Social Inequality and Educational Decisions in the Life Course

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Abstract

Research has shown consistently that social origin has exceptionally strong effects on educational outcomes in Germany. Alongside the primary effects of social origin, it is the secondary effects that are especially strong. The reasons for these differences in educational decisions, which persist even when academic abilities are held constant, are not clear. Several theoretical approaches claim to explain the association between social origin and educational decisions. These include rational choice theory and different versions of bounded rationality; theories based on the relevance of values, social norms, and reference groups; social capital theory; and cultural capital theory. However, simultaneously judging the relative merits of these approaches requires the appropriate data. Up to now, there has been a particular lack of consistent measures

We regret the sudden and untimely death of Volker Stocké, who died on August 22, 2017.

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across all relevant educational stages over the life course. Longitudinal data offer great advantages for determining the causal effect of the factors under consideration. Previous data has been restricted to a single educational decision and has been either cross-sectional or restricted to locally defined samples. Pillar 3 of the German National Educational Panel Study (NEPS) aims to measure the relevant factors for explaining educational decisions and inequality in educational opportunity in all relevant stages over the life course.

Keywords
Education · Social inequality · Rational choice · Social capital · Cultural capital

6.1 Introduction

Pillar 3 of the National Educational Panel Study (NEPS) focuses on educational decisions and inequality in educational opportunity (IEO) over the life course. There is a rich tradition of theoretical work in this field. Some of these theoretical approaches aim to use social origin to explain all relevant educational decisions over the life course as well as the inequality in these decisions (see, for explanations of ethnic inequality, Chap. 7, this volume). The four most important theories are (a) rational choice theory and bounded rationality; (b) values, social norms, and reference groups; (c) social capital theory; and (d) cultural capital theory.[1] This section provides an overview of the core theories forming the basis of Pillar 3 and how these theories are being operationalized to explain different transitions and decisions over the life course.

From birth to retirement, individuals face a vast number of important educational decisions. Some of these—such as the choice of school type after elementary school—have received extensive scientific attention, whereas others have been mostly neglected up to now. Shortly after a child's birth, parents have the option of choosing different child care arrangements, followed by the decision on whether to attend Kindergarten (and for how long), when to start elementary school, and which type of secondary school to attend. Then, there is the decision about leaving school instead of continuing education, the choice between academic and vocational studies, and the question whether to attend vocational education and training or a tertiary track. After leaving the educational system, there is the decision to participate in various forms of lifelong learning. Furthermore, actors can decide to modify or correct most of these choices at a later point in time by, for example, switching school types, dropping out of university, or obtaining a second degree.

Two important factors have to be taken into account when explaining educational decisions. First, the relative weight of different actors changes over the life course. Whereas in early stages, decisions are made mainly by a child's parents, with growing

[1]Other theoretical constructs pertaining to the decision formation, namely motivational concepts are discussed in Chap. 9, this volume.

age, the importance of the child increases. As a result, data collection in different educational stages has to concentrate on the appropriate decision agents. Second, educational decisions lead to different learning environments (e.g., school types), and these, in turn, influence future learning opportunities and outcomes. Thus, the interdependence between competence development (see Chap. 4, this volume), learning environments (see Chap. 5, this volume), and educational decisions has to be taken into account.

Many studies have shown considerable inequality in the above-mentioned educational decisions. For instance, children with less favorable social backgrounds spend less time at Kindergarten (Becker and Lauterbach 2008), select less ambitious secondary school tracks (Ditton 2007), and are less likely to continue school after a first school leaving certificate (Tieben 2011). Furthermore, lower social origins lead to less participation in higher (Reimer and Pollak 2010) and adult education (Schömann and Becker 1995). The extent of educational attainment has serious consequences for peoples' life chances. More education leads to higher income (Boockmann and Steiner 2006) and a lower unemployment risk (Kettunen 1997). There are important non-labor-market returns as well: Education is associated with better health (Sander 1998), lower risk of becoming criminal (Lochner and Moretti 2004), more life satisfaction (Hartog and Oosterbeck 1998), and better political representation (Milligan et al. 2004) (see, for all dimensions of returns, Chap. 8, this volume).

According to Boudon (1974), the reasons for inequality in educational opportunity (IEO) can be divided into primary and secondary effects of social class. Whereas primary effects operate through class differences in educationally relevant competencies, secondary effects lead to class inequality in educational choices at the same level of academic competence. Results for early educational stages prove that secondary effects are relatively strong in Germany (Becker 2009). Findings on the transition to secondary school in the state of Rhineland-Palatinate reveal that 53% of the effect of parental class and 71% of educational origin are due to secondary effects (Stocké 2007a). Similarly, secondary effects account for 40% of class inequality and 43% of effects of educational background in the states of Bavaria and Hesse (Relikowski et al. 2009). According to nationwide data, 59% of the effect of families' educational status is attributable to secondary effects (Neugebauer 2010). In the case of the transition to tertiary education, secondary effects have even been found to be as high as 53% and 79% (Neugebauer et al. 2013). Because secondary effects are of such pivotal significance for IEO, the third pillar deals with educational decisions.

For younger birth cohorts, the gender gap in secondary school degrees has changed considerably. Today, female students even receive higher educational degrees in Germany (Diefenbach and Klein 2002) and are less susceptible to grade retention (Krohne and Meier 2004). At the same time, men and women still choose gender-specific school subjects, fields of study, vocational education and training programs, and apprenticeships (e.g., Ayalon 1995). Some researchers explain these gender-related choices as the result of rational decisions (Jonsson 1999); others point to the relevance of biased beliefs about one's own abilities, gender differences in field-related self-concepts, or gender roles. In addition to improving the documentation of the most recent trends in

gender differences in the transition properties at the important branching points in educational careers, NEPS seeks to examine the explanatory potential of these competing theoretical explanations.

6.2 Theoretical Models and Empirical Evidence

This section gives an overview on the above-mentioned four most important theories for explaining educational inequality.

6.2.1 Rational Choice Theory and Bounded Rationality

There are three different versions of the theory of rational educational decisions: human capital theory (Becker 1964), the theory of planned behavior (Ajzen 1991), and sociological rational choice theory (Breen and Goldthorpe 1997; Erikson and Jonsson 1996; Esser 1999). Rational choice theory (RCT) can be regarded as a sound compromise between the extremes of human capital theory and the theory of planned behavior. Furthermore, this version of the theory has stimulated empirical research on selection between secondary school tracks and the decision to enter higher education (see, for a comparison of the different theories and the available empirical evidence, Stocké 2010). Thus, RCT is utilized as a theoretical basis of Pillar 3.

Sociological RCT assumes that the summary evaluation of an educational option O_i can be represented as the subjective expected utility SEU (O_i) (Breen and Goldthorpe 1997; Erikson and Jonsson 1996; Esser 1999). This SEU value is based on different educational returns that are evaluated on the basis of the actors' objectives j and result in the utility values U_{ij}. Relevant objectives are labor market returns such as income, job security, and job prestige (Stocké 2007b). An especially important non-labor-market outcome is to avoid intergenerational status demotion. Another important determinant of SEU is the subjective probability p_i of successfully completing an educational option O_i, so that the benefits U_{ij} can be realized. This expectation of success is the outcome of all the individual and structural factors that facilitate or hinder educational success. The last determinant of the expected utility SEU (O_i) is the direct and opportunity costs C_{ik} for completing educational option O_i. Direct costs include financial expenditures for textbooks, teaching materials, or tuition fees, whereas opportunity costs are all those forgone benefits that could have been realized instead of participating in educational training. The theory also includes nonfinancial burdens, for example, having to commute, time pressure, or alienation from friends and family. The theory assumes that the overall evaluation of each educational option can be expressed by the following formula: $\text{SEU}(O_i) = p_i \bullet U_{ij} - C_{ik}$. Actors then choose the option with the highest expected utility.

Three factors explain IEO: First, because of different endowments with time and resources, the burden of educational participation differs according to origin. Second,

own abilities combined with the support that can be mobilized from others make actors differ in how far they trust in their abilities to succeed in their respective educational careers. Third, the expected utility of educational returns may differ, for instance, because of anticipated discrimination on the labor market or because higher certificates are unnecessary for status maintenance.

Theoretical approaches and empirical evidence suggest that decision mechanisms are often much less than perfectly instrumentally rational. Instead, they are assumed to reflect satisficing (Simon 1993), be affected by frame selection (Esser 2001), and result from utilizing heuristics (Gigerenzer and Todd 1999) and attitudes. Furthermore, mode-choice models assume a variable kind of rationality (Heiner 1983). Another important determinant not taken into account by conventional RCT is the actor's time preference. It is assumed that people downscale and discount results of behavior that are expected to occur further on in the future (Fishburn and Rubinstein 1982). Thus, actors with higher discount rates can be expected to invest less in education, because costs are incurred in the present whereas advantages will come only later.

6.2.2 Values, Social Norms, and Reference Groups

Sociological approaches to explaining IEO have stressed the role of class-specific beliefs and values about educational success and differences in educational preferences conceptualized as achievement attitudes, norms, and values (e.g., Hyman 1966). Within the widely acclaimed Wisconsin Model, these subcultural differences in beliefs and values are assumed to result from social influence processes (Sewell et al. 1970). In particular, the learners' educational and occupational aspirations are expected to be shaped by reference groups and significant others. The resulting aspiration level is predicted to explain differences in educational outcomes. The theory assumes socially shaped aspirations to be the crucial mediating factor between social origin and educational behavior, and that this factor establishes motivational differences between status groups.

An often neglected but important differentiation is that between realistic and idealistic aspirations. Realistic aspirations represent forecasts of educational careers that take all factors facilitating or constraining educational attainment into account. In contrast, idealistic aspirations entail either self-commitment or a normative expectation to reach a certain educational level (see, for this differentiation, Haller 1968; Stocké 2005a). Whereas in many cases, it is unclear whether realistic expectations or idealistic wishes are being measured (e.g., Laanan 2003), idealistic aspirations are tapped more clearly by other measures (e.g., Dandy and Nettelbeck 2002). Although idealistic wishes may be the primary source of motivational effects on educational behavior, realistic expectations will be measured as well.

Interpersonal influences depend on the quality of the relationship and, in particular, on the strength of ties (Granovetter 1973). Influential others have been found to represent strong ties in terms of the frequency of interpersonal contact and communication

(Friedkin 1993), the duration of the relationships (Ganter 2003), and their length and intimacy (Hoffman et al. 1992). In order to take the relative effect of reference persons into account, proxy information about the strength of ties has to be measured.

Whereas the aforementioned influences establish normative reference group effects that are relevant for the formation of aspirations and values, reference groups also serve as a standard of comparison (Singer 1981). In order to realistically evaluate their own academic performance and their prospects of success in the future, actors utilize the performance of their social context as a standard for comparison. As a consequence, a well-performing reference group may have negative effects on learners' self-esteem and self-efficacy beliefs and consequently deteriorating effects on their achievement motivation (Bandura et al. 1996). Hence, normative and comparative reference group effects may exert contradictory effects on the learner's achievement motivation.

6.2.3 Social Capital Theory

Learners and families with large amounts of social capital can be expected to have privileged chances of reaching favorable educational outcomes. However, "social capital" can be regarded as an umbrella concept covering a range of different kinds of mechanisms. First, social capital refers to the existence of relations of trust and effective social norms that facilitate the provision of collective goods. According to Coleman (1988), functional communities around schools work together in order to enforce ambitious achievement norms and create positive attitudes toward learning (see, for normative reference group effects, paragraph 6.2.2, above). Many studies have confirmed the positive effect of social closure on educational success (e.g., Thorlindsson et al. 2007; for negative evidence, see Morgan and Todd 2009). Second, social capital encompasses differences in the quality and quantity of resources in a broader sense that a person can access and mobilize through social relations (Lin 1999). Three kinds of such resources can be differentiated. These are (a) information, for example, social networks provide access to adequate and cheap information about educational options (Granovetter 1973); (b) support, for example, well-educated parents can offer their children more qualified help in school-related issues (Teachman et al. 1997); and (c) obligations, for example, social credit built up in the past may help the actor to find a well-paid job (Bourdieu 1986). Many studies have shown that information (e.g., knowledge about job vacancies and inside information about job requirements) and support (e.g., referrals) also exert positive effects on labor market outcomes. As well as being directly beneficial for educational success, social capital also increases achievement motivation through different educational returns. Lower status families, being less well endowed with all kinds of social capital, have lower educational success and furthermore achieve lower returns to education on the labor market.

6.2.4 Cultural Capital Theory

Following social reproduction theory by Pierre Bourdieu and Jean-Claude Passeron, cultural capital has been hypothesized to be a major resource in the reproduction of educational inequalities and the existing class structure (Bourdieu 1986; Bourdieu and Passeron 1971). Basically, the authors assume that the class structure is reproduced across generations through the transmission of cultural capital within the family and through the way the cultural capital of the higher classes is rewarded within schools. In other words, the authors suppose that there is an intergenerational continuity of social positions backed by an only seemingly meritocratic educational system. Cultural capital comprises familiarity with and participation in the dominant culture in a society. Bourdieu (1986) distinguishes three different forms of cultural capital: (a) objectified cultural capital (resources such as pictures, musical instruments, books, and computers), (b) embodied cultural capital (such as cultural knowledge and linguistic competencies), and (c) institutionalized cultural capital (educational certificates and degrees).

Applications of the theory of cultural reproduction follow two different views on cultural capital: public cultural participation that serves to communicate status distinctions versus private forms of activities—such as reading—that help to develop specific skills (Crook 1997; see also de Graaf et al. 2000). Studies adopting the first perspective find a sizeable effect on educational success whatever specific educational outcome variable is chosen (school grades, years of schooling, or various transitions in the educational system; see DiMaggio 1982; Rössel and Beckert-Ziegelschmidt 2002). However, studies that additionally take into account activities directly supporting the development of skills find that participation in highbrow culture loses much of its explanatory power (de Graaf et al. 2000; Sullivan 2001). According to these studies, it is reading and watching certain valuable television programs that particularly foster students' educational attainment. Another important issue is whether cultural capital is surveyed in the parents (de Graaf et al. 2000), the students (DiMaggio 1982), or both (Aschaffenburg and Maas 1997; Rössel and Beckert-Ziegelschmidt 2002). If indicators of cultural capital are assessed only in students or parents, the hypothesis on the transmission of cultural capital from parents to children remains untested (see, for an exception, Sullivan 2001).

In the field of cultural capital, there are several open questions: First, applications of the theory are restricted to school students and their educational success. Is cultural capital relevant for educational success in later stages in the educational biography as well? Second, which kind of cultural capital has the strongest effect on educational success? Third, does the educational system positively sanction distinctive highbrow cultural capital, independent from competencies?

6.3 NEPS Measures for the Constructs in the Educational Stages

Given the various different educational decisions actors face over the life course, the main challenge for Pillar 3 is to develop a consistent concept of measurement for each construct over the eight educational stages. When doing so, adequate consideration must also be given to the specific situation within each stage. Therefore, the result has to be a balance between stage-specific and comparable measurements over the life course. As well as operationalizing the four theories for explaining educational decisions, the measurement of sociodemographics and social origin is central for Pillar 3. Here, rigorously standardized measurements are essential not only to retain comparability over the educational stages within NEPS but also to link up with existing (international) research.

Because there is a large overlap between reference group theories and social capital approaches such as that of Coleman (1988)—both dealing with normative climates and interpersonal influence—these constructs are generally measured at the same time points and treated together in Sect. 6.3.3. The target person's own aspirations and attitudes toward education are included in the section on bounded rationality.

6.3.1 Principles of Measuring Social Origin and Sociodemographics

Measuring social origin and sociodemographics is of central importance to NEPS. First, sociodemographic characteristics are essential for describing the composition of the sample, calculating weights, and performing imputation. Second, sociodemographic characteristics serve as proxy measures for several theoretically relevant constructs. And third, they are partly used as indicators for inequality in educational opportunity. The latter is of particular interest for Pillar 3, because we focus on social inequality and educational decisions.

Consequently, we attach great importance to an internationally comparable measurement of social origin and sociodemographic characteristics, and especially to the measurement of educational degrees and the structure of social inequality connected to status positions in the labor market. General and vocational degrees are measured so that they can be coded in line with the International Standard Classification of Educational Degrees (ISCED; OECD 1999) and the educational classification of the Comparative Analysis of Social Mobility in Industrial Nations (CASMIN; König et al. 1988) project. To measure the structure of social inequality, we collect detailed data about occupational positions. We are able to recode our data in line with, for example, the International Standard Classification of Occupations (ISCO; ILO 1990) as well as the International Socio-Economic Index of Occupational Status (ISEI; Ganzeboom et al. 1992) and the Erikson–Goldthorpe–Portocarero class scheme (EGP, Erikson et al. 1979; see also Erikson and Goldthorpe 1992).

In general, sociodemographic characteristics need to be ascertained for (a) the target person (i.e., for the child, adolescent, and adult who is the learner and decision maker); (b) the family of origin (both parents of the target person as well as siblings); and (c) the target person's own family (partner and children). Whenever possible, information is collected through self-reports by the individuals to whom the information is referring. Consequently, one reason to conduct a parental interview in Stages 1–5 is to obtain valid information about the social origin of the target persons and the sociodemographics of both target persons and parents. Depending on the educational stage under study, characteristics are being measured for different persons and in varying detail (see Table 6.1).

In addition, information on the target person's migration characteristics (see Chap. 7, this volume) as well as on her or his educational and employment history is collected for all cohorts. The basic instruments for measuring this history retrospectively are taken and adapted from the ALWA study ("*Arbeiten und Leben im Wandel*") of the Institute for Employment Research (Kleinert and Jacob 2006; see Chap. 17, this volume). Furthermore, in all educational stages, information is being collected on general and vocational educational level, employment, occupation, and migration history of mother and father in the family of origin and in the current partner. We are also collecting some information on the educational degrees and occupational status of siblings. Moreover, information on household income (see Chap. 8, this volume), household composition, and local residence is being measured in each stage. Adolescent or adult target persons in Stages 6–8

Table 6.1 Overview: measurement of sociodemographic characteristics

	Target persons		Family of origin		Own family	
	Stage 1–5	Stage 6–8	Parents	Siblings	Partners	Children
Basic sociodemographics	x	x	x	x	x	x
Migration characteristics (for details, see Pillar 4)	x	x	x		x	
Educational history	x	x				
Employment history		x				
General and vocational educational qualifications	x	x	x	x	x	x
Current employment status		x	x	x	x	
Current (or last) occupation and occupational status		x	x		x	
Household income and individual income (for details, see Pillar 5)	x	x	x			
Partnership status		x	x			
Household composition	x	x				
Regional information	x	x				

are additionally being asked for information on their personal income (see Chap. 8, this volume) and partnership status. Sociodemographic characteristics were measured in the first panel wave and are being updated each wave when status changes occur.

6.3.2 Measuring Rational Choice and Bounded Rationality

Finding a framework for operationalizing rational choice theory (RCT) and bounded rationality in NEPS poses the dilemma that instruments must be not only comparable across stages but also tailored to the decisions specific to each stage. A further problem is that there are substantial differences in the amount of previous research and operationalizations for the different educational decisions. Whereas several panel studies such as the projects "Educational Processes, Competence Development and Selection Decisions in Pre- and Primary School Age" (BiKS), "*Kompetenzaufbau und Laufbahnen im Schulsystem* [competence development and education careers in the school system]" (KOALA-S), and the "Mannheim Educational Panel Study" (MEPS), include rational choice constructs for the transition from elementary to secondary school, there are little to no explicit operationalizations for other stages. Furthermore, the existing concepts were developed with only one decision in mind, and it is not easy to transfer them to other contexts. Therefore, most of the constructs discussed in this section were developed specifically for NEPS.

To ensure comparability across stages, question format (including sentence structure, word choice, and response options) is being kept as constant as possible, whereas content varies according to the respective decision. All our operationalizations of RCT are strictly prospective, and we always focus on the most important upcoming decision. These are:

- Decisions about early child care arrangements (Stage 1)
- When to enter Kindergarten (Stage 1)
- When to enter elementary school (Stage 2)
- Choice of secondary school (Stage 3)
- Change of school type and choice of secondary degree (Stage 4)
- Choice of vocational education and training or university options (Stage 4, Stage 5)
- Discontinuation or change of vocational education and training/field of study (Stage 6, Stage 7)
- Choice of obtaining a master's degree/doctorate (Stage 7)
- Choice of reentering formal education (Stage 8)
- Participation in lifelong learning (Stage 8).

6.3.2.1 Expected Probability of Success, Costs, and Benefits

For each of these decisions, we operationalize the expected probability of success and the most relevant cost and benefit dimensions for each decision alternative. Depending on the stage, relevant cost dimensions include all or several of the following: financial

costs (both direct and indirect, e.g., missed income), social costs (e.g., losing friends who go to a different school/being sanctioned for not meeting social expectations), time costs, and effort costs. Benefits can include prospects for future jobs, access to other education options, and personal enjoyment of the chosen option. Which of these dimensions are used to explain a given decision depends on whether there is variation on a particular dimension for the different alternatives, whether previous research leads us to expect the dimension to be relevant, and whether the respondent is able to form an opinion about this dimension. For instance, it is the parents and not the school children themselves who are usually able to assess the financial implications of attending different school tracks.

6.3.2.2 Motive of Status Maintenance

NEPS includes an extensive operationalization of the motive of status maintenance, including maintenance of both educational and occupational status of the target person's mother and father. In Stages 1–5, we survey the parents' motive that their child should maintain their status. Stages 4–8 include the target person's motive of status maintenance. Thus, we can compare parents' and target persons' attitudes for the duration of secondary school.

For both educational and occupational status, we assess the subjective importance for the target person of maintaining the status of each parent. Consequently, the data provide evidence for testing the assumption that low status groups are less motivated to maintain their parents' status. For occupational status, we additionally ask respondents how likely they think it is that the mother's and father's status can be maintained when each of the possible educational options is chosen, thereby providing researchers with the opportunity to model an interaction of likelihood and importance, that is, subjective expected probability and utility.

6.3.2.3 Information and Time Horizon

The RCT assumes that actors are reasonably well informed about their options, and that their time horizon stretches far enough to consider the future implications of their actions. Therefore, we ask participants how well informed they feel about the institutional setting and the regulations relevant to the upcoming educational decision. Time horizon is operationalized by asking how often the respondent already thinks about a future decision. In addition, Pillars 3 and 4 have developed an instrument to measure actual information about the value of different educational degrees as well as certain institutional features of the education system in the form of a short quiz.

6.3.2.4 Aspirations and Value Orientations

Unlike most previous studies, NEPS distinguishes clearly between realistic and idealistic aspirations. In Stages 1–3 (birth to elementary school), we focus on parents' aspirations for their child's secondary school track. In Stage 4 (secondary school, Grades 5–10), we are surveying parents' and children's aspirations for the child's secondary degree every year. Additionally, we inquire about the child's expected and desired occupation and their realistic and idealistic plans after graduation. Occupational aspirations

are also measured in Stages 5–8. Additionally, we measure plans for after graduation (with a special focus on tertiary education) in Stage 5 (upper secondary school), vocational education and training aspirations in Stage 6 (vocational education and training), and aspirations for tertiary degrees in Stage 7 (university).

We assess value orientations in the form of a generalized attitude toward education, using a reduced version of the scale developed by Stocké (2005b). This scale is supplemented by stage-specific items in Stages 7 and 8.

6.3.3 Measuring Social Capital and Reference Group Effects

Operationalizations for the various dimensions of social capital and reference group effects are being developed in cooperation with Pillar 4. For an overview of social capital in regard to migration, see Chap. 7 in this volume.

6.3.3.1 Networks of Information, Support, and Obligation

We rely on a combination of established and newly developed instruments. Using a similar strategy as for RCT, our general approach is to rely on a common question format in all stages—thereby maintaining comparability—but to vary question content according to the decision of interest.

In all stages, we use a short version of the position generator (Lin et al. 2001) developed for the project "Immigrant children and youths in the German and Israeli educational systems" to determine network status composition (Schulz et al. 2017). Until the end of secondary school (Stages 1–5), the position generator is administered to the target person's parents. We also measure the composition of the respondent's network of close friends in terms of gender, migration background, and education.

We operationalize access to resources in a format similar to the resource generator proposed by van der Gaag and Snijders (2004, 2005). This instrument presents a list of resources and asks (a) whether the respondent knows somebody who has access to this resource and (b) whether this person is a family member, friend, or acquaintance, as a proxy for tie strength. However, instead of presenting a long list of general resources, we focus on a small number of carefully selected resources that are relevant to the decision at hand. For instance, we ask those about to graduate from lower secondary school and to enter vocational education and training whether they think that it is likely that somebody they know could give them information on where to apply. If this is the case, we ask (a) what their relationship to these persons is; (b) how many persons they know; and (c) gender, education, and migration background composition of the group of possible resource providers. Thus, we do not just know whether there is access to this resource, but also have a rough indication of quantity and quality.

In addition to this prospective measure of resource availability, we operationalize actual use of those resources retrospectively after the particular decision (such as change of occupation, the start of vocational education and training, or enrollment in university)

has taken place. Again, we measure the type of relationship; the number of people who provide the resource; and gender, education, and migration background composition.

6.3.3.2 Normative Climate and Reference Groups

The importance of different reference groups changes over the life course. The first and most important reference group is arguably the family, especially parents. In all stages, we therefore inquire about the educational outcomes parents expect from their children. The second reference group includes friends whose influence can be expected to increase over the life course. We ask our subjects about the expectations their friends have for their educational achievement, as well as proxy information about their friends' own educational values and aspirations. While children are still in school, we also ask parents about their own network of friends. A third reference group is composed of those with whom the target persons interact regularly in institutional settings: classmates (Stages 3–5), fellow university students (Stage 7), and coworkers (Stages 6 and 8). For each of these stages, we ask about the predominant attitudes toward education among these groups.

In Stages 2–5 (Kindergarten to upper secondary school), intergenerational closure is operationalized by asking parents how many of the parents of their child's friends and classmates they know personally. We also survey how often and in what form parents have contacts with the school or Kindergarten. To operationalize family climate, we use a short item battery previously developed within the BiKS project.

6.3.4 Dimensions of Cultural Capital

As already described, Bourdieu (1986) distinguishes three different forms of cultural capital: (a) objectified cultural capital, (b) institutionalized cultural capital, and (c) embodied cultural capital. All three forms are measured in NEPS.

6.3.4.1 Objectified Cultural Capital

To measure objectified cultural capital, NEPS has adopted a scale from the student questionnaire of the Programme for International Student Attainment (PISA) 2003 (Ramm et al. 2006). This scale contains questions on cultural possessions ("Are there any books in your home on classical literature [e.g., Goethe], books on poetry, and pieces of art [e.g., paintings]?"), home educational resources ("Which of the following is available in your home: a desk for learning, a room of your own, software for learning, books you can use for homework, a dictionary?"), and the number of books in the household. Whereas the cultural possessions scale assesses an element of the symbolic power path, the other two indicators assess aspects of a stimulating learning environment at home. As studies show, these PISA indicators are associated strongly with children's educational competencies (Jungbauer-Gans 2006).

6.3.4.2 Institutionalized Cultural Capital

Institutionalized cultural capital is conceptualized in the context of measuring social origin as described above: NEPS is surveying the educational history of all target persons and asking about the general and vocational educational qualifications of the mother and father of the family of origin.

6.3.4.3 Embodied Cultural Capital

The plan is to measure embodied cultural capital by developing an objective knowledge test following Sullivan (2001) for later waves. Embodied cultural capital is also being measured in the classical way (adopted from the ALWA study, see Matthes and Trahms 2010) by the frequency of participation in highbrow cultural activities such as going to the theater, museums or exhibitions, classic concerts, and opera. Furthermore, there are questions on the frequency of playing a musical instrument and listening to classical music that are similar to the questions in MEPS and BiKS. Finally, there is a scale measuring cultural involvement that contains the frequency of discussing political and social questions, books, as well as works of art and culture in general. This scale is adopted from PISA 2000 (Kunter et al. 2002).

6.3.4.4 Reading Culture

Besides measuring highbrow cultural activities, Pillar 3 is interested in measuring reading culture, because it has been shown to foster students' educational attainment (Crook 1997; see also de Graaf et al. 2000). Consequently, questions about the time spent on reading are asked in each NEPS cohort. Because of the emphasis on "Reading Engagement" in Stage 4, students are additionally asked how frequently they read literature of various genres as well as journals and magazines together with their attitude toward reading in general (see Chap. 13, this volume).

A further important issue in Stages 4 and 5 is to survey cultural capital in the parental interviews as well as in the students' questionnaires in order to test hypotheses on the transmission of cultural capital from parents to children. Therefore, the parents' questionnaire contains a shortened version of the questions about cultural capital.

All in all, the measurement of cultural capital has a high level of comparability over all stages; only slight adjustments are being made to respective instruments. The different dimensions of cultural capital are surveyed in the first wave of NEPS in all stages, except for Stage 1 and 7, in which rational choice is asked in the first wave, and Stage 8 in which social capital is a key aspect. Because it is assumed that cultural capital is relatively stable, measures are repeated less frequently than other core constructs.

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