



## NEPS SURVEY PAPERS

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# RETURNS TO EDUCATION ACROSS THE LIFE COURSE IN THE NATIONAL EDUCATIONAL PANEL STUDY: THEORETICAL FRAMEWORK AND CORRESPONDING SURVEY PROGRAM

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# Returns to Education Across the Life Course in the National Educational Panel Study: Theoretical Framework and Corresponding Survey Program

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# Returns to Education Across the Life Course in the National Educational Panel Study: Theoretical Framework and Corresponding Survey Program

## Abstract

One of the key themes covered in the National Educational Panel Study (NEPS) are returns to education. Within this wide-ranging field, NEPS focuses on the four following returns dimensions on which education is supposed to have an effect: labor market outcomes, civic engagement, health, and subjective well-being. The transformation of education into these outcomes occurs through a multitude of different sub-processes. Therefore adequate, relevant instruments necessary for analyses of, ideally, the causal relationship between and mediators of educational attainment and the outcomes from which an individual benefits in his or her working and private life are included in the NEPS survey program. In the present paper, we outline the theoretical framework underlying the design of the returns-related NEPS questionnaire program, which relies on human capital theory and theories that consider the role of social capital, and we briefly present the implemented measurement concepts for each of the outcome domains.

## Keywords

returns to education, labor market outcomes, civic engagement, health, well-being

## 1. Introduction

The design of the German National Educational Panel Study (NEPS) includes the thematic focus on returns to education across the life course as well as the collection and provision of data on this topic. The aim is to provide data that helps to answer the central question “What is education good for?” in terms of the contribution of education to an individual’s life course. Previous classifications on the aims and functions of education provide a helpful guidance in this respect.

Van de Werfhorst (2014), for example, defines four functions of education: Preparing individuals for the labor market; enabling active citizenship; ensuring equal opportunities regarding the access to education; and sorting students into educational tracks according to their talents and interests in order to optimize the production of knowledge and skills. While the last two aspects correspond to the allocation function of the education system, the first two refer to returns to education.

The National Educational Report for Germany proposes similar aims of education and the educational system: Promoting equality of opportunity regardless of social background, ethnic origin or gender; ensuring human resources for the labor market; fostering individual social participation; and helping students to develop individual regulatory capacity which enables them to plan and shape their lives on their own (Autorengruppe Bildungsberichterstattung, 2018). While the first aim refers to the allocation function of the education system, the other three are output related and address returns to education.

Taking these previous classifications into account, the conceptual framework of our work as the NEPS Working Unit “Returns to Education Across the Life Course” captures the output-related perspective on education. We particularly focus on monetary or economic as well as non-monetary returns dimensions on which education is supposed to have an effect: labor market outcomes, civic engagement, health, and subjective well-being. Individuals’ labor market participation and success, and their civic engagement, where we distinguish between social inclusion and political participation, are targets of educational processes, as mentioned before (Autorengruppe Bildungsberichterstattung, 2018; van de Werfhorst, 2014). As a core element of an individual’s regulatory capacity health is an essential prerequisite and condition for a person’s working and private life, and to be considered as relevant output of educational efforts (Autorengruppe Bildungsberichterstattung, 2018). An individual’s well-being can be considered an overarching outcome dimension, as subjective well-being or happiness is targeted by every person as the “ultimate goal of life” (Frey & Stutzer, 2002, p. 402) and is connected to the other three outcome dimensions (Frey & Stutzer, 2002; Kahneman, Diener, & Schwarz, 1999).

The transformation of education into the life course outcomes defined above occurs through a complex process or, rather, a multitude of different sub-processes. We are in charge of the development and implementation of an appropriate survey program, which addresses these processes and include it in the NEPS surveys: We provide adequate, relevant instruments necessary for analyses of, ideally, the causal relationships between and mediators of educational attainment and the outcomes from which an individual benefits in his or her working and private life. In this paper, we outline the theoretical framework underlying the design of the returns-related NEPS questionnaire program and briefly present the

corresponding measures.<sup>1</sup> For a detailed overview of empirical studies and the methodological challenges within the broad research field of economic and non-economic returns to education, see Gebel and Heineck (forthcoming).

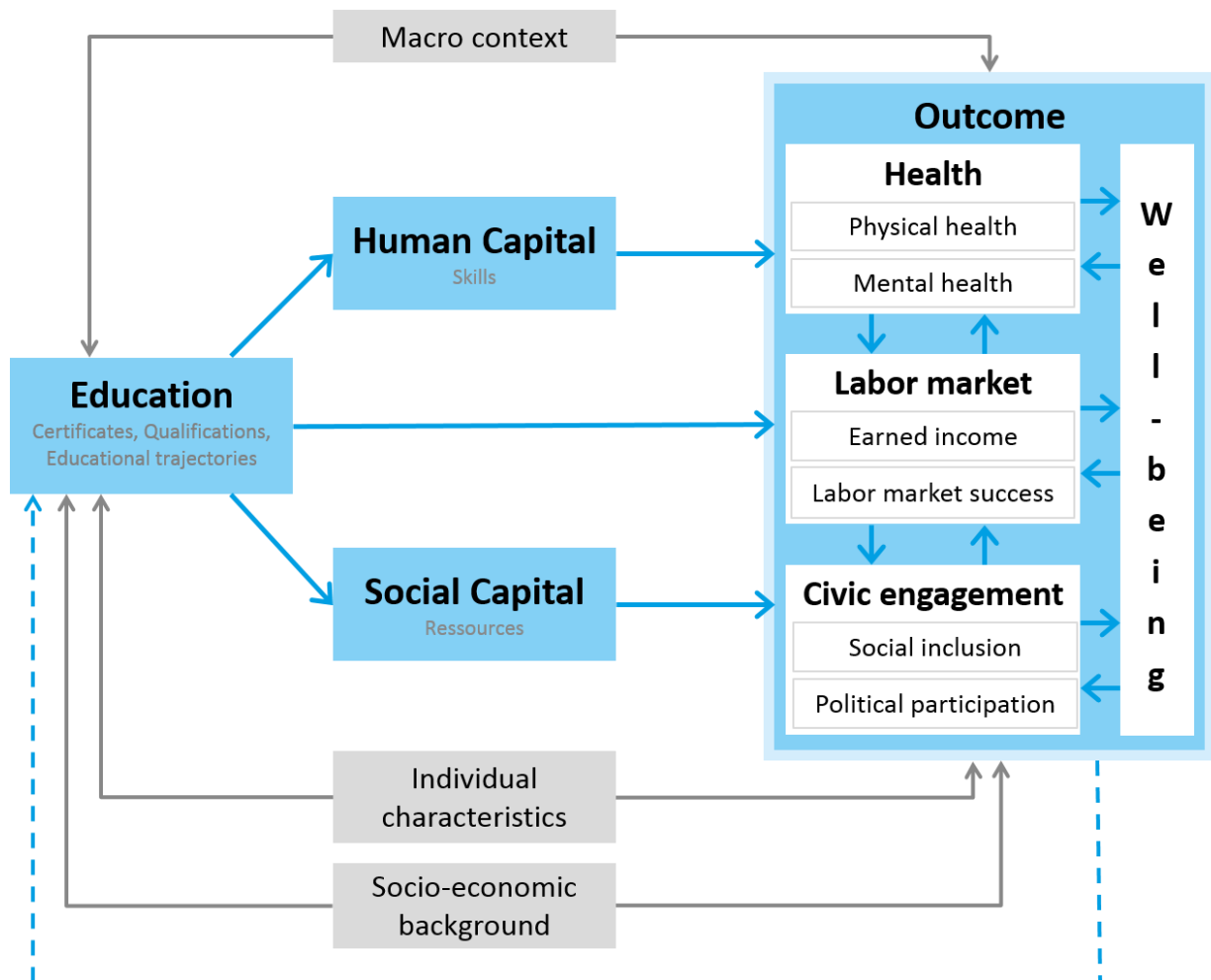


Figure 1. Relationships between education and health, labor market, civic engagement and subjective well-being

Figure 1 depicts our proposed conceptual framework on the relationship between education and the four outlined returns dimensions, where educational attainment is seen as a multidimensional concept that encompasses aspects such as certificates, qualifications, or educational trajectories. We address these relationships within a theoretical framework that relies on human capital theory and theories that consider the role of social capital. Both theoretical approaches are discussed in the remainder of this paper for each of the outcomes. Furthermore, the illustration shows that spurious associations between education and returns might arise due to various influential factors, which need to be taken into account when identifying possible causal effects and mechanisms. Here we distinguish contextual factors at

<sup>1</sup> We do not go into detail here. Note, however, that we employ a broad range of both well-established and specifically developed instruments and that we will complement the brief descriptions in survey papers that will be published in the near future. In these papers, we will focus on each of the outcome dimensions with details on theoretical models, a description of the selection and development process, as well as information on the wording of the specific instruments and when they were implemented in which NEPS cohort.

the macro level from socioeconomic background and other characteristics at the individual level, each of which can impact both educational attainment and our returns dimensions.

One example of an influential macro-level contextual factor is prevailing labor market conditions. They can affect educational processes through their influence on educational decisions (Tumino & Taylor, 2015) and additionally, determine earnings beyond an individual's acquired educational qualification (Gregg, Machin, & Fernández-Salgado, 2014).

Individuals' characteristics such as gender, age, ethnic origin, aspects of personality and others also affect education and the corresponding returns. We further collect data on individual preferences, particularly risk and time preferences (for references see Falk, Becker, Dohmen, Huffman, & Sunde, 2016). Both have an effect on educational processes, as well as on the considered returns dimensions. High risk tolerance can, for example, determine educational achievement (Belzil & Leonardi, 2007), but may also directly affect health behavior and health status (Dohmen et al., 2011). Similarly, time preference is a relevant determinant of educational choices (Cadena & Keys, 2015; Golsteyn, Grönqvist, & Lindahl, 2014) that also independently influences later life outcomes (Fouarge, Kriechel, & Dohmen, 2014).

To account for an individual's social background and socialization processes within families, we also collect data from the parents where possible. Implemented parental background measures include parental risk and time preferences, as well as the parents' occupational situation, health status, and interest in politics. In the following sections, we come back to this in the context of the respective outcome dimensions. Complementing our background measures relevant specifically to the returns of education, the NEPS also provides information on parental education, household income, and number of siblings, among others, all of which can play a role for the acquisition of education (Erikson & Jonsson, 1996), as well as for individuals' life outcomes (Erikson & Jonsson, 1998).

The feedback loop between the returns dimensions and education in Figure 1 highlights that the outcomes themselves may influence or initiate further education at a later point in time. Higher income, for example, enables an individual to spend more money on further training. Bad working conditions may also prompt a person to strive for additional education to achieve better job opportunities. Such scenarios turn outcomes into determinants of educational decisions, which, however, are not further elaborated in this survey paper. In the following sections of this paper, we outline both the theoretical connections and measurement issues of our approach to analyzing education as input and its returns as output. We start by looking at labor market outcomes and continue discussing civic engagement, health, and subjective well-being.

## **2. Labor Market Outcomes**

As outlined above, one of the four central functions of education is to prepare individuals for the labor market<sup>2</sup> (van de Werfhorst, 2014). To this end, education or schooling has the task to equip individuals with knowledge and skills that are useful and required for their working life. This is relevant not only for labor market entry (i.e. the transition from school to work), but also for later employment opportunities, including jobs with higher incomes, higher occupational status, or better working conditions (e.g. Kogan, Noelke, & Gebel, 2011; Müller

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<sup>2</sup> Our use of the term labor market refers not only to dependent employment, but also encompasses other possible employment types (public servants, self-employed or unpaid family workers).

& Shavit, 1998; OECD, 2018). Overall, education is an important factor, if not the most important one, to individuals' labor market success.

## 2.1 Theoretical Background

Several theoretical approaches have been proposed in sociology and economics to model the relationship between education and life outcomes. Human capital theory (Becker, 1964; Mincer, 1974) and signaling theory (Spence, 1973) are the most prominent theories in economics. Social capital theories (Bourdieu, 1983; Granovetter, 1973; Lin, 1999), and, adding a less individualistic perspective, social closure and structuralist explanations have been proposed in sociology (van de Werfhorst, 2011).

According to Becker (1964), human capital is a resource belonging to individuals in which they can invest by accumulating a set of skills and competencies. Human capital theory further assumes that workers differ in productivity because of differences in their human capital endowments and because of differences in their investments into human capital. Higher levels of productivity are valued by employers in terms of higher wages. Education and (on-the-job) training are the most important investments in human capital over an individuals' life course. The decision to invest in human capital derives from the relation between expected costs (in terms of direct costs of education and training, as well as indirect/opportunity costs of education and training due to forgone earnings), and expected returns to educational investments. Individuals will invest in education as long as expected returns at least equal the costs of the investment. Of all possible labor market outcomes, income, earnings, or wages have for long been and still are the most important returns-to-education indicators. However, there is also a well-established literature in both economics and sociology that proxies educational returns by looking at further aspects of labor market success, such as employment opportunities, occupational status, and prestige or job quality.

In addition to human capital, education and training also generate social capital, which must be taken into account when considering labor market returns to education. Regarding social capital theory we refer to the works of Bourdieu (1983), Granovetter (1973) and Lin (1999). According to Granovetter (1973) and Lin (1999), social capital can be defined as the accessibility of resources through social networks which individuals can use to achieve their goals. Attending educational institutions is, therefore, useful for establishing or expanding social networks because it offers opportunities to connect with people, particularly fostering new connections. The importance of the educational system for network formation becomes even more evident if homophily is taken into account: Individuals connect more likely with others that are rather similar to themselves and have also more opportunities to meet those (e.g. in school). Consequently, interpersonal networks tend to share homogeneous attitudes, values, norms, and lifestyles and are relatively homogenous in terms of education and social status. Thus, highly educated people tend to have highly educated or high social status people within their network, who are valuable resources. Moreover, as Lin (2001) states, individuals in better social positions do not only have access to social ties with better resources, they are also more able to mobilize them. Mobilized social contacts can then be beneficial for labor market success.

Regarding labor market outcomes, Granovetter (1973, 1974) argues that a significant share of employees find their jobs using social contacts rather than through formal channels like job advertisements or strenuous application processes. Therefore, one of the most important resources for labor market success is information about vacancies and corresponding job



characteristics. Job seekers using their social network have an informational advantage that offers greater opportunities to get better jobs, both in terms of income and job satisfaction. Granovetter (1973) further distinguishes between weak ties (e.g. acquaintances) and strong ties, which are defined as closer and more intense contacts, such as close friendships or family. He emphasizes the “strength of weak ties” (Granovetter, 1973, p. 1360) because they function as bridges between an individual and other social networks to which otherwise no access would exist.

Spence’s signaling theory (1973, 1974) provides an alternative explanation for the relationship between education and labor market outcomes. This approach models the allocation of jobs to people and people to jobs as an investment decision under uncertainty. Employers in particular have a lack of information about job applicants’ productivity. Therefore, they use observable characteristics and attributes, such as education or previous work experience, as signals for the individual’s productivity.<sup>3</sup> In turn, job applicants can invest in signal adjustments (e.g. higher education) and, thereby, accepting potential costs for these investments. It is assumed that these signaling costs are negative correlated with pre-existing differences in productivity. Individuals are willing to invest in (further) education as long as they can expect adequate returns to these investments. From the employer’s perspective, higher educational degrees reflect higher achievement potential, higher motivation, ability to work under pressure, and other productivity enhancing features (e.g. Spence, 1973; Weiss, 1995). In terms of outcomes, signaling theory also suggests that education increases individuals’ options on the labor market, including jobs with preferable features, such as higher income, better career advancement opportunities, better work-family balance, or working time flexibility.

Social closure perspectives and structuralist explanations add a different perspective to the relation between education and labor market outcomes (Bills, 2003; Collins, 1979; van de Werfhorst, 2011). According to these conceptual models, educational degrees matter only for the access to privileged occupations and job market segments, but that productivity would not be relevant beyond that and, for example, would not further affect the wage generation process (Weeden, 2002).

Overall, the theoretical explanations (i.e., the human capital related skills perspective, social capital theories, signaling, and social closure and structuralist explanations) provide insights into possible mechanisms that link education to a range of different labor market outcomes.

## 2.2 Measurement Concept

In the following, we briefly describe which measures we include in the NEPS surveys in particular when it comes to labor market outcomes, as described. These are then complementary to already implemented instruments in the questionnaires: The NEPS already provides a broad range of indicators for education itself and its closely related facets, including educational degrees, years of schooling, grades and competence measures (for additional information, see Stocké, Blossfeld, Hoenig, & Sixt, 2011; Weinert et al., 2011). The same holds for social capital, for which well-established instruments, including the resource generator and

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<sup>3</sup> Whereas strong versions of signaling models postulate that education is exclusively a signal of pre-existing individual productivity, adding no productive capacity to those who acquire it, weak versions of signaling models assume that schooling provides a signal of pre-existing individual productivity but students additionally acquire skills during school (Psacharopoulos 1979). The part of the association between education and labor market success that is due to sorting based on pre-existing differences is spurious and must be removed if the interest is in identifying the causal effect of education on labor market success.

the position generator, are already implemented in the NEPS surveys (see Hoenig, Pollak, Schulz, & Stocké, 2016; Schulz, Horr, & Hoenig, 2017).

As mentioned before, and in line with the theoretical framework, labor income is one of the key labor market returns to education. We therefore collect information on monthly gross and net income at least for every reported employment ongoing at the time of the interview. Additional information on extra payments like Christmas bonuses, vacation payments or performance-based bonuses is also available.

In addition to earnings, the NEPS already provides further indicators on individuals' labor market outcomes. These include information on occupation and sector, a person is employed in, his or her unemployment episodes as well as occupational status and prestige, and can be analyzed as returns to education itself. Aspects of job quality can be examined from either a more objective or subjective perspective. Objective job quality measures include variables such as labor income, working hours or job security. Yet, job quality is a multi-dimensional construct (Clark, 2005; Green, 2006). To enhance the analytical potential of NEPS data we provide additional information about perceived job quality (e.g. Bazen, Lucifora, & Salverda, 2005; Green, 2006; e.g. Layard, 2005, 2005). We in particular add a subjective component by asking workers about different aspects of their job capturing the multiple dimensions of job quality. The selection of job quality aspects draws from Gallie's (2007, 2013, 2017) concept of quality of work, which can be summarized in four dimensions: 1) training opportunities and skills, 2) job control, autonomy, work intensity, and work stress, 3) labor market flexibility and job (in)security, and 4) work-family and work-life conflict respectively. We implement an instrument on perceived overall job quality that captures these four dimensions by asking, for example, about high job security, the balance of private and working life, match of job requirements and the individual's skills as well as job autonomy. To get even more insights into job quality as return to education, we add more detailed information whether there is time or performance pressure in the person's job and also about possible work-life conflicts of employees. Within the NEPS surveys further and more detailed variables about job autonomy are available (Matthes, Christoph, Janik, & Ruland, 2014).

### **3. Civic Engagement**

As outlined before, another core function of education is to enable civic engagement<sup>4</sup>, so that individuals see themselves as part of society and are willing and able to engage in diverse social settings. Contexts discussed in the literature comprise both social and political domains. We distinguish between social inclusion and political participation in the following because of different underlying theoretical approaches.

#### **3.1 Social Inclusion**

Aspects of social inclusion, defined as partaking in society, are important non-monetary returns to education for both the individual and society as a whole (Oreopoulos & Salvanes, 2011). Oxoby (2009) argues that the lack of access to education and training is one of the crucial reasons for the social exclusion of individuals and groups. Going beyond the individual, he further states that social inclusion is "increasingly viewed as essential in developing successful growth strategies, fighting poverty, and increasing well-being" (Oxoby, 2009,

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<sup>4</sup> We use the term civic engagement to address both political participation and social inclusion, by which we mean active participation in society as well as individuals' perception of being part of the community or society.

p. 1134). However, since the 1990s at the latest, there is also an ongoing social and scientific debate about an alleged decline in social capital (Paxton, 1999; Putnam, 1995), as well as social trust (Robinson & Jackson, 2001), and the role of education in the formation and maintenance of social inclusion.

### **3.1.1 Theoretical Background**

Similar to section 2, human capital theory serves as a starting point for our theoretical considerations regarding social inclusion as an educational return. This will be extended and complemented by insights from social capital theory.

First, according to human capital theory, education equips people with a higher level of cognitive competencies or specific knowledge and skills which reduces costs of social inclusion (Gesthuizen & Scheepers, 2012, 2012; Hauser, 2000). Higher cognitive abilities or advanced information-processing capabilities, for example, can be used for administrative duties in different kinds of associations or all kinds of tasks in the context of volunteering in general. As another example, advanced verbal skills may be advantageous for getting in contact with others or for coordinating volunteering in social facilities. Second, economic returns to education, as outlined before, will increase individuals' social status positions. Individuals holding higher positions are more likely to be recruited by civic organizations (Hauser, 2000) because they are better able to contribute to the organization's advantage for example by creating a positive public image or attracting potential new members. Moreover, they know how to mobilize their high status social network partners, who may also be a valuable source of members or volunteers. Furthermore, high status positions provide other important resources, like income. This may be used to pay membership fees, and flexible working hours may enhance individuals' opportunities to engage in voluntary work. Third, Hoskins, D'Hombres, and Campbell (2008) argue that educational processes support the development of civic competencies, which in turn are prerequisites for being an active citizen. This is due to teaching special subjects in school and the way of learning in classrooms more generally (working in groups, interaction with teachers and peers etc.). Gesthuizen and Scheepers (2012), for example, suggest that education socializes children into helping others later in life and, by doing so, it raises the willingness to volunteer. Thus, additional to the skills enhancing perspective on education, schooling, and other educational processes advocate norms and values that may foster a sense of civic duty and shape a taste for participation.

Education affects norms and values not only directly, but also in an indirect manner, through its influence on the composition of an individual's social network (Dee, 2004). Indeed, social networks are the major structural component of social capital<sup>5</sup> (Bourdieu, 1983; Putnam, 1995). The core of social capital theory has been outlined above, and the implications for individuals' social inclusion are straightforward inasmuch as network composition and structure are not only important for the availability of useful information or shared opinions, values, and norms, but can also affect or motivate corresponding social behavior (Klandermans & Oegema, 1987). That means, that social network members are able to convey the importance of social inclusion in terms of membership in clubs or volunteer organizations and that they can even mobilize others to affiliate with an association. Furthermore, entry into an existing network or social group is facilitated by knowing an already established member.

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<sup>5</sup> A meta-analysis about the relation between education and social capital is provided by Huang, van den Brink, and Groot (2009).

In summary, network members fulfil recruitment and entry tasks by mobilizing other members and by reducing barriers to joining social groups (Verba, Schlozman, & Brady, 1995).

The individual endowment with both kinds of capital—human capital as reflected by knowledge and skills, and social capital as reflected by the integration in social networks—is important for the amount of trust an individual shows. Empirical evidence indicates that social trust is related to participatory behavior (Helliwell & Putnam, 2007; Hooghe, Marien, & Vroome, 2012). Zmerli (2013) argues that trusting people are more likely to volunteer or to be active in local organizations and show more interest in and effort for community. A large amount of trust reduces transaction costs, “since in the absence of trust it is necessary to have rules and enforcement (...) that the agreed purposes of the organization will be pursued as hoped and expected” (Helliwell & Putnam, 2007, p. 5). Trust is, therefore, a precondition to social inclusion. The connection between education and trust arises because trust comes along with positive adult experiences, such as high income or high social status, which are strongly influenced by educational attainment (Delhey & Newton, 2003).

### **3.1.2 Measurement Concept**

We model social inclusion as consisting of a passive and an active component. For the passive part referring to the macro level, we include a measure of the feeling of being a part of society. For active participation in social activities addressing the meso level, we include questions about membership of a social group, a club or an association, and doing voluntary work in social contexts to reflect different aspects of involvement as suggested by Huang et al. (2009). We are, therefore, able to cover the return to education by looking at both the actual active and observable behavior as well as the passive and subjective perception of belonging.

To cover relevant aspects of the central mechanism of trust, we implement instruments reflecting different dimensions of the construct. As Paxton (1999) and Itzenplitz and Seifferth-Schmidt (2011) argue, trust should not be seen as an overall category, but as being tied to specific actors, like generalized others, specific others, or institutions. First, we survey generalized social trust by asking respondents how trustful they are of most people. We complement this instrument with several items covering trust in various political and other institutions. The included institutions refer to different dimensions of the separation of powers in Germany as well as institutions on the European level, as well as trust in the (new) media. We additionally ask parents about their generalized social trust, because trust affects education and might be passed on to children through within-family socialization processes (Uslaner, 2008) irrespective of the education they receive later on. For analyzing some of the other mechanisms linking education and social inclusion, one can use further measures, such as social status position or labor market outcomes.

## **3.2 Political Participation**

We address political participation as the second dimension of civic engagement. In line with van de Werfhorst’s (2014) approach, one core function of education is to enable individuals to be active citizens. Given the educational expansion in the last decades, research findings seem to be at odds with expectations. Studies suggest that younger generations may have lost interest in politics, have too little political knowledge, feel like they are unable to promote change, or simply do not care about what is happening in the political sphere (Helsper et al., 2006; Sondheimer & Green, 2010). It is, therefore, justified to have a closer look at this seeming contradiction and at the relevance of education for political participation.

### 3.2.1 Theoretical Background

The relationship between education and participation in political contexts is widely discussed in different disciplines, including political science, sociology, and economics. A synthesis of theoretical approaches from these disciplines is provided by Verba et al. (1995). In short, the authors identify three factors as prerequisites for political participation. These are the availability of resources, psychological dispositions like motivation, norms, and values, and the involvement in recruiting social networks. Their civic voluntarism model is strongly associated with human and social capital theory and thus fits well into our overall framework of returns to education in NEPS.

Again following human capital theory and similar to our reasoning on social inclusion, education has an influence on different kinds of skills and knowledge, which reduce the costs of political actions, enable citizens to participate in an effective way, and, therefore, facilitate political behavior (Dee, 2004). Education fosters the development of cognitive and civic skills as well as the capability to gather and process politically relevant information, which is important for understanding the abstract contents of politics and for being able to catch up on campaigns and political officials (Delli Caprini & Keeter, 1996). However, schooling is not only important for the formation of abstract skills, but also for the provision of factual knowledge about the political system, its institutions, and its mode of operation. This knowledge serves as a basis for the sound evaluation of political issues. In addition, education increases the individually perceived benefits by promoting democratic principles. This is because curricula regularly include elements of political education and because the educational system itself can be seen as a setting in which students can practice democratic mechanisms. Claes and Hooghe (2017) show empirically that politically oriented classroom instruction and being a member of a school board are associated with a higher level of interest in political issues. In addition, and in line with our discussion of social inclusion, education may shape preferences for political participation, for example, by embedding debates on political issues in class or encouraging political awareness.

Turning to social capital theory, social networks are not only important in the context of social inclusion, but also for political participation. Educated individuals are more likely to be involved in politically oriented networks. As already outlined above, education fosters political participation on the individual level. According to the principle of homophily, an individual is more likely to connect with people who are similar to him- or herself. Thus, well-educated people are more likely to be tied to other highly educated people, who are probably politically active as well. This constellation, in turn, encourages participation in political contexts. This may be due to shared social norms and values, the provision of information about possibilities to participate, or the reduction of constraints to joining social groups (Nie, Junn, & Stehlik-Barry, 1996; Verba et al., 1995). However, education not only has an influence on the composition of someone's peer group, but it also conveys democratic and pluralistic values (Dee 2004) or interest in political issues (Hadjar & Becker, 2006), which may foster the willingness to engage directly.

The individual endowment with both forms of capital—human capital as reflected by different kinds of knowledge and skills, and social capital as *inter alia* reflected by the involvement in social networks—has an impact on a person's attitudes and motivations. Referring to social-psychological approaches of behavioral and motivational research, Verba et al. (1995) identify civic orientations, which can also be described as motives or attitudes, as further important determinants for political participation. Important dimensions of civic orientations covered in

NEPS are interest in political issues, political orientation on a left-right dimension, the importance of democratic values (e.g. free and fair elections), trust and political efficacy, which captures the perception of being able to contribute to politics. These dimensions are included in NEPS, because they are crucial mechanisms of the relationship between educational attainment and political participation.

### **3.2.2 Measurement Concept**

We measure political participation as an educational outcome with different items. We ask about voter turnout, as the most prominent and most analyzed aspect of political activity (Sondheimer & Green, 2010). We further include items on participation in politically motivated activities, like signing petitions or attending approved demonstrations. Interest in political issues is yet another indicator often used as an outcome, which also serves as a mechanism, for example, for the extent of political activity.

Further items in the field of political participation consider the measurement of the mechanism of civic orientations. These in part reflect personal characteristics and serve as mediator variables in between education and human/social capital and the political participation outcomes. Besides interest in politics, we add a measure of political orientation, by asking respondents to assess their political views on a left-right dimension. We cover individuals' perceptions of whether they understand and believe that they have an impact<sup>6</sup> on political affairs through a political efficacy measure. Further items address individuals' rating of democratic values, that is, respondents assess how important different basic democratic issues (e.g. free and fair elections or the protection of minorities) are for democracy in general. As mentioned before, trust in others and, directly relevant here, in (political) institutions is also measured. Similar to our argumentation before, we account for within-family socialization processes by asking parents about their political interest. Additional to an early exposure to such topics, parental political interest affects children's political attitudes and participation as adults (Jennings, Stoker, & Bowers, 2009).

## **4. Health**

Besides the two functions of education introduced before—preparing individuals for labor market requirements and encouraging active citizenship—we look at health as another return of education. This includes health related behavior as well as actual physical and mental health (Richter & Hurrelmann, 2009).

### **4.1 Theoretical Background**

In general, health can be defined as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (World Health Organization, 2014). This definition is rather broad, and different disciplines, like sociology, psychology, and economics, propose and use more complex definitions of health.

From a sociological or psychological perspective, health is based on the interaction of biological functioning, social conditions, and individual behavior. In this respect, health is the result of a balanced relationship between individuals' overall potential given by (1) “biologically given partial potential of individuals” (Bircher, 2005, p. 336), (2) their “personally

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<sup>6</sup> Other NEPS items may also play a role for this, like self-efficacy or locus of control (Wohlkinger, Ditton, Maurice, Haugwitz, and Blossfeld, 2011).

acquired partial potential” (Bircher, 2005, p. 337), and their different demands of life, such as learning at school, earning money, taking care of children, and participating in social activities. Biological potential, like genetic constitution and early development, is mostly given at birth and decreases with age. In contrast, acquired potential, which is influenced by education, among other factors, increases throughout the life course and includes “immunological competence, physical abilities, learning and other skills, psychological and spiritual development and social capital” (Bircher, 2005, p. 337).

Based on these considerations, education, or, rather, the lack thereof, is a factor that contributes to health inequalities. Low education may in particular lead to less acquired potential or fewer investments in health-related human capital (Bircher, 2005; Grossman, 2006). It is well known that health related behavior, like smoking, drinking, and physical activity, as well as additional health investments in the form of health checkups, differs significantly between educational groups and that explains educational differences in health to a large extent (Brunello, Fort, Schneeweis, & Winter-Ebmer, 2016; Clouston, Richards, Cadar, & Hofer, 2015; Ho & Fenelon, 2015). However, diverse theoretical approaches exist to explain these differences. In our framework, we focus on theories based on differences in resources and knowledge, ideally providing causal explanations of health inequalities.

Again, human capital theory suggests that education equips individuals with more specific and general knowledge as well as with higher cognitive skills, which improves acquisition, processing of complex information, and the ability to gather information efficiently. Therefore, education may enhance the perceived benefits of healthy living and more highly educated people might be better able to identify health problems early on and invest in their own health in a more timely manner. Additionally, their health may be better because higher education and the monetary returns from it increases the financial resources that can be invested into health (see section 2). For instance, education raises individuals’ income, which can be used, for example, to invest in better (more expensive) nutrition and in a healthy lifestyle in general (Abel & Frohlich, 2012; Deaton, 2002; Grossman, 2006). Education can also protect from health damaging factors due to placements into higher quality jobs with better working conditions (see section 2).

Referring to social capital theory, and as mentioned in previous sections, education contributes to a higher level of social capital and civic engagement, which might affect individuals’ health too. Bourdieu (1983), for example, suggests that social networks serve as a resource for health promotion, as well as exemplify and determine health behavior (Umberson, Crosnoe, & Reczek, 2010). Social networks might additionally be a buffering factor. They provide instrumental and financial, informational, as well as emotional support, which is helpful for handling stressful life events and reduces consequences from health issues or health shocks, such as chronic and psychological distress, as well as persistent negative health effects (Bartley, 2004; Berkman, Glass, Brissette, & Seeman, 2000; Ross & Wu, 1995).

## **4.2 Measurement Concept**

Based on these theoretical perspectives, we provide various information on individuals’ health status and underlying mechanisms in the NEPS surveys. For measuring health as an educational return, we implement three different measures of health status: self-rated health, “Healthy Days”, and information about respondents’ weight and height. While self-rated health is a well-established global measure of subjective health status, “Healthy Days” allow deeper analysis of physical and mental health (Toet, Raat, & van Ameijden, 2006). Weight and

height serve as indicators for physical fitness and nutrition status. We additionally collect information on health-related behavior as a well-known mechanism linking education and health. We further collect information on smoking, drinking, and physical activity, which all play important roles in explaining educational differences in health (Clouston et al., 2015; Paljärvi, Suominen, Car, Mäkelä, & Koskenvuo, 2011; Paterson & Warburton, 2010).

However, additional measures are necessary to examine the effect of education on health. For example, early life circumstances and parental characteristics affect children's education, as well as health and health behavior, which may induce a spurious correlation between education and health (e.g. Allmendinger, Ebner, & Nikolai, 2010; Brown & van der Pol, 2013; Chen, Martin, & Matthews, 2006). We, therefore, also collect information about parental health status in addition to children's socioeconomic background information to more fully account for parents' influence on a child's health through socialization and genetic factors. Additionally, we measure health outcomes in early childhood to function as control variables for early impairments that may negatively affect both the process of educational attainment and health status later in life.

## 5. Subjective Well-being

Interest in individuals' happiness, quality of life, or (subjective) well-being (SWB) has a long history. In particular, a large psychological literature addresses different aspects of it, including theoretical and methodological work, socio-demographic SWB patterns and questions of causal inference (Kahneman et al., 1999). The economic literature also increasingly uses SWB as a proxy for "utility" (Frey & Stutzer, 2002), which is the centerpiece of microeconomic thinking about individuals' behavior. What we learn from both disciplines is that well-being is the "central goal of human activity" (Ormel, Lindenberg, Steverink, & Verbrugge, 1999, p. 62) and that the educational returns we discussed before (i.e. labor market outcomes, health, and civic engagement) all play a substantial role for SWB (Argyle, 1999; Dolan, Peasgood, & White, 2008). Whether (subjective) well-being is a return to education itself, however, is still an open question, as results from previous studies yield inconclusive results, implying either negative, zero, or positive associations (Kahneman et al., 1999). Moreover, very few studies used identification strategies to examine whether education has a causal effect on SWB (e.g., Oreopoulos, 2007; Oreopoulos & Salvanes, 2011; Quis, 2018). Again, results are ambiguous, indicating positive or null effects.

### 5.1 Theoretical Framework

Complementing the empirical ambiguity in the relationship between education and SWB, there is also no cohesive "stand-alone" theory on the effect of education on SWB. Both psychological and economic theories outline aspects that are more general (for overviews of both perspectives, see Headey (1993) and Ormel et al. (1999)).<sup>7</sup>

There are different mechanisms of how education affects well-being. Among these mechanisms, the outcome dimensions we discussed above (i.e., labor market outcomes, civic engagement, and health) play an important role. First, education is beneficial for an individual's labor market outcomes, such as income, employment status, job position, and working conditions, to which well-being relates in a variety of ways. Individuals' with higher

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<sup>7</sup> Psychological literature, for example, looks into whether the source of well-being is the attainment of the desired end state or the movement towards the endpoint.



material resources achieve higher living standards and are able to fulfill their material demands more easily. In contrast, the lack of financial resources brings with it a loss of control over one's current financial situation and plans for the future, which negatively affects psychological well-being (Easterlin, 2001; Taylor, Jenkins, & Sacker, 2011). Recent research suggests a causal effect of income on well-being and that income acts as a mechanism within the education-well-being relationship (Clark, Frijters, & Shields, 2008; Powdthavee, 2010; Powdthavee, Lekfuangfu, & Wooden, 2013). Education also increases individuals' employability, which is positively linked to well-being through better employment options, better working conditions, and better job positions. Having a job increases an individual's experienced personal control, structures daily life, provides opportunities for achieving respect, being engaged, challenged, and meaningful, which are all positively linked to higher job satisfaction and overall well-being (Diener & Seligman, 2004).

Besides the positive link of education to well-being through better labor market outcomes, education predicts social inclusion. Social inclusion, understood as supportive and positive relationships and social belonging, is a central need for individuals and a crucial source for higher well-being (Mellor, Stokes, Firth, Hayashi, & Cummins, 2008). People have more positive feelings and positive experiences when they are with others than when they are alone (Diener & Seligman, 2004). Social relationships provide emotional, informational, and financial support, intimate ties, and behavioral confirmation, which positively affect psychological well-being, as well as overall life satisfaction (Berkman et al., 2000; Ormel et al., 1999). Additionally, higher education increases social and institutional trust, which allows individuals to get more in touch with other people, feel more secure, and perceive higher personal control in their daily life (Rodríguez-Pose & Berlepsch, 2014). Therefore, higher institutional and social trust might have positive effects on individuals' well-being. Further evidence suggests that being married, having an organizational membership, volunteering, social participation in groups, and higher social and institutional trust is associated with higher life satisfaction (for literature review see Diener & Seligman, 2004; Portela, Neira, & Salinas-Jiménez, 2013).

Education might also affect life satisfaction through political participation. Being part of political actions might enhance individuals' well-being, because political participation "provide(s) a feeling of being involved and having political influence, as well as of inclusion, identity, and self-determination" (Frey, Benz, & Stutzer, 2004, p. 387). However, empirical evidence is sparse and contradictory. While, for example, Pacheco and Lange (2010) show a significant effect of political participation on individuals well-being, Pirralha (2017) found no effect of political participation on well-being.

Finally, we assume another indirect effect of education on well-being via health and health behavior. Health is an important factor to achieve a range of important goals, which determine individuals' well-being. For example, health affects individuals' labor market outcomes. Additionally, the ability to independently accomplish one's daily activities is associated with higher well-being because of higher perceived control (Diener & Seligman, 2004). In contrast, illnesses might reduce individuals' well-being due to restrictions in daily activities or pain, which might cause chronic distress and unpleasant feelings. The absence of pain is a basic source of feeling comfortable in daily life (Ormel et al., 1999). Empirical evidence shows that people with physical impairments or serious health problems report lower well-being (Diener & Seligman, 2004). In addition to physical impairments, a bad mental health condition can also lower individuals' well-being. Anxiety disorders, depression, schizophrenia, and bipolar

disorders directly affect individuals' evaluation of the world. People with mental disorders tend to have lower life satisfaction than the reference group (Diener & Seligman, 2004).<sup>8</sup>

## 5.2 Measurement Concept

Measuring individuals' well-being is a challenge, and psychological literature introduced a broad variety of concepts (Cummins & Weinberg, 2015; Veenhoven, 2015). For measuring individuals' well-being in different stages of the life course, we refer to individuals' internal judgements about their own life satisfaction. We implement the approach that has seemingly become standard in large-scale surveys (e.g. German Socio-Economic Panel (SOEP), UK Household Longitudinal Study (UKHLS)); we include items for both individuals' general life satisfaction and domain-specific satisfaction. To measure general life satisfaction, we implement a single item, asking "How satisfied are you with your life, all in all?". Although this general life satisfaction-item is a good indicator for overall well-being, it is less reliable compared to a scale with more than one item, partly because it does not account for the various areas or domains of individual's life, which may be positively or negatively linked to his or her subjective well-being (Cummins & Weinberg, 2015). Based on suggestions of the International Well-being Group (2013), we also collect information about domain-specific satisfaction to complement the single general life satisfaction-item. We choose domains that, from our research perspective, are relevant for individuals' life satisfaction: satisfaction with the currently predominant activity (e.g. work or school), satisfaction with family and friends, satisfaction with health, and satisfaction with standard of living. Cummins and Weinberg (2015) recommend this scale for research purposes and stress that the "advantage of this scale is that the items can be analyzed separately to yield a diagnostic profile, or combined to provide a single measure of SWB" (Cummins & Weinberg, 2015, p. 263).

For analyzing the effect of education on well-being as well as the different mechanisms, one can use different outcome measures to disentangle different mechanisms. As outlined in the preceding chapters, the NEPS data provides information on labor market outcomes, social inclusion, political participation, and health, which can be included in analyses of the education-well-being association.

## 6. Conclusion

Research on the returns to education has come a long way (Heckman, Lochner, & Todd, 2006). It has contributed significantly to our understanding of how individuals and societies progress. From the very start, monetary returns, and its realizations, income, earnings, and wages, were, and to large extent still are, the key indicators, not only from an academic point of view, but also for policy makers. Next to that, empirical studies, particularly in sociology, studied further labor-related aspects including individuals' transition from education to work, unemployment risks, job mobility, occupational status, prestige, and class position. Non-monetary outcomes, including health, civic engagement, and subjective well-being, as examples for returns that are important for the overall well-being of individual and societies, have also started to attract a lot of attention in recent years (Heckman, Humphries, & Veramendi, 2018). The theoretical framework and survey program covering the thematic focus on returns to education in the NEPS takes up this multidimensional perspective on educational outcomes as a promising avenue for empirical research, because investigating multiple outcome dimensions is a

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<sup>8</sup> In empirical research both concepts, individuals mental health and well-being, are often mixed up. Subjective well-being is often used as a measure of individuals' mental health status.

necessary step toward reaching a broader understanding of the multifaceted consequences of education and the potential trade-offs and complementarities involved in the educational process.

Specifically, we contribute to this research by developing and implementing relevant instruments for all NEPS starting cohorts to cover the effect of education in four life domains: labor market, health, civic engagement, and subjective well-being. The selection of exactly these domains is based on the functions of educational processes as outlined in the beginning of this survey paper, which also reflects the development in the empirical literature of taking a multidimensional approach. Following the principles of theory-guided empirical research we have outlined a theoretical model on returns to education. A specific characteristic of this model is that it illustrates the main causal mechanisms of how education affects the different outcome dimensions, as well as which factors need to be taken into account as potentially confounding variables. The theoretical model guided us in the choice of measurement concepts of the main outcome variables and mechanisms.

This overview paper is only the starting point. More detailed theoretical models, a description of the selection and development process, as well as information on the exact wording of the specific instruments and when they were implemented in which NEPS cohort will be published in the near future in further papers, each focusing on one of the outcomes dimensions.

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