



Explaining differences in decision-relevant educational knowledge between parents with and without an immigrant background in Germany

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ABSTRACT

Although extant research persistently highlights the importance of information for educational decision-making, better understanding the existence of, and the underlying reasons for, informational differences between immigrant and non-immigrant parents is important. This study examines the differences in the level of information between immigrant and non-immigrant parents of third graders just before they make probably their most important educational decision in the German education system. We draw on approaches highlighting the importance of resources and parents' acculturation to explain the informational differences between immigrant and non-immigrant parents. Employing linear regression and probability models on data from the National Educational Panel Study in Germany (N = 3961), we demonstrate that all immigrant groups, particularly those from Turkey, the former Yugoslavia, the Middle East, and northern Africa, are significantly less informed than parents without own immigration experience. This result is evident both in our overall test and in various domains of the test, which analyze different aspects of information relevant to parents' educational decision-making. Furthermore, different endowments with social and cultural capital largely explain the informational differences between parents with and without an immigrant background. In contrast, different acculturation strategies are almost negligible in explaining the differences in the level of information. Our findings provide important insights for research on migration-related inequalities in educational decision-making and for developing interventions to improve migrant parents' ability to make well-informed and thus intended educational decisions.

1. Introduction

Education-related information affects the participation of immigrant families in education and thus their structural integration into the host society (Diehl et al., 2016). Information is critical at the junctures of an education system because families make educational choices at these institutionally defined transitions. Depending on the education system, families may encounter different school forms that vary in terms of admission criteria, performance requirements, length of education, and school-leaving qualifications (Maaz et al., 2008).⁴ Because school-leaving qualifications determine students' future education and training opportunities, immigrants' educational success and associated structural integration in the host society depend on a sequence of more

or less informed educational decisions (Diehl et al., 2016).

Because information is essential for complex educational decision-making, it plays a vital role in theory and empirics. Theoretically, information can be assumed to influence the subjective perception of the costs, returns, and probabilities of success of further education and is thus directly related to decision behavior (Erikson & Jonsson, 1996). Empirical research has frequently confirmed this direct relationship between information and behavior. For example, various studies demonstrate the effects of information on school retention (Forster & van de Werfhorst, 2019) or college enrollment (for reviews, see Kretschmer, 2019; Peter & Zambre, 2017). Moreover, evidence suggests promising results for reducing social disparities in tertiary enrollment by combining information with guidance programs (Herbaut & Geven,

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⁴ Highly stratified education systems, such as the German education system, are by no means exceptional. For example, according to Buchmann and Park (2009, 246), 18 of the 40 countries participating in the Programme for International Student Assessment had stratified systems.

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2020). Therefore, theoretical and empirical evidence confirms the importance of information for the decision-making behavior of families.

So far, few studies have explored whether differences in education-related information exist between parents who immigrated from different countries/regions of origin and parents without an immigrant background as well as how these differences can be explained. Qualitative research from the United States demonstrates that immigrant Hispanic parents lack information about the fact that different academic tracks result in different educational opportunities, that college access depends on specific coursework, and that financial aid opportunities exist for attending college (Goldenberg et al., 2001, p. 577). Tornatzky et al. (2002) confirm this finding of low informedness among Hispanic parents in Chicago, New York, and Los Angeles, United States, with a mixed-methods study. They show that low informedness about the prerequisites for attending college is particularly prevalent among first-generation immigrant parents with low socio-economic status. Further, they find language barriers as one of the main hurdles for Hispanic immigrants when searching for information. Whereas the works of Goldenberg et al. (2001) and Tornatzky et al. (2002) only consider Hispanic parents, Grodsky and Jones (2007) find that parents in all the groups they studied (black, Hispanic, and other) are less likely than white parents to have information about the expected tuition fees of attending college. Parents' sociodemographic characteristics, such as their education and spoken language, may account for some of the existing informational differences among the parents of different groups of origin. Relikowski et al., (2012, p. 118) confirm the low informedness among parents of Turkish origin who have not experienced the education system in Germany in the qualitative part of their mixed-methods study. Kristen (2008) supports this finding with quantitative data from a sample of parents of primary school students from the city of Essen in Germany. She also shows that the relatively lower educational level of parents of Turkish origin than parents without an immigrant background explains some of the existing informational differences. Moreover, parents being proficient in German and identifying themselves with Germany is advantageous (Kristen, 2008, 505). In probably the most comprehensive study to date, Kretschmer (2019) shows that in a knowledge test comprising only six questions about the German education system, immigrant parents from Turkey and the former Union of Soviet Socialist Republics (former USSR) correctly answered on average three questions, whereas parents without an immigrant background correctly answered five. However, Kretschmer (2019, p. 293) only partially explains this immigrant-native information gap, which he believes points to additional explanatory factors and limitations of the study. First, the coverage of the survey was limited; it included only three of the sixteen German states and few immigrant groups (Turkey and former USSR). Second, the test was exclusively based on questions central to the perception of returns to education. By contrast, factors influencing the perception of costs and success probabilities, such as the length of education and the existing admission criteria at the transition from primary to secondary education in Germany, were not considered. The latter is a significant limitation of the study, as in the German education system, arguably the most important educational decision is made at the transition from primary to secondary school (Maaz et al., 2008; see also Section 2.2); here, families weigh the costs, returns, and success probabilities of further education (Stocké, 2007). Therefore, further research is needed to explore and explain the differences in knowledge between parents who immigrated from different countries/regions of origin and parents without an immigrant background. Exploring whether these knowledge differences might be more pronounced in some decision-relevant areas, such as the costs or returns of further education, than in others is essential for broadening our understanding of informational differences.

Thus, this study aims to determine whether an immigrant-native gap in parents' overall and domain-specific information exists and how this gap can be explained. To this end, we employ the German National Educational Panel Study (NEPS), which provides a unique dataset for

addressing our questions and overcoming the limitations of previous research. First, our results are not limited to a narrow coverage of only a few German states and immigrant groups. Second, we draw on a more nuanced measure of information and thus better represent parents' (i) overall level of information and (ii) domain-specific information, which is considered theoretically and empirically relevant for weighting costs, returns, and success probabilities in parents' educational decision-making. Moreover, we can include additional explanatory factors for the expected immigrant-native information gap. By addressing the limitations of previous studies and realizing our objectives, this study will equip researchers and practitioners with a more comprehensive understanding of the immigrant-native information gap, thus setting the stage for developing early interventions aimed at enhancing immigrant parents' capability for informed decision-making.

The remainder of this paper is organized as follows. Section 2 presents background information on immigration to Germany, explains the critical aspects of the German education system, and links these to the factors considered theoretically relevant for informed educational decision-making, such as the returns, costs, and success probabilities of further education. Next, we describe the corresponding determinants of informed educational decision-making using a general resource framework, outline related research findings, and derive our hypotheses. Sections 3 and 4 present our data and study findings, respectively. Finally, the findings are discussed and the study is concluded with recommendations for future research in Section 5.

2. Background

2.1. Immigration to Germany

Different regions of origin that are related to the types of migration have shaped the population in Germany until 2013, when the study data were collected, and thus the composition of Germany's school population (Bundesamt für Migration und Flüchtlinge, 2020, pp. 60–133). In 2013, around one-fifth of the population in Germany had an immigrant background (owing to own immigration experiences or that of their parents). Among those under 10 years of age—that is, the age group attending primary school, 35% had an immigrant background according to the previous definition (Autorengruppe Bildungsberichterstattung, 2016, p. 161).⁵ However, despite their shared immigration experiences, these students are not a homogeneous group, as differences based on the regions of origin, which are related to the type of migration, are evident. For example, regionally, immigrant groups from Turkey, former USSR, former Socialist Federal Republic of Yugoslavia (former SFRY), and Poland dominate (Gresch, 2012, p. 26). Based on the type of migration, we differentiate between labor migration, family reunification, ethnic German immigrants, and humanitarian migration (Olczyk et al., 2016). Labor migration to Germany began in the mid-1950s from Italy and later from Spain, Greece, Turkey, Morocco, Portugal, Tunisia, and the former SFRY to counteract its manual labor shortage. Residence permits limited to 1–3 years initially made immigration unattractive for families. At the beginning of the 1970s, however, this limitation changed to allow an extension of the residence permits. Thereupon, family reunification increased, culminating in a temporary stop to the recruitment of foreign workers in 1973 (Bade & Oltmer, 2004, p. 73). Humanitarian migration and family reunification gained further importance toward the end of the 1980s partly owing to the conflicts in southeastern Turkey and the war in the former SFRY. Although the immigration of ethnic Germans from eastern Europe, such as Poland, was dominant before the end of the Cold War, this changed with the end of the Cold War and the increasing

⁵ Note that we only include a sub-population of the immigrant group mentioned in the Education Report: interviewed parents with their own immigration experience. Thus, the proportion of parents with an immigrant background is lower than 35% in our sample.

immigration of ethnic Germans from the former USSR states. In the 1990 s, more restrictive legislation limited immigration from countries outside the European Union. Numerous recent legal regulations, such as the 2004 Immigration Act, reflect Germany’s political self-image toward becoming an immigration country (Autorengruppe Bildungsberichterstattung, 2016, p. 161). One of the aims of the 2004 Immigration Act was to regulate immigration to Germany from an economic policy perspective, as the focus was on the immigration of persons with high- and medium-level qualifications (Storr, 2005). However, despite these developments, migrants in central European societies, such as Germany, share a distinct characteristic. Unlike in traditional immigration societies, their immigration is less affected by economic resources. These migrants usually settle without initial economic resources and instead rely on their social or cultural capital for integration (Nauck, 2011, p. 75). Social and cultural capital are presumed to be critical determinants of parents’ informedness and, thus, their children’s educational success.

2.2. Informed decision-making in a stratified system

Information about the country’s education system is a central component of families’ educational decision-making, as it enables or disables courses of action (Esser, 1999; Gottfredson, 2002). Information is particularly relevant for decision-making in Germany, which has 16 education systems at the state level. Here, families must make arguably the most critical decision about the further educational career of their children by the end of primary school (Maaz et al., 2008). Because the duration of primary school varies from state to state, this decision is made either in Grade 4 or 6 (see Fig. 1, letter A). Therefore, to evaluate the educational pathways that follow primary school, families need to be informed about the career prospects associated with each of the alternatives. In addition, secondary schools differ in the length of education between five or six years at the general secondary school “Hauptschule,” six years at the intermediate secondary school “Realschule,” and eight or nine years at the academic secondary school “Gymnasium,” presumably affecting families’ perceptions of the direct and indirect costs of

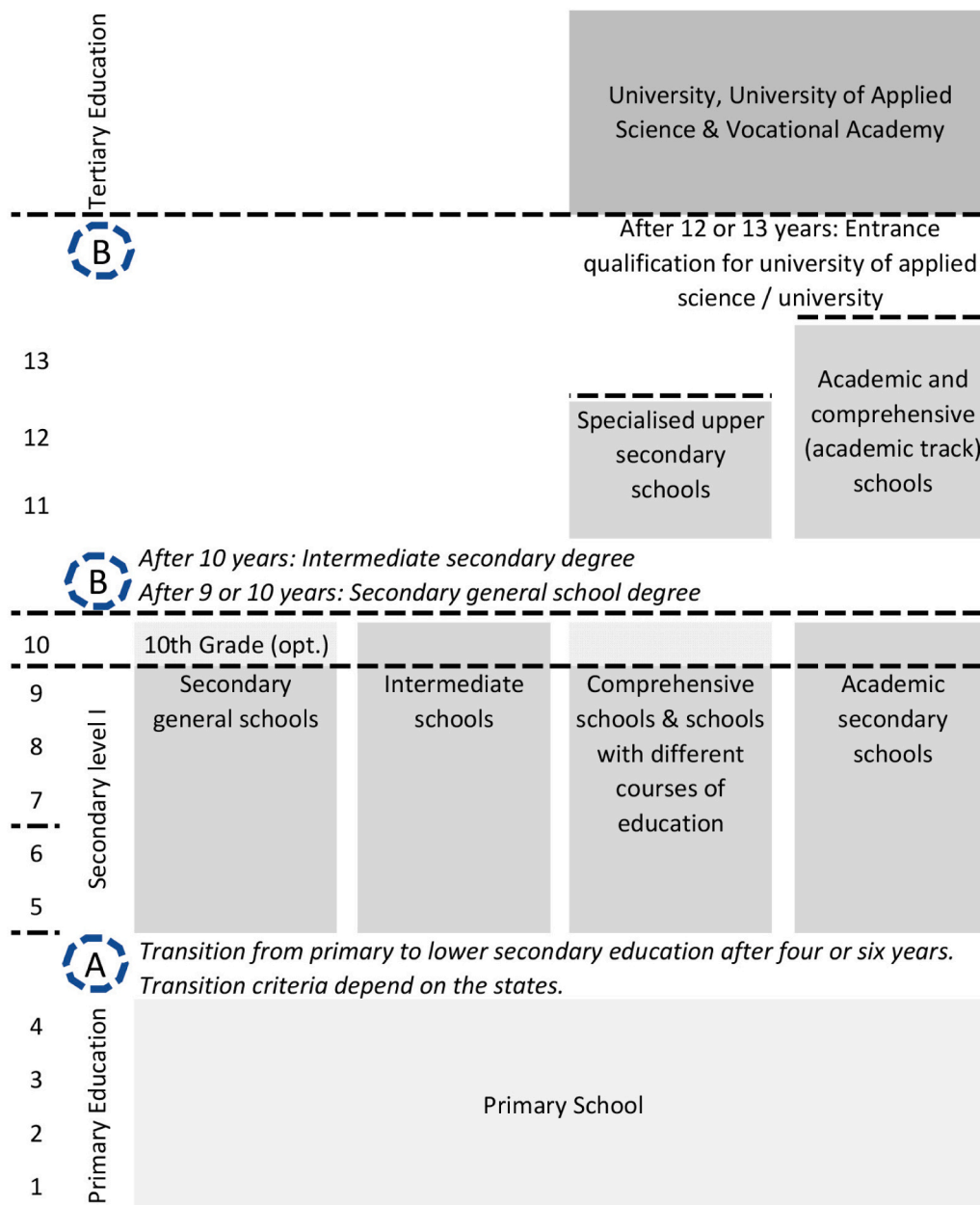


Fig. 1. The German Education System (simplified version) – for further information see Kultusminister Konferenz (2017) and Eurydice (2022).

education (Stocké, 2007) (see Fig. 1, letter B). In turn, students' success probabilities depend on the families' knowledge of existing legal regulations governing the transition from primary to secondary school, such as the (non)binding nature of teachers' recommendations (Olczyk & Will, 2019; Stocké, 2007) (see Fig. 1, letter A). Compared with families with an immigrant background, higher class families without an immigrant background can be assumed to be relatively better equipped to navigate through the various decision points within the German education system, as the parents themselves, their friends, and their relatives successfully did this before (Erikson & Jonsson, 1996, p. 22). Although few studies show that immigrant parents have less decision-relevant information than non-immigrant parents in Germany (Kretschmer, 2019; Kristen, 2008; Olczyk & Will, 2019), we know little about the overall and domain-specific (regarding the returns, costs, and success probabilities) informational differences by group of origin and the factors related to parents' informedness.

2.3. Determinants of information

Acquiring knowledge about the school system is a key facet of cultural competence, significantly shaping strategic decision-making in education (Erikson & Jonsson, 1996, p. 22). In the German context, where decisions about children's education are made relatively early and hold substantial predictive power for future educational achievements (Maaz et al., 2008), the role of informed decision-making is paramount. Such decision-making heavily relies on parents' understanding of educational opportunities, the time and costs associated with specific educational degrees, and the entry requirements determining their children's chances of success in school. However, this strategic educational knowledge cannot be universally applied owing to contextual variations, much like the language skills acquired in the country of origin (Friedberg, 2000).

Adopting a general resource perspective (Bourdieu, 1986), we argue that families possess different resources relevant to their educational information. Bourdieu identifies three convertible resources: cultural, social, and economic capital. Whereas cultural capital describes familiarity with the prevailing culture in society (Jæger & Breen, 2016), social capital comprises resources that are based on belonging to networks or social relationships. Economic capital refers to all resources that can be directly converted into monetary assets, such as income and property (Bourdieu, 1986). Unlike in traditional immigration countries, in Germany, economic capital only plays a subordinate role in immigration, as immigrants typically settle without economic capital (see Section 2.1 and Nauck, 2011, p. 75). Thus, cultural and social capital, in particular, may prove to be vital for explaining the differences in informedness, which we discuss in more detail below (Olczyk & Will, 2019).

Bourdieu's concept of cultural capital comprises three main forms: incorporated, objectified, and institutionalized capital. Incorporated cultural capital refers to the cultural knowledge, skills, and habits individuals have internalized throughout their socialization. Objectified cultural capital refers to the material objects or cultural goods that hold cultural value, such as books or art. Institutionalized cultural capital involves recognizing and validating an individual's cultural capital through formal institutions, such as educational qualifications or certificates. These forms shape an individual's ability to succeed and navigate social spaces, such as educational systems (Bourdieu, 1986).

The knowledge internalized by parents through their own experience about how institutions work or, as Lareau (2015, p. 6) puts it, "the knowledge of the 'rules of the game'" is closely linked to the parents' social status. Middle-class parents are more familiar with educational institutions than working-class parents (Forster & Werfhorst, 2019, p. 2)—possibly because they have higher educational qualifications on average (Erikson & Jonsson, 1996, p. 22). Various studies have shown that the level of education achieved by immigrants living in Germany varies according to country or region of origin (Acar, 2018; Gries et al., 2022; Spörlein et al., 2020). For example, Gries et al. (2022)

demonstrate with data from the German Socio-Economic Panel (SOEP) that immigrants from northern and western Europe have, on average, the highest and those from Turkey have the lowest educational attainment in terms of years and level of education. In between, in order from high to low educational attainment, countries and regions such as Poland, others, the former USSR, and the Middle East and North Africa (ME&NA) can be found (Gries et al., 2022, p. 834). These findings are consistent with those of Acar (2018). Acar (2018) demonstrates with data from the National Educational Panel Study for parents of Grade 9 students that education, occupational status, and the presence of cultural assets such as books in the home are stratified across different immigration groups. Based on the extent of their resources, the immigrant groups can be arranged in the following order from low to high: Turkey, former Yugoslavia, former USSR, southern Europe, Poland, eastern Europe, and northern and western Europe (Acar, 2018, p. 12). Despite the differences between the various groups, note that parents with an immigrant background may have learned different "rules of the game" as part of their socialization in their country of origin (Relikowski et al., 2012). Parents with immigrant backgrounds may have an advantage in understanding the German education system if they completed part of their education in Germany or made educational decisions for older siblings, gaining initial familiarity with the system. However, familiarity with the German education system is only one area in which parents with and without an immigrant background may differ owing to their resources.

In international comparative studies, such as the Program for the International Assessment of Adult Competencies (PIAAC), variations in information processing skills among adults in participating countries have been observed (Rammstedt, 2013). Nevertheless, there is consistent correlation between the duration of education and the quality of information-seeking and processing skills (Rammstedt, 2013). Given that the average education level varies by country of origin or region, it is plausible to infer varying levels of competence in searching for and processing information.

PIAAC data further indicate a close relationship between proficiency in the lingua franca, essential competencies assessed in the PIAAC, and the information processing skills of parents with immigrant backgrounds (Rammstedt, 2013). The utilization and mastery of the lingua franca, coupled with identification with the host country, can be viewed as integral aspects of immigrant acculturation (Berry, 1997). Immigrants who strongly identify with the host country, frequently engage in the lingua franca, and possess higher language skills in it are likely to enhance their chances of accessing decision-relevant information about the German education system (Kretschmer, 2019; Kristen, 2008). Note, however, that immigrant acculturation is not only determined by immigrants themselves but also affected by the host society.

Research highlights the diverse levels of immigrants' identification with Germany and their proficiency in the language of the host country. Gostomski (2010) finds a strong connection to Germany among individuals from Turkey, the former Yugoslavia, Italy, Greece, and Poland, with the former Yugoslavians showing the highest identification and Polish immigrants the lowest. Concerning German language proficiency, Gostomski's (2010, p. 109) findings reveal variations among these groups, with Turkish immigrants reporting the lowest confidence whereas other groups assessing their language skills as relatively high. Haug (2008) supports these findings using SOEP data, indicating that less than 50% of Turkish immigrants view their German language skills as good or very good, whereas approximately 80% of ethnic German repatriates and the broader category of "others" rate their language skills positively.

Bourdieu's (1986) concept of social capital refers to the actual or potential resources that people can access owing to their networks or social relationships with other people (Lareau, 2015, p.6). Put simply, it includes supportive resources such as information that people obtain through their connections with others (Lin, 2001). The relevance of social capital for the educational informedness of immigrant families

primarily depends on the characteristics of their social relationships, such as the strength of the social relationship and the contact persons' experiences with the host country's education system (Nauck, 2011). Accordingly, differentiating between intraethnic contacts—that is, contacts related to one's group of origin—and interethnic contacts—that is, contacts related to other groups of origin—is recommended (Putnam, 2000). According to Lin (2001), weak social relationships with contacts who have experience with the host country's education system increase the likelihood that immigrant families will receive educationally relevant, non-redundant information. This tends to be the case with interethnic contacts, particularly if these persons are highly educated and thus inhere the necessary strategic knowledge (Erikson & Jonsson, 1996, p. 22). Strong intraethnic social relationships with people who have no experience with the education system of the host country, in contrast, are unlikely to provide new and thus relevant information for choosing the correct secondary school owing to the existing redundancy of information (Nauck, 2011, p. 76). Thus, weak, presumably interethnic social relationships with people who have had experience with the education system in the host country are more relevant for immigrant families' strategic knowledge of the education system.

The literature also shows differences between immigrant groups regarding social capital. For example, Kretschmer (2019) provides evidence for differences in the number of social contacts with Germans with a university degree between parents without immigrant backgrounds and those from Turkey and the former USSR. Parents without an immigrant background have the highest number of contacts (almost four), followed by parents from the former USSR and Turkey, with fewer than one contact on average. Intraethnic partnerships are more common among immigrants from Turkey, southern Europe, and the former Yugoslavia, whereas immigrants from Poland are most likely to have interethnic partnerships (Gostomski, 2010, p. 181). Accordingly, differences exist according to the country where the partner acquired the highest educational qualification, whereby the partnerships are overall characterized by high educational homogeneity (Gostomski, 2010, p. 184).

In sum, the findings on the information-relevant cultural and social capital of the various immigrant groups indicate that we might expect group-specific differences in the level of information between parents with and without immigrant backgrounds and between those from different countries and regions of origin.

2.4. Hypotheses

Our research aims to explore the differences in the overall and domain-specific (regarding the returns, costs, and success probabilities of education) information between parents with and without immigrant backgrounds. First, we hypothesize that parents with immigrant backgrounds have less information on average than parents without immigrant backgrounds. Second, we expect group-specific differences in the level of information owing to the differences between the groups who immigrated to Germany. In particular, we expect immigrants from Turkey, the former Yugoslavia, and the ME&NA states to have the lowest level of information, whereas immigrants from northern and western Europe are expected to score closest to parents without an immigrant background; all other groups of origin would fall between these. Third, we speculate that family resources, such as social and cultural capital, and the accompanying acculturation strategies of parents are theoretically related to their educational informedness. Fourth, we hypothesize that the informational differences between the respective groups of origin should be mainly explained by their different endowments with information-relevant capital and the accompanying acculturation strategies. Finally, we expect the group differences we hypothesized to be present in both overall and domain-specific (regarding the returns, costs, and success probabilities of education) parental knowledge.

3. Data and methods

3.1. Data

This study uses data from the German NEPS (NEPS Network, 2022).⁶ With starting cohort (SC) 2, data of pupils and their parents before the transition from primary to secondary education are available for Germany. The NEPS is well suited for addressing our research questions, as it provides data on various aspects of informedness relevant for the assessment of the returns, costs, and success probabilities of further education by parents (Olczyk & Will, 2019). Moreover, it offers rich data on relevant explanatory factors such as the social and cultural resources available to parents (Stocké et al., 2019). It also allows differentiated analyses based on migration background (Olczyk et al., 2014). Pupil's data are obtained from structured written questionnaires and competence measurements, and parents' data are obtained from computer-assisted telephone interviews. Information from teachers is also available. We utilized data from waves 3 (Grade 1, Spring 2013) to 7 (Grade 5, Winter 2016/2017) for our analysis.

3.2. Measures

We measure parents' educational informedness using several distinct measures that capture their overall educational knowledge and their informedness on three decision-relevant parameters: returns, costs, and success probabilities of further education (for sample items, see Table A1 in the Supplemental Appendix and Olczyk & Will, 2019). Analogous to Kretschmer (2019), we capture information on returns via parents' knowledge of the dual education system, the university of applied sciences, and the vocational degrees required for a selection of occupations (wave 7). Although wave 7 follows the education decision, we assume that respondents did not have more information at previous time points. Accordingly, this should be a conservative measure for capturing the informational differences between parents with and without immigrant background. In addition, the questions about parents' informedness on the length of general secondary, intermediate, and academic secondary schooling in wave 5 (Grade 3) are well suited to capture their knowledge about the costs of education, as direct and indirect expenses increase with the length of schooling. Finally, we consider parents' knowledge of the transition regulations in their federal state, such as the (non)binding nature of teacher recommendations and the potentially applicable grade criteria (wave 5), as relevant for estimating the probability that the student will complete a given degree.

We capture the migration backgrounds of the interviewed parents via country of birth (Olczyk et al., 2014) and differentiate between the following countries/regions of origin: Germany, Turkey, the former USSR, the former SFRY, and Poland as well as the regions of northern and western Europe; southern, central, and eastern Europe; the Middle East and Northern Africa; and a group "Others" comprising all other countries of birth.

We capture the biography of the interviewed parents by their education, and social class. We measure their education and thus their institutionalized cultural capital using the Comparative Analysis of Social Mobility in Industrial Nations (CASMIN) (König et al., 1988) scale with a total of four categories: maximum general secondary education with vocational qualification (CASMIN 1a, 1b, 1c), intermediate secondary education with/without vocational qualification (CASMIN 2a, 2b), academic secondary education with or without vocational qualification (CASMIN 2c_gen, 2c_voc), and tertiary education (CASMIN 3a, 3b). We account for social class by the classification proposed by Erikson et al. (1979). Further, we distinguish between a working class (EGP IIIb,

⁶ This study uses data from the NEPS (see Blossfeld & Roßbach, 2019). The NEPS is conducted by the Leibniz Institute for Educational Trajectories (LifBi, Germany) in cooperation with a nationwide network.

VI, VIIa, VIIb), mixed class (EGP IIIa, IVabc, V), and service class (EGP I, II).

The existing experience with the German education system in the household is measured via three variables: as a proxy for parents' experience with the education system, we use a variable that indicates whether the child has siblings without secondary school, with non-academic secondary school, or with academic secondary school experience. Furthermore, we separately consider whether the interviewed parent is single or lives with a partner who acquired his or her highest educational qualification abroad or in Germany.

As weak social relations are particularly important for transferring new information, we draw on the position generator as a measure of social capital, which is recommended in the literature for capturing weak social relations (wave 3) (Lin, 2001; Nauck, 2011). Respondents indicate for a total of 13 different occupations (nurse, engineer, warehouse worker, social worker, salesperson, police officer, physician, banker, automobile mechanic, lawyer, optician, translator, and teacher) whether they know a person in one of these occupations and if so, their or their parents' country of origin. Because we expect educationally relevant, non-redundant information mainly from highly educated persons who have experienced the host country's education system, we consider the share of persons with academic background (engineer, social worker, physician, lawyer, and teacher) from Germany in the network of the interviewed parent. This number ranges between 0 (when the parent does not know any person with academic background from Germany) and 1 (when the parent knows up to five different persons from Germany who work as engineers, social workers, physicians, lawyers, and/or teachers).

We also measure the number of books in the household to capture the objectified cultural capital available in the family (wave 3).

We include three latent items to assess parents' acculturation: the subjective linguistic competence of the interviewed parent in German, the interaction language in the household, and their identification with Germany. Parents reported their subjective linguistic competence in German in wave 4 (comprehension, speaking, reading, and writing). Because these measures are only available for individuals with immigrant background, we assign parents without immigrant background a "very good" score in all four domains (Kretschmer, 2019). In principal component factor analysis, all four domains load on one factor (Cronbach's alpha = .90), which we use in our further analyses.

The interaction language item measures the language of interaction of the interviewed parent with their child and partner as well as the language predominantly used in the household. Immigrant parents indicated on a five-point scale whether German or another language was exclusively spoken in the household. All three items load on one factor in a principal component factor analysis, explaining 83% of the variation (Cronbach's alpha = .90).

We further capture the extent to which the interviewed parent identifies with German society. Immigrant parents indicated on a four-point scale ranging from 1 (*does completely apply*) to 4 (*does not apply at all*) to what extent the statements "I feel myself as part of the German society," "I feel closely connected to the people in Germany," "I feel very comfortable when I'm with people from Germany," and "It is important to me to belong to the people from Germany" applied to them. Again, only answers from parents with immigrant background are available. Therefore, we assigned the value 1 (*does completely apply*) to parents without immigrant background. As the answer options achieved at most an ordinal scale level, we used polychoric principal component analysis (Kolenikov & Angeles, 2004). All four items load on one component, explaining 93% of the variation (Cronbach's alpha = .89).⁷ We use the score on this component as a measure of identification with the German

society in further analyses.

3.3. Methods

We first present a descriptive overview of the distribution of the variables. Then, we investigate using ordinary linear regression models the differences in the educational informedness of the surveyed parents based on their immigration background. We analyze the relationship between parents' social and cultural capital as well as between acculturation and their educational informedness in a series of subsequent models. Here, we are particularly interested in whether the cultural and social capital and the acculturation of the interviewed parents explain the presumed negative relationship between their immigration background and educational informedness. If this is the case, then the association between immigration background and educational informedness should become less pronounced with the addition of the suggested social, cultural, and acculturation factors. We further examine the individual components of parents' educational informedness using linear regression and probability models to obtain more detailed insights into the decision-relevant components of educational informedness, such as parents' knowledge, that are relevant for assessing the returns, costs, and success probabilities of further education. The use of robust standard errors is recommended in the statistical analyses to account for the hierarchical data structure. We also include the age and age squared of the interviewed parents as control variables, as the relationship between knowledge and age is likely to be curvilinear (Salthouse, 2003). For our mediation analyses, we use a method developed by Karlson et al. (2012). We impute missing values multiple times (Rubin, 1987). The fraction of missing values (FMI) in the analyses is only 0.16. The recommendations for this benchmark are fulfilled with a total of 50 datasets. Further, our imputation models use auxiliary variables in addition to the analysis variables. Note that our analyses refer only to observations without missing values for the dependent variable (von Hippel, 2007).

4. Results

Our descriptive findings provide some preliminary indications of whether the suspected differences in educational informedness and resource endowment exist between immigrant and non-immigrant parents (see Table 1). Both the resources relevant to their level of knowledge and their educational informedness are unequally distributed between parents with and without immigrant background. One example is the overall knowledge test comprising 12 questions, where parents without immigrant background correctly answer 10 questions on average. In comparison, parents from Turkey, the former SFRY, and the ME&NA correctly answer only 6 of the 12 questions. Differences that exist in the overall test are also evident in the test components—that is, the questions central to estimating returns, costs, and success probabilities of further education. However, group differences are also present in the resources considered pivotal for parental knowledge, such as in terms of the highest educational degree attained or the share of academics without immigrant background acquainted with the parents. The descriptive findings therefore strengthen our assumption of an unequal distribution of educational informedness as well as social and cultural resources between parents in different immigrant groups.

Using multivariate analyses, we examine, first for the overall test and then for the individual test components (returns, costs, and success probabilities), whether parents with immigrant backgrounds have less information on average than parents without immigrant backgrounds (hypothesis 1). Next, we examine whether group-specific differences in the level of information exists (hypothesis 2). Subsequently, we investigate whether parents' resource endowment is associated with their informedness (hypothesis 3) and to what extent do the resources contribute to the explanation of differences in informedness between parents with and without immigrant background—that is, mediate the association between immigrant background and knowledge (hypothesis

⁷ When considering only immigrants, Cronbach's alpha is 0.78 for identification, 0.73 for language use in the household, and 0.86 for parents' subjective assessment of their language skills.

Table 1
Descriptive results.

Variables	Range	Immigrant background																	
		Germany		Turkey		f. USSR		Poland		f. SFRY		NoWe EU		SC&E EU		ME&NA		Others	
		M/%	S.D.	M/%	S.D.	M/%	S.D.	M/%	S.D.	M/%	S.D.	M/%	S.D.	M/%	S.D.	M/%	S.D.	M/%	S.D.
Knowledge test (overall)	0-12	9.50	1.82	5.83	2.58	6.96	2.54	7.98	2.52	5.95	2.67	7.59	2.51	7.90	2.35	6.25	2.61	7.46	2.67
Test educational returns	0-7	5.64	1.30	3.22	1.82	4.09	1.77	4.91	1.61	3.48	1.91	4.71	1.49	4.96	1.43	3.88	1.92	4.41	1.72
<i>Test educational costs</i>																			
Lower secondary	0-1	0.84		0.75		0.62		0.65		0.62		0.45		0.54		0.63		0.65	
Intermediate secondary	0-1	0.95		0.58		0.69		0.72		0.57		0.51		0.81		0.54		0.71	
Upper secondary	0-1	0.90		0.78		0.77		0.86		0.81		0.78		0.88		0.88		0.89	
<i>Test transition criteria</i>																			
Recommendation	0-1	0.80		0.39		0.64		0.58		0.38		0.74		0.50		0.29		0.53	
Mark criteria	0-1	0.37		0.11		0.15		0.26		0.10		0.41		0.21		0.04		0.28	
<i>CASMIN</i>																			
General secondary	0-1	0.03		0.30		0.05		0.01		0.10		0.01		0.01		0.05		0.03	
Intermediate secondary	0-1	0.23		0.21		0.43		0.21		0.40		0.09		0.13		0.15		0.14	
Academic secondary	0-1	0.23		0.32		0.32		0.42		0.40		0.36		0.37		0.42		0.36	
Tertiary (Ref.)	0-1	0.51		0.17		0.20		0.36		0.10		0.54		0.49		0.38		0.47	
<i>EGP</i>																			
Labor Class	0-1	0.08		0.49		0.27		0.15		0.19		0.04		0.17		0.06		0.13	
Mixed Class	0-1	0.15		0.21		0.18		0.18		0.38		0.07		0.20		0.04		0.19	
Service Class (Ref.)	0-1	0.77		0.30		0.55		0.67		0.43		0.89		0.63		0.90		0.68	
<i>Further social and cultural capital</i>																			
<i>Siblings</i>																			
None/Sibling without sec.	0-1	0.42		0.27		0.47		0.35		0.45		0.39		0.47		0.47		0.44	
Sibling non-academic sec.	0-1	0.31		0.42		0.29		0.25		0.47		0.28		0.30		0.19		0.25	
Sibling academic sec.	0-1	0.27		0.31		0.24		0.40		0.08		0.33		0.23		0.34		0.31	
Degree abroad (parent)	0-1	0.00		0.22		0.46		0.44		0.43		0.80		0.58		0.54		0.53	
<i>Spouse</i>																			
None	0-1	0.05		0.04		0.07		0.05		0.15		0.02		0.03		0.05		0.02	
Foreign degree (spouse)	0-1	0.05		0.39		0.40		0.30		0.54		0.34		0.25		0.65		0.26	
German degree (spouse)	0-1	0.90		0.57		0.53		0.65		0.31		0.64		0.72		0.30		0.72	
Share of non-immigrant academics in the network	0-1	0.72	0.26	0.31	0.31	0.32	0.29	0.57	0.27	0.59	0.34	0.65	0.22	0.56	0.27	0.35	0.25	0.55	0.30
<i>Number of books</i>																			
0-25	0-1	0.03		0.27		0.11		0.04		0.21		0.02		0.05		0.35		0.12	
26-100	0-1	0.20		0.52		0.40		0.39		0.64		0.06		0.16		0.38		0.21	
101-200	0-1	0.22		0.07		0.27		0.23		0.10		0.17		0.25		0.10		0.18	
201-500	0-1	0.34		0.11		0.16		0.20		0.05		0.35		0.32		0.09		0.20	
More than 500 (Ref.)	0-1	0.21		0.03		0.06		0.14		0.00		0.40		0.22		0.08		0.29	
<i>Acculturation</i>																			
Interaction language	-0.85-2.46	-0.85	0.00	0.92	0.80	0.68	0.82	0.30	0.67	0.47	0.78	0.85	0.87	0.31	0.63	0.98	0.77	0.69	0.76
Subj. linguistic comp.	-0.07-0.90	-0.07	0.00	0.09	0.22	0.10	0.17	-0.01	0.10	0.05	0.13	0.01	0.14	0.01	0.12	0.09	0.15	0.73	0.15
Acculturation	-0.81-2.48	-0.81	0.00	0.56	0.98	0.30	0.93	0.01	0.76	-0.51	0.56	0.72	0.80	0.01	0.89	0.16	0.91	0.29	0.90
Age	20-68	41.99	4.99	41.47	6.65	37.91	4.97	41.54	4.94	39.38	5.50	42.51	5.01	40.79	4.48	41.88	6.71	43.23	4.84
Observations		3961	3468	36		180		57		21		49		48		24		78	

Source: National Educational Panel Study (NEPS)

Note: These descriptive statistics are based on an N of 3961 cases of the imputed data set.

Abbreviations: f.=former; USSR= Union of Soviet Socialist Republics; SFRY=Socialist Federal Republic of Yugoslavia; NoWe=Northern and Western; EU=Europe; SC&E= Southern, Central and Eastern; ME&NA=Middle East and Northern Africa; M/%=arithmetic mean or percentage; S.D.=standard deviation; CASMIN= Comparative Analysis of Social Mobility in Industrial Nations; Ref.=Reference; EGP=Erikson, Goldthorpe & Portocarero; Nr.=Number; sec.= secondary school; subj.=subjective; comp.=competence

4). Finally, we evaluate whether the hypothesized group differences are present in both overall and domain-specific parental informedness.

The results for the overall test confirm the descriptively presented knowledge differences between parents with and without immigrant background. Given the control variable, the baseline model (see Fig. 2, Base Model: Immigrant Background & Controls) suggests that parents from all immigrant groups significantly differ in their level of knowledge from parents without immigrant experience (hypothesis 1). The differences are particularly pronounced for parents from Turkey, the former SFRY, and the ME&NA. As already evident from the descriptive findings, they incorrectly answer about 3–4 questions more than parents without immigrant background; thus, they know the correct answers for only half of the test items. Fig. 2 shows that this group of parents, as expected, has the lowest level of knowledge. However, contrary to our expectations, it also reveals that parents from northern and western Europe do not display the slightest difference in the level of knowledge from parents without immigrant background; instead, the parents from Poland do. Although the knowledge differences between parents from Poland and those from northern and western Europe are insignificant (see Appendix Table A.2.1), we can only partially confirm our second hypothesis.

In a further model, we test the relationship between parents' resources and knowledge (hypothesis 3: see Fig. 2, Full Model, and Table A2, Model 1.2, in the Supplemental Appendix). According to this model, having high social background—measured by the degree of education and social class of the interviewed parent—siblings in non-academic secondary or academic secondary school, and multiple social ties with academics without immigrant background is advantageous for parents' educational informedness. In contrast, highest educational degree being acquired abroad, small number of objectified cultural capital (books) available in the household, and the language of origin serving as the language of interaction in the household are unfavorable. A foreign educational degree of the partner, self-assessed linguistic competencies in German, and identification with Germany proved to be

irrelevant. Considering the resource variables, a significant reduction of knowledge differences ($p < .10$) between parents with and without immigrant background is evident (between 57% for parents from the former SFRY and 82% for parents from southern, central, and eastern Europe), which confirms our fourth hypothesis (see Table A2 in the Supplemental Appendix). Only parents from Turkey, the former SFRY, the ME&NA, and the group of other countries remain statistically distinguishable from German parents ($p < .05$).

Although the overall test provides preliminary insights into the unequal distribution of educational informedness, it does not reveal whether the hypothesized group differences are similarly present in both overall and domain-specific (regarding the returns, costs, and success probabilities) parental knowledge. Therefore, we separately examine the knowledge domains of the test relevant for estimating returns, costs, and success probabilities of further education.

A very similar picture to overall knowledge emerges for knowledge of returns (see Fig. 3 and Table A3 in the Supplemental Appendix). The base model initially points to pronounced group differences (see Fig. 2: Base Model). Again, parents from Turkey, the former SFRY, and the Middle East and Northern Africa region show the greatest disadvantages. Here, however, not the parents who have immigrated from Poland but those from southern, central, and eastern Europe show the smallest differences to parents without immigration background. The variables associated with knowledge of returns in the full model are similar to our analyses on overall knowledge with one exception—siblings with secondary school experience (see Fig. 3: Full Model). Even the results of the mediation analysis are almost identical: the differences between parents with and without immigrant background are significantly reduced by the resource variables (Turkey, former USSR, former SFRY, and the Middle East and Northern Africa ($p < .05$); although the differences between parents without immigrant background and those from Poland, northern and western Europe, southern, central, and eastern Europe, as well as others are reduced, we cannot establish that this reduction is statistically significant) (see Table A3 in the Supplemental Appendix). In

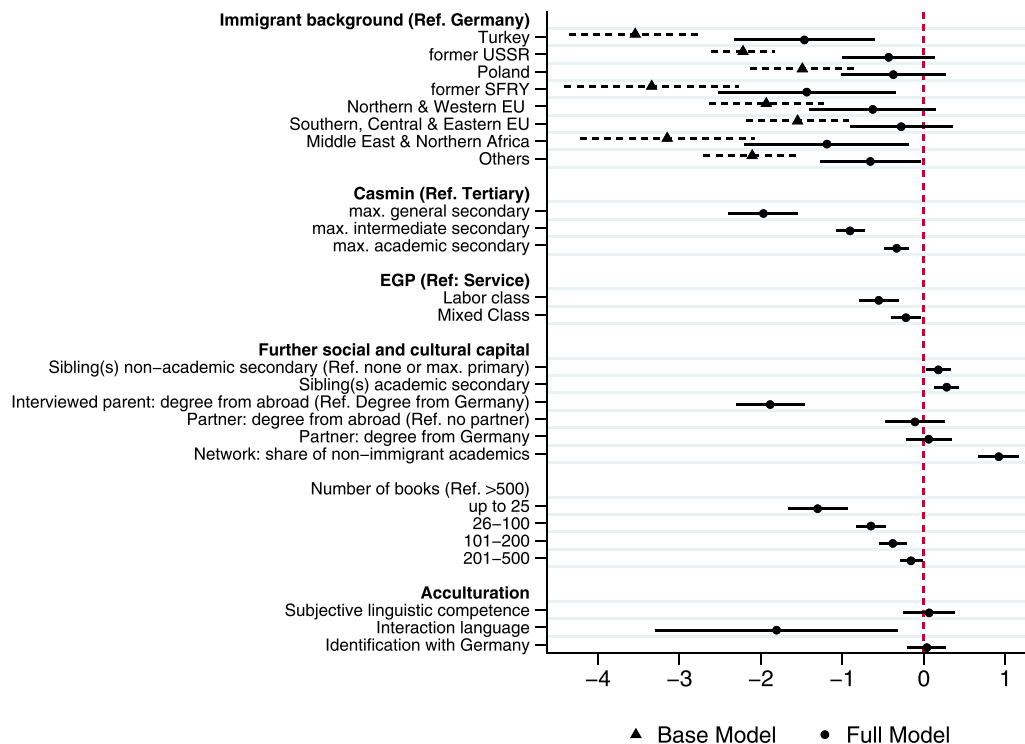


Fig. 2. OLS regression of parents' overall educational informativeness on immigrant background and the theoretically predicted determinants. Point estimates with 95% confidence intervals. Note: See Table A2 in the Online Appendix for all model parameters.

Source: National Educational Panel Study.

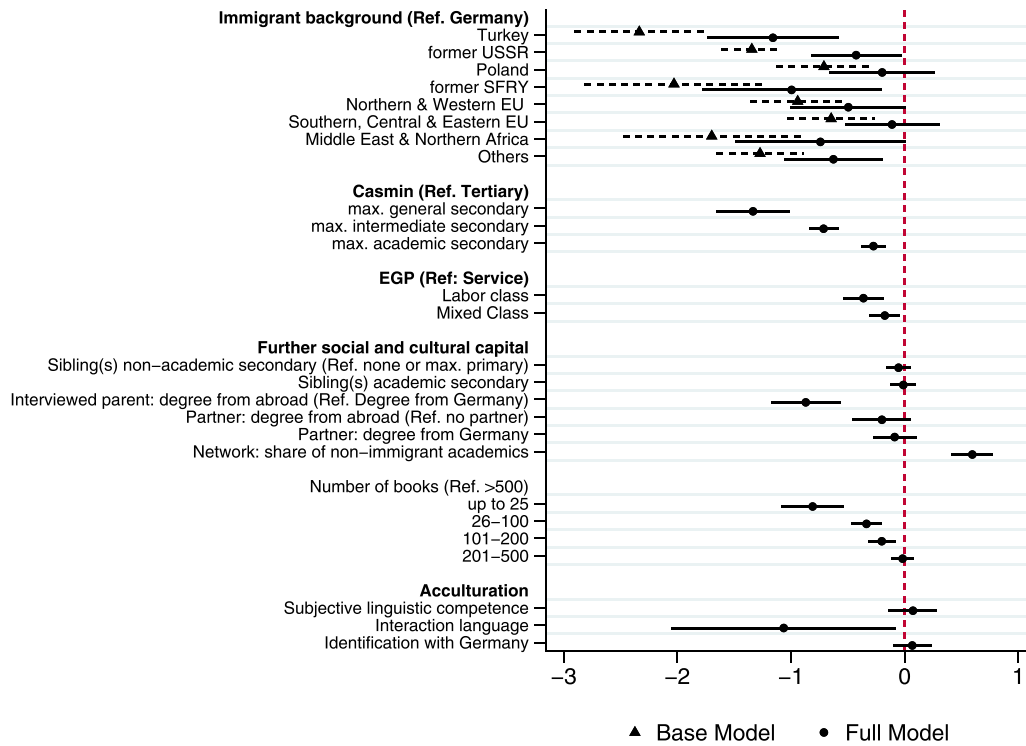


Fig. 3. OLS regression of parents' informativeness about the vocational qualifications and options (returns) on immigrant background and the theoretically predicted determinants. Point estimates with 95% confidence intervals. Note: See Table A3 in the Online Appendix for all model parameters. Source: National Educational Panel Study.

the case of knowledge of returns, marginal informational differences persisted for parents from Turkey, the former USSR and SFRY, as well as the group of other countries.

Next, we examine how well parents with and without immigrant background are informed about the time required to complete various

school degrees, a key factor in assessing the costs of further education (see Fig. 4 and Table A4–A6 in the Supplemental Appendix). Differences were hardly observed between parents regarding the estimation of the time required to obtain a school-leaving certificate from academic secondary school, the German “Abitur.” Only parents from the former USSR

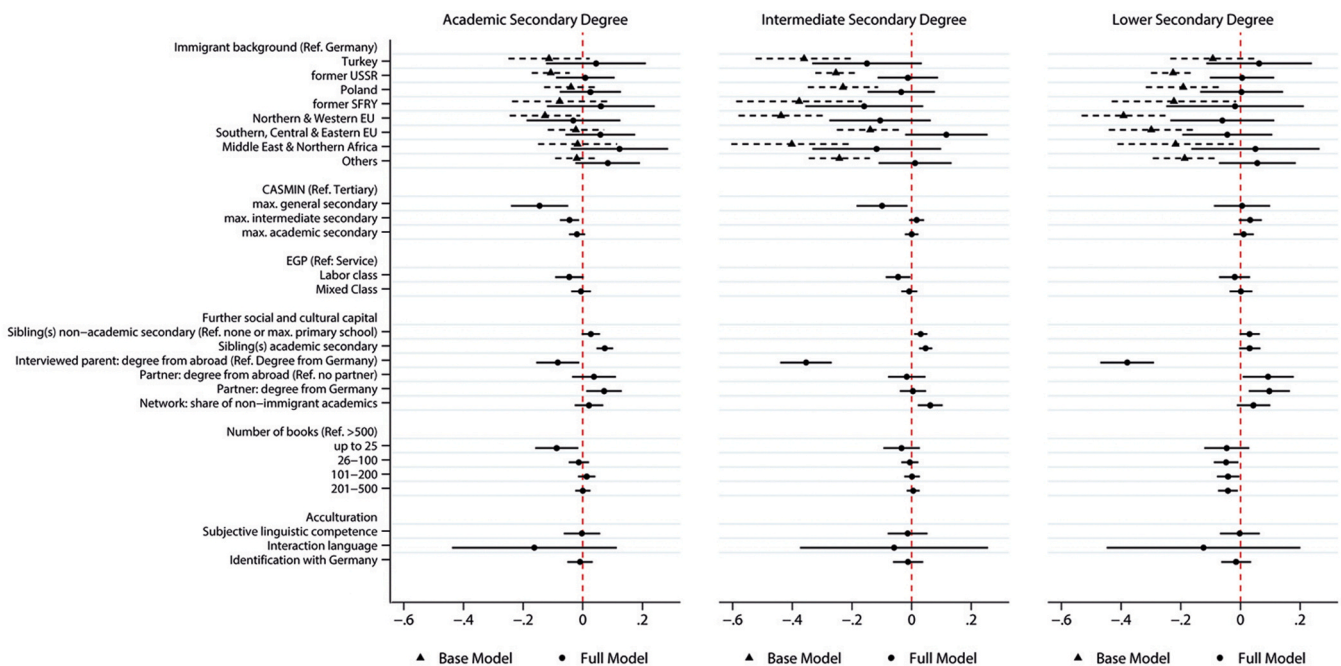


Fig. 4. OLS regression of parents' informativeness about the duration of schooling (costs, academic secondary (left), intermediate secondary (middle) and general secondary degree (right)) on immigrant background and the theoretically predicted determinants. Point estimates with 95% confidence intervals. Note: See Tables A4, A5 and A6 in the Online Appendix for all model parameters. Source: National Educational Panel Study.

and northern and western Europe are about 10% less likely than parents from Germany to correctly predict the duration (see Fig. 4: Academic Secondary Degree, left, Base Model). However, more pronounced differences were observed in the knowledge of the length of schooling required to obtain an intermediate (“Mittlere Reife”) (see Fig. 4: Intermediate Secondary Degree, middle, Base Model) and general secondary school-leaving certificate (“Hauptschulabschluss”) (see Fig. 4: General Secondary Degree, right, Base Model). Here, all immigrant groups show a higher probability of being misinformed, with parents from northern and western Europe showing the highest. The only exception is parents from Turkey, who do not differ from German parents in their assessment of the time needed to obtain a general secondary school degree. The correlations between knowledge and resources are interesting. Particularly in the case of education, with increasing proximity to the respective school-leaving certificate, informedness increases. Having siblings with experience in secondary school is positively related to knowing the duration of intermediate and academic secondary school but not general secondary school. Parents who earned their highest educational qualification abroad are less knowledgeable in estimating the duration of schooling required to earn a general, an intermediate, and an academic secondary school-leaving certificate. Having books and a partner with a degree from Germany is favorable for knowing the duration of general and academic secondary school. Regarding the time required to obtain an intermediate secondary school-leaving certificate, all other factors are irrelevant for an explanation with the exception of the share of academics without an immigrant background. Informational differences between immigrant and non-immigrant parents can be fully explained for all groups and all three alternatives: the general, intermediate, and academic secondary school-leaving certificate. The mediation is not significant for parents from Poland; northern and western Europe; and southern, central, and eastern Europe for the academic secondary degree and for Turkish parents in the case of the general secondary degree.

With the knowledge of the (non)binding nature of recommendations from primary school and existing grade criteria at the transition from primary to general secondary school, we look at two critical aspects for parents’ assessment of whether their child will be successful in secondary school (see Fig. 5 and Table A7–A8 in the Supplemental

Appendix). Although most parents without immigrant background know they must not automatically follow the primary school recommendation, marked differences exist according to country or region of origin (see Fig. 5, left, Recommendation and Table A7 in the Supplemental Appendix). Compared with non-immigrant parents, those from the Middle East and Northern Africa region show 50% lower probability of correctly answering this question and those from Turkey and the former SFRY show a 40% lower probability. Parents from northern and western Europe are only seven percent less likely to correctly answer the question, thus showing a minor and statistically insignificant difference from non-immigrant parents. Regarding the determinants central to the knowledge of the (non)binding nature of primary school recommendations, a familiar picture emerges: the higher the social origin of the parents, the better their knowledge. In addition, it is advantageous if the parents have acquired their highest educational degree in Germany, have a high share of academics without immigrant background in their social network, and own many books. All other factors are irrelevant. Surprisingly, having a partner who acquired his or her highest educational qualification in Germany instead of being single is negatively related to being correctly informed. However, the informational differences are significantly reduced in most groups, except for parents from Poland and northern and western Europe. In comparison to parents who were born in Germany, statistically significant differences remain only for parents who immigrated from the former SFRY; southern, central, and eastern Europe; as well as the Middle East and Northern Africa.

Compared with the knowledge about the (non)binding nature of primary school recommendations, parents with and without immigrant background generally show a low level of knowledge about the grading criteria that exist in some federal states at the transition from primary to secondary school (see Fig. 5, right, Marks and Table A8 in the Supplemental Appendix). Even parents without immigrant background show only 37% probability of being correctly informed (see Table 1). Whereas parents from northern and western Europe are slightly but statistically not significantly better informed than parents from Germany, all other groups show significantly lower knowledge levels (in the case of parents from Poland and the group “others,” these are insignificant). Regarding parents’ education and their endowment with books, we find a well-

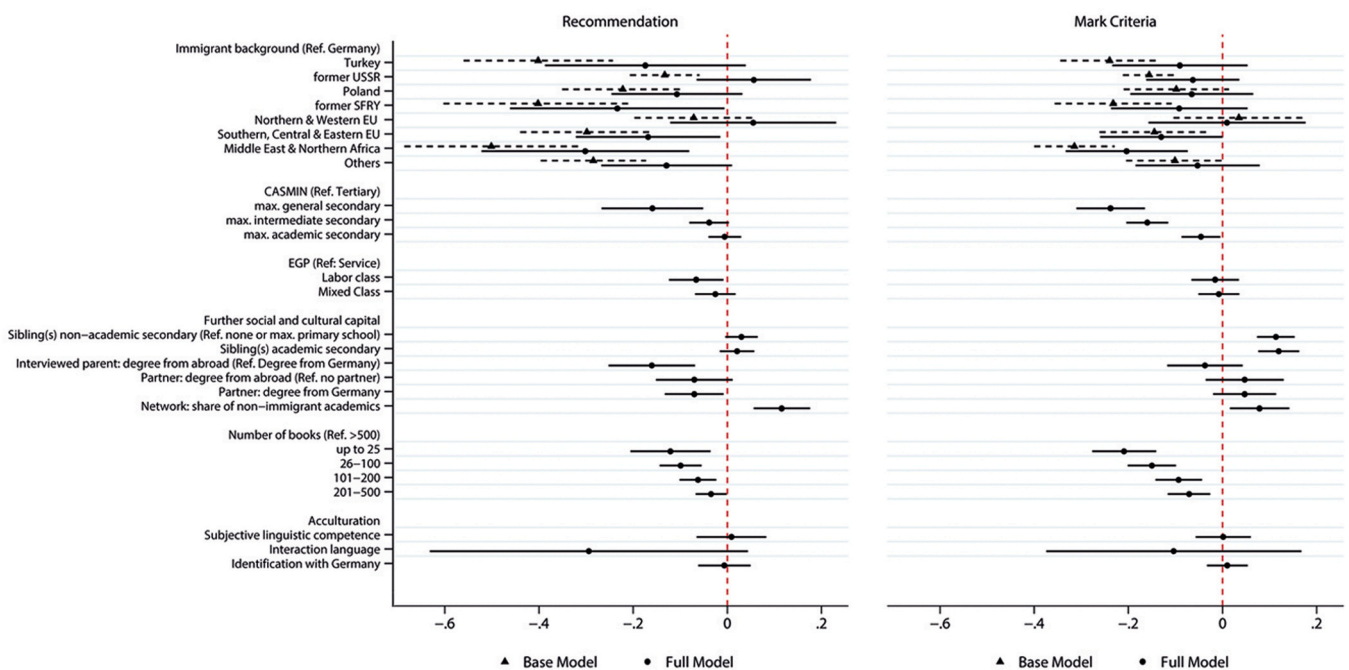


Fig. 5. OLS regression of parents’ informativeness about the transition criteria (probability of success) on immigrant background and the theoretically predicted determinants. Point estimates with 95% confidence intervals. Note: See Tables A7 and A8 in the Online Appendix for all model parameters. Source: National Educational Panel Study.

known result: the lower the education and number of books at home, the more likely are parents to be misinformed about grade criteria compared with parents with a tertiary degree and more than 500 books at home. However, having siblings with secondary school experience and a high share of academics without immigrant background in their social network benefits parents' knowledge. Although the explanatory variables yield a significant ($p < .05$) reduction in knowledge differences in the case of parents from Turkey and the former SFRY, the reduction proves to be non-significant for parents of the other groups of origin. Furthermore, significant knowledge differences remain for parents from southern, central, and eastern Europe as well as from the Middle East and Northern Africa.

In summary, we find informational differences between immigrant and non-immigrant parents in the overall test and its components. We also establish differences by group of origin. In many cases, the existing between-group differences in informedness can be explained. The determinants of informedness show that different factors are relevant for explaining parents' knowledge in different test domains. Five variables are central for almost all domains: the education and social class of the interviewed parent, having siblings with experience in secondary school, whether the parent's highest educational qualification was acquired abroad or in Germany, the number of books in the household—as a measure of objectified cultural capital—and the share of academics without immigrant background in the network of the interviewed parent. Contrary to our expectations, the knowledge differences between groups of origin do not show a uniform pattern across all domains (hypothesis 5).

4.1. Robustness checks

To ensure the robustness of our findings, we conducted several supplementary analyses. In particular, we repeated the analysis twice: first by excluding parents without an immigration background and then by excluding the variables capturing the acculturation strategies of the parents (linguistic competence of the interviewed parent in German, the interaction language in the household, and identification with Germany). Detailed information about these analyses can be found in the [Supplemental Appendix](#).

5. Summary and discussion

This study aimed to determine whether parents with and without immigrant background have different levels of educational knowledge and how these differences can be explained. As our overall test results impressively illustrate, differences in educational knowledge between parents with and without immigrant background exist. Moreover, our detail-rich analyses reveal for the first time that knowledge differences exist in both the investigated immigrant groups and knowledge domains. Immigrants from Turkey, former SFRY, and the ME&NA region have the lowest educational knowledge compared with parents without immigrant background. This finding was confirmed for the overall test, the test components about the returns of further education, and the transition criteria, which are central to assessing the success probability of education (Stocké, 2007). The only areas where parents from northern and western Europe were less informed than other parents with immigrant background were the length of schooling and, thus, the knowledge relevant to estimating the costs for the three school-leaving qualifications. We verified for the first time that nearly all groups are well informed about the length of schooling up to the Abitur. At the same time, more pronounced differences were observed between parents with and without immigrant background in estimating the duration to obtain the general and intermediate secondary school-leaving certificates. In summary, based on the overall test and the components, we confirm that parents with immigrant background, on average, have less knowledge, which directly leads us to the explanation of these differences.

In many cases, we fully explain the knowledge gaps between parents

with and without immigrant background through their endowment with cultural and social capital. Correspondingly, high social class and education are conducive to high informedness among the interviewed parents, especially if they obtained their highest educational qualification in Germany and thus gathered their own experiences with the German education system. Advantageous is the presence of siblings with experience in secondary school and objectified cultural capital, namely books, in the household as well as having a high share of academics without immigrant background in the social network. The latter is irrelevant, however, for knowing the length of schooling, except intermediate secondary schooling. Surprisingly, parents' acculturation—illustrated by their subjective language competence in German, their use of the language of origin in their domestic environment, and their identification with the host country—is almost insignificant to their performance in the test. This also mostly applies to whether the parent's partner obtained their highest educational qualification in Germany or abroad. Because such differentiated analyses based on immigrant groups and fields of knowledge have not been performed before, our findings and the accompanying explanations represent a new and important contribution to research in social stratification.

We discuss our results in the context of two previous findings on educational decision-making during the transition from primary to secondary school in Germany. First, various studies indicate that children with immigrant background have higher transition rates to the Gymnasium than children without immigrant background, given a comparable social background and school performance (for a literature review, see Dollmann, 2016a, 2016b). So far, however, we have not been able to fully explain why more ambitious educational decisions are observed among families with immigrant background (Dollmann, 2016a). Knowledge differences, especially related to the perception of the costs and returns of further education, offer potential further explanations for the question of immigrant families' more ambitious educational decisions during the transition from primary to secondary education. Second, our findings suggest that parents with immigrant background are less informed about the transition criteria, particularly the (non)binding nature of primary school recommendations, which is decisive for assessing the success probability of further education. Because parents with immigrant background are less informed about the (non)binding nature of the recommendations, they are more likely to accept the recommendations. This erroneous assumption may, therefore, hamper their ambitious decision-making (Dollmann, 2016a, 2016b) because this recommendation is primarily based on academic performance and social background, and both are, on average, lower for families with immigrant background than for non-immigrant families. Hence, if families with and without immigrant background were equally informed about the (non)binding nature of the recommendations, even more ambitious educational decisions could be expected from the former. Thus, our findings offer new perspectives on well-known puzzles in educational research and allow us to derive theoretical and practical implications for improving immigrant parents' ability to make informed decisions.

5.1. Implications

Theoretically, we confirm our assumption of the unequal distribution of decision-relevant knowledge between parents with and without immigrant background for both the overall test and its components. Because knowledge about the costs, returns, and success probabilities or, more generally, about how the education system works is highly consequential for informed educational decision-making (Erikson & Jonsson, 1996, p. 22), the findings also raise the question of how some parents with immigrant background can make "strategic" decisions at all, especially considering that some could correctly answer only half of the questions in this relatively short knowledge test. One possibility that has yet to be more extensively considered in educational research is that these parents do not, or only to a minimal extent, evaluate the costs,

returns, and success probabilities of the different educational alternatives. For these parents, relying on bounded rationality and referring to simpler heuristics for their decision-making is probably more realistic (Gigerenzer & Todd, 1999).

The existing inequalities in the information level between parents with and without immigrant background can, as we theoretically assumed, largely be explained by a group-specific endowment with knowledge-relevant cultural and social capital. Surprisingly, however, the acculturation strategies of the interviewed parents could have been more relevant to their information level. Only their subjective proficiency in German is related to their performance on the overall test and, as in Kretschmer (2019), to their information about the returns of further education. For all other domains, however, parents' subjective linguistic competence in German proved to be irrelevant. This non-significant finding also applies to the use of German language in the home environment and the identification of the interviewed parent with the host country; the latter was also positively related to the parent's knowledge in the studies by Kretschmer (2019) and Kristen (2008). Because the measure of identification with the host country used in this study differs from that employed in Kretschmer (2019) and Kristen (2008), drawing any final conclusions is difficult owing to the limited number of empirical findings. Although cultural and social resources are relevant for explaining the differences in the information level between parents of different groups of origin, further research should comprehensively assess the relevance of acculturation strategies.

Our findings have important practical implications for educators and policymakers, particularly considering the growing global relevance of informedness in immigrants' educational success (United Nations Department of Economic and Social Affairs, Population Division, 2021). The recent influx of refugees from countries such as Syria (since 2015) and Ukraine (since 2022) to Germany further underscores the importance of this issue. Therefore, educators must recognize that immigrant parents may not have access to sufficient information about the education system and that they may require additional assistance in navigating the system and making informed decisions. This could practically include the provision of information about the education system in general, such as the different career and training alternatives resulting from the different school-leaving qualifications, the length of schooling, and, importantly, the existing transition criteria, as these expand or limit the scope of action available to parents in the first place. Additional information on how to access educational services, apply for financial aid, or advocate for their children's educational needs may also be beneficial for broadening immigrant parents' understanding of how the system works (Lareau, 2015). As social relations with academics without immigrant background have been proven to be beneficial based on the results of parents' performance in the knowledge test, at least in specific domains, promoting such social relations in a targeted manner seems conceivable (Kretschmer, 2019). Mentoring programs or tandems for parents with immigrant background would facilitate knowledge exchange between the parents and thus increase their knowledge about the system. Finally, policymakers should consider the unique challenges immigrant families face when developing educational policies to ensure that all parents have equal access to information about the education system (Goldenberg et al., 2001). For this purpose, an exchange with schools, teachers, and parents' representatives on site would be beneficial for developing efficient ways of informing immigrant parents and disburdening schools and teachers.

5.2. Limitations and future directions

This study has several limitations that must be addressed in future research. The first is that our analysis fails to explain why informational differences between parents with and without immigrant background remain in some cases. Although these differences are relatively small, we need to better understand the factors contributing to these informational differences to better support parents from all backgrounds and ensure

equal access to resources and information. Thus, further research on the underlying causes of these disparities is needed. Second, immigration is shaped by regions of origin and the type of migration. Exploring the relationship between the type of migration (work, displacement, family reunification) and parents' level of information as well as differences by region of origin would be a valuable avenue for future research. Third, acknowledging that the success of acculturation strategies employed by immigrant parents is contingent upon the opportunities available in the host society is crucial. To this end, a potential research direction would be to investigate the extent to which differences in opportunities, such as at the municipal level, affect immigrant parents' informedness. The fourth limitation is that this study assesses the performance differences in the knowledge test only among interviewed parents (in most cases, mothers) (Kretschmer, 2019). Considering only one parent raises the question of whether these differences would remain if both parents were considered. Thus, assessing the knowledge of both parents could be a fruitful avenue for future research, allowing us to gain insights into how parental roles may affect knowledge acquisition and test performance. It would also provide more comprehensive data to better inform our understanding of family dynamics and their effects on acquiring information among both parents. This finding would be particularly fruitful, as the educational decision-making at such an early transition point in the system is considered a decision made by the family (Wohlkinger & Ditton, 2012). Exploring new strategies for addressing these limitations is essential for further research, as it is the basis for tailoring parenting interventions to better serve these populations and their decision-making capabilities.

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CRedit authorship contribution statement

Thomas Zimmermann: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Visualization, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

None.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.rssm.2024.100894](https://doi.org/10.1016/j.rssm.2024.100894).

References

- Acar, T. (2018). The variation in educational aspirations among immigrant students in Germany. In H. J. Park, & G. Kao (Eds.), *Research in the sociology of education* (Vol. 20, pp. 5–40). Emerald Publishing Limited.

- Autorengruppe Bildungsberichterstattung. (2016). Bildung in Deutschland 2016: Ein indikatorengestützter Bericht mit einer Analyse zu Bildung und Migration. *W Bertelsmann Verlag*. (<http://www.oapen.org/search?identifier=640941>).
- Bade, K.J., & Oltmer, J. (2004). *Normalfall migration*. Zeitbilder 15. Bundeszentrale für Politische Bildung.
- Berry, J. W. (1997). Immigration, acculturation, and adaptation. *Applied Psychology*, 46(1), 5–34. <https://doi.org/10.1111/j.1464-0597.1997.tb01087.x>
- Blossfeld, H.-P., & Roßbach, H.-G. (2019). *Education as a lifelong process: The German National Educational Panel Study (NEPS)* (Second revised edition (edition ZfE., Vol. 3). Springer VS. (<http://www.springer.com/>).
- Bourdieu, P. (1986). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–260). Greenwood.
- Bundesamt für Migration und Flüchtlinge. (2020). Migrationsbericht: Der Bundesregierung. Unpublished manuscript, last modified January 26, 2023. (https://www.bamf.de/SharedDocs/Anlagen/DE/Forschung/Migrationsberichte/migrati-onsbericht-2020.pdf?_blob=publicationFile&v=20).
- Diehl, C., Hunkler, C., & Kristen, C. (2016). *Ethnische Ungleichheiten Im Bildungsverlauf: Mechanismen, Befunde, Debatten*. Springer Fachmedien Wiesbaden.
- Dollmann, J. (2016a). Der Übergang von der Primar- in die Sekundarstufe. In C. Diehl, C. Hunkler, & C. Kristen (Eds.), *Ethnische Ungleichheiten im Bildungsverlauf: Mechanismen, Befunde, Debatten* (pp. 517–542). Springer Fachmedien Wiesbaden.
- Dollmann, J. (2016b). Less choice, less inequality? A natural experiment on social and ethnic differences in educational decision-making. *European Sociological Review*, 32(2), 203–215. <https://doi.org/10.1093/esr/jcv082>
- Erikson, R., & Jonsson, J. O. (1996). Introduction. Explaining class inequality in education: the Swedish test case (Social Inequality Series). In R. Erikson, & J. O. Jonsson (Eds.), *Can education be equalized? The Swedish case in comparative perspective* (pp. 1–64). Westview Press.
- Erikson, R., Goldthorpe, J. H., & Portocarero, L. (1979). Intergenerational class mobility in three Western European societies: England, France and Sweden. *The British Journal of Sociology*, 30(4), 415. <https://doi.org/10.2307/589632>
- Esser, H. (1999). *Soziologie: Spezielle Grundlagen*. Situationslogik und Handeln. Campus-Verlag.
- Forster, A. G., & van de Werfhorst, H. G. (2019). Navigating institutions: Parents' knowledge of the educational system and students' success in education. *European Sociological Review*, 36(1), 48–64. <https://doi.org/10.1093/esr/jcz049>
- Friedberg, R. (2000). You can't take it with you? Immigrant assimilation and the portability of human capital. *Journal of Labor Economics*, 18(2), 221–251. <https://doi.org/10.3386/w5837>
- Gigerenzer, G., & Todd, P. M. (1999). *Simple heuristics that make us smart*. Oxford University Press.
- Goldenberg, C., Gallimore, R., Reese, L., & Garnier, H. (2001). Cause or effect? A longitudinal study of immigrant Latino parents' aspirations and expectations, and their children's school performance. *American Educational Research Journal*, 38(3), 547–582. <https://doi.org/10.3102/00028312038003547>
- Gostomski, C. B. von (2010). Fortschritte der Integration: Zur Situation der fünf größten in Deutschland lebenden Ausländergruppen. Forschungsbericht 8. Bundesamt für Migration und Flüchtlinge.
- Gottfredson, L. S. (2002). Gottfredson's theory of circumscription, compromise, and self-creation. In D. Brown (Ed.), *Career choice and development* (4th ed., pp. 85–148). John Wiley & Sons.
- Gresch, C. (2012). Der Übergang in Die Sekundarstufe I: Leistungsbeurteilung, Bildungsaspiration und rechtlicher Kontext bei Kindern mit Migrationshintergrund. *VS Verlag Sozialwissenschaften*.
- Gries, T., Redlin, M., & Zehra, M. (2022). Educational assimilation of first-generation and second-generation immigrants in Germany. *Journal of International Migration and Integration*, 23, 815–845. <https://doi.org/10.1007/s12134-021-00863-9>
- Grodsky, E., & Jones, M. T. (2007). Real and imagined barriers to college entry: Perceptions of cost. *Social Science Research*, 36(2), 745–766. <https://doi.org/10.1016/j.ssresearch.2006.05.001>
- Haug, S. (2008). Sprachliche Integration von Migranten in Deutschland. Arbeitspapier 14. Bundesamt für Migration und Flüchtlinge.
- Herbaut, E., & Geven, K. (2020). What works to reduce inequalities in higher education? A systematic review of the (quasi-)experimental literature on outreach and financial aid. *Research in Social Stratification and Mobility*, 65. <https://doi.org/10.1016/j.rssm.2019.100442>
- Jäger, M. M., & Breen, R. (2016). A dynamic model of cultural reproduction. *American Journal of Sociology*, 121(4), 1079–1115. <https://doi.org/10.1086/684012>
- Karlson, K. B., Holm, A., & Breen, R. (2012). Comparing regression coefficients between same-sample nested models using logit and probit: A new method. *Sociological Methodology*, 42, 286–313.
- Kolenikov, S., & Angeles, G. (2004). The use of discrete data in PCA: Theory, simulations, and applications to socioeconomic indices. CPC/MEASURE Working Paper, WP-04-85.
- König, W., Lüttinger, P., & Müller, W. (1988). A comparative analysis of the development and structure of educational systems: Methodological foundations and the construction of a comparative educational scale. *CASMIN Working Paper*, 12 Universität Mannheim.
- Kretschmer, D. (2019). Explaining native-migrant differences in parental knowledge about the German educational system. *International Migration*, 57(1), 281–297. <https://doi.org/10.1111/imig.12535>
- Kristen, C. (2008). Primary school choice and ethnic school segregation in German elementary schools. *European Sociological Review*, 24(4), 495–510. <https://doi.org/10.1093/esr/jcn015>
- Lareau, A. (2015). Cultural knowledge and social inequality. *American Sociological Review*, 80(1), 1–27. <https://doi.org/10.1177/0003122414565814>
- Lin, N. (2001). *Social capital: A theory of social structure and action*. Cambridge University Press.
- Maaz, K., Trautwein, U., Lüdtke, O., & Baumert, J. (2008). Educational transitions and differential learning environments. How explicit between-school tracking contributes to social inequality in educational outcomes. *Child Development Perspectives*, 2(2), 99–106. <https://doi.org/10.1111/j.1750-8606.2008.00048.x>
- Nauck, B. (2011). Kulturelles und soziales Kapital als Determinante des Bildungserfolgs bei Migranten? In R. Becker (Ed.), *Integration durch Bildung: Bildungserwerb von jungen Migranten in Deutschland* (1st ed., pp. 71–93). VS Verlag für Sozialwissenschaften / Springer Fachmedien Wiesbaden GmbH.
- NEPS Network. (2022). National educational panel study, Scientific use file of starting cohort kindergarten. *Leibniz Institute for Educational Trajectories (LifBi)*. <https://doi.org/10.5157/NEPS:SC2:10.0.0>
- Olczyk, M., & Will, G. (2019). Measuring knowledge about the German education system in NEPS. *NEPS Survey Papers*, 56. Leibniz Institute for Educational Trajectories (LifBi).
- Olczyk, M., Will, G., & Kristen, C. (2014). Personen mit Zuwanderungshintergrund im NEPS: Zur Bestimmung von Generationenstatus und Herkunftsgruppe. *NEPS Survey Papers*, 41a *Leibniz Institute for Educational Trajectories*.
- Olczyk, M., Seuring, J., Will, G., & Zinn, S. (2016). Migranten und ihre Nachkommen im Deutschen Bildungssystem: Ein aktueller Überblick. In C. Diehl, C. Hunkler, & C. Kristen (Eds.), *Ethnische Ungleichheiten im Bildungsverlauf: Mechanismen, Befunde, Debatten* (pp. 33–70). Springer Fachmedien Wiesbaden.
- Peter, F. H., & Zambre, V. (2017). Intended college enrollment and educational inequality: Do students lack information? *Economics of Education Review*, 60(1), 125–141. <https://doi.org/10.1016/j.econedurev.2017.08.002>
- Putnam, R. D. (2000). *Bowling alone: The collapse and revival of american community*. Simon & Schuster. <https://doi.org/10.1145/358916.36199>
- Rammstedt, B. (2013). PIAAC 2012: Die wichtigsten Ergebnisse im Überblick. In B. Rammstedt (Ed.), *Grundlegende Kompetenzen Erwachsener im internationalen Vergleich: Ergebnisse von PIACC 2012*. Waxmann. (<https://nbn-resolving.org/urn:nbn:de:0168-ssoar-360687>).
- Relikowski, I., Yilmaz, E., & Blossfeld, H.-P. (2012). Wie lassen sich die hohen Bildungsaspirationen von Migranten erklären? Eine Mixed-Methods-Studie zur Rolle von strukturellen Aufstiegschancen und individueller Bildungserfahrung. In R. Becker (Ed.), *Soziologische Bildungsforschung / Kölner Zeitschrift für Soziologie und Sozialpsychologie* (Vol. 52, pp. 111–136). Springer VS.
- Rubin, D. B. (1987). Multiple imputation for nonresponse in surveys. In *Wiley series in probability and mathematical statistics: Applied probability and statistics*. Wiley. (<http://s.ite.ebrary.com/lib/alltitles/docDetail.action?docID=10344008>).
- Salthouse, T. A. (2003). Interrelations of aging, knowledge, and cognitive performance. In U. M. Staudinger, & U. Lindenberger (Eds.), *Understanding human development*. Springer. https://doi.org/10.1007/978-1-4615-0357-6_12
- Spörlein, C., Kristen, C., Schmidt, R., & Welker, J. (2020). Selectivity profiles of recently arrived refugees and labour migrants in Germany. *Soziale Welt*, 71(1–2), 54–89. <https://doi.org/10.5771/0038-6073-2020-1-2-54>
- Stocké, V. (2007). Explaining educational decisions and effects of families' social class position: An empirical test of the Breen-Goldthorpe model of educational attainment. *European Sociological Review*, 23(4), 505–519. <https://doi.org/10.1093/esr/jcm014>
- Stocké, V., Blossfeld, H.-P., Hoenig, K., & Sixt, M. (2019). Social inequality and educational decisions in the life course. In H.-P. Blossfeld, & H.-G. Roßbach (Eds.) (Second revised edition (edition ZfE., *Education as a lifelong process: The German National Educational Panel Study (NEPS)* (Second revised edition (edition ZfE., Vol. 3, pp. 101–118). Springer VS.
- Storr, C. (2005). Einführung. In C. Storr, & R. Albrecht (Eds.), *Das neue Zuwanderungsrecht. Textausgabe mit Einführung, Übergangsregelungen und allen Verordnungen*. 2., überarbeitete und erweiterte Auflage. Richard Boorberg Verlag.
- Tornatzky, L. G., Cutler, R., & Lee, J. (2002). College knowledge: What Latino parents need to know and why they don't know it. *Joyce Foundation*. (<https://files.eric.ed.gov/fulltext/ED469295.pdf>).
- United Nations Department of Economic and Social Affairs, Population Division (2021). *International Migration 2020: Highlights* [Population studies]. Unpublished manuscript, last modified March 15, 2023. (https://www.un.org/en/file/105459/download?token=oh_ySkJg).
- von Hippel, P. T. (2007). Regression with missing Ys: An improved strategy for analyzing multiply imputed data. *Sociological Methodology*, 37(1), 83–117. <https://doi.org/10.1111/j.1467-9531.2007.00180.x>
- Wohlkinger, F., & Ditton, H. (2012). Entscheiden Die Schüler Mit? Der Einfluss Von Eltern, Lehrern Und Kindern Auf Den Übergang Nach Der Grundschule. *Soziologische Bildungsforschung*, 44–63.