

## Determinants of students' idealistic and realistic educational aspirations in elementary school

Nicole Gözl  · Florian Wohlkinger

Published online: 26 November 2019  
© The Author(s) 2019

**Abstract** Although the social stratification of educational aspirations is well documented for parents and adolescents, current educational inequality research largely ignores the perspective of children. To learn more about the involvement of children in the emergence and reproduction of social disparities, we examine children's educational aspirations during elementary school. Based on the Wisconsin model, rational choice approaches, and the theory of cultural reproduction, our explorative investigation aims to identify determinants of young students' idealistic and realistic aspirations. We utilize a sample of 4947 third grade students from Starting Cohort 2 of the German National Educational Panel Study (NEPS). The multivariate results indicate that students' aspirations are influenced by their parents' social position and aspirations, whereby the students' self-rated rational choice indicators assert the greatest impact.

**Keywords** Educational aspirations · Elementary school · Rational choice · Theory of cultural reproduction · Wisconsin model

### Determinanten idealistischer und realistischer Bildungsaspirationen von Kindern im Grundschulalter

**Zusammenfassung** Obwohl die soziale Stratifizierung von Bildungsaspirationen bei Eltern und Jugendlichen gut dokumentiert ist, blendet die gegenwärtige bildungsbezogene Ungleichheitsforschung die Kinderperspektive weitgehend aus. Um mehr über die Beteiligung von Kindern an der Entstehung und Reproduktion sozia-

---

N. Gözl (✉) · Dr. F. Wohlkinger  
Ludwig-Maximilians-Universität München, Martiusstr. 4, 80802 München, Germany  
E-Mail: Nicole.Goelz@edu.lmu.de

Dr. F. Wohlkinger  
E-Mail: Florian.Wohlkinger@edu.lmu.de

ler Disparitäten herauszufinden, untersuchen wir kindliche Bildungsaspirationen in der Grundschulzeit. Anknüpfend an das Wisconsin Modell, Rational Choice Ansätze und die Theorie der kulturellen Reproduktion zielt unsere explorative Untersuchung auf die Identifikation von Determinanten früher idealistischer und realistischer Bildungsaspirationen ab. Unsere Analysen basieren auf Daten von 4947 Drittklässlern der Startkohorte 2 des Nationalen Bildungspanels (NEPS). Die multivariaten Ergebnisse zeigen auf, dass die Aspirationen der Schüler im Zusammenhang mit ihrer sozialen Herkunft sowie den Aspirationen der Eltern stehen und Rational Choice Indikatoren die stärksten Determinanten sind.

**Schlüsselwörter** Bildungsaspirationen · Grundschule · Rationale Wahl · Theorie der kulturellen Reproduktion · Wisconsin Modell

## 1 Introduction

Students' career paths in Germany are shaped by the stratified school system, which requires several transitions. Blossfeld (1988) identified transitions as 'sensitive phases' in educational trajectories, whereby the first allocation to secondary education has proven to play a key role in the emergence and persistence of social disparities (Ditton 2007, 2013). Although structural developments (such as the introduction of school types combining several courses of education) have led to an increasing dissociation of school types and school-leaving certificates in the secondary education sector, school-leaving certificates still contain different qualification levels and thereby impact educational career opportunities. On the lower secondary level, the *Hauptschulabschluss* (i.e. a general education qualification), which serves as prerequisite to attend vocational education and training programs, can be acquired after grade nine, whereas the *Realschulabschluss* (i.e. an intermediate general education qualification) can be obtained after 10 years of schooling and enables students to enter upper secondary education and vocational training. The only certificate that permits direct admission to university is the *Abitur*, which offers an intensified general education qualification after graduating from the higher secondary level in grade 12 or 13 (KMK 2017).

A large body of research has identified teachers' recommendation practices, as well as parents' differing educational decisions, as crucial factors in the emergence and reinforcement of social disparities in the transition from elementary to secondary education (e.g. Ditton and Krüsken 2009; Maaz et al. 2010). In this respect, parents' aspirations regarding their children's school careers have become a topic of great interest, with several studies having investigated and confirmed their social stratification (e.g. Kurz and Paulus 2008; Stocké 2009). The role of students' aspirations has been examined mainly for adolescents in the secondary education sector (e.g. Trebbels 2014; Roth 2017). In contrast, the perspective of younger students is typically constricted to the impact of their academic achievement, motivation in school, or gender on the aspirations and decisions of their parents (e.g. Harazd and van Ophuysen 2008; Jonkmann et al. 2010). The current research debate is therefore remarkably paradoxical: Although the discourse regarding social disparities centers

on children and their school careers, their own contributions in terms of opinions and interactions are largely disregarded (Bühler-Niederberger and Türkyilmaz 2017).

Thus far, few studies have challenged this paradigmatic blind spot. Wohlkinger (2014) revealed that, after controlling for parents' aspirations, teachers' school type recommendations, students' academic achievement and parental attitudes towards child rearing, the aspirations of the students at the conclusion of grade three significantly impact decisions about secondary school enrollment. However, the question of how these early aspirations emerge remains unanswered. It is crucial to gain further insight and acknowledge children's active role in that process, given that they contribute to the construction of social structures, in addition to the reproduction of social disparities. Hence, this paper aims to identify determinants of students' idealistic and realistic aspirations in elementary school.

## 2 Theoretical considerations

### 2.1 On the concept of aspirations

Although aspirations have been studied across several disciplines, the concept initially stems from the field of social psychology. According to Lewin (1939), the relevance of aspirations is based on the assumption that human behavior is not only influenced by the environment, but also by one's perception of the future. As there is no consensual definition, terms such as 'aspirations', 'goals', 'plans', and 'expectations' are often used interchangeably (Kerckhoff 1976; Trebbels 2014). In an frequently quoted essay, Haller characterized aspirations as the 'cognitive orientational aspect of goal-directed behavior' (Haller 1968, p. 484). The common distinction between idealistic and realistic aspirations acknowledges that aspirations do not necessarily reflect the outcome levels that individuals perceive as achievable (Trebbels 2014). In general, *idealistic aspirations* can be regarded as wishes comprising the value-oriented level of desired outcomes 'that are not limited by constraints on resources' (Hauser and Anderson 1991, p. 270). In the field of education, idealistic aspirations are usually understood as expressions of a person's motivation towards educational attainment, independent from the individual's chances to realize this goal (Stocké 2013). *Realistic aspirations*, on the other hand, incorporate the perceived likelihood of successfully attaining a desired outcome (Haller 1968; Kurz and Paulus 2008), and thereby consider influences such as achievement levels and other potentially restricting factors known to the individual (Stocké 2013). Idealistic aspirations are generally assumed to exceed realistic aspirations, whereas realistic aspirations are expected to show a higher variance over time, as they are adapted to changing situations (Becker and Gresch 2016). With respect to young children's idealistic and realistic goals for their distant future, Lewin (1939) presumed that they are mainly based on vague and narrow ideas, and are hardly distinguishable from each other. As children grow and develop, they gradually learn to factor the time dimension into the perception of reality. Hence, the degree of their expectations' reality and the unreality of their wishes are expected to diverge increasingly more over the years.

## 2.2 The Wisconsin model

The ‘Wisconsin Model of Status Attainment’ is a prominent approach investigating the mediating influence of social origin on adolescents’ aspirations, and educational and occupational attainment. Sewell et al. (1969) expanded Blau and Duncan’s (1967) path model of ‘the academic attainment process’ via the addition of intervening social-psychological variables to specify ‘a modified causal chain leading from social origins to adult outcomes’ (Hauser 2005, p. 12). The framework is based on the idea that socioeconomic status and mental ability are linked to attainment levels of high school seniors through intervening influences, such as academic performance, social influences, or the level of educational and occupational aspirations (Sewell et al. 1970). The occurrence of socially differentiated aspirations are mainly ascribed to the influence of the expectations from *significant others*, which are referred to as ‘persons exerting the greatest influence’ (Sewell et al. 1970, p. 1015). The perspectives of significant others are assumed to be associated with their social status, as well as the students’ academic performance. The effect of significant others’ expectations on students’ aspirations is hypothesized to operate through the students’ adaptation and subsequent imitation of the modeled behavior. However, Sewell et al. (1970) further emphasized that, before adjusting their aspiration levels, students reflect on the expectations of significant others in terms of academic performance.

The Wisconsin research considerably fostered the popularity of investigating aspirations in inequality research. Meanwhile, the framework has received criticism for the causal outline of aspirations and attainment outcomes, along with the lack of distinction between idealistic and realistic aspirations (Morgan 2006; Stocké 2013). According to Stocké (2013), the normative attitudes and wishes of significant others are conceptualized as the central determinants of one’s idealistic aspirations. By contrast, realistic aspirations are hypothesized to be additionally impacted by significant others’ normative attitudes and wishes, as well as their expectations. Furthermore, the framework’s applicability to the emerging aspirations of elementary school students in the German school system has not been addressed.

## 2.3 Rational choice models

Another research tradition attempting to explain educational attainment inequalities rests on Boudon’s (1974) distinction of two different kinds of effects of social origin on educational outcomes: *primary effects* and *secondary effects*. *Primary effects* refer to differences in academic performance between children from different social classes. *Secondary effects* are differences in education-related choices, which occur even when academic performance is the same. Boudon assumed that secondary effects are the main cause for educational inequalities and result from differing calculations of expected costs and benefits of educational alternatives. His early ideas were later adapted by various scholars, and led to the conceptualization of several formalized ‘rational choice’ models.

According to Breen and Goldthorpe (1997, p. 281), *benefits* are defined as ‘value or utility that parents and children attach to [...] educational outcomes’. Families

with a high social status associate options leading to higher educational certificates with greater benefits. This is amplified by the motive of risk aversion, wherein parents seek to avoid the downward social mobility of their children by attempting to secure them a social position at least equivalent to their own (Erikson and Jonsson 1996). The *probability of success* reflects the subjective estimation attached to the successful passing of educational options. Erikson and Jonsson (1996) argued that this estimation stems from several factors, such as academic achievement or the availability of cultural and economic resources. The consideration of *costs* is based on monetary and social aspects (Boudon 1974), whereby monetary costs include imposed direct costs for education as well as foregone earnings (Breen and Goldthorpe 1997). The unequal distribution of economic resources across social positions leads to diverging results. Social costs increase in situations in which students choose options that are not in accordance with the expectations of their social circle or family (Boudon 1974).

Rational choice models have been criticized for being restricted to one individual, wherein children and parents are treated as a 'single decision-making entity' (Breen and Goldthorpe 1997, p. 302). Young children are merely included as influencing factors on the probability of success (especially in terms of their academic performance) within their parents' cost-benefit-calculation, thus, they are denied the position of individual actors actively participating in educational decisions and exerting influence on others (Wohlkinger and Ditton 2012). Another limitation is imposed by the assumption that decisions are made at a specific point in time, which disregards processual aspects of educational decisions, as well as the impact of unobserved early choice components (Erikson et al. 2005; Ditton 2007). Kurz and Paulus (2008) have addressed the transferability of Boudon's (1974) cost-benefit calculation concept to parents' educational aspirations, which can be considered 'anticipated choices' (Kurz and Paulus 2008, p. 5490). Accordingly, based on their value orientation, idealistic aspirations are assumed to be associated with benefits, irrespective of costs and grades. In contrast, realistic aspirations are hypothesized to be based on grades, as well as benefit and cost estimations. However, questions remain regarding whether young children can be regarded as 'rational' actors, and how rational choice factors (i.e., benefits, costs, and probability of success) are related to idealistic and realistic aspirations.

## 2.4 Cultural reproduction theory

Bourdieu's (1973) cultural reproduction theory explained educational inequalities through systematic differences among social classes in terms of the possession of different forms of capital. *Economic capital* refers to money or assets and property rights that are convertible into money, whereas *social capital* includes resources that are accessible through networks, in the form of institutional relationships or mutual acquaintances. Bourdieu's (1986) key focus, however, lies on *cultural capital*, given its domestic transmission is assumed to be 'the best hidden and socially most determinant of educational investment' (p. 244). Cultural capital in its *institutionalized* form refers to academic or professional qualifications and certifications. The possession of material cultural goods, such as artworks, scientific instruments and books,

indicates the *objectified* state of cultural capital. In its *embodied* state of enduring dispositions, cultural capital consists of knowledge, skills, and personality traits that are acquired both consciously and unconsciously through processes of socialization and daily practice. As the parental position in the social hierarchy shapes the interactions with the child, familial communication processes are particularly vital for the early transfer of cultural capital. The volume and composition of an individual's available capital types determine their respective position in the competition for (more) resources. The individual possession of capital also impacts the *habitus*, i.e., according to Bourdieu (1977), a 'system of dispositions which acts as a mediation between structures and practice' (p. 487). A person's habitus results from internalized social structures and subsequently influences the person's perception, thinking, judgments, and actions.

From Bourdieu's perspective, aspirations can be considered a component of the habitus, based on the individual possession of different forms of capital and the corresponding internalized social structures. In this respect, Bourdieu's cultural reproduction theory opposes the idea of aspirations originating from rational (i.e., *conscious*) calculations of costs and benefits, with the suggestion of primarily *unconscious* internalization processes which determine the formation of aspirations. A general weakness in Bourdieu's theoretical framework is the passive part that children play in the outlined internalization and socialization processes and the resulting educational inequalities. Bühler-Niederberger and Türkyilmaz (2017) have questioned the portrayal of children as passive 'inheritors' of parental attitudes and actions for undermining their ability to interact autonomously with their environment and exert influence on others.

### 3 Previous research on the formation of children's aspirations

The state of research concerning the aspirations of children varies depending on age. Studies focused on educational aspirations of students within the secondary school system identified the parental academic involvement in the early school career (Hill et al. 2004), as well as cultural capital, migration background, social status, language skills, labor market-related criteria (Trebbels 2014), and multiple motivation factors (Walkey et al. 2013) as determinants. Roth (2017) and Zimmermann (2018) both found that the aspirations of teenagers were significantly associated with the aspirations of their parents and the educational plans of their friends.

For students in grades five and six, Haunberger and Teubner (2008) found that idealistic aspirations were influenced by average grade points, socioeconomic heritage, parental aspirations, as well as regional factors that determine the social and economic situation concerning the family's place of residency.

Regarding the phase of elementary school, qualitative results from Helsper et al. (2007) suggested that, by the age of 10, children have already developed individual orientational frameworks that comprise the stratified German education system in great detail. Although these orientations are strongly influenced by their parents' attitudes, they do not appear as their direct replications and are assumed to result from habitus configuration processes.

Quantitative analyses of the relationship between educational aspirations of students in elementary school and their parents indicate that children's aspirations are strongly associated with their parents' aspirations and the school-type recommendations of their teachers (Wohlkinger and Ditton 2012; Wohlkinger 2014). Furthermore, socioeconomic background has an influence on students' aspiration levels, whereby, especially the wish to attend the Gymnasium, is more prevalent amongst students whose parents themselves hold an Abitur degree (Wohlkinger 2014). Whether third-grade students have developed a concrete aspiration about the type of secondary school they want to attend is significantly influenced by their academic achievement: With increasing achievement levels, students are more likely to have developed educational aspirations as early as the end of grade three. In contrast, low-performing students showed more hesitation and tended to choose the vague answer 'I don't know yet' more often (Wohlkinger 2014). Using data from the World Vision Children Study, Gehrmann (2019) recently found that academic performance, parental educational status, and cultural capital (indicated by the number of books available in the household) influence the educational aspirations of elementary school children.

In sum, these findings indicate that the majority of children in elementary school already possess educational aspirations that are not mere reproductions of parental aspirations. However, it remains unclear how these early aspirations develop. Moreover, differentiated results with regard to the predictors for idealistic and realistic aspirations are hitherto not available.

## 4 Research questions

As the literature review revealed, thus far, few studies on the emergence of educational inequalities in elementary education have considered the students' perspective. Furthermore, very little is known about the formation of students' educational aspirations in this early phase of schooling. To find out more about the role that children play in the reproduction of educational inequalities, the main objective of this paper is to identify determinants of students' idealistic and realistic aspirations formed in elementary school. Drawing on the theoretical frameworks of the Wisconsin model, rational choice models, and cultural reproduction theory, we tested the following five hypotheses:

**H1** Students in third grade indicate higher *idealistic* than *realistic* educational aspirations.

**H2** Students' early aspirations are constrained by cultural and economic capital, as well as by the parental level of education and the corresponding communication practices in the family; thus, students from a privileged *family background* should indicate higher chances of aspiring for the Abitur than students from less privileged families.

**H3** Students' early aspirations vary according to their level of *non-cognitive* and *cognitive academic performance*: the higher the performance levels, the higher the chances of aspiring for the Abitur.

**H4** Students' early aspirations are associated with their *rational calculations*, i.e. their perception of the probability of success, benefits, and costs anticipated with obtaining the Abitur.

**H5** Students' aspirations are significantly associated with *parental aspirations*; the higher the level of parental aspirations, the higher the chances of students to aspire for the obtainment of the Abitur.

Given that distinctive findings for the formation of early idealistic and realistic aspirations are rarely available, all influencing factors were considered for both domains.

## 5 Methods

### 5.1 Sample

Our empirical analyses relied on data from Starting Cohort 2 (SC2) of the German National Education Panel Study (NEPS) (see Blossfeld et al. 2011).<sup>1</sup> This sample of, initially, four- and five-year-old kindergarteners were followed to elementary school in the institutional context and then into secondary school, with individual follow-ups. The sampling was established in an indirect two-stage approach, to meet the complex requirements for a longitudinal structure that aims to analyze educational transitions (Aßmann et al. 2011). The process included the representative sampling of elementary schools followed by the selection of kindergartens from which children were likely to transfer into these schools. Information on the children's performance in several domains and additional data from the perspective of parents and educators is available from the first wave onwards. Data from NEPS SC2 offered the opportunity to address our research questions from the children's perspective, as they participated in paper-and-pencil questionnaires since wave five (third grade). To investigate the earliest possible information available on emerging educational aspirations, the analyses were based on a total of 5805 third-grade students.

---

<sup>1</sup> This paper uses data from the National Educational Panel Study (NEPS): Starting Cohort Kindergarten, <https://doi.org/10.5157/NEPS:SC2:6.0.0> From 2008 to 2013, NEPS data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network.



## 5.2 Analytical approach

**Analytical strategy** We derived a set of prospective predictors from the proposed theoretical frameworks and previous results on adolescents' aspirations, to test their applicability to third-grade students' idealistic and realistic aspirations. First, we completed detailed descriptions and bivariate analyses to approach the 'blind spot' regarding students' early aspirations and to lay the foundation for deepening analyses. We compared the distributions of idealistic and realistic aspirations of students and parents and conducted Spearman's rank correlations to examine the relevant structures. Further, we investigated associations between the students' aspirations and three highly relevant variables (i.e., parental level of education, academic performance, and rational choice measures) using chi-square tests and univariate variance analyses. In the second step, we dichotomized the dependent variables for the multivariate analyses, given the bivariate analyses revealed substantial differences between the aspirations to obtain the Abitur compared to lower certificates. To account for the divergent theoretical approaches towards the prediction of early educational aspirations, we conducted four logistic regression models that gradually included indicators of the students' (I) social background, (II) non-cognitive and cognitive performance, (III) rating of rational choice indicators, and, finally, (IV) the parental aspirations. The models were applied separately to predict early students' idealistic and realistic aspirations and thoroughly considered control variables. To encounter the issues that arise for coefficients of logistic regressions regarding the comparability across different models, we reported  $y$ -standardized coefficients (Mood 2010) and, additionally, provided average marginal effects in the appendix.

**Missing values** A common problem in longitudinal surveys is panel attrition and nonresponse, which often affects the representativeness of the sample, particularly in later panel waves. Given all considered variables showed at least a low percentage of missing values, we relied on the mice package in R (version 3.5.1) and applied multiple imputation using the chained equation technique (White et al. 2011), whereby missing values were filled in multiple times by creating 50 complete datasets. Concerning the representativeness of NEPS SC2, selectivity analyses from Zinn et al. (2018) revealed that the drop-out propensity increased for students with no migration background, living in the Western part of Germany, attending privately funded schools, and with parents with an education level lower or equal to secondary education. Subsequently, to counter the problem of non-random attrition, the variables identified to be predictive for the occurrence of missing data were included in the imputation and considered as control variables in the multivariate analyses. Additionally, we incorporated auxiliary variables to improve the imputation results. This concerned both students' and parents' school-type-related aspirations, teachers' long-term predictions of educational success, and the highest family ISEI. Following the imputation strategy from von Hippel (2007), we excluded cases with missing values in at least one dependent variable after the imputation, resulting in a final sample of 4947 third-grade students with available information about their idealistic and realistic aspirations. The reported findings are displayed as pooled results across all 50 generated complete datasets (Rubin 1987).

**Limitations** Despite our efforts to improve the statistical potential of our analyses by means of multiple imputation, the representativeness of our final sample and statistical inference coefficients may be biased due to panel attrition. Furthermore, limitations might have arisen in terms of the included variables concerning the low alpha of the HOMEPOS scale and the number of missing values regarding the economic capital. Nevertheless, the HOMEPOS scale was the only available indicator that covers a breadth of objectified cultural resources and thus captures the heterogeneity of the construct itself. Hence, we preferred the instrument over variables that solely enumerate the available books in a household. Furthermore, for survey data, it is well-documented that the sensitive subject of household income typically results in high rates of item-nonresponse (e.g. Riphahn and Serfling 2002). As the exclusion of economic capital would result in the loss of essential information, we acknowledged the problem by improving the multiple imputation process through the inclusion of associated variables (in terms of parental education level, ISEI, and region) and conducting sensitivity analyses (see appendix). The applicability of bivariate analysis techniques for multiple imputed data sets is a current topic of debate, and various statistic programs and packages are limited in terms of the methods applicable to pooled data. Consequently, for the purpose of this study, Spearman's rank correlations were conducted with pairwise deletion, while the effect sizes for chi-square tests could not be obtained for the analyses with imputed data. Regarding the results of the logistic regression models, the effect sizes for the two different dependent variables do not allow for direct comparisons.

### 5.3 Operationalization

**Students' educational aspirations** The dependent variables comprised the third-grade students' self-reported information with regard to the school-leaving certificates they aspire to, both idealistically (*'Not considering how well you do in school, which school-leaving qualification do you wish to obtain?'*) and realistically (*'When you think of all the things that you now know, which school-leaving qualification will you actually obtain?'*). The answer categories included the options of attaining a Hauptschulabschluss, Realschulabschluss, Abitur, or leaving school without any formal qualification. This certificate-based assessment of aspirations offered advantages regarding the comparability across all 16 federal states and compliance with the rational choice measures (which were also specifically focused for certificates; see below).

**Parental level of education** To account for the families' educational background, we combined the information about the respondents' school-leaving certificates and their partners within a single variable. Three categories distinguished between households with the Hauptschulabschluss and no degrees, the Realschulabschluss, and the Abitur.

**Cultural capital** The HOMEPOS scale served as indicator for objectified cultural capital. The construct included measures for the possession of works of classic literature, poetry, artworks, dictionaries and library cards (based on OECD 2005). Internal

consistency reliability analyses among the five variables yielded a Cronbach's alpha of  $\alpha=0.49$ , and should therefore be interpreted with caution.

**Economic capital** Economic resources were operationalized by the highest available information from the parents' interview regarding the monthly household net income. Three categories distinguished between families with the lowest earnings (less than 2000 €), an intermediate income group (between 2000 and 4000 €) and families with the highest economic capital (more than 4000 €).

**Familial communication** Students' estimations with regard to the number of times their parents ask about school, teachers, classmates, homework and friends (varying from 'never' to 'always' on a five-point scale) were combined with a Cronbach's alpha of  $\alpha=0.67$  to create the familial communication scale.

**Non-cognitive and cognitive performance related factors** Indicators for affective-motivational aspects were rated by the students in terms of their *joy of learning* and *exertion*. Both factors offered four possible response items, ranging from 'completely disagree' to 'completely agree'. The scale for joy of learning consisted of three items (enjoyment concerning learning and going to school, as well as perceiving school as fun), which yielded a Cronbach's alpha of  $\alpha=0.88$ . Exertion was measured with three items (diligence, carefulness, and endurance), and indicated a reliability level of  $\alpha=0.67$ .

Given that information about the students' grades was not provided for the waves spanning over the first four school years, competence tests were used as indicators for the students' academic performance instead. Due to the panel study design, competence tests for the same domain were not available for each grade (Fuß et al. 2016). Consequently, we included the available performance measures up to third grade. *Grammar competencies* (Lorenz et al. 2017) were measured in first grade, *mathematical competencies* (Schnittjer and Duchhardt 2015) in second grade and *scientific competencies* (Hahn et al. 2013) in third grade. All performance measures were included in the analyses, in the form of z-standardized weighted likelihood estimations.

**Rational calculations** Students used five-point scales to rate their perceived probability of successfully attaining the Abitur ('very unlikely' to 'very likely'), the estimated benefits of obtaining a good job with the Abitur ('very poor' to 'very good'), and the anticipated costs in terms of effort required for gaining the Abitur ('very little' to 'very great').

**Parental aspirations** Indicators for the parents' normative attitudes and wishes were included as independent variables, pertaining to the idealistic aspirations they hold for their children ('No matter which school your child is currently attending or how good her grades are, which school-leaving qualification would you like her to obtain?'). The parents' realistic aspirations contained the attainment level that they realistically expect to be achievable for their children ('And considering everything

**Table 1** Distribution of variables

Variables	N	Categories or Min–Max	Percentages or Averages	(SE) or (SD)
<i>Dependent variables (ref. not Abitur)</i>				
Students' idealistic aspirations	4947	Abitur	69.05%	0.007
Students' realistic aspirations	4947	Abitur	60.44%	0.007
<i>Family Background</i>				
Parental level of education	4193	Max. HSA	11.68%	0.005
		RSA	31.64%	0.007
		Abitur	58.88%	0.008
Cultural capital	4359	0.20–1.00	0.76	0.222
Economic capital	1018	<2000 €	11.69%	0.026
		2000–4000 €	47.68%	0.076
		>4000 €	40.63%	0.100
Familial communication	4942	1–5	3.37	0.837
<i>Non-cognitive and cognitive performance</i>				
Joy of learning	4873	1–4	2.99	0.955
Exertion	4883	1–5	3.37	0.574
Performance in mathematics	4728	–3.87–3.69	0.02	0.996
Performance in science	4791	–4.20–4.77	–0.01	0.993
Performance in grammar	4659	–3.04–3.53	0.01	0.969
<i>Rational calculations</i>				
RC probability of success	4879	1–5	3.57	1.111
RC benefits	4711	1–5	4.32	1.044
RC costs	4739	1–5	3.88	1.250
<i>Parental aspirations (ref. not Abitur)</i>				
Parents' idealistic aspirations	3421	Abitur	71.28%	0.007
Parents' realistic aspirations	3390	Abitur	57.29%	0.008
<i>Control variables</i>				
Region (ref. West)	4947	East	14.24%	0.005
Funding	3610	Public	89.89%	0.005
		Private	6.12%	0.004
		Church	3.97%	0.004
Migration background (ref. none)	3987	Yes	26.68%	0.007
Gender (ref. none)	4485	Male	49.88%	0.007
Year of birth	4947	2004	5.45%	0.001
		2005	31.34%	0.007
		2006	67.55%	0.007
		2007	5.66%	0.001

Source: NEPS Starting Cohort 2 (release 6.0.0); authors' calculations  
 Descriptive findings are based on  $n = 4947$ ,  $m = 50$  multiple imputed data sets  
 HSA Hauptschulabschluss, RSA Realschulabschluss

*you know now, which qualification will your child actually leave school with?').* The answer categories were identical to those of the students.

**Funding** We controlled whether the students were enrolled in a public, private, or church-funded elementary school.

**Region** To account for regional influences, we included information on whether students attended elementary school in the Eastern or Western part of Germany.

**Gender** To consider potential differences between the aspirations of boys and girls, gender was included in the analyses as a dummy variable.

**Migration background** Whether at least one of the students' parents was born outside of Germany or not was operationalized as a dummy variable and used to control for the influence of migration background on students' aspiration levels.

**Age** To control for the age of the students, we constructed an interval scaled age indicator, based on the information of the students' year and month of birth. The scores were reversed, hence, increasing values represent older students.

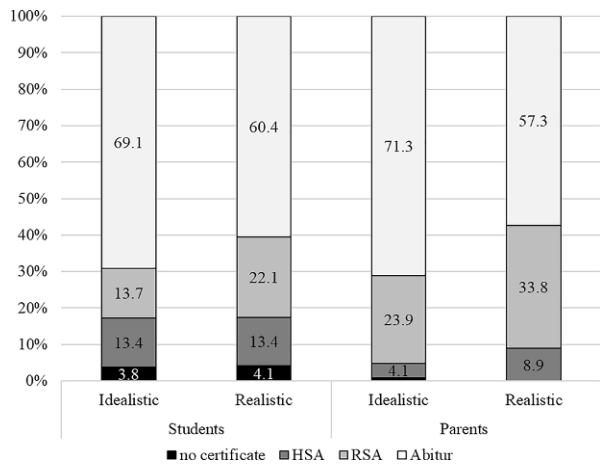
Table 1 displays a brief descriptive overview of all variables included in the analyses. The sample contained approximately as many boys as girls, and 26.7% of students with a migration background. Notable is the comparably small share of students from families with the lowest education level (10.4%) and economic capital (11.2%).

## 6 Results

### 6.1 Aspirations of students and parents

The distributions of idealistic and realistic aspirations of students and parents are shown in Fig. 1. The majority of third-grade students (69.1%) idealistically aspired to obtain the Abitur. In contrast, the Realschulabschluss (13.7%) and the Hauptschulabschluss (13.4%) were both considerably less desired certificates. Only a small share of students (3.8%) wished to leave school without receiving any certification. A similar pattern appeared concerning realistic aspirations: The majority of students expected to achieve the Abitur (60.4%), while the shares of students expecting to obtain the Realschulabschluss (22.1%) or the Hauptschulabschluss (13.4%) were smaller. Overall, the students' idealistic and realistic aspirations yielded a correlation of  $\rho=0.65$  ( $n=4947$ ;  $p<0.001$ ). The parents' idealistic aspirations exceeded the students' wishes, with 72.3% specifying the Abitur and 23.9% the Realschulabschluss. The Hauptschulabschluss (4.1%) and the option to leave school without any qualification (0.8%) were only marginal considerations in the parents' view. The parents' realistic aspirations were considerably lower than the students: 57.3% expected their children to obtain the Abitur, while the shares for the Realschul-

**Fig. 1** Students' and parents' idealistic and realistic aspirations. (Source: NEPS Starting Cohort 2 (release 6.0.0),  $n=4947$ ,  $m=50$ ; authors' calculations). (HSA Hauptschulabschluss, RSA Realschulabschluss)



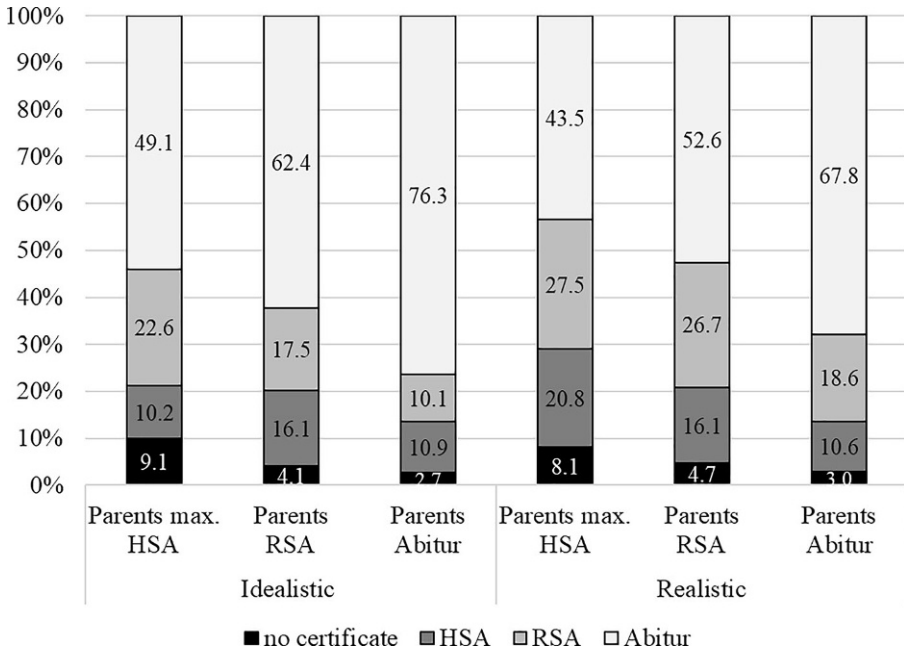
abschluss (33.8%) and the Hauptschulabschluss (8.9%) were greater. Both sets of parental aspirations correlated positively on a level of  $\rho=0.57$  ( $n=3371$ ;  $p<0.001$ ).

Overall, the Abitur was the most desired certificate among third-grade students and their parents, and both groups had higher idealistic than realistic aspirations. However, students generally expressed lower aspirations and ascribed a greater role to the Hauptschulabschluss than the parents. By comparison, idealistic aspirations of students and parents indicated a correlation of  $\rho=0.26$  ( $n=3421$ ;  $p<0.001$ ), and their realistic aspirations also correlated with  $\rho=0.28$  ( $n=3390$ ;  $p<0.001$ ). Parents' realistic and students' idealistic aspirations correlated with  $\rho=0.29$  ( $n=3390$ ;  $p<0.001$ ), and students' realistic aspirations were correlated with the parents' idealistic aspirations on a level of  $\rho=0.25$  ( $n=3421$ ;  $p<0.001$ ).

## 6.2 Parental level of education

In order to test for socially stratified aspiration patterns, we grouped students' aspirations according to their parents' level of education. The bar graph in Fig. 2 illustrates similar trends for both kinds of aspirations: Students from highly educated families expressed the greatest idealistic aspirations for the Abitur (76.3%), as well as the highest realistic aspirations for the Abitur (67.8%), while students from low-educated families desired and expected to obtain lower or even no certificates than students from more educated families with considerable more frequency.

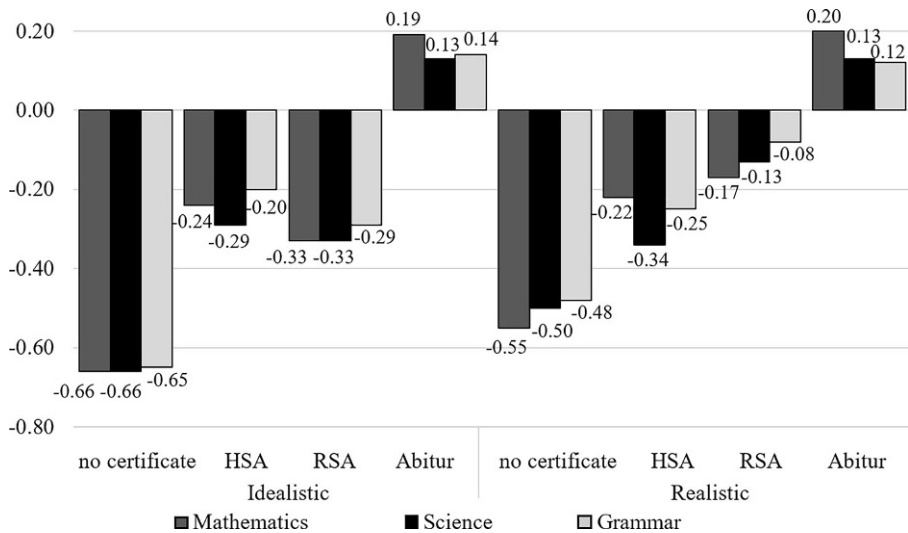
Furthermore, a chi-square test yielded significant overall effects ( $p<0.001$ ) concerning the parental level of education and students' idealistic aspirations ( $F(6, 766.34)=27.698$ ), as well as realistic aspirations ( $F(6, 1212.28)=24.593$ ). These findings indicate that both idealistic and realistic aspirations of third-grade students are already highly affected by social stratification and covary strongly with the parental level of education.



**Fig. 2** Students' idealistic and realistic aspirations by parental level of education. (Source: NEPS Starting Cohort 2 (release 6.0.0),  $n = 4947$ ,  $m = 50$ ; authors' calculations). (HSA Hauptschulabschluss, RSA Realschulabschluss)

### 6.3 Academic performance

Without a doubt, academic performance is of significant relevance in educational settings, and may furthermore play a role in the formation of early aspirations—in particular, regarding realistic aspirations. Fig. 3 presents the differences in z-standardized mean scores in mathematics, science, and grammar for students with different aspirational levels. Students who expressed idealistic aspirations for the Abitur attained the highest mean scores in all three competence domains, while students wishing to leave school without any qualification showed the lowest results. The one-way variance analyses yielded significant overall effects ( $p < 0.001$ ) for mathematical ( $F(3, 75,672.87) = 109.75$ ), scientific ( $F(3, 185,990.20) = 96.26$ ), and grammatical competencies ( $F(3, 14,959.31) = 82.09$ ). The partial eta square was the highest for mathematics ( $\eta^2 = 0.06$ ) and identical for the other two domains ( $\eta^2 = 0.05$ ). The realistic aspirations revealed a similar stratification pattern, with the highest competences achieved by students realistically anticipating obtainment of the Abitur and the lowest by students expecting to receive no formal qualification. The overall effects were, again, significant ( $p < 0.001$ ) for mathematics ( $F(3, 111,745.20) = 80.62$ ), science ( $F(3, 122,626.70) = 67.57$ ), and grammar ( $F(3, 19,238.72) = 48.17$ ). The partial eta square of mathematics ( $\eta^2 = 0.05$ ) exceeded those of science ( $\eta^2 = 0.04$ ) and grammar ( $\eta^2 = 0.03$ ). These results demonstrate that students' aspirations are closely



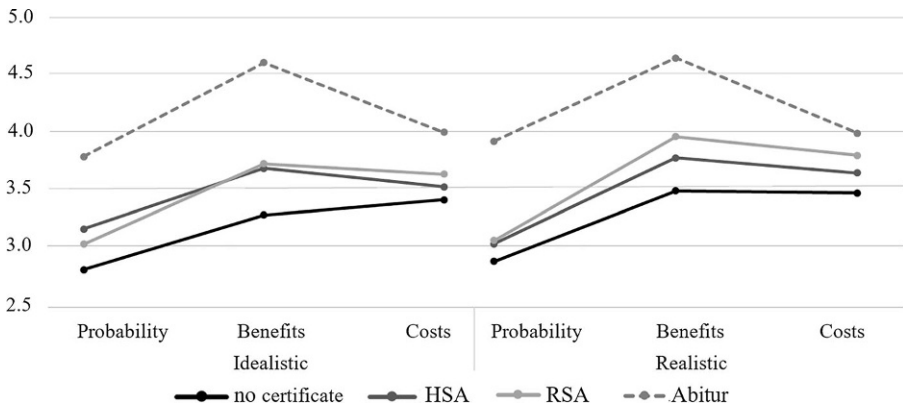
**Fig. 3** Competence scores by students' idealistic and realistic aspirations. (Source: NEPS Starting Cohort 2 (release 6.0.0),  $n = 4947$ ,  $m = 50$ ; authors' calculations). (HSA Hauptschulabschluss, RSA Realschulabschluss)

related to academic performance, however, it is not only realistic aspirations that show this connection, but also idealistic ones.

#### 6.4 Rational calculations

In order to analyze whether early aspirations comprise aspects of cost-benefit calculations, we examined the associations between students' aspirations and the three self-rated rational choice measures (see Fig. 4). Students with aspirations for the Abitur had the highest mean scores in all three dimensions. In contrast, students who aspired to leave school without any formal qualification consistently indicated the lowest mean scores. In one-way analyses of variance, we found significant overall effects ( $p < 0.001$ ) for the probability of success ( $F(3, 244,761.30) = 166.30$ ), costs ( $F(3, 5295.622) = 327.26$ ) and benefits ( $F(3, 13,967.17) = 44.61$ ). The partial eta square yielded the highest effect for costs ( $\eta^2 = 0.18$ ), followed by estimations of probability of success ( $\eta^2 = 0.09$ ) and benefits ( $\eta^2 = 0.03$ ). Significant overall group differences were also found for the realistic aspirations concerning the probability estimations ( $F(3, 144,311.70) = 293.73$ ), costs ( $F(3, 7499.95) = 251.76$ ) and benefits ( $F(3, 12,144.33) = 22.01$ ). Here, the greatest effects were indicated by the probability estimations ( $\eta^2 = 0.15$ ), along with the perceived costs ( $\eta^2 = 0.14$ ) and benefits ( $\eta^2 = 0.01$ ). These findings suggest that these aspects of rational calculations are not associated only with early idealistic aspirations, but also realistic aspirations.





**Fig. 4** Rational calculations by students' idealistic and realistic aspirations. (Source: NEPS Starting Cohort 2 (release 6.0.0),  $n=4947$ ,  $m=50$ ; authors' calculations). (HSA Hauptschulabschluss, RSA Realschulabschluss)

## 6.5 Multivariate analyses

To predict early childhood education students' idealistic (see Table 2) and realistic aspirations (see Table 3) for obtaining the Abitur, the logistic regression models were applied separately. The indicators for the divergent frameworks were included in a step-wise approach.

Model I, conducted for students' idealistic aspirations (Table 2), showed that, in comparison with students from families with the highest level of education, students with parents holding the Hauptschulabschluss ( $-0.400$ ) and the Realschulabschluss ( $-0.185$ ) had smaller chances of idealistically aspiring for the Abitur. Greater chances of aspiring for the Abitur were found for students from families with high cultural capital possessions ( $0.432$ ). Compared to students from families indicating the highest economic capital, the idealistic aspirations towards the Abitur were significantly smaller for students from moderate- ( $-0.242$ ) and low-income ( $-0.486$ ) groups. Familial communication practices indicated no significant effect. In combination, family background variables explained 5.1% of the variance among the students' early idealistic aspirations.

Following the addition of non-cognitive and cognitive performance measures (model II), the effects of family background indicators on students' idealistic aspirations were reduced, and the comparison between students from families holding the Abitur and the Realschulabschluss no longer yielded significant results. The students' joy of learning ( $0.058$ ) and exertion ( $0.137$ ) were both positively associated with idealistic aspirations. All cognitive measures reached the level of significance, whereby mathematics performance asserted the greatest effect ( $1.72$ ), followed by performance in scientific ( $0.091$ ) and grammar ( $0.071$ ). Altogether, the predictors accounted for 9.7% of the variance.

After considering the students' rational calculations (model III), the parental level of education and the students' exertion no longer yielded significant effects. Nevertheless, the estimated probability of success ( $0.143$ ), benefits ( $0.307$ ), and costs

**Table 2** Logistic regression models for students' idealistic aspirations (y-standardized coefficients)

	Students' idealistic aspirations: Abitur (0/1)			
	I bStdY (SE)	II bStdY (SE)	III bStdY (SE)	IV bStdY (SE)
<b>Family background</b>				
<i>Parental level of education (ref. Abitur)</i>				
HSA	-0.400*** (0.100)	-0.212* (0.088)	-0.148 (0.085)	-0.015 (0.087)
RSA	-0.185** (0.054)	-0.087 (0.049)	-0.026 (0.049)	0.052 (0.048)
<i>Cultural capital</i>	0.432*** (0.107)	0.260* (0.101)	0.229* (0.095)	0.117 (0.093)
<i>Economic capital (ref. &gt;4000 €)</i>				
<2000 €	-0.486* (0.220)	-0.379* (0.182)	-0.369* (0.167)	-0.331* (0.155)
2000–4000 €	-0.242* (0.120)	-0.201* (0.093)	-0.172* (0.087)	-0.150* (0.075)
<i>Familial communication</i>	0.028 (0.021)	0.030 (0.021)	-0.003 (0.020)	0.000 (0.020)
<b>Non-cognitive and cognitive performance</b>				
<i>Joy of learning</i>	–	0.058** (0.020)	-0.008* (0.019)	0.036 (0.019)
<i>Exertion</i>	–	0.137*** (0.031)	-0.008 (0.032)	-0.016 (0.032)
<i>Performance in mathematics</i>	–	0.172*** (0.024)	0.099*** (0.024)	0.068** (0.024)
<i>Performance in science</i>	–	0.091*** (0.024)	0.054* (0.024)	0.040 (0.023)
<i>Performance in grammar</i>	–	0.071** (0.025)	0.056* (0.024)	0.047 (0.024)
<b>Rational calculations</b>				
<i>RC probability of success</i>	–	–	0.143*** (0.016)	0.130*** (0.016)
<i>RC benefits</i>	–	–	0.307*** (0.019)	0.297*** (0.019)
<i>RC costs</i>	–	–	0.056*** (0.014)	0.056*** (0.014)
<b>Parental aspirations</b>				
<i>Parents' idealistic aspiration (ref. Abitur)</i>				
None	–	–	–	-0.080 (0.316)
HSA	–	–	–	-0.350* (0.147)
RSA	–	–	–	-0.249*** (0.054)
<i>Parents' realistic aspiration (ref. Abitur)</i>				
HSA	–	–	–	-0.149 (0.114)
RSA	–	–	–	-0.142** (0.052)

**Table 2** (Continued)

	Students' idealistic aspirations: Abitur (0/1)			
	I bStdY (SE)	II bStdY (SE)	III bStdY (SE)	IV bStdY (SE)
<b>Control variables</b>				
<i>Region: East (ref. West)</i>	-0.114* (0.053)	-0.076 (0.050)	-0.030 (0.049)	-0.047 (0.050)
<i>Funding (ref. public)</i>				
Private	0.025 (0.082)	0.053 (0.081)	0.086 (0.077)	0.063 (0.077)
Church	-0.039 (0.106)	-0.049 (0.104)	0.008 (0.104)	-0.024 (0.103)
<i>Gender: male (ref. female)</i>	-0.066 (0.036)	-0.075* (0.038)	-0.094* (0.037)	-0.078* (0.037)
<i>Migration background (ref. none)</i>	0.195** (0.056)	0.275*** (0.052)	0.198*** (0.049)	0.127* (0.034)
<i>Age indicator</i>	-0.002 (0.004)	-0.005 (0.004)	-0.005 (0.004)	-0.001 (0.004)
<b>Pseudo-R<sup>2</sup></b> (McKelvey & Zavoina)	<b>0.051</b>	<b>0.097</b>	<b>0.209</b>	<b>0.227</b>

Source: NEPS Starting Cohort 2 (release 6.0.0),  $n = 4947$ ,  $m = 50$ ; authors' calculations  
*HSA* Hauptschulabschluss, *RSA* Realschulabschluss

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

(0.056) all significantly predicted the students' idealistic aspirations, increasing the explained variance to 20.9%.

The addition of the parental aspirations (model IV) further reduced the factors of cultural capital, joy of learning, as well as performance in science and grammar to insignificant effects. Students whose parents idealistically aspired for them to obtain the Hauptschulabschluss (-0.350) or the Realschulabschluss (-0.249) indicated lower chances to aspire to the Abitur themselves, in comparison with students from families with the highest aspirations. Compared with students whose parents realistically aspired for their children to reach the highest school-leaving certificate, students whose parents expected them to attain the Realschulabschluss (-0.142) indicated lower chances to idealistically aspire for the obtainment of the Abitur. The chances of aiming for the Abitur remained significantly smaller for students from moderate- (-0.150) and low-income (-0.331) groups, and were positively associated with performance in mathematics (0.068), probability of success (0.130), benefits (0.297) and costs (0.056). The combined model explained 22.7% of the variance.

Subsequently, we applied the same logistic regression models predicting students' realistic aspirations (Table 3). The first model revealed significant negative effects of the parental education level, whereby students from families with the Hauptschulabschluss (-0.346) and the Realschulabschluss (-0.218) had lower chances to aspire for the Abitur realistically, compared with students from families with the highest educational background. The familial communication practices asserted a significant positive effect (0.071) on students' realistic aspirations, whereas no effect was found for cultural capital possessions. The realistic aspirations towards the Abitur were significantly smaller for students from low- (-0.500) and moderate-income (-0.261) groups, compared with students from families with the highest economic capital. In combination, the predictors explained 4.4% of the variance.

**Table 3** Logistic regression models for students' realistic aspirations (y-standardized coefficients)

	Students' realistic aspirations: Abitur (0/1)			
	I bStdY (SE)	II bStdY (SE)	III bStdY (SE)	IV bStdY (SE)
<b>Family background</b>				
<i>Parental level of education (ref. Abitur)</i>				
HSA	-0.346** (0.102)	-0.201* (0.093)	-0.127 (0.089)	-0.025 (0.091)
RSA	-0.218*** (0.050)	-0.150** (0.047)	-0.093* (0.045)	-0.032 (0.045)
<i>Cultural capital</i>				
	0.192 (0.099)	0.072 (0.095)	-0.001 (0.090)	-0.088 (0.090)
<i>Economic capital (ref. &gt;4000 €)</i>				
<2000 €	-0.500* (0.189)	0.418* (0.163)	-0.387** (0.145)	-0.355* (0.136)
2000–4000 €	-0.261* (0.106)	-0.227* (0.087)	-0.187* (0.079)	-0.171* (0.069)
<i>Familial communication</i>				
	0.071*** (0.020)	0.063** (0.020)	0.033 (0.019)	0.033 (0.019)
<b>Non-cognitive and cognitive performance</b>				
<i>Joy of learning</i>				
	–	0.053** (0.019)	0.033 (0.018)	0.026 (0.019)
<i>Exertion</i>				
	–	0.208*** (0.031)	0.055 (0.030)	0.048 (0.030)
<i>Performance in mathematics</i>				
	–	0.161*** (0.022)	0.075** (0.022)	0.051* (0.022)
<i>Performance in science</i>				
	–	0.061** (0.023)	0.024 (0.022)	0.012 (0.022)
<i>Performance in grammar</i>				
	–	0.013 (0.023)	0.001 (0.022)	-0.006 (0.022)
<b>Rational calculations</b>				
<i>RC probability of success</i>				
	–	–	0.270*** (0.016)	0.262*** (0.016)
<i>RC benefits</i>				
	–	–	0.263*** (0.018)	0.254*** (0.018)
<i>RC costs</i>				
	–	–	0.008 (0.014)	0.009 (0.014)
<b>Parental aspirations</b>				
<i>Parents' idealistic aspiration (ref. Abitur)</i>				
None	–	–	–	0.063 (0.309)
HSA	–	–	–	-0.093 (0.161)
RSA	–	–	–	-0.213*** (0.051)
<i>Parents' realistic aspiration (ref. Abitur)</i>				
HSA	–	–	–	-0.244* (0.110)
RSA	–	–	–	-0.087 (0.049)

**Table 3** (Continued)

	Students' realistic aspirations: Abitur (0/1)			
	I bStdY (SE)	II bStdY (SE)	III bStdY (SE)	IV bStdY (SE)
<b>Control variables</b>				
<i>Region: East (ref. West)</i>	-0.038 (0.052)	-0.008 (0.050)	0.048 (0.048)	0.033 (0.048)
<i>Funding (ref. public)</i>				
Private	0.005 (0.080)	0.025 (0.079)	0.051 (0.077)	0.035 (0.077)
Church	-0.124 (0.103)	-0.110 (0.101)	-0.093 (0.099)	-0.113 (0.098)
<i>Gender: male (ref. female)</i>	-0.037 (0.035)	-0.043 (0.036)	-0.051 (0.034)	-0.039 (0.035)
<i>Migration background (ref. none)</i>	0.213*** (0.058)	0.255*** (0.054)	0.177** (0.052)	0.115* (0.055)
<i>Age indicator</i>	-0.013*** (0.004)	-0.015*** (0.004)	-0.016*** (0.004)	-0.013*** (0.004)
<b>Pseudo-R<sup>2</sup></b> (McKelvey & Zavoina)	<b>0.044</b>	<b>0.079</b>	<b>0.199</b>	<b>0.209</b>

Source: NEPS Starting Cohort 2 (release 6.0.0),  $n = 4947$ ,  $m = 50$ ; authors' calculations

HSA Hauptschulabschluss, RSA Realschulabschluss

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

With the inclusion of non-cognitive and cognitive performance measures in model II, the previous effects of family background indicators on students' idealistic aspirations were reduced. Students' joy of learning (0.053) and exertion (0.208), as well as performance in mathematics (0.161) and science (0.061), were positively associated with their realistic aspirations, while no effects were found for the domain of grammar. The predictors in this model explained 7.9% of the variance.

The addition of the students' rational calculations (model III) led to a considerable reduction in the size of all effects, whereby the lowest parental education level, familial communication, both non-cognitive measures, and performance in science became non-significant. Probability of success (0.270) and benefits (0.260) were both significantly associated with realistic aspirations, while we found no effect for the cost dimension. In model III, the explained variance increased considerably and reached a pseudo-R<sup>2</sup> of 19.9%.

Overall, the addition of parental aspirations (model IV) had little impact on the other factors considered in this study. Nevertheless, the influence regarding the parental education level (in terms of the Realschulabschluss) became non-significant. Students whose parents idealistically aspired for them to obtain the Realschulabschluss (-0.213) indicated lower chances to realistically aspire for the Abitur themselves, in comparison with students from families with the highest idealistic aspirations. Compared with parents who realistically aspired for their children to reach the highest school-leaving certificate, students whose parents expected them to reach the Hauptschulabschluss (-0.244) indicated lower chances to aspire for the Abitur realistically. The effects for low (-0.355) and moderate (-0.171) economic capital possession, performance in mathematics (0.051), probability of success (0.262), and benefits (0.254) remained significant. Model IV explained 20.9% of the variance.

## 7 Discussion

Prevalent approaches attempting to explain the development of educational inequalities have one significant ‘blind spot’ in common, as they almost exclusively focus on the perspective of parents or adolescents, while ignoring the perspective of young children. In contrast, our goal was to examine the formation of educational inequalities by identifying predictors for children’s emerging educational aspirations during elementary school.

In line with the theoretical concept of aspirations, we found that students’ levels of *idealistic* aspirations exceed the levels of *realistic* aspirations as early as grade three. Nevertheless, the two concepts were significantly correlated and showed remarkable similarities across our analyses. With regard to Lewin (1939), the observations from our study raise the question as to whether the distinction between wishes and expectations considerably increases as children advance in their school career and the impending decision at the end of elementary school becomes more relevant. In this respect, controls for age have shown that older students are less likely to realistically aspire for the Abitur. To address this matter, follow-up analyses focusing on the development of aspirations from third grade on are necessary.

In accordance with our hypothesis, across our analyses, students from privileged *family backgrounds* have indicated higher chances of aspiring for the Abitur. Although the results suggest that the familial background plays a greater role concerning students’ realistic aspirations, students’ wishes were also shown to be stratified by the families’ economic capital; this contradicts the definition of idealistic aspirations as being independent of constraints on resources (Hauser and Anderson 1991). Our findings might rather agree with Bourdieu’s (1977) viewpoint, that students’ aspirations are shaped by their internalized position in the social structure, which is determined by the possession of different kinds of capital. Nevertheless, in our final model, no direct effect of cultural capital on children’s aspirations was found. However, the mediation through parental aspirations (for students’ idealistic aspirations) indicates that the effect of cultural capital possession influences aspirations indirectly. Thus, the complex relationship should be scrutinized more closely in further analyses.

Following our hypothesis, the results revealed that the higher the *non-cognitive* and *cognitive performance* levels, the higher the chances of students to aspire for the Abitur. Thereby, performance in mathematics has proven to be a direct predictor for idealistic and realistic aspirations; whereas the effect of the other domains, as well as the non-cognitive measures, were mainly mediated by rational choice indicators and parental aspirations. Thus, contrary to the concept of aspirations, third-grade students’ wishes are constrained by performance.

The multivariate models have identified the students self-rated *rational choice factors* as the strongest predictors for their early aspirations, and revealed differing patterns: While idealistic aspirations are determined by all rational choice indicators, realistic aspirations are not constrained by costs. The positive associations between both aspiration domains and the *benefits* ascribed to the employment prospective of the Abitur are consistent with the assumptions of Kurz and Paulus (2008). Our results indicate that benefits, in this case, refer to the students’ general value ascribed

to education, which is mainly expressed in the idealistic aspirations but also reflected in the realistic counterpart. The direct effect of *costs* on idealistic aspirations has shown to be contrary to the outlines of Kurz and Paulus (2008). Nonetheless, it is important to consider that the operationalization of the cost concept was adjusted to the perspective of young students and comprises the effort required to obtain the Abitur instead of monetary or social costs. Arguably, effort-based costs mainly refer to the value-oriented aspect of aspirations. Accordingly, the results revealed that an increasing degree of required effort positively affects students' idealistic aspirations, which could also indicate that demanding certificates are perceived as more valuable. The robust effects of students' estimated *probability of success*, especially on idealistic aspirations, suggest that young students do not form their aspirations from an isolated point of view, wherein the actual chances to achieve these outcomes are simply ignored. Rather, early idealistic aspirations are not only driven by value-oriented components, but also by situational factors. Questions remain as to how the rational choice indicators relate to one another and how students weigh them against each other, concerning their idealistic and realistic aspirations. Specifically, the theoretical concept of idealistic aspirations offers little insights into the underlying mechanisms, and the strict separation from situational factors is inadequate to explain how children actually form their educational wishes. The adaption of rational choice variables to early aspirations has shown to shift the focus to value-oriented aspects, which raises the question as to whether cost-benefit calculations can be regarded as 'rational' (in terms of a *conscious* deliberation of pros and cons) or if the underlying value attributions are rather shaped by *unconscious* processes.

In accordance with our hypothesis, we found that *parental aspirations* impact the aspirations of students. Contrary to the assumptions of Stocké (2013), our results indicate that it is not only students' realistic aspirations, but also their idealistic aspirations, which are affected by both of their parental aspiration domains. The greater correlations within the students' aspiration domains than between students and parents' aspirations further supports the notion that students do not simply replicate their parents' wishes and expectations (Helsper et al. 2007; Wohlkinger 2014).

In sum, our analyses demonstrate that the application of different theoretical viewpoints offers complementary explanations regarding the formation of early aspirations. The combination of these approaches and previous findings provided an advantageous starting point to identify the determinants of students' idealistic and realistic aspirations. Given that the social stratification of aspirations strikes in the early school career, our findings suggest a change of perspective in terms of considering the role of young students in research on the occurrence of educational inequalities, even in elementary school. Follow-up analyses could expand the perspective of students' aspiration formation beyond the sphere of the family, in terms of the institutional school context and the position of the teacher, and further address the long-term development of idealistic and realistic aspirations, as well as the complex interrelations between predictors of the different theoretical traditions. A major strength of this study lies in the data that facilitates the distinction between early idealistic and realistic aspirations from the perspective of young students. Limitations are imposed by the unavailability of indicators that might additionally determine

early aspirations, such as grades, aspirations of peers, and indicators regarding the students' general value of education.

**Open Access** This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

## Appendix

**Table 4** Spearman's rank correlations for pairwise deletion

	Students' idealistic aspirations	Students' realistic aspirations	Parents' idealistic aspirations	Parents' realistic aspirations
Students' idealistic aspirations	1.000	–	–	–
Students' realistic aspirations <i>n</i> = 4947	0.647***	1.000	–	–
Parents' idealistic aspirations <i>n</i> = 3421	0.264***	0.254*** <i>n</i> = 3421	1.000	–
Parents' realistic aspirations <i>n</i> = 3390	0.285***	0.281*** <i>n</i> = 3390	0.574*** <i>n</i> = 3371	1.000

Source: NEPS Starting Cohort 2 (release 6.0.0), *n* = pairwise deletion; authors' calculations

\**p* < 0.05, \*\**p* < 0.01, \*\*\**p* < 0.001

**Table 5** Spearman's rank correlations for all generated cases

	Students' idealistic aspirations	Students' realistic aspirations	Parents' idealistic aspirations	Parents' realistic aspirations
Students' idealistic aspirations	1.000	–	–	–
Students' realistic aspirations	0.647***	1.000	–	–
Parents' idealistic aspirations	0.283***	0.257***	1.000	–
Parents' realistic aspirations	0.298***	0.287***	0.625***	1.000

Source: NEPS Starting Cohort 2 (release 6.0.0), *n* = 247350; all generated cases; authors' calculations

\**p* < 0.05, \*\**p* < 0.01, \*\*\**p* < 0.001



**Table 6** Polychoric correlations (SE) for imputed data

	Students' idealistic aspirations	Students' realistic aspirations	Parents' idealistic aspirations	Parents' realistic aspirations
Students' idealistic aspirations	1.000	–	–	–
Students' realistic aspirations	0.786 (0.006)	1.000	–	–
Parents' idealistic aspirations	0.386 (0.018)	0.341 (0.018)	1.000	–
Parents' realistic aspirations	0.400 (0.017)	0.363 (0.017)	0.805 (0.006)	1.000

Source: NEPS Starting Cohort 2 (release 6.0.0),  $n = 4947$ ,  $m = 50$ ; authors' calculations

Levels of significance could not be obtained

**Table 7** Distribution of observed, imputed and complete cases

Variables	<i>N</i>	Observed cases % or average	Imputed cases % or average	Complete cases % or average
<b>Dependent variables (ref. not Abitur)</b>				
<i>Students' idealistic aspirations</i>	4947	69.05%	None	69.05%
<i>Students' realistic aspirations</i>	4947	60.44%	None	60.44%
<b>Family Background</b>				
<i>Parental level of education</i>	4193	–	–	–
Max. HSA	–	7.37%	17.43%	11.68%
RSA	–	30.43%	38.94%	31.64%
Abitur	–	62.20%	43.64%	58.88%
<i>Cultural capital</i>	4359	0.77	0.66	0.76
<i>Economic capital</i>	1018	–	–	–
<2000 €	–	7.07%	13.41%	11.69%
2000–4000 €	–	45.78%	45.50%	47.68%
>4000 €	–	47.15%	41.09%	40.63%
<i>Familial communication</i>	4942	3.38	3.33	3.37
<b>Non-cognitive and cognitive performance</b>				
<i>Joy of learning</i>	4873	3.00	2.86	2.99
<i>Exertion</i>	4883	3.36	3.28	3.37
<i>Performance in mathematics</i>	4728	0.02	0.02	0.02
<i>Performance in science</i>	4791	–0.01	–0.21	–0.01
<i>Performance in grammar</i>	4659	0.01	–0.09	0.01
<b>Rational calculations</b>				
<i>RC probability of success</i>	4879	3.58	3.50	3.57
<i>RC benefits</i>	4711	4.34	3.96	4.32
<i>RC costs</i>	4739	3.88	3.77	3.88

**Table 7** (Continued)

Variables	N	Observed cases % or average	Imputed cases % or average	Complete cases % or average
<b>Parental aspirations (ref. not Abitur)</b>				
<i>Parents' idealistic aspirations</i>	3421	78.14%	56.40%	71.28%
<i>Parents' realistic aspirations</i>	3390	66.19%	38.04%	57.29%
<b>Control variables</b>				
<i>Region (ref. West)</i>	4947	–	–	–
East	–	14.24%	None	14.24%
<i>Funding</i>	3610	–	–	–
Public	–	90.44%	88.43%	89.89%
Private	–	5.96%	6.57%	6.12%
Church	–	3.60%	5.00%	3.97%
<i>Migration background (ref. none)</i>	3987	23.80%	38.39%	26.68%
<i>Gender (ref. none)</i>	4485	–	–	–
Male	–	49.81%	50.48%	49.88%
<i>Year of birth</i>	4947	–	–	–
2004	–	5.45%	None	5.45%
2005	–	31.34%	None	31.34%
2006	–	67.55%	None	67.55%
2007	–	5.66%	None	5.66%

Source: NEPS Starting Cohort 2 (release 6.0.0); authors' calculations, the results of the imputed and complete cases are averaged over  $m = 50$

HSA Hauptschulabschluss, RSA Realschulabschluss

**Table 8** Individual logistic regression models for students' idealistic aspirations (results are y-standardized)

	Students' idealistic aspirations: Abitur (0/1)				
	I bStdY (SE)	II bStdY (SE)	III bStdY (SE)	IV bStdY (SE)	VI bStdY (SE)
<b>Family background</b>					
<i>Parental level of education (ref. Abitur)</i>					
HSA	–	–0.319** (0.102)	–	–	–
RSA	–	–0.174** (0.054)	–	–	–
<i>Cultural capital</i>	–	0.484*** (0.104)	–	–	–
<i>Economic capital (ref. &gt;4000 €)</i>					
<2000 €	–	–0.436* (0.209)	–	–	–
2000–4000 €	–	–0.229 (0.115)	–	–	–
<i>Familial communication</i>	–	0.028 (0.021)	–	–	–

**Table 8** (Continued)

	Students' idealistic aspirations: Abitur (0/1)				
	I bStdY (SE)	II bStdY (SE)	III bStdY (SE)	IV bStdY (SE)	VI bStdY (SE)
<b>Non-cognitive and cognitive performance</b>					
<i>Joy of learning</i>	–	–	0.067*** (0.018)	–	–
<i>Exertion</i>	–	–	0.167*** (0.030)	–	–
<i>Performance in mathematics</i>	–	–	0.179*** (0.023)	–	–
<i>Performance in science</i>	–	–	0.116*** (0.024)	–	–
<i>Performance in grammar</i>	–	–	0.104*** (0.023)	–	–
<b>Rational calculations</b>					
<i>RC probability of success</i>	–	–	–	0.199*** (0.016)	–
<i>RC benefits</i>	–	–	–	0.351*** (0.018)	–
<i>RC costs</i>	–	–	–	0.045*** (0.014)	–
<b>Parental aspirations</b>					
<i>Parents' idealistic aspiration (ref. Abitur)</i>					
None	–	–	–	–	–0.262 (0.307)
HSA	–	–	–	–	–0.528*** (0.132)
RSA	–	–	–	–	–0.374*** (0.053)
<i>Parents' realistic aspiration (ref. Abitur)</i>					
HSA	–	–	–	–	–0.523*** (0.100)
RSA	–	–	–	–	–0.454*** (0.047)
<b>Control variables</b>					
<i>Region: East (ref. West)</i>	–0.207*** (0.045)	–	–	–	–
<i>Funding (ref. public)</i>					
Private	0.026 (0.081)	–	–	–	–
Church	0.003 (0.105)	–	–	–	–
<i>Gender: male (ref. female)</i>	–0.060 (0.034)	–	–	–	–
<i>Migration background (ref. none)</i>	–0.033 (0.042)	–	–	–	–
<i>Age indicator</i>	–0.010*** (0.004)	–	–	–	–

**Table 8** (Continued)

	Students' idealistic aspirations: Abitur (0/1)				
	I bStdY (SE)	II bStdY (SE)	III bStdY (SE)	IV bStdY (SE)	VI bStdY (SE)
<b>Pseudo-R<sup>2</sup></b> <b>(McKelvey &amp; Zavoina)</b>	0.006	0.045	0.074	0.167	0.091

Source: NEPS Starting Cohort 2 (release 6.0.0),  $n = 4947$ ,  $m = 50$ ; authors' calculations

HSA Hauptschulabschluss, RSA Realschulabschluss

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table 9** Individual logistic regression models for students' realistic aspirations (results are y-standardized)

	Students' realistic aspirations: Abitur (0/1)				
	I bStdY (SE)	II bStdY (SE)	III bStdY (SE)	IV bStdY (SE)	VI bStdY (SE)
<b>Family background</b>					
<i>Parental level of education (ref. Abitur)</i>					
HSA	–	–0.278** (0.104)	–	–	–
RSA	–	–0.212*** (0.051)	–	–	–
<i>Cultural capital</i>	–	0.237* (0.096)	–	–	–
<i>Economic capital (ref. &gt;4000 €)</i>					
<2000 €	–	–0.441* (0.177)	–	–	–
2000–4000 €	–	–0.247* (0.098)	–	–	–
<i>Familial communication</i>	–	0.068* (0.020)	–	–	–
<b>Non-cognitive and cognitive performance</b>					
<i>Joy of learning</i>	–	–	0.063*** (0.017)	–	–
<i>Exertion</i>	–	–	0.238*** (0.030)	–	–
<i>Performance in mathematics</i>	–	–	0.166*** (0.022)	–	–
<i>Performance in science</i>	–	–	0.086*** (0.022)	–	–
<i>Performance in grammar</i>	–	–	0.039 (0.021)	–	–
<b>Rational calculations</b>					
<i>RC probability of success</i>	–	–	–	0.312*** (0.016)	–
<i>RC benefits</i>	–	–	–	0.295*** (0.018)	–
<i>RC costs</i>	–	–	–	0.002 (0.014)	–

**Table 9** (Continued)

	Students' realistic aspirations: Abitur (0/1)				
	I bStdY (SE)	II bStdY (SE)	III bStdY (SE)	IV bStdY (SE)	VI bStdY (SE)
<b>Parental aspirations</b>					
<i>Parents' idealistic aspiration (ref. Abitur)</i>					
None	–	–	–	–	–0.051 (0.296)
HSA	–	–	–	–	–0.262 (0.150)
RSA	–	–	–	–	–0.345*** (0.051)
<i>Parents' realistic aspiration (ref. Abitur)</i>					
HSA	–	–	–	–	–0.573*** (0.103)
RSA	–	–	–	–	–0.385*** (0.043)
<b>Control variables</b>					
<i>Region: East (ref. West)</i>					
	–0.132** (0.046)	–	–	–	–
<i>Funding (ref. public)</i>					
Private	0.005 (0.080)	–	–	–	–
Church	–0.101 (0.104)	–	–	–	–
<i>Gender: male (ref. female)</i>					
	–0.035 (0.034)	–	–	–	–
<i>Migration background (ref. none)</i>					
	0.004 (0.042)	–	–	–	–
<i>Age indicator</i>					
	–0.020*** (0.004)	–	–	–	–
<b>Pseudo-R<sup>2</sup> (McKelvey &amp; Zavoina)</b>	0.007	0.038	0.054	0.174	0.057

Source: NEPS Starting Cohort 2 (release 6.0.0),  $n = 4947$ ,  $m = 50$ ; authors' calculations

HAS Hauptschulabschluss, RSA Realschulabschluss

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table 10** Logistic regression models for students' idealistic aspirations (results as average marginal effects)

	Students' idealistic aspirations: Abitur (0/1)			
	I AME (SE)	II AME (SE)	III AME (SE)	IV AME (SE)
<b>Family background</b>				
<i>Parental level of education (ref. Abitur)</i>				
HSA	-0.163*** (0.044)	-0.083* (0.036)	-0.055 (0.032)	-0.006 (0.031)
RSA	-0.071** (0.021)	-0.033 (0.019)	-0.009 (0.017)	0.018 (0.016)
<i>Cultural capital</i>	0.163*** (0.041)	0.097* (0.038)	0.081* (0.034)	0.041 (0.033)
<i>Economic capital (ref. &gt;4000 €)</i>				
<2000 €	-0.195* (0.089)	-0.149* (0.073)	-0.138* (0.064)	-0.123* (0.059)
2000–4000 €	-0.089* (0.044)	-0.074* (0.034)	-0.060 (0.030)	-0.052* (0.026)
<i>Familial communication</i>	0.011 (0.008)	0.011 (0.008)	-0.001 (0.007)	0.000 (0.007)
<b>Non-cognitive and cognitive performance</b>				
<i>Joy of learning</i>	–	0.021** (0.007)	0.016* (0.007)	0.013 (0.007)
<i>Exertion</i>	–	0.051*** (0.012)	-0.003 (0.011)	-0.006 (0.011)
<i>Performance in mathematics</i>	–	0.064*** (0.009)	0.035*** (0.008)	0.024** (0.008)
<i>Performance in science</i>	–	0.034*** (0.009)	0.019* (0.008)	0.014 (0.008)
<i>Performance in grammar</i>	–	0.026** (0.009)	0.020* (0.009)	0.016 (0.008)
<b>Rational calculations</b>				
<i>RC probability of success</i>	–	–	0.050*** (0.006)	0.045*** (0.006)
<i>RC benefits</i>	–	–	0.108*** (0.006)	0.104*** (0.006)
<i>RC costs</i>	–	–	0.020*** (0.005)	0.020*** (0.005)
<b>Parental aspirations</b>				
<i>Parents' idealistic aspiration (ref. Abitur)</i>				
None	–	–	–	-0.035 (0.114)
HSA	–	–	–	-0.136* (0.061)
RSA	–	–	–	-0.093*** (0.022)
<i>Parents' realistic aspiration (ref. Abitur)</i>				
HSA	–	–	–	-0.054 (0.043)
RSA	–	–	–	-0.051** (0.019)

**Table 10** (Continued)

	Students' idealistic aspirations: Abitur (0/1)			
	I AME (SE)	II AME (SE)	III AME (SE)	IV AME (SE)
<b>Control variables</b>				
<i>Region: East (ref. West)</i>	-0.044* (0.021)	-0.029 (0.019)	-0.011 (0.018)	-0.017 (0.018)
<i>Funding (ref. public)</i>				
Private	0.009 (0.030)	0.019 (0.029)	0.029 (0.026)	0.021 (0.026)
Church	-0.015 (0.041)	-0.019 (0.040)	0.002 (0.037)	-0.009 (0.037)
<i>Gender: male (ref. female)</i>	-0.025 (0.014)	-0.028* (0.014)	-0.033* (0.013)	-0.027* (0.013)
<i>Migration background (ref. none)</i>	0.071** (0.019)	0.097*** (0.017)	0.067*** (0.016)	0.043* (0.017)
<i>Age indicator</i>	-0.001 (0.001)	-0.002 (0.001)	-0.002 (0.001)	-0.000 (0.001)
<b>Pseudo-R<sup>2</sup> (McKelvey &amp; Zavoina)</b>	0.051	0.097	0.209	0.227

Source: NEPS Starting Cohort 2 (release 6.0.0),  $n = 4947$ ,  $m = 50$ ; authors' calculations  
HSA Hauptschulabschluss, RSA Realschulabschluss

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table 11** Logistic regression models for students' realistic aspirations (results as average marginal effects)

	Students' realistic aspirations: Abitur (0/1)			
	I AME (SE)	II AME (SE)	III AME (SE)	IV AME (SE)
<b>Family background</b>				
<i>Parental level of education (ref. Abitur)</i>				
HSA	-0.152** (0.046)	-0.086* (0.041)	-0.052 (0.037)	-0.011 (0.036)
RSA	-0.094*** (0.022)	-0.064** (0.020)	-0.037* (0.019)	-0.013 (0.018)
<i>Cultural capital</i>	0.081 (0.042)	0.030 (0.040)	0.000 (0.036)	-0.035 (0.035)
<i>Economic capital (ref. &gt;4000 €)</i>				
<2000 €	-0.218* (0.083)	-0.181* (0.071)	-0.160** (0.061)	-0.146* (0.057)
2000–4000 €	-0.110* (0.044)	-0.095* (0.036)	-0.075* (0.031)	-0.068* (0.027)
<i>Familial communication</i>	0.030*** (0.008)	0.026** (0.008)	0.013 (0.008)	0.013 (0.008)

**Table 11** (Continued)

	Students' realistic aspirations: Abitur (0/1)			
	I AME (SE)	II AME (SE)	III AME (SE)	IV AME (SE)
<b>Non-cognitive and cognitive performance</b>				
<i>Joy of learning</i>	–	0.022** (0.008)	0.013 (0.007)	0.010 (0.007)
<i>Exertion</i>	–	0.087*** (0.013)	0.022 (0.012)	0.019 (0.012)
<i>Performance in mathematics</i>	–	0.067*** (0.009)	0.030** (0.009)	0.020* (0.009)
<i>Performance in science</i>	–	0.025** (0.010)	0.009 (0.009)	0.005 (0.009)
<i>Performance in grammar</i>	–	0.005 (0.010)	0.000 (0.009)	–0.002 (0.009)
<b>Rational calculations</b>				
<i>RC probability of success</i>	–	–	0.107*** (0.006)	0.103*** (0.006)
<i>RC benefits</i>	–	–	0.104*** (0.007)	0.100*** (0.007)
<i>RC costs</i>	–	–	0.003 (0.005)	0.003 (0.015)
<b>Parental aspirations</b>				
<i>Parents' idealistic aspiration (ref. Abitur)</i>				
None	–	–	–	0.020 (0.117)
HSA	–	–	–	–0.039 (0.067)
RSA	–	–	–	–0.088*** (0.022)
<i>Parents' realistic aspiration (ref. Abitur)</i>				
HSA	–	–	–	–0.101* (0.047)
RSA	–	–	–	–0.035 (0.020)
<b>Control variables</b>				
<i>Region: East (ref. West)</i>	–0.016 (0.022)	–0.003 (0.021)	0.019 (0.019)	0.013 (0.019)
<i>Funding (ref. public)</i>				
Private	0.002 (0.033)	0.010 (0.032)	0.020 (0.030)	0.013 (0.030)
Church	–0.053 (0.044)	–0.047 (0.043)	–0.038 (0.040)	–0.045 (0.040)
<i>Gender: male (ref. female)</i>	–0.016 (0.015)	–0.018 (0.015)	–0.020 (0.014)	–0.015 (0.014)
<i>Migration background (ref. none)</i>	0.087*** (0.022)	0.103*** (0.021)	0.069** (0.019)	0.045* (0.021)
<i>Age indicator</i>	–0.006*** (0.002)	–0.006*** (0.002)	–0.006*** (0.001)	–0.005*** (0.001)
<b>Pseudo-R<sup>2</sup></b> <b>(McKelvey &amp; Zavoina)</b>	0.044	0.079	0.199	0.209

Source: NEPS Starting Cohort 2 (release 6.0.0),  $n = 4947$ ,  $m = 50$ ; authors' calculations

HSA Hauptschulabschluss, RSA Realschulabschluss

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$



## References

- Aßmann, C., Steinhauer, H. W., Kiesl, H., Koch, S., Schönberger, B., Müller-Kuller, A., et al. (2011). Sampling designs of the National Educational Panel Study: challenges and solutions. In H.-P. Blossfeld, H.-G. Roßbach & J. von Maurice (Eds.), *Education as a Lifelong Process. The German National Educational Panel Study (NEPS)* (Zeitschrift für Erziehungswissenschaft: Special Issue 14, pp. 51–65). Wiesbaden: VS.
- Becker, B., & Gresch, C. (2016). Bildungsaspirationen in Familien mit Migrationshintergrund. In I. C. Diehl, C. Hunkler & C. Kristen (Eds.), *Ethnische Ungleichheiten im Bildungsverlauf. Mechanismen, Befunde, Debatten* (pp. 73–115). Wiesbaden: Springer VS.
- Blau, P. M., & Duncan, O. D. (1967). *The American occupational structure*. New York: John Wiley & Sons.
- Blossfeld, H.-P. (1988). Sensible Phasen im Bildungsverlauf: Eine Längsschnittanalyse über die Prägung von Bildungskarrieren durch den gesellschaftlichen Wandel. *Zeitschrift für Pädagogik*, 34(1), 45–63.
- Blossfeld, H.-P., Roßbach, H.-G., & Maurice, J. von (Eds.) (2011). *Education as a Lifelong Process. The German National Educational Panel Study (NEPS)* (Zeitschrift für Erziehungswissenschaft: Special Issue 14). Wiesbaden: VS Verlag für Sozialwissenschaften.
- Boudon, R. (1974). *Education, opportunity, and social inequality. Changing prospects in western society*. New York: Wiley.
- Bourdieu, P. (1973). Cultural reproduction and social reproduction. In R. K. Brown (Ed.), *Knowledge, education, and cultural change: papers in the sociology of education* (pp. 71–112). London: Travistock.
- Bourdieu, P. (1977). *Outline of a theory of practice*. Cambridge: University Press.
- Bourdieu, P. (1986). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). New York: Greenwood Press.
- Breen, R., & Goldthorpe, J. H. (1997). Explaining educational differentials. Towards A formal rational action theory. *Rationality and Society*, 9(3), 275–305.
- Bühler-Niederberger, D., & Türkyilmaz, A. (2017). Erben oder (Inter-)Akteure? Entwürfe von Kindern in der Erforschung sozialer Ungleichheit. In I. I. Diehm, M. Kuhn & C. Machold (Eds.), *Differenz – Ungleichheit – Erziehungswissenschaft. Verhältnisbestimmungen im (Inter-)Disziplinären* (pp. 199–218). Wiesbaden: Springer VS.
- Ditton, H. (Ed.). (2007). *Kompetenzaufbau und Laufbahnen im Schulsystem. Ergebnisse einer Längsschnittuntersuchung an Grundschulen*. Münster: Waxmann.
- Ditton, H. (2013). Bildungsverläufe in der Sekundarstufe. Ergebnisse einer Längsschnittstudie zu Wechseln der Schulform und des Bildungsgangs. *Zeitschrift für Pädagogik*, 59(6), 887–911.
- Ditton, H., & Krüskens, J. (2009). Bildungslaufbahnen im differenzierten Schulsystem – Entwicklungsverläufe von Laufbahempfehlungen und Bildungsaspirationen in der Grundschulzeit. In I. J. Baumert, K. Maaz & U. Trautwein (Eds.), *Bildungsentcheidungen* (Zeitschrift für Erziehungswissenschaft: Special Issue 12, pp. 74–102). Wiesbaden: VS.
- Erikson, R., & Jonsson, J. O. (1996). Explaining class inequality in education: the Swedish test case. In R. Erikson (Ed.), *Social inequality series. Can education be equalized? The Swedish case in comparative perspective* (pp. 1–63). Boulder: Westview Press.
- Erikson, R., Goldthorpe, J. H., Jackson, M., Yaish, M., & Cox, D. R. (2005). On class differentials in educational attainment. *Proceedings of the National Academy of Sciences of the United States of America*, 102(27), 9730–9733.
- Fuß, D., Gnamb, T., Lockl, K., & Attig, M. (2016). *Competence data in NEPS: overview of measures and variable naming conventions* (Starting Cohorts 1 to 6). Bamberg: Leibniz Institute for Educational Trajectories (LIfBi).
- Gehrmann, S. (2019). *Aspirationen, kulturelles Kapital und soziale Herkunft. Eine qualitativ-empirische Untersuchung von Grundschulkindern in Deutschland*. Wiesbaden: Springer VS.
- Hahn, I., Schöps, K., Saß, S., Hansen, S., Martensen, M., Wagner, H., & Funke, L. (2013). *The assessment of scientific literacy in the National Educational Panel Study (NEPS) including example items for Kindergarten, grade 6, students and adults. Scientific Use File 2013, Version 1.0.0*. Bamberg: Leibniz Institute for Educational Trajectories (LIfBi).
- Haller, A. O. (1968). On the concept of aspiration. *Rural Sociology*, 33(4), 484–487.
- Harazd, B., & van Ophuysen, S. (2008). Was bedingt die Wahl eines nicht empfohlenen höheren Bildungsgangs? *Zeitschrift für Erziehungswissenschaft*, 11(4), 626–647.
- Haunberger, S., & Teubner, M. (2008). Bildungswünsche von Eltern und Kindern im Vergleich. Eine empirische Analyse anhand der drei Wellen des DJI-Kinderpanels. In C. Alt (Ed.), *Kinderleben – Individuelle Entwicklungen in sozialen Kontexten* (pp. 293–316). Wiesbaden: VS.

- Hauser, R. M. (2005). Survey response in the long run: the wisconsin longitudinal study. *Field Methods*, 17(1), 3–29.
- Hauser, R. M., & Anderson, D. K. (1991). Post-high school plans and aspirations of black and white high school seniors: 1976–86. *Sociology of Education*, 64(4), 263–277.
- Helsper, W., Kramer, R.-T., Brademann, S., & Ziems, C. (2007). Der individuelle Orientierungsrahmen von Kindern und der Übergang in die Sekundarstufe. Erste Ergebnisse eines qualitativen Längsschnitts. *Zeitschrift für Pädagogik*, 53(4), 477–490.
- Hill, N. E., Castellino, D. R., Lansford, J. E., Nowlin, P., Dodge, K. A., Bates, J. E., & Pettit, G. S. (2004). Parent academic involvement as related to school behavior, achievement, and aspirations: demographic variations across adolescence. *Child Development*, 75(5), 1491–1509.
- von Hippel, P. T. (2007). Regression with Missing Ys: An Improved Strategy for Analyzing Multiply Imputed Data. *Sociological Methodology*, 37(1), 83–116.
- Jonkmann, K., Maaz, K., Neumann, M., & Gresch, C. (2010). Übergangsquoten und Zusammenhänge zu familiärem Hintergrund und schulischen Leistungen: Deskriptive Befunde. In K. Maaz, J. Baumert, C. Gresch & N. McElvany (Eds.), *Der Übergang von der Grundschule in die weiterführende Schule. Leistungsgerechtigkeit und regionale, soziale und ethnisch-kulturelle Disparitäten* (Bildungsforschung Vol. 34, pp. 123–149). Bonn: Bundesministerium für Bildung und Forschung (BMBF) Referat Bildungsforschung.
- Kerckhoff, A. C. (1976). The status attainment process: socialization or allocation? *Social Forces*, 55(1), 368–381.
- KMK (2017). *The Education System in the Federal Republic of Germany 2014/2015. A description of the responsibilities, structures and developments in education policy for the exchange of information in Europe*. Bonn: Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany.
- Kurz, K., & Paulus, W. (2008). Übergänge im Grundschulalter die Formation elterlicher Bildungsaspirationen. In K.-S. Rehberg (Ed.), *Die Natur der Gesellschaft* (Verhandlungen des 33. Kongresses der Deutschen Gesellschaft für Soziologie in Kassel 2006, pp. 5489–5503). Frankfurt am Main: Campus.
- Lewin, K. (1939). Field theory and experiment in social psychology: concepts and methods. *The American Journal of Sociology*, 44(6), 868–896.
- Lorenz, C., Berendes, K., & Weinert, S. (2017). *Measuring receptive grammar in kindergarten and elementary school children in the German national educational panel study* (NEPS Survey Paper 24). Bamberg: Leibniz Institute for Educational Trajectories (LifBi).
- Maaz, K., Baumert, J., Gresch, C., & McElvany, N. (Eds.). (2010). *Der Übergang von der Grundschule in die weiterführende Schule. Leistungsgerechtigkeit und regionale, soziale und ethnisch-kulturelle Disparitäten* (Bildungsforschung, Vol. 34). Bonn: Bundesministerium für Bildung und Forschung (BMBF) Referat Bildungsforschung.
- Mood, C. (2010). Logistic regression: why we cannot do what we think we can do, and what we can do about it. *European Sociological Review*, 26(1), 67–82.
- Morgan, S. L. (2006). Expectations and aspirations. In G. Ritzer (Ed.), *The Blackwell encyclopedia of sociology* (pp. 1528–1531). Oxford: Blackwell, University Press.
- OECD (2005). *PISA 2003 Technical Report*. Paris: Organisation for Economic Co-operation and Development.
- Riphahn, R. T., & Serfling, O. (2002). *Item non-response on income and wealth questions*. IZA Discussion Paper No. 573. <https://ssrn.com/abstract=331467>
- Roth, T. (2017). Interpersonal influences on educational expectations. New evidence for Germany. *Research in Social Stratification and Mobility*, 48, 68–84.
- Rubin, D. B. (1987). *Multiple Imputation for Nonresponse in Surveys*. New York: John Wiley & Sons.
- Schnittjer, I., & Duchhardt, C. (2015). *Mathematical competence: framework and exemplary test items*. Bamberg: Leibniz Institute for Educational Trajectories (LifBi).
- Sewell, W. H., Haller, A. O., & Ohlendorf, G. W. (1970). The educational and early occupational status attainment process: replication and revision. *American Sociological Review*, 35(6), 1014–1027.
- Sewell, W. H., Haller, A. O., & Portes, A. (1969). The educational and early occupational attainment process. *American Sociological Review*, 34(1), 82–92.
- Stocké, V. (2009). Adaptivität oder Konformität? Die Bedeutung der Bezugsgruppe und der Leistungsrealität der Kinder für die Entwicklung elterlicher Bildungsaspirationen am Ende der Grundschulzeit. In J. Baumert, K. Maaz & U. Trautwein (Eds.), *Bildungsentscheidungen* (Zeitschrift für Erziehungswissenschaft: Special Issue 12, pp. 257–281). Wiesbaden: VS.

- Stocké, V. (2013). Bildungsaspirationen, soziale Netzwerke und Rationalität. In R. Becker & A. Schulze (Eds.), *Bildungskontexte. Strukturelle Voraussetzungen und Ursachen ungleicher Bildungschancen* (pp. 269–298). Wiesbaden: Springer VS.
- Trebbels, M. (2014). *The transition at the end of compulsory full-time education. Educational and future career aspirations of native and migrant students*. Wiesbaden: Springer VS.
- Walkey, F. H., McClure, J., Meyer, L. H., & Weir, K. F. (2013). Low expectations equal no expectations: aspirations, motivation, and achievement in secondary school. *Contemporary educational psychology*, 38(4), 306–315.
- White, I. R., Royston, P., & Wood, A. M. (2011). Multiple imputation using chained equations: Issues and guidance for practice. *Statistics in Medicine*, 30(4), 377–399.
- Wohlkinger, F. (2014). *Die Rolle des Schülers bei der Wahl der weiterführenden Schule. Eine vergleichende Untersuchung von Grundschulern aus Bayern und Sachsen*. Wiesbaden: Springer VS.
- Wohlkinger, F., & Ditton, H. (2012). Entscheiden die Schüler mit? Der Einfluss von Eltern, Lehrern und Kindern auf den Übergang nach der Grundschule. In R. Becker & H. Solga (Eds.), *Soziologische Bildungsforschung* (Kölner Zeitschrift für Soziologie und Sozialpsychologie: Special Issue 52, pp. 44–63). Wiesbaden: Springer VS.
- Zimmermann, T. (2018). Die Bedeutung signifikanter Anderer für eine Erklärung sozial differenzierter Bildungsaspirationen. *Zeitschrift für Erziehungswissenschaft*, 21(2), 339–360.
- Zinn, S., Würbach, A., Steinhauer, H. W., & Hammon, A. (2018). *Attrition and Selectivity of the NEPS Starting Cohorts: An Overview of the Past 8 YEARS*. Bamberg: Leibniz Institute for Educational Trajectories (LIfBi).