children

	<i>Dependent variable:</i>
	Transition to Gymnasium
<i>Ethnicity (ref: Aussiedler)</i>	
Turkish	0.033 (0.022)
Other	0.030* (0.018)
Mother's education	0.139*** (0.019)
Father's education	0.067*** (0.019)
<i>Mother's age at migration (ref: 15 or younger)</i>	
16 to 25	0.146*** (0.047)
26 and older	0.064 (0.056)
<i>Father's age at migration (ref: 15 or younger)</i>	
16 to 25	0.019 (0.051)
26 and older	0.078 (0.055)
<i>Interactions</i>	
Mother's education. × Mother migration age 16-25	-0.080*** (0.020)
Mother's education. × Mother migration age 26+	-0.046** (0.022)
Father's education. × Father migration age 16-25	-0.006 (0.021)
Father's education. × Father migration age 26+	-0.023 (0.021)
Constant	-0.433*** (0.087)
Controlling for age	Yes
Controlling for gender	Yes
Controlling for siblings	Yes
Controlling for parental occupation	Yes
Controlling for transfers	Yes
Observations	3722
R ²	0.145

Note: Table created with R package *Stargazer* (Hlavac, 2018).

Standard errors in parentheses.

Significance level: *p<0.1; **p<0.05; ***p<0.01.

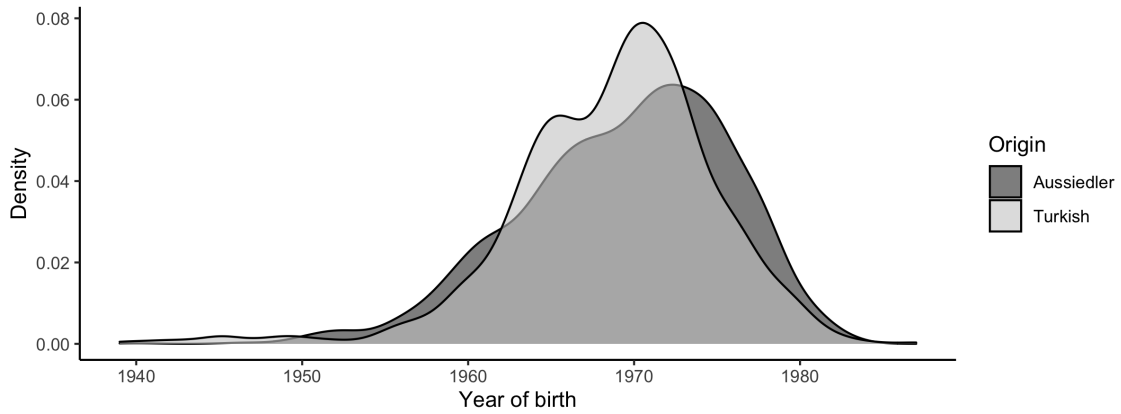
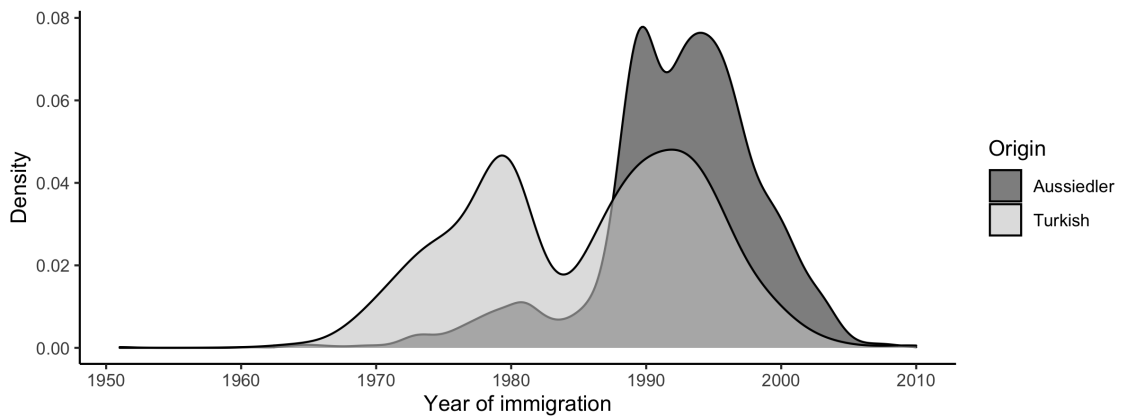
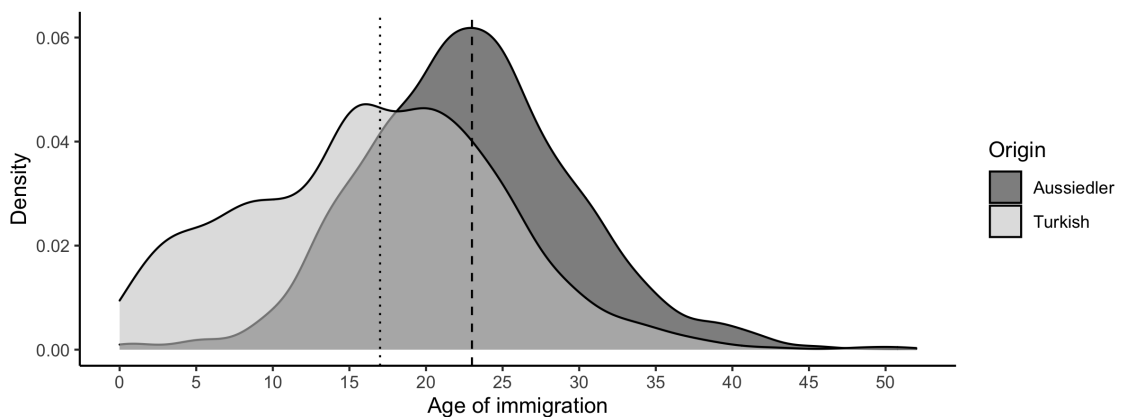
C.6 Distribution of birth year and age and year of immigration of *Aussiedler* and Turkish parents

My analysis sample includes youth who were between 12 and 18 years old in 2013, implying dates of birth between 1995 and 2001. It is therefore not surprising that, as [Figure C.1](#) shows, Turkish and *Aussiedler* parents of children in the analysis sample were born overwhelmingly in the 1960s and 1970s. Differences in the distribution of birth year between these groups are very small: The median years of birth of Turkish mothers and fathers in the sample were 1970 and 1967, respectively, while for *Aussiedler* it was 1968 for fathers and 1971 for mothers.

While they were born around the same years, the Turkish and *Aussiedler* parents in my sample display very different patterns when it comes to the timing of their immigration to Germany (and hence their age of immigration). This can be seen in [Figure C.2](#), which shows the distribution of the year of immigration for the two groups, as well as in [Figure C.3](#), which shows the distribution by age of immigration. The median age of immigration was 17 for Turks and 23 for *Aussiedler*.

These differences mirror the different chronologies of Turkish and *Aussiedler* immigration flows. A large share of Turkish parents in the sample probably immigrated to Germany in the 1970s on family reunification grounds, as the children of so-called guest workers. A second large wave of Turkish immigration, in the 1990s, coincides with the escalation of the Turkish–Kurdish conflict, which provoked large flows of asylum seekers into Germany (Sirkeci et al., 2012). In contrast, the *Aussiedler* immigrated mostly in the late 1980s (from Poland and Romania) and throughout the 1990s (from the former Soviet Union) and were considerably older at the time of migration than Turks.

One implication of the different patterns of immigration of Turkish and *Aussiedler* parents is that Turkish parents have been, on average, in Germany significantly longer and thus may have had more time to accumulate country-specific resources (i.e., language skills, knowledge about the German education system, social contacts). At the same time, a significant proportion of them may have attended school (partially, at least) in Germany. Another important implication is that for many Turkish immigrant parents in Germany, the decision to immigrate to Germany was not theirs but rather that of their parents.

Figure C.1: Density plot of year of birth of Turkish and *Aussiedler* parentsFigure C.2: Density plot of year of immigration of Turkish and *Aussiedler* parentsFigure C.3: Density plot of age of immigration of Turkish and *Aussiedler* parents

Note: The dotted line indicates the median age of immigration of Turkish parents (17), while the dashed line indicates the median age of immigration of *Aussiedler* parents (23).

Appendix D

List of papers

Paper 1 appears as Chapter 2 in this dissertation

“In between natives and migrants? The educational attainment of mixed and transnational children in England, Germany, the Netherlands and Sweden”

Paper 2 appears as Chapter 3 in this dissertation

“Do differences in information sources contribute to immigrants’ high educational aspirations? Evidence from Sweden and England”

Paper 3 appears as Chapter 4 in this dissertation

“Is parental educational attainment less important for the education of the children of immigrants? Evidence from Germany”