

**Local and Regional Context Effects on Individual  
Educational and Occupational Aspirations and  
Transitions**

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vorgelegt von  
Andreas Hartung, M.A.  
aus Tschita

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Dekan:

Prof. Dr. Josef Schmid

1. Gutachter:

Prof. Dr. Steffen Hillmert

2. Gutachter:

Prof. Dr. Martin Biewen



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## **Abstract**

For many decades now, inequality in educational opportunities has been one of the main subjects of sociological research. A remarkably large amount of empirical studies has discovered diverse relationships between the social belonging of a person and his/her chances to achieve a certain educational level. This interest can be explained by the obvious and enormous importance of the educational degree for the general allocation of individual life chances: in modern societies education is one of the main determinates of the employment opportunities and income as well as of social prestige.

In my dissertation I tie in with the general sociological presumption that individual educational success is not predetermined by inborn personal qualities. Rather it is the social embedding of the person that affects the development of his or her education-relevant characteristics as well as the chances of their efficient realisation. Social embedding of a person can be considered from different perspectives; in terms of educational inequality current research highlights the importance of families as well as school environment. However, differences between individuals exist also when these conditions are accounted for.

This dissertation addresses possible educational disparities due to varying local or regional residential environments. It is also assumed that the effects of different contexts on the final educational success are indirect ones and mediated by the individual competences and aspirations (which are for their part understood as a pre-stage of specific educational decisions). An independent effect of educational aspirations on educational success should be expected even under control of competences.

Thus, the aim of this dissertation is to understand how explanatory factors that can be hosted in local and regional environment contribute towards explaining social disparities in educational and occupational aspirations and - as a consequence - in educational outcomes. For this

reason, I develop a general definition of individual educational and occupational aspirations and introduce an analytical framework that ties them to the educational success in form of educational transitions. Furthermore, I depict possible pathways for how contextual characteristics, including local and regional factors, can affect educational and occupational aspirations across the individual life course. I also use a flexible conceptualisation of spatial conditions with the aim to more precisely cover relevant theoretical mechanisms that are hosted in spatial environment.

Three empirical studies aim at providing examples for the application of this general approach and give insights into the empirical importance of local and regional socio-economic factors for individual aspirations on the example of secondary school completion in Germany. I focus on this particular educational stage because the effects of local and regional conditions are here more likely. For this purpose I link local and regional data on different aggregational levels to individual data of two large German surveys: National Educational Panel Study (NEPS) and German Socio-Economic Panel. Two of these empirical studies address educational and occupational aspirations at the end of secondary education while the third study focuses on their realisations in form of transition from general schooling to vocational training.

Findings suggest that the local composition of the population in matters of education as well as socio-economic regional conditions are of particular importance; while the so called positive academic environment in close neighbourhoods positively affects young people's general educational aspirations, the regional socio-economic situation has a clear impact on prospective school graduates' career planning. It is related to different dimensions of their educational and occupational aspirations as well as to their objective behaviour in the form of fulfilled transitions. Furthermore, considered effects are not equally relevant for different social groups, e.g. students from different social class origin and students who attend different school tracks. I ad-

ditionally point out the importance of an adequate operationalisation of contextual data according to theoretical assumptions of underlying mechanisms when dealing with spatial explanatory factors.



## **Zusammenfassung**

Das Thema der Bildungsungleichheit zählt bereits seit einigen Jahrzehnten zu den wichtigsten Themen der soziologischen Forschung. Eine außerordentlich große Anzahl an Studien widmet sich der sozialen Herkunft einer Person und ihren Chancen, ein bestimmtes Bildungsniveau zu erreichen. Dieses Interesse kann mit der offensichtlichen und enormen Bedeutung erklärt werden, die erreichtes Bildungsniveau für die späteren Lebenschancen einer Person hat: in den modernen Gesellschaften ist Bildung eine der Hauptdeterminanten des Erfolges auf dem Arbeitsmarkt, des Einkommens und des sozialen Prestiges.

In meiner Dissertation knüpfe ich an die generelle soziologische Prämisse an, dass individueller Bildungserfolg nicht durch angeborene Eigenschaften einer Person determiniert ist. Es ist eher die soziale Einbettung der Person, die die Entwicklung ihrer bildungsrelevanten Eigenschaften und die Chancen ihrer Realisation bestimmt. Soziale Einbettung der Person kann aus unterschiedlichen Perspektiven betrachtet werden: mit Blick auf die Bildungsungleichheit betont Sozialforschung die Bedeutung der Familie und der schulischen Umgebung. Allerdings können auch unter Berücksichtigung dieser Faktoren Unterschiede zwischen Individuen beobachtet werden.

Diese Dissertation richtet ihren Fokus auf mögliche Bildungsunterschiede, die auf lokale und regionale Bedingungen zurück zu führen sind. Zudem wird angenommen, dass verschiedene Kontexteffekte auf Bildung indirekt sind und durch individuelle Kompetenzen und Aspirationen (die wiederum als Vorstufe von spezifischen Bildungsentscheidungen verstanden werden) vermittelt werden. Unter Kontrolle von Kompetenzen sollte deswegen ein unabhängiger Effekt der Aspirationen auf Bildungserfolg erwartet werden.

Ziel dieser Dissertation ist es daher, zu verstehen, wie Faktoren, die in der lokalen und regionalen Umgebung angesiedelt sind, zur Erklärung sozialer Unterschiede in Bildungs- und Berufsaspirationen und

- als Konsequenz - im Bildungserfolg beitragen können. Zu diesem Zweck entwickle ich eine generelle Definition von Bildungs- und Berufsaspirationen und schlage einen analytischen Rahmen vor, der diese mit dem individuellen Bildungserfolg in Form von Übergängen verknüpft. Des Weiteren zeichne ich mögliche Wege auf, wie Kontexteigenschaften, darunter lokale und regionale Faktoren, Bildungs- und Berufsaspirationen im Lebensverlauf beeinflussen können. Ich nutze ein flexibles Konzept der räumlichen Umgebung, um relevante theoretische Mechanismen, die einen räumlichen Bezug haben, möglichst genau abbilden zu können.

Drei empirische Studien dienen als Anwendungsbeispiele für dieses generelle Vorgehen. Sie bieten einen Eindruck von der Bedeutung lokaler und regionaler Bedingungen für die individuellen Aspirationen. Als Beispiel dient das Ende der regulären Schulzeit in Deutschland. Ich widme mich diesem Bildungsstadium, weil solche Effekte hier am wahrscheinlichsten zu erwarten sind. Zu diesem Zweck verknüpfe ich regionale Daten auf unterschiedlichen Aggregationsebenen und die Individualdaten der zwei großen deutschen Datensätze: National Educational Panel Study (NEPS) und Sozio-ökonomisches Panel. Zwei der empirischen Studien beschäftigen sich mit Bildungs- und Berufsaspirationen am Ende der regulären Schulzeit. Die dritte Studie hat den Übergang von der Schule in die Berufsausbildung als Thema.

Die empirischen Ergebnisse zeigen, dass die Zusammensetzung der lokalen Bevölkerung bezüglich der Bildung sowie regionale sozio-ökonomische Bedingungen einen bestimmten Effekt haben: während die so genannte positive Bildungsumgebung in der Nachbarschaft die generellen Bildungsaspirationen der jungen Menschen positiv beeinflusst, hat die regionale sozio-ökonomische Situation einen klaren Einfluss auf die Karriereplanung von angehenden Schulabsolventen. Das betrifft verschiedene Dimensionen ihrer Bildungs- und Berufsaspirationen sowie die tatsächlichen späteren Übergänge. Außerdem sind die beobachteten Effekte für unterschiedliche soziale Gruppen nicht

gleich: es zeigen sich klare Interaktionen mit dem sozialen Hintergrund und dem Schulzweig. Ich betone zusätzlich die Bedeutung der adäquaten Operationalisierung der Kontextdaten mit Blick auf die theoretischen Annahmen über die Wirkungsmechanismen, sollte man sich mit räumlichen Erklärungsfaktoren beschäftigen.

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## 1 General Introduction

For many decades now, inequality in educational opportunities has been one of the main subjects of sociological research. An almost endless amount of empirical studies has addressed diverse relationships between a person's social identity and his/her chances of achieving a certain educational and professional level. This interest can be explained by the obvious and enormous importance of educational attainment for the general allocation of individual life chances. In this context sociological educational research is highly dominated by the so called rational-choice theoretical model of educational decisions with empirical focus on the outcomes of single educational transitions. Thereby, the transitions are assumed to base on individual cost-benefit calculations. On the other hand within the socio-psychological research context a great importance is explicitly addressed to the individual attitudes, expectancies, and wishes in form of aspirations. One of the prominent examples within educational research is the so called Wisconsin model of educational aspirations.

I argue that educational (and occupational) aspirations and educational transitions are not in principle two incompatible concepts, but can be seen as stages of one and the same process of the formation, continuous adaptation, and realisation of educational plans. I make it explicit on the example of secondary school completion in Germany; as the end of general schooling approaches, school leavers are faced with the question of which educational or occupational pathway to choose. I expect that young people don't face this situation unprepared. They rather develop a conception of upcoming alternatives and adapt their final decision due to these considerations. Educational and occupational aspirations can in this respect be seen as a pre-stage of educational decisions that again create the necessary basis for educational transitions and outcomes. In this respect the understanding of educa-

tional and occupational aspirations is necessary for the whole understanding of consequent educational transitions.

The theoretical focus of this dissertation results from the fact that educational and occupational aspirations are not expected to be stable across an individual's life time. They can emerge, change, and possibly disappear. At different life stages, different kinds of aspirations can be present. They can be affected by different explanatory factors to different extents, and ultimately have different impacts on educational and occupational outcomes. Educational and occupational aspirations need to be seen as multidimensional concepts that are embedded in a life-course perspective. This means that given particular outcomes (here school system leaving) I will focus on particular dimensions of aspirations that are expected to be relevant at this point in time and particular explanatory factors that are effective under given conditions.

A person's social integration can be considered from various perspectives and relevant social factors can be found in various contexts. The focus of this dissertation lies on explanatory factors that have a spatial dimension and are embedded in local or regional contexts because I expect that aspirations and decisions at secondary school completion are especially sensible to spatial environments. The focus on later educational stages is justified by the fact that ending secondary schooling marks a very important stage in the individual life course. This phase is characterised by upcoming educational transitions from school to vocational and academic training or the labour market. General educational and occupational aspirations begin to play an important role at this stage as a result of the impending demand that individuals identify a professional orientation. Processes in the later school career are also likely to be affected by a greater variety of socio-economic characteristics of the surrounding spatial contexts; the importance of the upcoming decision forces young people to use as many available



resources in the form of information and orientation as possible. Because school-to-work transitions are highly dependent on the local and regional socio-economic situation, it can also be expected that young people are aware of this fact and try to effectively implement their perception of the local and regional situation in their decision-making. I will argue that contextual analysis does not necessarily demand that we single out spatial explanatory factors: at least from a theoretical point of view, their role fits into the more general discussion about contextual explanations of individual educational and occupational success. However, from a methodological perspective, the analysis of local and regional effects creates practical challenges.

My particular interest in the role of spatial explanatory factors fits into a long tradition of sociological theory and research dealing with the importance of locality for individual social behaviour. Directly or indirectly, the question of space and its importance for the social world has been addressed by such luminaries as Durkheim, Simmel, Bourdieu, and Giddens, to name just a few. And at least since the 1990s and the so-called “spatial turn” in the social sciences (Bachmann-Medick 2006), demands for more a systematic and elaborated integration of the spatial dimension into analyses of cultural and social phenomena have been increasingly articulated (Löv 2001). From an empirical perspective, as well, interest in the role of local and regional factors has been continuously present.

The Chicago School of Sociology can be seen as pioneers in this regard in their empirically linking of social phenomena to their geographical location. Although Chicago School never developed a consistent theoretical basis for their research, their central position can be summarised as follows:

“One cannot understand social life without understanding the arrangements of particular social actors in particular social times and places. Another way of stating this is to say that Chicago felt that no social fact makes any sense abstracted from its context in social (and often geographic) space and social time. Social facts are located” (Abbott 1997: 1152).

But even after the peak of the Chicago School, the explanatory potential of geographical location was repeatedly addressed by empirical social researchers. Those researchers came to some extent from very different theoretical schools and were interested in a number of different research areas. Many of them linked local and regional conditions to educational outcomes:

In Germany, there is a tradition of regional research linking contexts and educational outcomes in a descriptive manner. Such studies address the role of regional socio-economic composition (Block & Klemm 2005, Hansen 1993, Ditton 1992, Bertram & Dannenbeck 1990, Meulemann & Weishaupt 1976) or the relevance of a region’s endowment with educational institutions (Eirmbter 1977, Peisert 1967). Within this tradition, and especially before the educational expansion took place, disparities between urban and rural areas were of particular interest (Peisert 1967, Geipel 1965).

There are also a considerable number of studies that address local and regional influences from a more analytical perspective and focus more explicitly on the theoretical mechanisms behind observed local and regional differences.<sup>1</sup> In this respect, we can broadly differentiate be-

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<sup>1</sup>Social mechanisms are theoretical concepts for explaining empirical correlations in social phenomena. There are several competing definitions of scientific mechanisms, although some general ideas are shared by most of the accepted definitions: mechanisms are a) always characterised by a particular effect to be explained, b) they have an irreducibly causal notion and c) a clear explanatory structure (following Hedström & Ylikoski 2010).

tween studies that are more focused on the social processes within neighbourhoods and studies that follow a more economic perspective and primarily address the role of regional infrastructure and economic conditions.

Sewell and Armer published a classic study on the link between neighbourhood socio-economic status and young people's educational aspirations (college plans) in 1966, and found differences with respect to the neighbourhoods' occupational composition (Sewell & Armer 1966). This contribution from the so-called "Wisconsin group" was part of a series of US studies over the 1950s and 1960s that addressed the role of neighbourhood environment on individual educational ambitions (Turner 1964, Sherif 1961, Wilson 1959). In the later years, however, the topic of neighbourhood impacts lost popularity in social research.

The interest for neighbourhood effects rose again in the late 1980s. This new research tradition focused above all on the negative consequences of living in disadvantaged neighbourhoods with particular emphasis on "social dislocation" within ethnically and economically segregated "ghettos" (Wacquant & Wilson 1989). Characteristic in this respect is the work of William Julius Wilson and his most prominent study "When Work Disappears" (Wilson 1996). Therein, Wilson links the various individual disadvantages, particularly on the labour market, that people from "inner-city ghettos" face with various characteristics of their living environment and formulates a number of theoretical mechanisms the observed correlations can be traced back to, such as collective socialisation, (lack of) social control and little endowment with social capital. The quality of infrastructure also plays an important role, particularly local schools. Wilson indicates that neighbourhood effects on ghetto inhabitants' lower life chances are mediated by lower educational success, among other variables. This idea was adopted by further researchers; James Ainsworth's study,

which is strongly oriented on the definitions and recommendations found in Wilson's work, finds significant correlations between neighbourhood socio-economic and ethnic composition and the educational achievement of school students (Ainsworth 2002). Other US and UK studies have also found an effect of neighbourhood composition on educational performance (Garner & Raudenbush 1991), school leaving (Brooks-Gunn et al. 1993, Crane 1991), and general educational success (Owens 2010, Aaronson 1998, Duncan 1994). Studies in Sweden, Norway, Finland, Germany, and Netherlands have repeatedly found effects of a neighbourhood's socio-economic and ethnic composition on educational attainment. However, the tendency is that such effects are weaker in comparison to the US or UK context (Nieuwenhuis et al. 2015, Brattbakk & Wessel 2013, Sykes & Musterd 2010, Brännström 2008).

The second "research tradition" mentioned here predominantly focuses on the model of rational educational decision-making and seeks to explain how regional opportunity structures influence individual decision-making processes. In this respect, regional economic conditions have received particular interest. Research explicitly linking labour-market characteristics with aspects of educational processes argues that poor labour-market conditions lower individual's perceptions of their employment chances and tend to discourage young adults from entering the labour market after the end of compulsory schooling (discouraged worker effect; Micklewright et al. 1990, Raffe & Willms 1989). Poor conditions in a residential area are associated with a higher individual risk of becoming unemployed. In that sense, further general education is used as an "escape" from unemployment. Results supporting this assumption can be found in international research, particularly in the US (Betts & McFarland 1995, Walters 1984), but also the UK (Clark 2011, Rice 1999), Italy (Carmeci & Chies 2002), and Spain (Peraita & Pastor 2000). Most of these studies assume more or

less strictly that young adults at the end of their compulsory schooling tend to be limited to a specific local and regional setting.

Interestingly, although both of these research traditions implicitly work with the concept of individual preferences and decisions, there are only a small number of studies that directly link local or regional explanatory factors to aspirations. The author is aware of only a few studies dealing with occupational aspirations (Flouri et al. 2015, Wicht & Ludwig-Mayerhofer 2014, Furlong et al. 1995); almost no empirical evidence is available on the immediate connection between spatial environment and educational aspirations. In my opinion, this is a profound research gap, the existence and extent of which is surprising. Furthermore, with respect to the impact of socio-economic contexts on educational and occupational attainment, it seems important to differentiate between aspirations and their realisation. Directly assessing the impact of contextual conditions on aspirations enables the unique effect of spatial socio-economic contexts on educational decision-making to be identified.

In this dissertation, I intend to introduce a general concept of individual educational and occupational aspirations. Spatial characteristics do not play a separate role in my explanatory model. I will, however, introduce some more general considerations regarding how to systematically integrate explanatory factors on the local and regional levels into the explanation of educational outcomes, particularly educational and occupational aspirations.

The main part of this dissertation, which consists of three empirical studies, deals with the practical implementations of this theoretical model and addresses the role of selected characteristics of local neighbourhoods and the broader regional environment for levels of educational and occupational aspiration and their realisation. These empirical examples focus on young people at the end of compulsory school

in Germany. On the one hand, the end of secondary school marks a crucial turning point in the individual life course; young people and their parents face a point in time that is characterised by important transitions and the need to assess given alternatives and make a highly important decision. Furthermore, there is empirical and theoretical evidence that the role of local and regional characteristics at this stage of the educational and life course is particularly high (e.g. Tumino & Taylor 2015, Meschi et al. 2011, Sykes & Musterd 2010, Brännström 2008, Kauppinen 2008, Oberwittler 2007, Rice 1999, Beattie 2002, Pickett & Pearl 2001, Ellen & Turner 1997, Betts & McFarland 1995, Brooks-Gunn et al. 1993, Mayer & Jencks 1989).

In particular, I will address the following questions<sup>2</sup>:

- What are the general underlying mechanisms that account for the impact of local and regional contextual characteristics on inequalities in educational and occupational aspirations (of young people at the end of secondary schooling)?
- What are appropriate techniques for measuring these effects? In particular: how to theoretically locate and empirically replicate the area where the assumed mechanisms are expected to be at work (*spatial reference* of the mechanism, see Hillmert 2016)?
- Are different social groups differently affected by local and regional characteristics in terms of their effects on educational and occupational aspirations?
- Are educational and occupational aspirations important for ac-

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<sup>2</sup>This dissertation originated within the context of the author's work in the project "Social Inequality in Educational Attainment: The Impact of Regional Socio-economic Environments" under the direction of Prof. Dr. Steffen Hillmert and in cooperation with Katarina Weßling. For this reason following points can to certain degree overlap with the the work of Katarina Weßling (2016).

tual educational and occupational success, and if yes, how does their role relate to the importance of factors aside from individual preferences and decisions?

In line with this agenda, I structure my dissertation as follows: in the theoretical part, I will first present the central theoretical concepts I will work with: educational and occupational aspirations, contextual influences, and the life-course perspective (Chapter 2.1). Next, I will present my general explanatory model (Chapter 2.2): this model is expected to be universally applicable to the explanation of different kinds of educational and occupational aspirations at different stages of a person's educational career and of the life course. Spatial contextual factors do not play a specific role in the explanatory model but should be integrated according to each particular research question. The fact that the direct link between spatial contextual conditions and educational or occupational aspirations has been somewhat neglected in social research may stem from specific data requirements and corresponding challenges in obtaining and linking appropriate data on the individual and the contextual levels. In Chapter 3 I will address the topic of data requirements and availability of appropriate data in the case of Germany. Chapter 4 integrates the studies that constitute the empirical part of this dissertation into a more general perspective on steadily developing and varied educational and occupational aspirations. In particular, I will explain which specific dimensions of educational and occupational aspirations are addressed in the studies and which particular local or regional explanatory factors have been chosen and why. After presenting the empirical studies (Chapter 5), I will close with a general summary in the Chapter 6 that will again try to reintegrate the specific results of these studies in a more general perspective of life-course development of educational and occupational aspirations and the role of spatial context conditions.

## 2 Theoretical Framework

### 2.1 Theoretical Key Concepts

#### 2.1.1 Educational and Occupational Aspirations

The concept of aspirations as it is understood by most contemporary sociologists has its origins in social psychology. The American Sociological Review- one of the world's leading sociological journals- published an article in 1939 by the world-famous socio-psychologist Kurt Lewin. Therein, Lewin explains his understanding of goal-oriented behaviour and the roles of different disciplines in explaining of its emergence. He also outlines similarities and mutual advantages of the psychological and sociological perspectives. It is quite telling that "Field theory and experiment in social psychology" begins with the words: "The sociologists, I suppose, have reason to be satisfied with the recent psychology" (Lewin 1939: 868). Lewin opposes a strict behaviourist perspective that reduces the processes of goal orientation to- in his words- "psychological facts" and stresses the role of "social facts", such as the "presence or absence of other persons or the competitive or non-competitive character of the situation" (Lewin 1939: 869). In the same article, Lewin introduces the term "level of aspirations" to represent the cognitive-orientational aspect of goal-directed behaviour.

This early contribution points to certain aspects that are important for a proper understanding of the contemporary concept of aspirations: first, the term has its origin in (social) psychology and stands for a cognitive state that precedes a future individual, conscious, deliberate action. Second, there might be a narrow psychological interpretation that only considers the "psychological facts" in explaining individual goal-oriented behaviour. It means that decision-making is understood as a fundamentally individual process where the prime determining factors remain within the influence of individuals (Osipow 1990). A wider in-

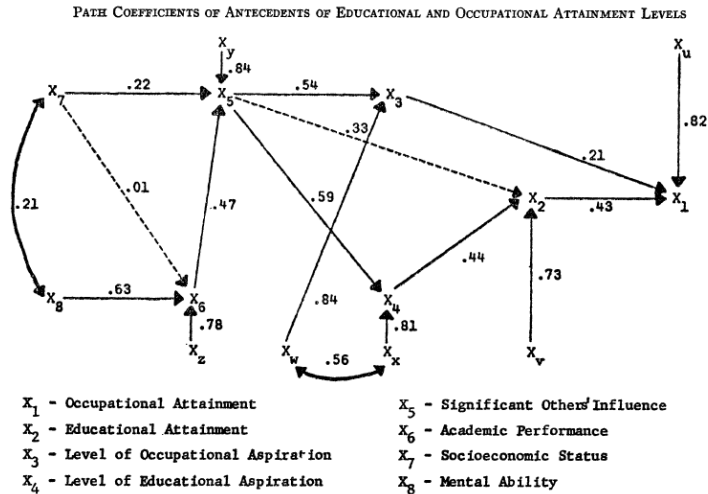


terpretation, however, points to the importance of “social facts”, i.e. the role of external social factors such as affiliation to certain social groups and inter-individual processes within these groups. This is the point of intersection where sociology can make use of this concept originally drawn from psychology.

In fact, the concept of aspirations was soon adopted by social psychologists and sociologists who were particularly interested in the social processes of educational and occupational preference formation: In 1953, Kahl used social status affiliation as the interrogating factor to explain the relationship between parents’ orientations and adolescents’ educational and occupational aspirations (Kahl 1953). In the same year, Reismann directly connected adults’ occupational aspirations to a series of socio-economic indicators such as previous educational and occupational success (Reissman 1953). In subsequent years, more systematic steps were taken to theoretically integrate educational and occupational aspirations on one hand and socio-economic explanatory factors on the other. Although there have been alternative approaches (for example Musgrave 1967), it is the so called “Wisconsin model” that has received the most attention in this respect, and its authors are often referred to as the originators of contemporary sociological research on educational and occupational aspirations. The Wisconsin model integrates individual educational and occupational aspirations in a complex path model. This model links both kinds of aspirations to psychological explanatory factors like mental ability (and resulting academic performance) as well as to an individual’s socio-economic context (Sewell et al. 1969). The publications of the Wisconsin group also helped to establish the terms realistic and idealistic aspirations, originally taken in a slightly different form from Lewin (1939), who speaks of “real” and “ideal” aspirations. While the former are defined as what a person believes he/she might really be able to attain, the latter are what he/she hopes to attain if all goes well. These two levels

of aspirations are not identical, and idealistic aspirations are ordinarily supposed to be higher than realistic ones (Haller 1968).

Figure 1: Path diagram of the Wisconsin model of educational and occupational aspirations



Source: Sewell et al. (1969: 85)

As we see in the Figure 1 educational and occupational aspirations are not directly connected in the model framework. Both kinds of aspirations, however, are shaped by what is known as significant others' influence, which in turn mediates the effects of socio-economic status, mental ability, and performance. Significant others' influence is the combined influence of parents, teachers and friends. The term "significant others" is well chosen and explicitly stresses the relevance of socialisation processes for an individual's educational and occupational career. It represents a specific group of persons from whom the individual obtains his level of aspiration, either because they serve as models or because they communicate to him their expectations for his

behaviour (Sewell et al. 1969). Thus, the model consists of aspirations individuals hold for themselves, the expectations definers hold for them, and the status exemplifications their models present them with (Haller 1982).

Significant others base their expectations on students' educational and occupational ability and socio-economic status. Interestingly, there is no independent link between individual socio-economic status and performance and level of aspirations that is not mediated by the peer group. While an individual's perception of his or her own socio-economic status is integrated into the general social status measurement (combined with the objective social status of father and mother), perception of one's own performance is not considered relevant for the formation of aspirations. This link, however, was integrated into latter model specifications. On the left side of the model, we see educational and occupational attainment as final explanandi. Speaking for the Wisconsin group of researchers, Haller points out that research on aspirations is only meaningful if level of aspirations in turn can be used for the explanation and prediction of objective behaviour (Haller 1968). In a later statement, Haller and Portes describe the Wisconsin model as a socio-psychological status attainment model (Haller & Portes 1973).

In the model's wider interpretation, the group of significant others can be extended beyond parents, teachers, and friends. Already in 1966, Sewell and Armer published a study on the link between a neighbourhood's socio-economic status and young people's educational aspirations (college plans), finding some (albeit weak) differences in college plans among students from various neighbourhoods classified according to occupational composition (Sewell & Armer 1966). The authors interpreted the role of local socio-economic composition in light of peer influences and socialisation, among other potential factors. Therewith, the local explanatory level was also integrated into the explanation of educational and occupational aspirations.

The concept of educational aspirations was later rediscovered by researchers applying the rational-choice approach to explain educational attainment. Within this theoretical framework, aspirations received a very practical and much narrower interpretation. Clear psychological explanatory elements were excluded from the model and group differences were re-interpreted in terms of group-specific costs-benefit evaluations. According to the rational-choice approach of educational decisions, actual educational success can be seen as the accumulated result of individual educational transitions, which are traced back to rational consideration by individual actors. During each educational transition, actors (parents or the pupils themselves - depending on the model specification) can choose between certain given alternatives with regard to the further educational course. Following Boudon, individuals weigh the expected costs against the benefits of each alternative and choose the one with the highest expected utility. Thereby, benefits are not only measured as expected future financial income but also the social status children could reach as a result of their education (Boudon 1974). Costs can also include the income foregone in the years spent on education. In later model specifications, an additional decision factor was articulated: the expected likelihood or probability of success (Esser 1999, Breen & Goldthorpe 1997); the lower an actor's chances of implementing a potential decision, the more unlikely it is that he or she will choose this alternative. This is important because it is the point where the so called primary and secondary effects of social background get to interact. The primary effects are defined by Boudon as differences in educational transitions due to different levels of school achievement. School achievement, on the other hand, depends strongly on the family's cultural resources, i.e. the child's social background. The secondary effects are the "direct" effects of social background on the educational decision, controlling for achievement (Boudon 1974).

Although the rational-choice approach explicitly addresses subjective educational decision-making processes, the basic rational-choice model does not deal with the concept of aspirations. However, in later works the term aspirations gained certain popularity as a description of subjective educational or occupational preferences, as a kind of pre-stage to the final expressed individual decision. Some researchers simply use the term educational aspirations as a synonym for the individual rational educational decision (Becker 2000). Other researchers are more aware of the possible importance of group socialisation and the process of norm and attitude transition as formulated in the original socio-psychological approach. Paulus and Blossfeld (2007), for example, use the distinction between realistic and idealistic aspirations to separate “rational” and “not rational” influencing factors by equating the cost-benefit evaluation with realistic aspirations, as opposed to idealistic aspirations, which are based on educational norms. Kleine, Paulus, and Blossfeld later propose a similar approach, separating educational aspirations into those that are stable and those that are adaptable over time. According to this scheme, stable educational aspirations are not affected by variation in factors and parameters relevant for rational decision-making (Kleine et al. 2009). Aspirations are measured here as parents’ and their children’s perceptions regarding the final level of education that has to be reached. Educational decisions at individual transitions points are derived exclusively from this general goal perception, which can be changed and adapted depending on the student’s previous educational course. The advantage of this approach is the overcoming of a strict separation into just two kinds of aspirations: “rational” and “norm based”. Here, the importance of educational norms on the educational decision can be seen as varying over social groups and over the individual life course (Kleine et al. 2009). Thus, social groups not only differ in initial aspirations, but they are also differently disposed to change them depending on the constellation of influencing factors and their interplay. Similar argu-

mentation is also used by other authors (Beal & Crockett 2010, Stocké 2009). It has been noted that this theoretical combination is not only an extension of the rational-choice approach but also an expansion of the original Wisconsin model, where no interactions were expected and all effects were specified as constant (Stocké 2009). Another advantage of this concept is that the factors leading to the adaptation of individual aspirations can be specified on different levels: not only one's own previous success but also institutional influences like teachers' recommendations (Kleine et al. 2009) or elements of the social environment like peers (Stocké 2009) can be integrated in the model.

Besides the narrow rational-choice model of educational decision-making that is broadly used in sociology and the economic sciences, there are alternative ways to model individual educational decisions; in the psychological interpretation of the educational decision-making model, individual socio-economic contextual factors play a role along with individual cognitive characteristics and psychological processes within the family. One of the most prominent socio-psychological educational and occupational decision models is the so called expectancy-value theory of achievement related choices by Eccles and colleagues. According to this theory, achievement-related choices are present in several decision situations: between school courses as well as between educational tracks or occupations. Eccles predicts that individuals will select those alternatives that they think they have the greatest chance of mastering and that have the highest task value for them. Individuals' expectations for success depend on the confidence that individuals have in their intellectual abilities and on the predicted difficulty of the various options they are considering. The so-called relative subjective task values of various (achievement-related) alternatives, on the other hand, are also important for decision-making and are influenced by several factors that can be grouped into four broad categories: interest value (the enjoyment that comes from being engaged in the task), util-

ity value (the instrumental value of the task for fulfilling further goals), attainment value (the link between the task and one's sense of personal or social identity), and cost (monetary or in terms of potential negative experiences associated with each possible choice) (Eccles 2007). The concept of aspirations is not a systematic part of the expectancy-value model. However, the term is used in some contexts to describe parents' or students' beliefs and attitudes. An adapted form of the expectancy-value model was explicitly applied to occupational aspirations as the dependent variable (Jodl et al. 2001). Thereby, aspirations were measured via multiple codes reflecting individuals' vision of their occupational future. In this respect, this interpretation of aspirations is much more complex than that used in the Wisconsin model or in the narrow rational-choice perspective.

Compared to the concept of educational aspirations, occupational aspirations have remained the prerogative of socio-psychological research to a greater extent (Hodkinson & Sparkles 1997, Osipow 1990). The development and manifestation of career plans is considered to be particularly important during adolescence, and occupational decision-making is understood as an individual process where the determining factors such as self-concept (1981) and self-efficiency (Lent et al. 1994) are under the cognitive influence of individuals. One of the most popular theories of the formation of occupational aspirations, by Linda S. Gottfredson, proposes that occupational plans should be seen as the result of *circumscription and compromise*, a process of occupational goal formation that depends on a developing self-concept. At different stages of the process of circumscriptions during the first two decades of life, individuals eliminate occupations they find to be unacceptable. This process starts in early childhood and implies an influence of social valuation, sex roles, and unique individual self-perception, which, however, can differ with social class background (Gottfredson 2002). In the opposite process of compromise, individ-

uals relinquish preferred alternatives if they face barriers on the road to achieving them in favour of less compatible but more accessible alternatives. Thereby, a typical pattern of compromise is that occupational interests are sacrificed first, job level second, and sex roles last, because the latter numbers among the more central aspects of self-concept, according to Gottfredson (1981).

However, there is also a long tradition within socio-psychological research stressing the importance of contextual social factors on the subjective process of occupational goal formation (Hughes 2011, Lent et al. 2000, Holland 1994, Sewell et al. 1969, Roberts 1968). For example, socio-economic background plays an important role in social cognitive career theory; here, individual career choices steadily develop in according with individual self-efficiency beliefs in terms of confidence regarding the accomplishment of particular educational goals and outcome expectations in terms of beliefs about the consequences or outcomes of choosing each of them. Such outcomes can be monetary, social or related to self-satisfaction (Lent et al. 1994, Bandura 1986). Self-efficiency as well as outcome expectations are strongly dependent on individual cognitive characteristics; however, especially in the extended model, greater attention is paid to a person's socio-economic environment: family, friends, institutions, and macroeconomic conditions that provide points of comparisons when evaluating one's own occupational goals. In this respect, the assumptions of cognitive career theory resemble the importance attributed to significant others in the Wisconsin model of aspirations.

Occupational aspirations typically refer to preferences with regard to future occupations (Lee & Rojewski 2009, Rojewski 2005; Armstrong & Crombie 2000, Lent et al. 1994). They can vary on several dimensions, such as the occupational sector, the social status associated with an occupation or traditional roles for specific social groups (e.g. gender-specific norms) (Osipow & Fitzgerald 1996, Reskin 1993, Betz & Fitzgerald 1987, Daymont & Adrisani 1984).



### 2.1.2 Spatial Contextual Influences

After I presented my explanandum I will next address the role of the spatial explanatory contexts that constitute the explanans in this dissertation.

A central idea in the social sciences is that individuals are embedded in and influenced by social contexts. Thereby, “social context” is a very broad analytical concept that does not necessarily need to be understood in spatial - local or regional - terms. To summarise the idea of social contexts, the definitions of Peter Blau are highly appropriate, although Blau himself prefers the term “social structure” to “social context”. According to Blau, the social structures that individuals are embedded in are characterised - explicitly or implicitly - by frequency distributions of individuals’ behaviour or relationships among them. This can become manifest in common values and norms or in the networks of social relations in which processes of social interaction become organised and through which individuals’ social positions become differentiated. These concepts refer to attributes of social collectivities, not to those of individuals, but they have counterparts that do refer to characteristics of individuals. Individuals can be described in terms of their orientations and dispositions, just as groups can be described in terms of their prevailing social values and norms, and individuals can be distinguished on the basis of their social status, just as groups can be distinguished on the basis of the status distribution in them (Blau 1960). Thereby, it is important to distinguish between the effects on human behaviour that are produced by individual attitudes and characteristics and the consequences of individual exposure to social conditions. Such contextual effects can be direct, meaning that their strength does not differ according to individual characteristics. Effects on both levels can also be inverse or of a more complex kind; for example, they can mediate one another (Blau 1960).

The logic of contextual analysis can be transferred to spatial contexts. Moreover, this is one of the contemporary developments in social sciences that explicitly stresses the importance of the spatial perspective for an appropriate and complete understanding of social processes. In the history of the social sciences, there have been several “turns” in terms of far-reaching theoretical paradigm shifts; the 1990s was the decade of the so called “spatial turn” (Bachmann-Medick 2006), when demands for more systematic and elaborated integrations of the spatial dimension into analyses of cultural and social phenomena were increasingly articulated. Sociology was also affected by this renewed perspective (Löv 2001). The perspective was renewed and not new because the spatial turn merely returned the spatial dimension to the focus of sociology. Its importance was first recognised very early on and has played an important role in many theoretical traditions and approaches within sociology. Among others, Georg Simmel, Pierre Bourdieu, and Antony Giddens elaborated theoretical principles of the interplay between social processes and geographical space, and in a more practical sense regional and local influences have been frequently included in empirical studies based on different theoretical models, including the rational-choice model and various socio-psychological models.

With regard to the concept of space in social philosophy, two different theoretical conceptualisations can be viewed in opposition to each other: the absolutist and the relativist (Rau 2013). Duncan summarises the two perspectives as follows: from the absolutist perspective, space can be understood as a container in which objects have positions and develop relationships with other objects. The containers and objects exist independently from each other.

In contrast, in the relativist view, space only exists as a relation between objects (for example cities, groups of people, or single individuals). Space itself does not have substance and there can be no spa-

tial relationships without objects, which do have substance. Space is not an independent substantive object, and hence has no autonomous causal powers. Rather, spatial relations exist between substantive objects, which in turn do possess causal power (Duncan 1989). From a sociological point of view, social actors are the substantial objects that produce social facts. Viewing space from the relativist perspective would mean that perceived space is a result of social relations and processes between individuals that are embedded in a spatial dimension, or in a more radical interpretation, produce this spatial dimension. Similar developments also have taken place in classical geography; while physical geographers have observed nested hierarchies of geographic scales among earth systems, many human geographers understand geographical scales as outcomes of social constructions (Ruddell & Wentz 2009). In the corresponded literature- both sociological and geographical- the terms “space” and “place” are used to stress this differentiation, with space understood as the physical and “objective” geographic range. In contrast, place is understood as the space where relevant human behaviour takes place and that is intersubjectively defined by acting humans (Agnew 2011, Gieryn 2000).

One of the main aspects of the spatial turn is the greater emphasis placed on this relativist perspective (Bachmann-Medick 2006). However, a closer look at the sociological research that systematically addresses the question of space shows that in sociological theory space has always been seen from the relativist perspective. Even if the existence of space as an absolute and given entity often meets no objections, the importance of spatial contexts for sociological analysis is always considered with respect to the social processes they host.

Georg Simmel can be seen as one of the first sociologists to systematically develop a sociological concept of space. The theoretical considerations presented in his work “Soziologie des Raums” (sociology

of space) largely align with the relativist position. From a sociological point of view, space only exists if a social group gives it shape, according to Simmel. Space remains an “ineffective form”; social facts like boundaries, neighbourhood, or foreignness are mental products that are translated into spatial form. Simmel accepts the existence of physical space and attributes particular importance to it for the social processes that it hosts, but he stresses the necessity of not confusing geometrical form and compositions, which only exist because of social actions (Simmel 1995).

Pier Bourdieu also does not take the radical relativist position and addresses the link between physical and - so he calls it - social space. The concept of social space is based on Bourdieu’s theory of social capital and habitus: individuals’ relative endowment with three kinds of capital - economic, social in term of relevant social contacts and relationships, and cultural in terms of cultural knowledge and goods - defines their positions within social space and as a consequence their habitus, defined as an entity of social behaviour codes and preferences (Bourdieu 1985). Actors that are positioned at different places within social space develop principles of differentiation. In this respect, Bourdieu argues that “distances” in social space can also be translated to physical space or “objectified” (Bourdieu 1991). Objectified structures can then once again be reflected in and re-situate the subjective social structures of differentiation.

Antony Giddens proposed the term “spacing” to describe the process of establishing physical space through the positioning of social goods and interactions between individuals and groups. Physical structures on the one hand provide space for social action, but are on the other hand continuously created by social processes. The idea of this interplay can be seen as part of Giddens’ general “theory of structuration” (Giddens 1984).

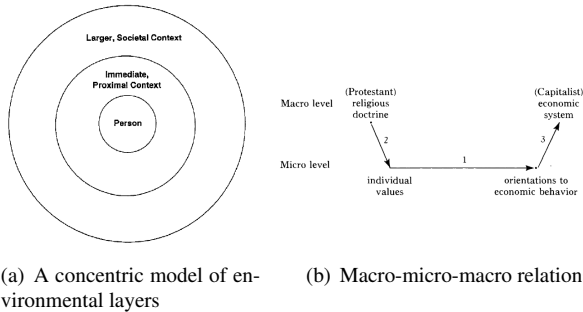
In Germany, Simmel, Bourdieu, and Giddens’ work was extended by the so called “Darmstädter Raumsoziologie”. Here, the relativist con-

cept of space was thought through to the end and three main positions were formulated. First, space and action are not opposed. Second, space is a flexible rather than a constant category; the object of the sociology of space is the process of the constitution of space through social action by means of *spacing* and *synthesis*. These terms describe the process of the arrangement and cognitive “anchoring” of spatial environment. Third, spacing orders individuals as well as physical objects, animals, and social goods (Rau 2013, Löw 2001).

Lent, Brow, and Hackett make a recommendation on how to properly understand the role of contextual factors on educational and occupational preferences from a (developmental) socio-psychological perspective. They propose conceiving the social environment as a series of concentric circles; the person whose aspirations are considered forms the middle circle and is surrounded by the immediate environment (e.g. family, friends, financial condition), which is, in turn, encircled by larger social contexts (e.g. institutions and macroeconomic conditions). The model is not restricted to only two layers; more complex models contain additional ecological structures, such as microsystems, mesosystems, exosystems, and macrosystems. Thereby, individuals can be affected by objective and perceived environments, according to the authors; in addition to beliefs about whether certain barriers exist in society, individuals also form beliefs about how such barriers would affect them, should they be encountered directly. Certain features of the inner layer (e.g. one’s immediate circle of significant others) may both serve as a filter that distils perceptions of structural barriers in the larger environment and a source of information about how one might cope with such barriers (following Lent et al. 2000).

The second theoretical approach discussed, the rational-choice model, can also be expanded to include local and regional contextual effects.

Figure 2: Theoretical models of the relationship between the individual and context levels



Source: Lent et al. (2000: 45), Coleman (1986: 1322)

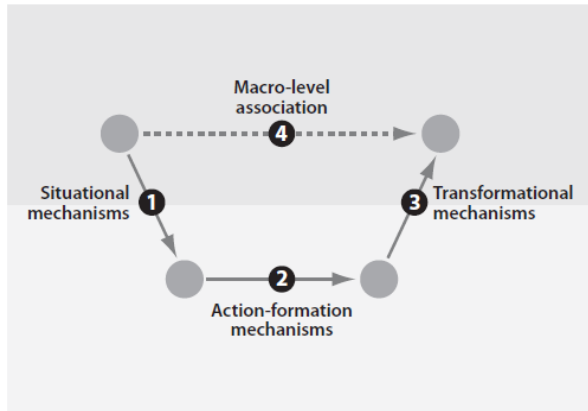
The basic model is generally very flexible in terms of integrating additional explanatory factors and levels. Moreover, it is argued that particularly with respect to educational processes, appropriately considering contextual macro indicators is a crucial analytical step because the anticipated values of the cost-benefit components are not independent of the economic and institutional conditions in which people live and make their educational decisions (Hillmert 2004; Erikson & Jonsson 1996; Bradley & Taylor 1996). For example, institutional characteristics can be understood as a framework defining and limiting the scope of potential educational goals and implementation pathways (Hillmert 2004). At the same time, aggregated socio-economic characteristics can additionally affect the perceived costs and benefits of preferring and choosing particular educational alternatives (Micklewright et al. 1990; Handa & Skolnik 1975).

The role of spatial contexts in this particular theoretical tradition can be understood from the general perspective of the so called macro-micro link, which is based on the work of James Coleman. Coleman

makes his ideas more clear by using a famous example by Max Weber regarding the link between the Protestant ethic and modern capitalism, see Figure 2.b. Coleman follows a strict individualist perspective, arguing that social processes are always based on individual behaviour (Coleman 1990). However, individuals are influenced by macro-level social structures that are an aggregated product of previous collective action (logic of the situation in the wording of Hartmut Esser (Esser 1999)). In Coleman's example, a collective religious ethic affects individuals' every day norms and values. Given particular action possibilities defined by the macro-framework, (potentially) adapted norms and values will result in a particular individual behaviour (logic of selection). In the example above, Protestants developed a particular form of economic behaviour that is typical for modern capitalism (diligence and thrift). Finally, Coleman draws a further link from individual action back to the macro-level. If a group of individuals are influenced by the social structure in similar ways, their behaviour will again aggregate to a macro-level phenomenon (logic of aggregation). In our example, a modern economic culture emerged. In this respect, changes in social structure are always produced via a "detour" over individual action. In this respect and according to Coleman, a purely macro-theoretical orientation offers "no explanation or understanding of why one relation holds rather than another" (Coleman 1986: 1322). Thus, there are no causal mechanisms to link macro-phenomena to each other. Hence, not only is it more correct but also scientifically (from an explanatory point of view) the only meaningful approach to identify the situational mechanisms by which social structures shape individual desires and beliefs and constrain their actions and to specify the transformational mechanisms by which individuals, through their actions and interactions, generate various intended and unintended social outcomes (Hedström & Ylikoski 2010). Moreover, pure macro relations are also empirically problematic because there is simply not enough variation in one social system over time or even from a com-

parative perspective to provide empirical evidence for the assumed relations (Coleman 1986).

Figure 3: A typology of social mechanisms



Source: Hedström & Swedberg (1998: 59)

Coleman does not explicitly name the local and regional environment as part of the macro-level situation individual action is embedded in. This general model can, however, be adapted to the spatial environment insofar as we understand spatial contextual factors as an aggregation of individual behaviour.

These quite abstract theoretical considerations about the nature of space have fundamental consequences for social research that is interested in the importance of spatial - local or regional - contexts. Without fundamentally questioning the existence of objectively given physical space, social research is only interested in space with respect to the social processes that are hosted in it. In this respect, space adds an additional dimension to the considered individual social environment but does not have independent “objective” importance. Hence,



a causal influence cannot be attributed to space as such. Rather, influential social mechanisms have specific spatial references. Thus, in sociological terms, the spatial environmental setting is worthy of consideration when it becomes significant for specific social processes (Logan 2012, Löw 2001).

However, recent debates have also featured a critical response; the idea of physical reference or geographical location does not have to be completely banned from sociological research. Even though only social actions are of interest from the perspective of social theory, social research shouldn't neglect the fact that individuals and objects have their own, objective "unique space in the universe" (Gieryn 2000). It has to be mentioned that the authors who demand to "make place for space in sociology" (Logan et al. 2012) generally do not argue from the position of social theory, but rather from the perspective of social science methodology. Individuals are often not randomly distributed in geographical space, but are to a considerable degree clustered; this may be a reflection of both empirical population patterns (for example because of self-selection) and cluster-based sampling of survey data. If not this clustering is not adjusted for, empirical models often produce biased or even wrong results. To avoid such empirical biases, spatial heterogeneity has to be appropriately integrated into modelling (Hillmert et al. 2017). Accounting for this is necessary but should not be confused with contextual analysis in terms of uncovering causal social processes that have their antecedents in the geographical environment. In addition, the fact that spatial heterogeneity itself is a result of social spacing processes is typically not questioned (Gieryn 2000).

### **2.1.3 Life-Course Perspective**

It was mentioned that life-course perspective is important for an adequate selection of dimensions of educational and occupational aspirational be explained and the explanatory factors that can be expected to

be effective.

The so called life-course perspective refers to a multidisciplinary paradigm or “theoretical orientation” (Elder et al. 2003) that combines the study of changes in individual lives with changes in the historical and socio-economic contexts in which these lives are embedded. From the perspective of social research, the term life course can be defined as the sequence of activities or states and events in various life domains spanning from birth to death. Therefore, for an empirical study, following the life-course perspective means to aim at describing and explaining the distribution of individuals into social positions, states, and roles across their lifetimes. Thereby, the life-course perspective presumes that the states considered have a particular temporal ordering and duration. On the other hand, the life-course perspective stresses the relevance of the time component in the relations between the individual on the one hand and institutions, culture, and social structure on the other (Mayer 2004).

The life-course perspective has its origin in the second and third decades of the twentieth century; in their famous study “Polish peasants in Europe and America” Thomas and Znaniecki argued already in 1918 in favour of an interplay between the development of personal characteristics, social conditions, and historical context, which can be observed in the “broken” biographies of immigrants (following Thomas & Znaniecki 1918). At almost in the same time, the German sociologist Karl Mannheim published his treatise entitled “The Problem of Generations”, arguing that simultaneously sharing the same experiences contributes to a unique world view or frame of reference that can be a powerful force in individual lives. Mannheim proposed a concept of generations in term of cohorts that share similar social conditions that form the context in which they act (Mannheim 1952). A little later, in the 1940s and 1950s, the life-course perspective was applied to the more psychological tradition of human development. The focus

here switched from historical cohort differentiation to interpersonal life dynamics, above all with a view to mental development processes (Mayer 2009). Particular interest was paid to the developmental patterns of children, extended into the adult years and beyond.

Already at this early stage, different sub-perspectives within the life-course perspective could be identified: the first point of view emphasises an individual's "objective" historical and structural situation. Individuals are seen as parts of a social group that faces particular social and economic circumstances with direct consequences for individual life chances. From another point of view, the "subjective" situation is stressed: here, an individual's situation is seen as the consequence of previous life-course experiences. The third interpretation sees individual life chances as the result of an interaction between individual changes and social changes. This position is now considered predominant (Hillmert 2009, Elder et al. 2003). It argues in favour of close links between psychological, social-psychological, social, and historical perspectives. The consensus is that there is not just one mechanism underlying the social structuring of human lives, but rather manifold mechanisms operating on the individual, meso-, and macro-levels (Mayer 2009).

Still, the life-course perspective cannot be seen as a uniform theoretical body. But despite the great number of existent concepts, several central elements can be identified that distinguish the life-course perspective from other fields of research (following Mayer 2004, 2009):

- Individual life courses have to be seen as part and product of a *multilevel* social and historical process. They are closely tied to the life courses of other people (parents, partners, children, work colleagues, etc.) and the dynamics of the social groups of which individuals are members. They are highly structured by social institutions and organisations and their temporal dy-

namics. Thereby, transitions between states are considered over a long stretch of lifetime and not just as particular episodes or narrow life phases.

- A life course is *multidimensional*; it develops in different mutually related and mutually influencing life domains like family dynamics, educational, and occupational careers.
- A life course is a *self-referential* process; the person acts or behaves on the basis of prior experiences and resources. Therefore, endogenous causation already on the individual level must be expected. By way of aggregation, this then also becomes true for the collective life courses of birth cohorts or generations. It means that a proper understanding of the processes at play at a particular point in the lifetime of an individual or group requires an understanding of prior experiences and resource acquisition.
- Through the manner in which people live and construct their own individual lives, they *reproduce and change social structures*. This can either happen through “simple” aggregation processes or through the immediate or intermediate institution formation.

The interplay between the individual and the macro-level thereby can be manifold; the main assumption is that individuals can only occupy states that are given by the internal social differentiation into subsystems (Mayer 2004). The educational system, for example, defines and regulates educational careers by its time-scheduled order of classes, school types, and tracks. Occupational structure defines occupational careers via conventional or institutionalised occupational activities, employment statuses, qualification groups, segmentation, and segregation. The internal differentiation of the institutional system that directly affects individual life chances can vary between systems, for example between countries. This makes the life-course perspective

useful for comparative studies.

Furthermore, macro systems can change over time. Kohli (1985), for instance, differentiates between pre-modern and modern “life-course regimes”. Characteristics of the modern life-course regime are temporalisation and chronologisation of the life course, which means that chronological age became a main structural principle and central criterion for the “typical life course”. A more or less standardised succession of life cycles predominates in modern life planning, and age boundaries are important to separate particular events in life (following Hillmert 2009). According to Kohli, the vocational system forms the centre of a modern life course; the aim of the educational phase is to prepare individuals for the working phase, while the third important life period is defined by leaving the labour market (Kohli 1985).

Besides these global historical changes, there might also be changes in single domains within a given “life-course regimes”. In fact, particular domains can change relatively frequently. For example the situation on the labour market in terms of unemployment structure or the conventional terms of “hiring” and “firing” can change several times during an individual’s life time.

Usually the term “cohort” is used to summarise a group of individuals who have shared a particular event or condition over a particular time span (Glenn 1977). The relation between the individual, the cohort, and the macro-system is thereby twofold: individuals as members of the cohort not only face constraints set by macro-institutions, but the characteristics of the cohort itself can also become relevant for individual life chances within a given particular macro-system. So the cohort size of school leavers as well as the cohort size of the preceding and succeeding cohorts can directly influence individual employment chances in terms of the competitive situation for limited jobs on the “free” labour market. Hence, unravelling patterns in life courses have to do with the fact that it is not single individuals but rather populations which are allocated to and are streamlined through the respective

social processes (Mayer 2004).

All in all, it becomes clear that for the sociological life-course perspective, interest lies not in single individuals but in populations, which are localised by their position in space and time as characterised by common living circumstances. The characteristics of particular cohorts that are going through the same life stages and states more or less simultaneously or share the same country or historical epoch can have enormous effects on individuals' life chances (Mayer 2004). Thus, the life-course perspective is not only a powerful tool to differentiate among varying conditions over time. This paradigm also allows for an integration of the spatial perspective, according to which individuals are embedded in a macro-level social structure that is defined by socio-economic and socio-structural conditions that have direct effects on individuals' actions and choices (Settersten & Gannon 2009, Elder 1974). Thus, individuals actively conceptualise their life choices and actions within socio-structural boundaries that are defined not only by the historic time period but also by institutional, structural, economic conditions at the local and regional levels, among others.

## **2.2 General Conceptual Model**

In the previous Chapter 2.1 I outlined the main concepts in sociological research dealing with the development and importance of educational and occupational plans and preferences. I argue that combining the listed theoretical and conceptual implications allows for a derivation of a multidimensional longitudinal concept of individual educational and occupational aspirations and propose a general approach for explaining them.

### **2.2.1 Conceptualisation of Educational and Occupational Aspirations**

First, I will specify the relationship between educational and occupational aspirations and objective educational outcomes. In terms of educational inequality educational and occupational aspirations are only of interest if they have consequences in terms of objective educational attainment. According to Boudon (1974), I define final educational success as an accumulated result of individual educational transitions during a person's school career. I also distinguish between selectivity in transition chances due to social differences in educational performance (primary effects) and due to social disparities in educational decisions (secondary effects) (Boudon 1974). This means that there ought to be differences between social groups with respect to access to educational alternatives even after controlling for individual school performance.

However, it is also argued that there is no direct link between the constellation of decision factors and the actual transition. Beyond that, it is argued that the process of transition encompasses several steps; educational and occupational aspirations and educational transitions can be seen as stages of a successive process of the formation, continuous adaptation, and realisation of individual educational plans. In light of these considerations, secondary effects - in terms of aspirations - de-

scribe the influence of different social factors on general preferences towards education and hence on the demand that a certain educational level be reached in the future. In these terms, aspirations exist either consciously or unconsciously, and when a decision situation - a so called turning point (Hodkinson & Sparkles 1997) - approaches, individuals have to finally evaluate their various educational and occupational aims in order to make the decision which is (subjectively) most meaningful at that particular time. This procedure can be simplified as follows:

**current level of educational and occupational aspirations →  
educational decision → educational transition**

Educational transitions are single events and the times at they take place are usually predetermined by formal regulations within the educational system. People are free to decide upon their educational pathway given the institutional settings in which they are embedded. Educational decisions are thus defined as an individual plan of action. An attempt is made to implement this plan in the specific situation in which the transition takes place. Consequently, educational decisions are expected to be discrete and strongly related to the corresponding transition. The underlying aspirations, on the other hand, are expected to not just arise when an institutionally regulated educational transition has to be managed. It seems more reasonable to argue that there is a continuous process of orientation during a person's entire educational career that merely crystallises into individual educational decisions (Beal & Crockett 2010, Kleine et al. 2009). It is empirical fact that previously made education decisions and a person's previous educational career have a direct impact on the educational decisions that will be made later (Biewen & Tapalaga 2016). Thus, individual educational decisions and transitions as the objective result of educational and occupational aspirations in turn reflexively affect future educational and occupational aspirations. This all emphasize the ne-



cessity of a *life-course perspective on the formation and implementation of educational and occupational aspirations*, as previous educational stages play a particularly important role when focusing on an individual's preferences and upcoming decisions in his or her later educational career.

In this context, I see individual educational and occupational aspirations as a multidimensional concept and assume that they can simultaneously exist in various forms. Looking at educational and occupational aspirations from the life-course perspective implies that there is a continuous process of orientation over a person's entire educational career, and at different stage of this process different dimensions of educational and occupational aspirations emerge, develop, and interact to different degrees. Previous theoretical and empirical research has already identified diverse forms of differentiation, which I adapt in my integrative concept:

Individuals can simultaneously have educational and occupational aspirations that focus on different goals. Students can, for example, aspire to a high school diploma but have no aspirations for higher education. Or an aspired occupation can be attractive in terms of high status or high job security. Different goals can diverge or compete and have to be weighed against each other in the decision-making situation.

One specific implication of the life-course concept of educational and occupational aspirations lies in the fact that the focus is primarily on the life course of the person completing the educational process, even though it is not only his/her aspirations and decisions that are important for his/her educational transitions. Especially in early educational stages, parents are the main decision makers. It is important to consider the interrelatedness between parents' and children's aspirations at different educational stages in the children's life course. At the very beginning of the child's educational career, the two can be expected to be identical, because children either do not have their own educa-

tional and occupational aspirations, or these are just replications of their parents' communicated wishes (Gottfredson 1981). In advanced stages of the child's educational career, there might be differences between parents' and children's expectations and wishes. It is plausible to assume that the probability of divergence increases with the age of the children, meaning that the importance of parents' expectations on children's decision-making should decrease over time. The explanation for this is the increasing importance of secondary socialisation and increasing freedom for children to implement their own decisions, which encourages more autonomous planning.

Aspirations can also be of a realistic or idealistic nature; idealistic aspirations are per definition educational wishes that do not consider possible costs and probabilities of success. Because rational evaluation is suspended, idealistic aspirations are assumed to be mainly based on educational norms. Realistic aspirations, on the other hand, are future plans that explicitly consider costs and probabilities and are accordingly assumed to be mainly based on rational reasoning (Paulus & Blossfeld 2007). However, the relation between realistic and idealistic aspirations also includes a time component: it can be argued that rational planning becomes more important as the the educational transition becomes closer in time. Hence, initial educational aspirations can be expected to be of a (mainly) idealistic kind, because people either do not have enough information and experience to estimate the "actual" probabilities of success and benefits of given alternatives or the remaining time is considered sufficient to implement the idealistic wishes. Over the course of their educational careers, individuals adapt their expectations as a result of new information, for example about their abilities, with idealistic aspirations more likely to remain higher than realistic ones (Beal & Crockett 2010). It can be argued that realistic aspirations are simply an adaptation of these initial idealistic aspirations with respect to new information and circumstances which encourage the decision maker to reconsider their aspired educational

and occupational alternatives. However, I assume that realistic aspirations not completely replace idealistic ones, but rather that the two kinds of educational attitudes can exist in parallel in the form of educational wishes (idealistic) and more concrete educational planning (realistic).

Figure 4: Dimensions of educational and occupational aspirations

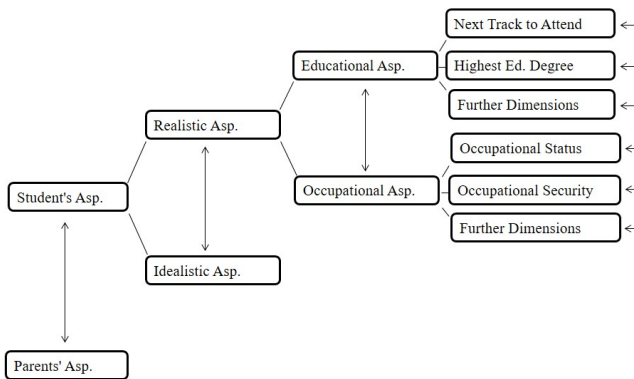


Figure 4 illustrates possible dimensions of individual career aspirations from a cross-sectional perspective. It represents dimensions that can potentially play a role at a particular point in the educational career. It is not an explanatory model but rather an aid for researchers that show which possible dimensions have to be considered when conducting research on individual career aspirations. Here, the lower sections are symmetrical to the upper sections. After making a decision about whether to consider parents' or students' aspirations, the next choice is between realistic and idealistic aspirations. In both cases, different aspirational goals - educational and occupational - exist simultaneously. Individual dimensions can be explicitly addressed according to a given research interest. In doing so, the interrelationships

between individual dimensions might need to be taken into account. Furthermore, the constellation and quality of the given dimensions can change over time.

Thus, looking at educational and occupational aspirations means always being aware of which dimensions at which stage of individuals' educational careers we are looking at. This decision can have crucial consequences for the obtained results because dimensions can be influenced by different social mechanisms at different periods and can in turn be differentially important for objective educational and occupational success.

### **2.2.2 How to Explain Aspirations?**

Next, I will propose an approach to explain particular dimensions of educational and occupational aspirations at a particular point in the life course. The proposed model is less a causal model than a list of important conceptual points that have to be considered for a given research question.

For the rational-choice theory of educational decisions, I expect differences in educational and occupational plans to be based on an individual evaluation of three basic decision factors: costs, utility, and success probability (Esser 1999, Breen & Goldthorpe 1997). Within this, costs and utility include not only direct monetary gains or risks but also anticipated lifetime income; additional education increases expected future income but implies additional years of education with no income. However, the future status that can be achieved or reproduced by means of education and later one's occupation is interpreted as a benefit. If an individual's expectations regarding the constellation of these factors changes, an adaptation of individual educational and occupational aspirations will be the consequence. An exact determi-

nation of the time points when adaptations will take place is hardly possible and can vary individually. However, we can argue that certain events within the individual's educational career, e.g. educational transitions and track placements, have collectively observable consequences. At these specific stages, actors receive feedback on their actual positioning in the educational system. Beyond the results of educational transitions, major importance can be attributed to formal (marks, teachers' recommendations) and informal performance feedback (consultations with teachers). These provide parents and students with information on how their educational wishes correspond with "reality".

The general assumptions of the rational-choice model can be complemented by arguments about the importance of educational group attitudes taken from the classic Wisconsin model; Stephen L. Morgan, for example, sees the rational-choice model as generally compatible with the assumptions of the Wisconsin school because expectations that exist in the minds of significant others are to some degree based on rational appraisals of an individual's potential and the adaptation of these expectations by the individuals, accomplished by adding these to their own expectations formed independently through their own rational self-reflection (Morgan 1998).

But there have also been attempts within the rational-choice theoretical framework to integrate the normative side of decision-making into the general decision model. The suggestion is that the decision-making processes can proceed in different "modi" depending on specific socialisation and group behaviour codes (Stocké 2007). These can be described as educational norms. Depending on this general disposition, individual decision factors can be weighted differently or even completely suppressed and made irrelevant for the educational decision. One approach that aims to extend the "classical" rational-decision model by including normative aspects is the frame selection

model (Schulz-Schaeffer 2008, Esser 2005, Kroneberg 2005). It is argued that actors have to define the objective situation they are actually dealing with by first matching it to existent mental patterns (frames) and in a next step choosing the most appropriate predefined way of actively reacting (script). Like the choice of frame, the choice of script can take place in a mode which is determined by normative orientations or rational considerations. The relationship between these two kinds of orientations for action can be differently specified. The argumentation in the “early” works of Esser (2001) sees normative attitudes as an intervening factor in the rational decision-making process. Later, a more restrictive argumentation became central. This position pleads for a strict separation of the so-called “as-mode” of normative orientation from “rc-mode” of rational decision-making.

Theoretical impulses for an extended educational transition model can also be taken from psychological decision models, where subjective norms and emotional attitudes play an important analytical role (e.g. Ajzen 1991, Eccles 1983). Such a socio-psychological interpretation of the subjective utility expectation model can - after some re-specification - be applied to the topic of educational transitions and consequently educational and occupational aspirations (Maaz et al. 2006).

Thus, I can now distinguish between the effects the relevant factors have on the anticipation and evaluation of the rational decision components and effects on the normative decision-making side. Thereby, I assume that the effects on the benefit-cost-success calculation are mediated by the provided resources. There are different kinds of resources that are considered relevant for individual aspirations; economic resources affect the anticipated economic costs and benefits of education and occupational alternatives. It is also important that actors have valid information about the educational and vocational training system, the requirements that need to be fulfilled in order to reach a

certain level or earn a certain degree, and how they can benefit from it. It is assumed that such information is primarily provided by social networks and is therefore a kind of “social” resource, but a person’s endowment with “cultural” resources is of importance here, too. Cultural resources can translate into better academical support for children and can cause better performance at school. Better performance again leads to an increase in the anticipated success probability (Esser 1999). This definition of resource endowment conforms with Pierre Bourdieu’s idea of endowment with three kinds of capital (Bourdieu 1983).

I also expect a direct link between social background and the decision components due to the additional impact of intergenerational status reproduction within the middle and upper social classes, which can be considered additional beneficial factor (Esser 1999).

Figure 5: Model of adaptation of educational and occupational aspirations

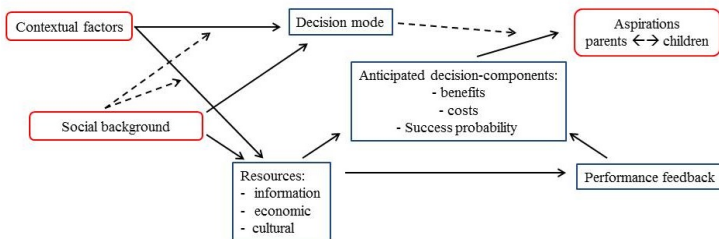


Figure 5 illustrates the considerations discussed. It represents a kind of snapshot of the continuous process of aspirational formation and depicts the moment when an adaptation of aspirations takes place. There might be several points along an individual’s educational and occupational career where an adaptation of aspirations takes place. I argue that the basic model shown in the Figure 5 holds true for each of them. The explanandum is a particular dimension of educational and occu-

pational aspirations. On the left side, I differentiate between social (family) background and all remaining explanatory contexts. These contexts can be specified in various ways, including as regional or local environments with a specific socio-economic composition.

As mentioned before, educational and occupational aspirations are assumed to be based on the evaluation of the factors anticipated by the actors: benefits, costs, and probability of success. People aspire to a level of education that subjectively assures them maximal benefits in terms of anticipated lifetime income and social status. As I mentioned, this effect is mediated by people's endowments with different kinds of resources; there is also a direct link between social background and the decision components due to the status preservation assumption. An endowment with certain resources (including cultural, but also economic) can also directly affect individuals' educational performance. This increase in performance can in turn be perceived by the actors and interpreted in terms of an increased probability of success. This should positively affect aspirations.

The subjective evaluation of objective factors can be additionally affected by what is known as the decision mode. This is where norm-based attitudes towards education come into play. They interact with the rational evaluation; depending on this general disposition, individual decision factors can be differently weighted or even completely suppressed and made irrelevant for the educational decision. This argumentation is similar to the "early" works of Esser (2001). If the normative impact is extraordinarily strong, rational decision-making can also be completely suspended. The decision mode is for its part affected by the environment the person is embedded in, primarily (but not exclusively) the family. Its extraordinary importance within the model of social background is additionally emphasized by the fact that family background can affect the impact of the remaining contextual influencing factors.



### 2.2.3 The Role of Local and Regional Characteristics

According to the conceptualisation developed here, individual dimensions of educational and occupational aspirations emerge and develop at different stages in the educational process. The selection of explanatory contextual factors and their expected effects can vary depending on which particular dimension at which particular point in the life course is to be explained. The general model does not differentiate between spatial and non-spatial contexts. I assume that the general mechanisms providing for contextual effects remain the same independently of whether the considered context has a spatial reference or not. In this respect, the effects of local or regional conditions can be twofold; on the one hand, they can provide certain resources, in economic, social, or cultural terms. This should lead to a higher expected probability of achieving certain educational degrees or obtaining an aspired occupation. On the other hand, the local or regional environment can influence normative attitudes towards education and lead to certain unconditional preferences and expectations towards a person's own future educational and occupational success. In both cases, the person's background can have an intervening role.

On the basis of these main theoretical mechanisms, groups of local and regional characteristics can be formulated that may have effects on educational and occupational aspirations:

First, educational and occupational preferences may be affected by the *social composition of the population* in the local or regional environment. In the first instance, this is the composition in terms of educational and occupational status, employment/unemployment, and income. Furthermore, the endowment with more abstract resources like cultural and social capital may be important. Thereby, the assumption is that on the individual level, higher income, employment, and a

higher endowment with cultural and social capital are positively associated with higher educational and occupational status. It can be expected that individuals make contacts with other people in their living environment. A higher density of people with these positive characteristics implies that the individuals under consideration have stronger exposure to peers who demonstrate the advantages of more education. These contacts can function as “models” for young people as they exemplify a specific life concept where education plays an essential role for economic welfare, social status, and social acceptance. As so-called “definers”, they can additionally set expectations with regard to educational and occupational performance and attitudes that are necessary to receive their acceptance (Haller 1982).

In addition to behavioural codes and social control, peers can provide specific resources; first, educated contact persons can provide information about educational institutions, requirements, and opportunities on the road to higher education. This additional information can demonstrate to doubtful students and parents that education is more feasible as they might have assumed. Furthermore, information about later possibilities on the labour market once educational goals are achieved can increase anticipated future benefits.

Because listed processes are based upon direct interpersonal contact, the direct effects of the social composition of the population in one’s vicinity should be expected in the close local environment. In this respect, possible confounding effects of the social composition of the living environment and educational institutions have been discussed; the social composition of the neighbourhood environment is often directly associated with the social composition of schools. In this respect, the effect of the composition of the local environment on educational outcomes can be largely mediated by a school’s socio-economic composition (Kauppinen 2008).

Second, *local and regional opportunity structures* can be important for

the formation of individual educational and occupational aspirations. Opportunities represent objective possibilities to implement particular educational and occupational choices available (Petersen 2009). A decision in favour of a particular educational path or occupation is only meaningful if it also can be objectively implemented. In the first instance, educational or vocational training institutions should be available and individuals should have an objective possibility of obtaining a spot in these institutions. Furthermore, deciding in favour of a profession to be practised in the future implies that there is a certain probability of obtaining an appropriate employment position. In this respect, the opportunity structure of the labour market is of immense importance. Accordingly, perceived opportunity settings influence the individual cost-benefit evaluation and thus also educational (pre)decisions or aspirations. In this respect, opportunities are related to transaction costs (Becker 1993). The availability of institutions like schools, vocational training facilities, and universities as well as the situation on the local labour market can strongly vary across regions. It can be argued that the individuals forming their educational and occupational preferences are not always aware of what objective opportunities are given or do not necessarily take them into account. In this respect, the effects of opportunity structures on actual fulfilled transitions can be expected to be larger than the corresponding effects on underlying aspirations. However, I expect that individuals' realistic aspirations should be most affected by given objective opportunities because they are per definition formed with respect to the actual possibility of implementing one's educational and occupational preferences. Accordingly, idealistic aspirations can be expected to be less affected by opportunity structures.

Institutional and administrative regulations can be seen as a special form of opportunities or obstacles: legal and administrative requirements and regulations (available school tracks, selection of study programs, and university quotas) as well as institutionally set minimum

standards (e.g. Abitur to move on to higher education, a qualifying degree to obtain certain vocational positions, minimum performance requirements) that can be understood as a framework defining and limiting the scope of individual action (Hillmert 2004).

The concept of the availability or reachability of relevant institutions is strongly connected to the concept of mobility: the greater the distance individuals can cover in a short amount of time the broader the area where they can look for appropriate positions. In this respect, it is not only the regional distribution of educational and job opportunities that is important but also the public transportation density and timing as well as the density and quality of transportation routes. It is also obvious that different kinds of educational and occupational decisions demand different mobility decisions: to attend a position at university or to gain a highly paid job demands a higher mobility readiness up to the willingness to move to another region. In this respect, the life-course perspective also implies that the spatial area in which to look for given opportunities relevant for particular kinds of aspirations also varies with the stage in the individual life course.

In general, I argue that the associated effects are located in a broader area than the discussed effects of local social composition. This aspect is also directly connected to the modifiable areal unit problem: relevant contextual characteristics may show no effects in statistical analyses if the area in which indicators were measured was not appropriate with respect to the research question under consideration.

#### **2.2.4 Implementations of the Life-Course Perspective**

As discussed in the following list, the combination of the life-course perspective and the idea of multidimensionality of aspirations foregrounds several aspects that researchers have to be aware of:

First, not only the levels but also the aims of aspirations are not stable over time. The goals individuals are led by can vary over the life

course. At different stages in the life course, different kinds of aspirations as well as different dimensions of them can become more important for practical decision-making. Every person can also at the same time have aspirations directed at different goals. Which dimensions of aspirations are particularly important for which outcomes at a given point in time can vary and needs to be argued on a case-by-case basis with respect to the particular research question at hand.

Second, educational and occupational aspirations can have normative and rational parts. Which element is dominant and more important for a given educational decision can vary between individuals but also according to the stage in the individual's life course.

Third, whose aspirations - parents' or students' - are important for the actual transition can vary during the life course. It was said that individual life courses have to be seen as part and product of a multilevel social process. They are closely tied to the life courses of other people, among others their parents. Which decisions parents can make for their children can vary during the life span of the child but also depends on the life-course situation of the parents themselves (for example, is it the first child or not). According to the socio-ecological ideas of individual development (Bronfenbrenner 1979) we can assume that there is an expansion in the individual space of action from early childhood to adulthood. Thus, students' own aspirations should be increasingly important for later transitions and the importance of the family for the formation of those aspirations should decrease.

Which influencing factors are important for the formation and adaptation of educational decisions can strongly depend on the stage of one's educational career. Life courses develop in different mutually related and mutually influencing life domains. Single domains can on principle switch their importance on given dependent factors depending

on the stage in the life course. Thus, the same factors can affect different dimensions of aspirations at different stages in the life course. For a particular research question this affects the selection of relevant factors, the theoretical mechanisms they work through and has to be considered as well as the contextual level they have to be measured on.

Finally, it was said that life course is a self-referential process; it means that a proper understanding of the processes at play at a particular point in the lifetime of an individual requires an understanding of prior experiences. Context conditions often require certain durations to become salient, so that exposure to specific context conditions can be expected to have cumulative effects along the life course or the educational career. Individuals are exposed to different contexts at different stages in the life course for different amount of time. Vice versa, particular contextual conditions can only become effective after a certain time of exposure that then has to be considered. This all particularly concerns spatial explanatory factors (Browning et al. [2015](#)).

### 3 Data Requirements

#### 3.1 Individual Data

The purpose of this dissertation is to explain individual levels of educational and occupational aspirations at single stages of the individual life course and, in particular, to evaluate possible effects of local and regional contextual factors. This results in a number of basic requirements with regard to the individual data to be used:

1. Data on individual educational and occupational aspirations is needed. As discussed in Chapter 2.2 educational and occupational aspirations consist of a number of theoretical dimensions. The data used should provide various indicators that would allow for the operationalisation of these different dimensions. In particular, different formulations that allow the realistic or idealistic nature of the reported aspirations to be deduced would be beneficial. Because individuals can simultaneously have multiple aspirations toward different goals, all potential outcomes have to be reported; for example, aspirations for the next educational step, for the highest degree of educational aspiration, the desire to pursue higher education or what particular qualification is aspired to. Occupational aspirations should also best be reported in a number of different detailed classifications, so that researchers can systematise them according to their theoretical considerations and research design.
2. In addition to the dependent variables, all relevant individual characteristics should be available to allow for necessary controls. Because individual educational and occupational aspirations are known to be largely shaped by the family environment, information on relevant family characteristics like the educational and occupational status of family members is indispensable. Besides the necessary controls, the researcher also needs

information that allows assumptions about the theoretical mechanisms at work to be tested. As I have argued, I expect individual educational and occupational aspirations to have their origin in cost-benefit evaluation and norm transmission. Hence, individual assessments of different educational and occupational alternatives in terms of costs, benefits, and the probability of success as well as information about educational attitudes and communication processes within the family and in relevant peer groups will be helpful.

3. School environment is also known to be important for educational and occupational success. Furthermore, it is particularly important to have information on relevant school characteristics, because school effects are known to interact with local and regional influences.
4. To access the development of educational and occupational aspirations in the course of one's educational career and one's life, longitudinal data is needed. This data should provide comparable measures of individual educational and occupational aspirations at different points in time as well as corresponding control variables. The researcher has to have information on all relevant events that happened between measurement points that might have potentially affected the development of individual aspirations. The best case would be event data with frequent measures of educational and occupational aspirations and explanatory indicators. As an alternative to longitudinal panel data, information from different data sources can be used to evaluate aspirations at different stages in the educational career. In this case, the provided data should be broadly comparable and based on the same population. If the research populations are different, there must be a way to control for this.



5. To evaluate the role of local and regional characteristics, individual data should provide locational information on the cases under consideration for the purpose of enriching them with contextual information. The best option would be to have an exact geographical location for each case in the form of geographical coordinates. If this is not possible, degree of the accuracy to which individual locations are approximated should allow for the operationalisation of individuals' local and regional environment in accordance with theoretical considerations. Many contextual mechanisms do not have an immediate effect; individuals living in one location may be influenced by locations they have moved away from. This makes it necessary to locate individuals at different points in their lifetimes. A complete relocation history with regard to residential information would be ideal.

Given my specific research interest, there are at the present time no publicly available data sets in Germany that would meet all of the listed requirements. Only two German data sets meet the described requirements to enough of an extent that meaningful analyses are possible. These datasets are the *German Socio-Economic Panel Study (GSOEP)* and the *National Educational Panel Study*. Both data sets are utilised in the following empirical analyses.

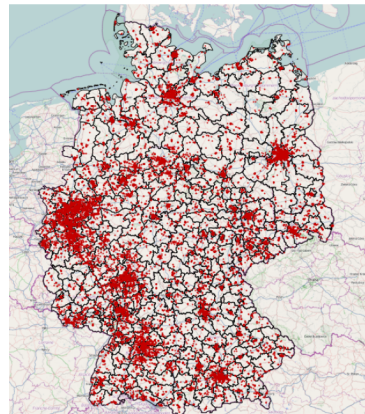
The GSOEP is a panel study that has surveyed private households since 1984. The survey provides information on households and their individual members. Starting at age 17, household members are directly interviewed on a yearly basis. In addition, information on other household members (e.g. younger children, disabled persons) is captured indirectly. The study provides information on living conditions, the economic situation of individuals and households, and individuals' educational careers of individuals. It also contains a set of information

on values and attitudes. Besides the main yearly questionnaires, there is a biographical questionnaire that is carried out at the time of the first interview. Therein, individual biographies until the date of the first interview are recorded. For the present analyses, the so called youth questionnaire is of particular relevance. Since 2000, young adults living in households taking part of the survey have been interviewed with regard to their school career and career plans as part of this special youth questionnaire. The interview takes place at the age of 16 or 17 (Schupp & Fröhling 2007).

Among other topics, young people are asked about their plans to pursue different kinds of education in the future. This can be interpreted as educational aspiration for the highest educational degree. Furthermore, young people are asked for their aspired occupation. Because the survey does not address any further educational and occupational aims and because no distinction is made between the realistic and idealistic dimensions of the reported aspirations, GSOEP meets the first of the listed requirements only to a limited extent. A further strong

limitation is the fact that GSOEP does not contain any information about the schools young people are attending: neither their social composition nor geographical position is available. The fourth requirement is also met only partially; information about educational and occupational aspirations is obtained only once in the youth ques-

Figure 6: Geocoded GSOEP households since 2000



Source: Goebel (2014)

tionnaire, and the questions are not repeated in subsequent main yearly questionnaires. Hence, it is not possible to evaluate the development of educational and occupational aspirations over the life course using only GSOEP data. On the other hand, GSOEP makes it possible to compare reported educational aspirations with their final realisations because in later waves the factual educational and occupational success of individuals can be observed.

One of the main advantages of GSOEP in comparison to other German large survey data sets is the availability of varied geographical information. For each respondent in the data, there are area codes (e.g. administrative district code or postal code) for different levels of territorial aggregation. This makes it possible to link GSOEP with regional or local contextual indicators. In addition, GSOEP provides a selection of small-scale local contextual characteristics (Knies & Spiess 2007). Furthermore, GSOEP began providing exact geographical positions of surveyed households starting with the wave in 2000. This makes it possible to link individual information to geo-referenced contextual data from any source and on (almost) any aggregation level. Due to the strict data protection policy, the geographical locations of GSOEP households can be only used for linkage with contextual data. Analyses that require the exact geographical coordinates of the research units, such as spatial regression models, cannot be performed with this data.

The second individual data provider mentioned is the National Educational Panel Study (Blossfeld et al. 2011). NEPS is a study carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg and is run by an interdisciplinary network. The proclaimed target activity of the NEPS is to collect longitudinal data on the development of competencies, educational processes, educational decisions, and returns to education in formal, nonformal, and

informal contexts throughout the life span.<sup>3</sup> The NEPS project has a complex structure; it distinguishes between five theoretical dimensions: (1) competence development in the life course, (2) education processes in learning environments, (3) social inequality and education decisions in the life course, (4) education acquisition for people with migration backgrounds in the life course, and (5) returns to education in the life course. The content of these five dimensions is examined throughout the lifespan with a focus on eight stages of education: (1) from birth to early childcare, (2) from kindergarten to elementary school, (3) from elementary school to lower secondary school, (4) from lower to upper secondary school or vocational training, (5) from upper secondary school to higher education, vocational training, or the labour market, (6) from the vocational education and training system to working life, (7) from higher education to the labour market, and (8) adult education and lifelong learning. To simultaneously capture different lifespans, NEPS follows a multi-cohort design: six starting cohorts - newborns, Kindergarten children, 5<sup>th</sup> graders, 9<sup>th</sup> graders, first-year undergraduates at universities and adults - were recruited between 2009 and 2012. These contained a total of more than 60,000 participants, who have since been on the yearly basis (von Maurice et al. 2011).

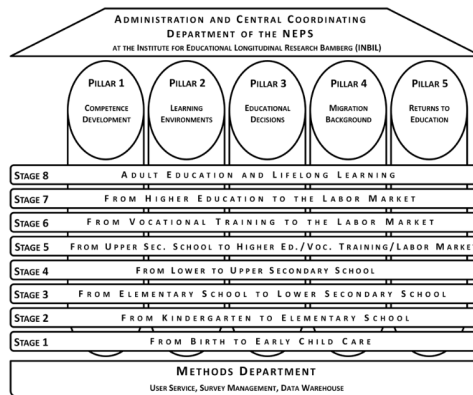
In this respect and at the present time, NEPS provides the best opportunity to access the development of educational and occupational aspirations along the life course. Because the development of educational decisions is one of the main NEPS “pillars”, great attention is paid to the educational and occupational aspirations of the respondents in every cohort. The part of the questionnaires that addresses this topic consists of manifold questions addressing different educational and occupational goals and their dimensions, among others their re-

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<sup>3</sup><https://www.neps-data.de/en-us/projectoverview.aspx>, 05 Oktober 2016

alistic and idealistic nature. Therewith, the NEPS study fully meets the first of the formulated data requirements. The one exception is the Starting Cohort 6: adults. The first wave of this survey was conducted in 2007/2008 by the Institute for Employment Research (IAB) under the title Working and Learning in a Changing World (ALWA). The adult survey continued to be carried out within the framework of NEPS from 2009 onwards. The NEPS-SC6 contains retrospective information about completed educational and occupational careers with new yearly waves starting in 2009 and contains no information on individual educational or occupational aspirations.

Figure 7: The framing concept of the National Educational Panel Study



Source: von Maurice et al. (2011: 4)

One of the main aims of NEPS is to evaluate educational processes from a life span perspective. Most questions (including those concerning individual aspirations) are sampled yearly. Thus, NEPS also fully meets the third of the formulated data requirements by looking at individual educational and occupational aspirations at different points

in (life) time. NEPS is also appropriate for examining not only the development but also the consequences of individual aspirations because it follows the respondents beyond school graduation; thus, researchers can observe respondents' later educational and occupational success and its conformity with the aspirations that had been reported earlier. Because the study is relatively new, there are not many waves at the present time. This diminishes the current usability of the survey to a certain extent. An alternative is the comparison of different cohorts standing for different stages in the individual life course. Thanks to the comparative design of the NEPS study, each cohort consists of largely comparable indicators (again, except Starting Cohort 6).

One unique feature of NEPS is that in addition to students' and parents' questionnaires school authorities and teachers are also surveyed. Therefore, NEPS contains additional information about the learning situation and social composition of respondents' schools. Information on the local environment of participants' schools is also provided. With respect to further important control variables, especially concerning family background, NEPS is comparable to GSOEP.

The great advantage of NEPS in terms of broad information on educational and occupational aspirations and the school environment is to some degree counterbalanced by its relatively limited geographical information. Like many large panel data providers, NEPS enables researchers to link contextual indicators to individual data using administrative index numbers at the level of districts and municipalities. Because geo-references for the sampled households and schools are not available, linkage with indicators that are organised at different levels of aggregation is not possible. NEPS also provides selected contextual indicators for the small-scale geographical units respondents are hosted in just as GSOEP does (actually these are the same indicators like in GSOEP, provided by *microm* Consumer Marketing). But the geographical position of these units is not provided, making more complex contextual data preparation and spatial analyses impossible.

### 3.2 Spatial Contextual Data

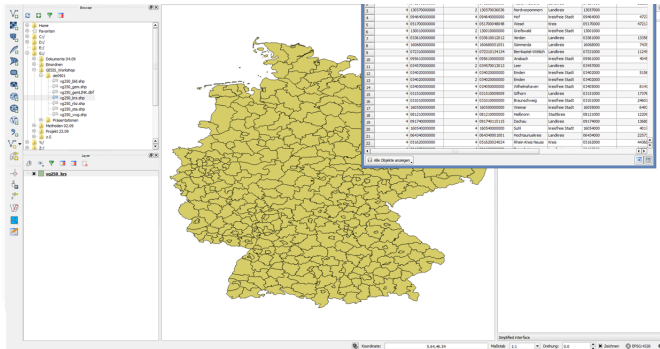
When speaking about contextual data, we have to be clear about what is meant specifically; in the case of this dissertation, the term contextual data automatically implies local or regional data in the form of spatial data. A spatial datum contains three measurements: one or more *attributes* are measured in a set of *locations* at particular point in *time* (Haining 2009).

Attributes are qualitative pieces of information that can be “attributed” to a particular location. They are basically statistical variables that describe geographical units. Just like any other statistical variable, they can be differently scaled and aggregated. They can describe physical as well as socio-economic characteristics of geographical units. Beyond that, geographical attributes can describe the presence or absence of particular administrative, social institutions, or their aggregated numbers or characteristics. Furthermore, geographical attributes can describe relations between given geographical units, for example migration flows or administrative affiliations.

The specificity of spatial data is that sample units can be definitively localised by means of geographical coordinates. The most rudimentary localisation is a point in a two-dimensional space described by its latitude and longitude, but geographical points can also be used to build more complex geographical entities. They can be combined to form lines or to polygons that have closed boundaries and represent a geographical area. The amount of geographical information that is needed for a precise description of a geographic unit is its “geometry”. In this respect, geometries constitute a second sort of spatial data. Figure 8 exemplifies the difference between the two sorts of spatial data. It shows a screen shot of a GIS program. Here, spatial data are opened in what is known as the shape-file format. The “empty” map in the middle shows the mapped geometries of the geographical units (German administrative districts in 2009). The opened table is a list of

corresponding attributes.

Figure 8: QGIS screenshot: Geometries and attributes of German administrative districts (2009)



Both the geometries of the geographical units as well as their attributes can change over time. If the analysis is concerned with only a single time period, the time component may be suppressed, but should be retained if series of changing geometries or attributes are needed for comparative analyses. In this respect, the fundamental properties of spatial data (attribute, location, and time) are necessary pieces of information for conceptualising the geography of the “real world”. The economic and social sciences thus mostly follow what is known as the “object view” of space conceptualisation; the object view conceptualises space as populated by well-defined invisible objects with certain characteristics (Haining 2009). While geometries are used to define or approximate a spatial position, attributes are indicators of corresponding (social) characteristics. The time component ensures correct chronological attribution.

International comparative research involving Germany has had relatively limited access to georeferenced contextual data. In this respect,



we can differentiate between **administrative data** and data that is offered by **private providers**;

There are three large providers of administrative data in Germany. The *Statistical Service of the Federal Labour Office* (and its research institute IAB) provides labour-market information on unemployment and labour-market structure as well as the location and characteristics of industrial enterprises. The *Federal Statistical Office* provides information on the regional socio-economic and demographic composition of administrative regions as captured by official statistics. The third provider is the *Federal Institute for Building, Urban Affairs and Spatial Development*, which offers prepared time series of indicators obtained from other administrative data offices as well as additional information on regional infrastructure and settlement patterns.

The great advantage of administrative data is their high quality and validity because they are mostly based on aggregations of comprehensive administrative records. This data is also mostly available in the form of time series. Because the data is aggregated on the level of administrative units, the corresponding geometries can also be easily obtained (for example from the *Federal Office of Geodesy and Cartography*). But because most individual datasets contain administrative codes geometries are not necessarily needed to link administrative with individual data. Due to the fact that German individual data providers mostly do not offer linkage via geographical references, administrative data is often the only geographical data at all that can be used for contextual analysis.

This highlights one of the greatest disadvantages of administrative data: the regional administrative structure consists of relatively large units, with municipalities as the smallest level of aggregation, comparable to the international LAU 2 level. Individual municipalities' statistical offices often provide additional information on a smaller level of aggregation. But due to a lack of comparability and completeness,

these indicators cannot be used for analyses that concern Germany or its larger units as a whole. The first piece of administrative data to provide aggregated demographic characteristics on a smaller scale is a selection of cross-sectional indicators from the 2011 German census. These indicators are aggregated within grid cells of 1\*1 kilometres.

Private providers of spatial data usually offer data at very small levels of aggregation, up to the street and house level. This data mostly contains socio-demographic and demographic characteristics as well as a broad selection of additional indicators that can be used for marketing purposes. The greatest disadvantage of this data relates to the confirmation of its quality because the origin of the information and its preparation remains a trade secret of the provider. It also concerns the time aspect; private providers mostly offer cross-sectional contextual data rather than time series. Even if different states of data can be purchased, it is not possible to monitor which indicators have been collected anew or whether the survey method has been changed. There is also no consistent system of data aggregation, and different providers use different sets of geometries to aggregate their indicators. All of this makes the comparability of data from different providers virtually impossible. Again, even the same provider can change its geometries without notification, so that even two editions of data from the same provider are not fully comparable. The extremely high cost factor also needs to be mentioned.

Meanwhile, both GSOEP and NEPS purchase contextual indicators from private providers such as *infas 360* or *microm* and make them available for analyses. This is, however, only offered in the form of individual variables indicating the contextual situation of the respondents. The location of the corresponding geographical unit is not available and the geometries of the referencing system used are not provided. Therefore, users can neither aggregate these indicators at different levels nor use them for analyses that demand certain infor-

mation on geographical proximity, such as spatial regression models. It is also not always identifiable which individuals share the same geographical units, meaning that multilevel modelling and clustering techniques are also not possible.

Given the specific nature of the geographical contextual data as well as the issue of their availability and potential challenges of linkage with individual data, I can summarise the following points researchers have to be concerned about when looking for contextual data:

1. As was previously said, the attributes of geographical units are often aggregations of information at smaller levels. Every step of aggregation into larger polygons involves a loss of information regarding the (spatial) variability of social characteristics. A further loss of geographical information may occur when depicting the polygon itself in the database, for example if it is captured using representative points (such as centroids) (Haining 2009). Furthermore, the way particular polygons are defined does not necessarily represent the theoretical spatial reference of the social mechanisms under consideration. The larger available polygons are the less precise than the theoretical areas to be conceptualised. And a dis-aggregation into smaller geographical units is always based on strong assumptions about the correct distribution of corresponding attributes. For these reasons, researchers should attempt to obtain geographical data on the most smallest level of aggregation available.
2. To facilitate possible aggregation, socio-economic attributes should be measured in the form of absolute numbers. A summarising of proportions - for example unemployment rates - when adding regions together is only unproblematic if the populations of the units are commensurate. Otherwise, it would lead to a miscalculation, with the importance of smaller regions over-

estimated. Therefore, if proportions are needed for analyses, they should be re-calculated using aggregated absolute numbers.

3. As with every other sort of research data, geographical indicators should be based on valid, reliable, and objective measures. Data with reliable documentation or possibilities for reconciliation with other data sources should be preferred.
4. For many research agendas, time series on contextual data are needed because events of interest can potentially take place at different points in time. This is true when a longitudinal design is applied or when an individual data set consists of different cohorts. As a consequence, the contextual situation also has to be measured at different points in time. Furthermore, the concept of exposure means that individuals are not necessarily only influenced by contexts as they are in the present time. Thus, in order to depict relevant changes in a contextual characteristic at the same particular location, time series data might be necessary. If time series are not available, researchers have to make comprehensible arguments as to why a particular contextual indicator that varies geographically should remain stable in time.
5. Finally, it should be possible to match contextual data to individual data. Again, the best option is to use exact geographical locations of the units in the form of geographical coordinates on both sides. Otherwise, spatial units should be uniquely identified and individual data should contain appropriate identifiers attributing individual cases to their corresponding geographical units.

## 4 Research Agenda

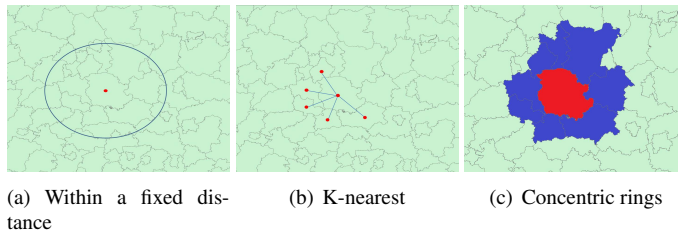
According to the presented theoretical concept, educational and occupational aspirations exist continuously in various dimensions over the entire educational and vocational career of an individual. Because individuals can in principle always want to be more educated, it can be assumed that some kinds of educational aspirations can occur and persist over the entire individual life course. And if we consider parents and their expectations for their children, certain educational and occupational aspirations can exist even before a person is born. Many aspired goals, above all those termed idealistic, will never be achieved. Others will be pursued and have direct impacts on objective educational and occupational transitions. Contextual factors, particularly the local and regional situation, can be important for the development of educational and occupational aspirations and for their implementation. Depending on the stage of the individual life course under consideration, different spatial factors can be of greater or lesser importance and their effect can be driven by different theoretical mechanisms. In this respect, the life-course perspective to educational and occupational aspirations opens countless possibilities for empirical implementations. According to the concept presented in Chapter 2.2.1 I will systematically address following points if interested by linking individual aspirations to contextual explanatory factors:

- *Which particular dimensions of educational and occupational aspirations are of interest?* The concrete goals the person focuses on can vary across the life course. And depending on one's stage in the life course, different kinds of aspirations as well as different dimensions of them can become more important for practical decision-making. It makes sense to look at the dimensions that are probably existent and important at the stage the researcher is focusing on.

- *Which influencing factors* are important for the formation of an educational decision can strongly depend on the stage of the educational career. The selection of relevant factors should be made according to the *theoretical mechanisms* they are working through.
- Both points result in the consideration of which empirical *individual and contextual data* is mostly appropriate to test the theoretical links between educational and occupational aspirations and the contextual factors under consideration.
- The question of theoretical mechanisms and their theoretical spatial reference is also directly linked to the consideration of on which *empirical level of aggregation* the contextual factors have to be measured.

As previously mentioned, the number of possible empirical applications is almost unlimited. This dissertation consists of three empirical studies that address detailed questions and deal with educational and occupational aspirations and their implementation at the end of compulsory school in Germany. These papers originated within the context of the author's work in the project "Social Inequality in Educational Attainment: The Impact of Regional Socio-economic Environments" under the direction of Prof. Dr. Steffen Hillmert and in cooperation with Katarina Weßling. The aim of the project was to understand how causal mechanisms that can be located in socio-structural contexts contribute to explaining social disparities in the later educational career, i.e. how they are associated with educational aspirations and transitions to and within vocational training, further general schooling, and higher education. These aims result in my particular interest in the processes at the end of compulsory schooling and in dimensions of educational and occupational aspirations that are important at this stage of a person's educational career.

Figure 9: Aggregation of basic geographical units



All three articles furthermore have in common that existing concepts of contextual settings such as neighbourhoods or local labour markets has been enhanced by a more flexible conceptualisation of spatial contexts. A flexible operationalisation of local and regional contexts implies that relevant contexts are not only individualised but also often heterogeneous and variable (Hillmert 2016). Because individual spaces of action do not necessarily align with fixed regional borders, for example administrative boundaries, an action-based operationalisation makes use of individualised, scalable neighbourhoods, so-called egocentric neighbourhoods or “ego-hoods”. Using georeferenced data enables the aggregation of contexts within a given radius of a specific location where the individual under consideration is hosted. The localisation of the person can be more or less precise depending on the accuracy of the geo-data used, and the computed radius can be measured in different ways - geographic distance, contiguity, driving times. Furthermore, individual context circles can be split into concentric “context rings” by summing up only areas that range between two particular distances. Figure 9 shows a selection of possible aggregation algorithms for available basic geographical units.

Contextual indicators aggregated within such flexible areas can be considered as the specific contextual characteristics of the people living in the centre. This spatial operationalisation fits well with a theo-

retically assumed ego-centred perception of one's own living environment by the actors. Such flexible environments can cross exactly like individual action areas, which can be tangential without being identical. The challenge is to articulate meaningful theoretical expectations about the size and shape of such ego-hoods and to reproduce them using the available geographical levels upon which empirical indicators are aggregated. A further implication of the flexible operationalisation of spatial contexts is the fact that egohoods are potentially not equal for all sample members. Different groups of people can have different relevant contexts. This concerns not only the size of potential contextual effects but also where these effects can be expected. Conversely, group differences in contextual effects at a particular level of aggregation do not necessarily imply that these groups differ per se in their susceptibility to contextual conditions. They may instead differ in the location of this susceptibility (Hillmert 2016). Furthermore, the extent of relevant local contexts may depend on characteristics of the context itself. This is, for example, the case when the physical radius of individual activity is adapted in response to local conditions.

As we see, the operationalisation of contextual indicators is not trivial. When speaking about the effects of local and regional contextual factors, we have to differentiate between essential conceptual elements: empirically, we can observe potential correlations between a particular aggregated contextual indicator, measured within a defined spatial unit, and a given dependent variable. An ideal-typically observed correlation consists of a causal effect that comes from a theoretical factor that is more or less precisely covered by the empirical indicator. This effect is expected to be driven by a causal mechanism that can be theoretically specified and that is hosted in a particular context. Local and regional contexts have a spatial dimension per definition. In this respect, we can speak about a spatial extension of a theoretical mechanism: this is where the independent theoretical factor manifests its



expected causal impact. In empirical terms, we expect that the defined geographical unit covers this theoretical spatial reference. This concept relates to the idea of interdependence between the different scales upon which spatial phenomena can be measured (Dungan et al. 2002); the spatial range at which processes actually operate (“phenomenon scale”) should be reproduced by the geographical scale used in the analysis (“analysis scale”). Of course, this is only possible when the contextual data provides the necessary range of detail (“sampling scale”).

The nature of the problem is that this ideal-typical connection is not always given. Empirical indicators and theoretical factors that produce the observed effect are not necessarily identical, and observed effects may not be produced by causal mechanisms but rather be the product of a correlation between the empirical indicators and an unspecified third variable. The spatial dimension adds a further consequence; the same empirical indicator may correlate with different factors if measured within different spatial references. Thus, when aggregated at different levels, the same indicator may exhibit effects that are produced by different causal mechanisms. Empirical examples show that for some research questions, effects can strongly vary or even switch direction depending on the indicator’s level of aggregation (Anderson & Malmberg 2015, Nonnenmacher 2013). This phenomenon is broadly known in geographical studies as the modifiable areal unit problem (MAUP) (Kwan 2012, Fotheringham & Wong 1991). Therefore, an appropriate definition of regional contexts has been repeatedly called one of the main challenges in neighbourhood and local studies (Galster 2008, Dietz 2002). For this reason, each of the three articles that make up this dissertation has a methodological section that explicitly addresses the assumed theoretical mechanism, the technical possibilities for its representation in data and the consequences for the interpretation of the considered effects in causal terms. In addition to my primary interest in the development of educational and occupa-

tional aspirations, this methodological perspective builds the second main pillar of this dissertation.

In following I will shortly present the empirical studies:

The *first study* that constitutes this dissertation is entitled “*Favourable educational living environment and educational aspirations to attend higher education*”;

It addresses aspirations for higher education among seventeen-year-olds in Germany. The individual level data is from the German Socio-Economic Panel (GSOEP). Since 2000, young adults who live in households taking part the survey have been interviewed regarding their school career and career plans as part of a special youth questionnaire. They are first interviewed at the age of 16 or 17. For the years 2000 to 2012, individual level data is available for 4,190 young adults and includes information on their place of residence. The dependent variable is aspiration to pursue higher education in the future. This particular dimension was chosen to represent young adolescents’ general educational predisposition. The young people under consideration attended different school tracks and had partly already left the school system. However, each of the considered persons has the objective possibility to pursue higher education in the future.

As the title says, the article focuses on the effects of the academic composition of the close living environment. Academic composition is defined as the proportion of university graduates in the total population within a particular local context. I expect to find positive effects on individual educational aspirations given a potential interaction effect with the social background of the person under consideration.

This is the only one of the three studies that can be located within the field of neighbourhood research because of its theoretical and methodological approach. Theoretically central arguments of neighbourhood research are used to forecasts effects of collective socialisation and the

provision of social capital through peers in the local environment. For these reasons, I make use of socio-psychological theories as well as the Wisconsin model of aspiration to derive my research hypothesis. The spatial reference of these assumed mechanisms is expected to be within a geographically close area where interpersonal contacts with one's neighbours can be expected.

Technically, I apply a person centred, cyclical definition of the close living environment. For this reason, the contextual indicators are aggregated within ego-centred areas of the sizes that accords to the theoretically assumed spatial reference of the expected effect. To do so, I use small-scale data purchased from *microm Consumer Marketing* to cover those flexible areas.

The *second study* was written in collaboration with Steffen Hillmert and Katarina Weßling and is entitled "*The relevance of regional socio-economic conditions for educational and occupational aspirations at the end of secondary school*";

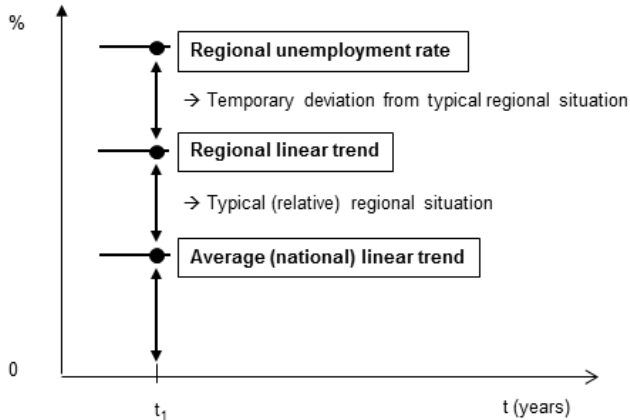
It addresses different dimensions of the educational and occupational aspirations of students in the lower and middle secondary school tracks in Germany. Finishing secondary school is a crucial transition in the individual life course, and young adults need to make plans and decisions that will have significant consequences for their educational and occupational future and to decide between leaving the school system in favour of labour-market entry or continuing general education. In this article, we extend conventional theoretical concepts of aspirations by developing a multidimensional approach that considers educational and occupational goals simultaneously. This is also the only one of the three studies to directly address dimensions of occupational aspirations. The considered dimensions are occupational status and job security, operationalised by means of the ISEI (International Socio-Economic Index of Occupational Status) and the occupation-specific unemployment rate of the aspired occupation, respectively. General

educational preferences are operationalised as a binary variable indicating aspiration to continue general schooling in the coming years. We use individual data from the National Educational Panel Study - Starting Cohort 4: Grade 9 (NEPS-SC4), specifically the waves collected in autumn 2010/Spring 2011 and in Autumn 2011/Spring 2012. In this study, students are repeatedly asked about their educational and occupational prospects.

Within the considered process, we attribute particular importance to regional socio-economic contextual conditions because they can play a role in the evaluation of future job chances and opportunities. The overall assumption regarding the relation between educational and occupational aspirations and the regional labour-market situation is that individuals associate poor conditions with an increased risk of becoming unemployed. Therefore, poor labour-market conditions should motivate individuals to either aspire to those occupations that promise the greatest employment chances regardless of their status, or individuals may strive for higher status occupations associated with a higher monthly income. In addition, students who anticipate a poor regional labour-market situation should be aware of the lower supply of vocational training opportunities and should expect their chances of obtaining an applicable training position to be relatively lower. Participation in general education postpones the transition to the vocational (training) market and therefore the risk of not finding a training position or of potential unemployment in the future.

To capture these theoretical effects, we use the regional unemployment rate as the main independent variable, as it is the most visible information representing socio-economic conditions in a region. Information on unemployment rates for the years from 2000 to 2010 is used. Unemployment is measured in NUTS-3 level units (administrative districts) as well as the adjacent neighbouring units. This argument is discussed in detail in the third study.

Figure 10: Decomposition of regional unemployment



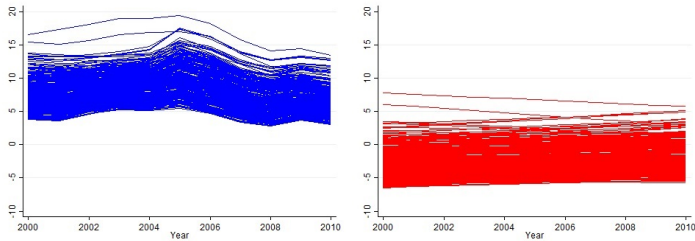
Source: following Hillmert et al. (2017)

Additionally, a decomposition method for unemployment rates is used, but not discussed in detail; the decomposition method makes an explicit distinction between long-term (structural) developments and short-term deviations due to, for example, business-cycle fluctuations by modelling regional trends in the relevant structural indicators, for example, unemployment, and their residuals. First, for the considered macro-indicator and for every regional area considered, a trend and corresponding residuals are estimated. The deviations of local trends from the national (West German) trend are also calculated. This differentiation allows us to decomposing each region-specific unemployment rate in a particular year into three components: the long-term national trend (Component 1), the deviation of the local trend from the national trend (Component 2), and the short-term deviation from the local trend (Component 3). By using these three components as separate predictors in the analytical models, their specific relevance

for the process under consideration can be assessed. While Component 1 represents the common trend, Component 2 represents the typical situation in a particular region relative to the average situation, and Component 3 represents the current (short-term) regional situation relative to the typical regional situation. By definition, these three components always add up to the value of the regional unemployment rate (see Figure 10). In this study, the method of decomposition is applied to time series data on unemployment rates between 2000 and 2010. Regional trends can be operationalised in different ways in line with various theoretical definitions. In this case, linear trends are computed.

However, the presented interpretation is only meaningful if the dependent variables on the individual level are measured at multiple time points. Cyclical fluctuations are highly symmetric between regions; therefore all observed changes within one year always indicate an upturn or a downturn with a small variation in strength. For this reason, we cannot interpret a possible effect as an effect of a positive or negative cyclical development. However, it is argued that even when using cross-sectional individual data, it is reasonable to make use of longitudinal information on the macro-level. The extraction of the regional trend allows us separating the regional unemployment situation from short-term fluctuations. This allows us more appropriately capturing persistent economic and structural regional differences. The assumption is that stable variations in regional economic and structural situations are more relevant for shaping the perception of the situation on the vocational training market. For this reason, only the regional unemployment situation (difference between the regional and national linear trends) is used in the empirical analysis (Component 2). Figure 11 demonstrates the distribution of original unemployment rates and the obtained indicator for regional unemployment situation for all considered regions.

Figure 11: Unemployment rates (percentage points) in Germany: Regional time series (2000-2010) and Decomposition Component 2



(a) Regional rates of unemployment

(b) Trends in regional rates of unemployment: deviations from average (national) trends (Component 2)

The *third study* was written in collaboration with Steffen Hillmert and Katarina Weßling and is entitled “*Spatial structure counts: The relevance of regional labour-market conditions for educational transitions to vocational training*”;

This study can be understood as follow-up research to *study two*. By looking at the actual transition after secondary school and particularly at the role of the regional socio-economic situation we can test the assumption that a poor regional labour-market situation discourages young people from leaving general school education and from entering the labour market or vocational training market. In this respect, the interest of this particular study is not the development but rather the actual consequences of educational aspirations. The paper does not address the dimensions of occupational aspirations that were the subject of *study two*.

This is the only one of the three studies that does not directly address individuals’ aspirations but rather actual transitions after secondary school. In the study, we argue that the outcomes of these transitions can be produced by two kinds of effects: on the one hand aggregated

socio-economic characteristics, such as regional unemployment, can affect the perception of costs and benefits and consequently educational aspirations. Experiencing poor economic conditions diminishes the expected chances of successfully entering the labour market - in our case the vocational training market - and hence the subjectively anticipated benefits of leaving general education. On the other hand and independent of the graduate' aspirations, the general labour-market situation can indicate a objectively limited availability of training spots in the region. Thus, poor labour-market conditions can entail a lack of demand for trainees and hence lower objective probabilities of school leavers finding a training position. In this case, the continuation of general schooling happens not because of but despite previous educational aspirations.

We use the same individual level data from the German Socio-Economic Panel as in the *study one*, but in this case we are not looking at the educational aspirations reported in the last year of lower or middle secondary school but at actual educational transitions after. Unfortunately, because of the cross-sectional structure of this particular GSOEP data set, it is not possible to explicitly control for educational aspirations at previous points in time, thus disentangling the two mechanisms. As a result, the expected mediating effect of educational aspirations may be mixed up with the effects of objective regional opportunity structures.

The main aim of this paper is to capture the spatial extension of the impact of regional labour-market conditions on training chances. We try to overcome the fixed limitations of administrative boundaries by constructing concentric rings of neighbouring territorial units at the level of NUTS-3 regions (administrative districts (Kreise)). To capture the spatial extension of a labour-market region and to analyse where unemployment has an influence on the transition to training, we make use of the administrative district where young adults live, as well as the first-order and the second-order neighbouring districts. The rings



are taken into account separately. The concentric ring model is considered particularly appropriate because it partly rules out the problem of multicollinearity by calculating the context indicators for the surrounding spatial districts while excluding already controlled for contexts of lower order. This concept enables one to specify the overall effect of the regional context as an additive or a mediating effect. For the latter, interaction effects or effect thresholds have to be specified.

All studies base on papers that have been or will be published in different scientific journals. The reader should note that structure and content of the studies in this dissertation can differ compared to the journal articles they base on. The formatting and citations has been adapted.

## 5 Empirical Studies

### 5.1 Favourable Educational Living Environment and Educational Aspirations to Attend Higher Education

#### 5.1.1 Introduction

In social research, neighbourhood conditions are frequently considered one of the main explanatory factors for educational outcomes. Thereby, neighbourhood characteristics are often defined in terms of unfavourable social composition (Crowder 2003, Brooks-Gunn et al. 1993, Crane 1991), but this can also be reversed in order to speak of advantaged neighbourhoods (Kauppinen 2008, Andersson 2004).

In this paper I want to investigate the link between the educational composition of the immediate living environment and individual educational aspirations. Theoretically, I assume that having a high percentage of university graduates in the living area creates a so-called favourable educational environment that can positively affect individual perceptions of given educational alternatives. My focus, thereby, is on individual aspirations to pursue higher education.

Appropriating defining geographical units of study has been repeatedly called one of the main challenges in neighbourhood studies (Galster 2008, Dietz 2002). I argue that an appropriate definition of the geographical scale of measurement is inextricable from the assumed theoretical mechanisms behind the expected impacts and their theoretical spatial reference (Hillmert 2016). Technically, I apply a person centred, cyclical definition of the close living environment.

This paper is structured as follows: section 5.1.2 provides an overview of the theoretical conceptions of educational aspirations this study builds on. Section 5.1.3 presents the current state of research regarding the link between neighbourhood environment and educational success.

Generally speaking, there are only a few studies that directly link close living environment and individual educational aspirations. This study attempts to close this research gap. In section 5.1.4, I outline my theoretical arguments on how the educational composition of the close living environment affects individual aspirations to complete higher education. Section 5.1.5 presents my individual and contextual data as well as cyclical concept of aggregating context indicators. After, results will be presented in section 5.1.6. They mainly confirm my theoretical assumptions on the positive effect of a favourable educational environment, the interaction with individual social backgrounds, and the localisation of the effect. Section 5.1.7 concludes the paper with a final discussion.

### 5.1.2 The Concept of Educational Aspirations

The term “aspirations” as it is understood by most contemporary sociologists has its origin in social psychology where the term “level of aspirations” is used as a paraphrase for the “cognitive orientational aspect of goal-directed behaviour” (Haller 1968, Lewin 1939). Although there have also been other efforts to integrate the concept of aspirations into a more sociologically oriented theoretical framework of educational preference formation (Kahl 1953, Reissman 1953), it is the so called Wisconsin group that has received the most attention in this respect, with its members often referred to as the originators of the contemporary socio-psychological concept of educational aspirations. *The Wisconsin model* links the level of educational aspirations to psychological explanatory factors like mental ability as well as individuals’ socioeconomic context (Sewell et al. 1969). Within the model framework, so-called significant others take on a central explanatory role, functioning as definers, who communicate their status expectations to the individual, and models, who positively illustrate their status. Thus, the model consists of aspirations individuals hold for them-

selves, the expectation levels individuals' definers hold for them, and the status exemplifications their models present to them (Haller 1982).

The term educational aspirations was later increasingly adopted by researchers applying a *rational choice approach of educational decisions*; according to this approach, educational success can be seen as the accumulated result of individual educational transitions, which are in turn the result of rational deliberations by individual actors (Boudon 1974). It is assumed that individuals weigh the expected costs of given educational alternatives against the benefits and choose the one with the largest expected utility. Thereby, benefits are not only measured in terms of expected future monetary income but also the social status that could be reached at a given level of education. Later model specifications articulated a further decision factor as well: the expected success likelihood or probability of success (Breen & Goldthorpe 1997); the lower a person's chance of following through on a possible decision, the more unlikely it is that he or she will choose this alternative. In this theoretical framework, educational aspirations are interpreted much more narrowly than in the comparable socio-psychological approach: clear psychological explanatory elements are excluded from the model, and group differences are re-interpreted as differences in group-specific cost-benefit evaluations.

Nevertheless, the two perspectives need not conflict in principle. Focusing on the Wisconsin model of aspirations in particular, Morgan (1998) argues that its assumptions are compatible with the general assumptions of the rational choice approach; expectations of significant others are to some degree based on rational appraisals of students' potential, and students, in turn, adapt these expectations by combining them with their own expectations based on rational self-reflection.

### 5.1.3 Educational Success and the Close Living Environment

William Sewell and Michael Armer, both members of the “Wisconsin group”, found in one of their studies positive albeit weak correlations between neighbourhood status and college enrolment plans (Sewell & Armer 1966). Their results are in alignment with a series of US studies from the 1950s and 1960s that addressed the role of neighbourhood environment for individual educational ambitions and obtained similar results (Turner 1964, Sherif 1961, Wilson 1959).

Interest in neighbourhood effects rose once again in the late 1980s. In this new research tradition, the focus lies above all on the negative consequences of living in disadvantaged neighbourhoods, with particular emphasis on “social dislocation” within ethnically and economically segregated “ghettos” (Wacquant & Wilson 1989). Characteristic in this respect is the work of William Julius Wilson and his most prominent study “When Work Disappears” (Wilson 1996). Therein, Wilson links various individual disadvantages people from “inner-city ghettos” face with characteristics of their living environment. Furthermore, he formulates various theoretical mechanisms for the observed correlations, such as collective socialisation, (lack of) social control and weak endowment with social capital. The quality of infrastructure, above all local schools, also plays an important role.

Wilson attributes great importance to the lower educational success of ghetto inhabitants. This idea was adopted by further researchers; US and UK studies find an effect of neighbourhood composition on educational performance (Garner & Raudenbush 1991), graduation rates (Brooks-Gunn et al. 1993, Crane 1991), and general educational success (Owens 2010, Aaronson 1998, Duncan 1994). Studies in Sweden, Norway, Finland, Germany, and the Netherlands have also repeatedly found effects of a neighbourhood’s socio-economic and ethnic composition on educational attainment. However, these effects tend to be

weaker than in comparable US or UK contexts (Nieuwenhuis et al. 2015, Brattbakk & Wessel 2013, Sykes & Musterd 2010, Weishaupt 2009, Brännström 2008).

Less empirical evidence is available on the direct connection between neighbourhood environment and educational aspirations. Studies dealing with occupational aspirations provide rather ambiguous results on the importance of neighbourhood context (Flouri et al. 2015, Wicht & Ludwig-Mayerhofer 2014, Furlong et al. 1996).

#### **5.1.4 Theory and Hypotheses: Educational Aspirations and Favourable Living Environment**

According to the rational choice theory of educational decisions, differences in educational plans are assumed to be based on individuals' anticipation and evaluation of three basic decision factors: costs, utility, and probability of success (Breen & Goldthorpe 1997). The effects of the benefit-cost-success calculation are further assumed to be mediated by the resources available. Different kinds of resources are considered relevant for individual aspirations: economic resources affect the anticipated economic costs and benefits of educational alternatives. In order to make educational decisions, it is also important to have valid information about the educational and vocational training system, what is required to obtain a certain degree, and how beneficial the given alternatives are. It is assumed that such information is mainly provided by social networks and is therefore a kind of "social" resource. "Cultural" resources are associated with better academic support and lead to better performance at school, which in turn can lead to an increase in the anticipated success probability (Esser 1999). In contrast, the Wisconsin model stresses the importance of socialisation in the formation of attitudes towards education. In addition to information and cultural support, peers can communicate their atti-

tudes and expectations with regard to education.

In this respect, context effects can be twofold: on the one hand, contexts can provide certain economic, social, or cultural resources. This should lead to a higher expected probability of reaching a certain level of education. Furthermore, peers located within a person's environment can influence attitudes towards education and lead them to adopt certain preferences and expectations regarding their future educational attainment unrelated to material factors.

With respect to the educational composition of the close living environment, I assume that a higher proportion of university graduates translates into a higher individual probability of coming in contact with educated neighbours or peers from families with educated parents. For young people, these contacts can function as "models" as they illustrate a life concept where education plays an essential role for economic welfare, social status, and social acceptance. As "definers", they can additionally set expectations in matters of educational performance and attitudes that must be fulfilled in order for a person to win their approval.

In addition to behaviour codes and social control, educated peers provide specific resources: first, educated neighbours can provide information about educational institutions, requirements, and opportunities on the way to higher education. This additional information can demonstrate to sceptical students and parents that education is more feasible as they may have previously assumed. Furthermore, information about later opportunities on the labour market once educational goals are achieved can increase anticipated future benefits.

Summing up, I can formulate my first hypothesis:

***Hypothesis 1:*** *A higher proportion of university graduates in the close living environment leads to higher individual aspirations of young people for higher education among young people.*

A look at the relevant research confirms that the effect of a favourable living environment should not be identical for all social groups (Sykes & Kuyper 2009, Brooks-Gunn et al. 1993, Jencks & Mayer 1990). Specifically, students with different social backgrounds should be influenced by these mechanisms to different degrees, with stronger effects likely to be observed for students from lower status families. Jencks and Mayer (1990) provide two arguments in support of this assumption: first, there is evidence that the social networks of families with lower (educational) status are more geographically restricted than those of higher status families. Thus, for children from lower status families, the social composition of the living environment determines the composition of the peer group to a greater extent. Research on the localisation of social networks, particularly in Germany, supports this assumption (Mewes 2009).

Second, higher status families endow their children with particular skills that are important for educational success but are not provided within lower status families. Students from lower status families have to acquire these skills to a greater extent outside the family (Jencks & Mayer 1990). Educational aspirations are arguably one such skill: young people from higher status families already face high expectations regarding their educational future from their parents and are given the resources necessary to meet them (Dupriez et al. 2012, Bozick et al. 2010, Teachman & Paasch 1998). This leaves little room for additional environmental effects, while on the other hand, contextual factors can partially compensate for the low educational aspirations of lower status parents. Therefore, I furthermore formulate a following second hypothesis:

***Hypothesis 2:*** *The positive effects of a higher proportion of university graduates in the close living environment on young people's educational aspirations is stronger for students from lower status families.*



### 5.1.5 Data, Analytical Concept, and Methods

#### *Data*

I use individual-level data from the German Socio Economic Panel (GSOEP)<sup>4</sup>. The GSOEP is a yearly household panel that has been carried out since 1984. Since 2000, young adults living in households that are part of the survey have been interviewed on their school trajectories and career plans as a part of a special youth questionnaire. They are first interviewed at the age of 17 (Frick et al. 2008). For the years 2000 to 2013, individual-level data is available for 4,447 young adults.

My central dependent variable is aspiration to pursue higher education in the future. In the youth questionnaire, adolescents are asked about the highest educational degree they are striving for. I use this information to produce a binary outcome on whether or not a student aspires to higher education.

Because I can assume that current educational status has a direct impact on individual educational plans, I have to control for students' school track or participation in vocational education in our models. The German school system comprises different tracks. As educational policy is the responsibility of each individual federal state, institutional implementations vary, but a broad differentiation between school tracks which lead to a lower or intermediate secondary school certificate (Haupt- and Realschule) or a university entrance qualification (Gymnasium) is still possible. Because compulsory school attendance ends at age 16, our sample (24%) consists partly of school leavers. Most of them (85%) are attending vocational school and participating in a vocational qualification program. Because I cannot definitively determine the status of the remaining school leavers (un-

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<sup>4</sup>Socio-Economic Panel Study (SOEP), 1984-2012, version 30, doi:10.5684/soep.v30

employed or taking part in vocational education that does not include vocational school courses), they are excluded from the estimations (171 cases). School leavers with a qualifying school leaving certificate or who have completed vocational qualification can later obtain a university entrance certificate by re-entering the school system or participating in a special program. In this respect, all individuals in my sample would theoretically be able to pursue higher education. Cases in which no definite information on educational status is provided were excluded (274 cases).

Various additional variables on the individual level are also included into the models: parent level of education is a binary variable indicating that at least one parent has obtained higher education. I additionally control for household income. Both variables are important to avoid possible composition biases in cases where high status families with similar educational preferences tend to settle in the same neighbourhoods. Individual academic performance is measured with students' last exam grades in Maths and German. This control is necessary due to the strong expected effect of performance on the anticipated probability of success associated with a student pursuing higher education. In Germany, school grades range between 1 and 6, with 1 the best and 6 the worst. For a more intuitive interpretation of the results, I reverse these grades, making 1 the lowest and 6 the highest possible performance. I additionally control for sex, migration background, and survey year. Table 1 shows the descriptive statistics of individual model variables.

GSOEP began to provide georeferenced addresses of participating households in 2000. This allows me to flexibly link individual GSOEP panel data to contextual data. My central explanatory contextual indicator is the proportion of university graduates in the immediate living environment. To operationalise this indicator, I use data purchased from *microm* Consumer Marketing, a private provider of small-scale geo-indicators for Germany. The company provided me with a vari-

Table 1: Descriptions of individual model variables

Variable	Category	Percentage / Mean (St.dev.) [Min - Max]	N
Aspirations for university	yes	46.47	1,212
	no	53.53	1,396
Educational track	lower secondary school	8.13%	212
	middle secondary school	24.23%	632
	higher secondary school	43.33%	1,130
	left school	24.31%	634
Sex	female	48.54%	1,266
	male	51.46%	1,733
Parents: at least one has degree univ.	yes	23.12%	603
	no	76.88%	2,005
Migration background	natives	75.54%	1,970
	migration background	24.46%	638
Performance in German		4.13 (0.84) [1 - 6]	2,608
Performance in Math		4.05 (1.04) [1 - 6]	2,608
Household income		45,808.64 (27,951.23) [0 - 298,627]	2,608
Survey year		2005.78 (3.96) [2000 - 2013]	2,608

*Data: GSOEP, microm, own calculation*

able indicating the percentage of inhabitants older than 25 in a given area with a university degree, with area defined using a so-called market cell, a unit created by microm. Market cells are not generally identical with respect to either area or population. However, they are created in such a way as to obtain homogeneous units with respect to functional characteristics and residential structure, meaning that market cells in residential and non-residential areas are largely comparable. Market cells are produced by means of a clustering procedure and may be similar with respect to types of housing, industries, and land utilisation. The complete macro-indicator dataset consists of ca.

85,000 polygons with an average area of 4.2 km<sup>2</sup>, with 50% of units smaller than 2 km<sup>2</sup>, primarily in urban areas. The average number of households is 470, with 99.5% of market cells containing no more than 1000 households. The proportion of university graduates per market cell varies between 0% and 40%, with an average of 8.5%. Because citizens do not indicate their level of education when completing official administrative registration, the variable is estimated by microm in such a way as to ensure comparability between market cells. This indicator is available for the year 2008; data series on the proportion of university graduates at the community level shows that this contextual characteristic remains very stable over time.

Figure 12: The distribution of the proportion of university graduates within market cells. Data: microm, own depiction

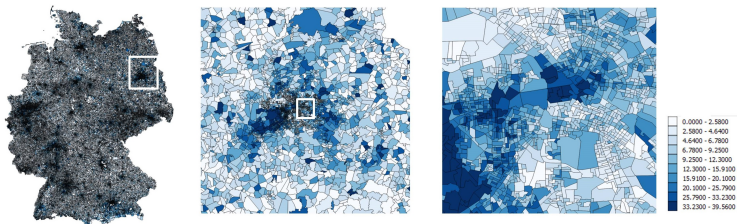


Figure 12 shows the distribution of the proportion of university graduates across market cells. At the highest level (left), only rough patterns can be recognised; most parts of the country have a relatively low proportion of university graduates. Some regions have no university graduates at all. Higher values can be observed around large urban areas. A closer look at the selected region around the city of Berlin (middle) shows a relatively even distribution, with a weak clustering of higher values closest to the city. Within the city (right), a clearer clustering of lower and higher values can be observed.

Because I assume that my theoretical mechanisms require a certain level of temporal exposure before they exerting their effect, I exclude individuals who had been living less than two years at their reported address from my analyses. This leads another 246 individual cases to be dropped.

### *Analytical Concept*

When considering the impact of local contextual factors, we have to differentiate between several essential conceptual elements: empirically, we might observe a correlation between a particular aggregated contextual indicator, measured within a defined spatial unit, and the dependent variable. Ideal typically, the observed correlation indicates an effect of a theoretical impact factor, which aligns with the empirical indicator to a greater or lesser degree. The effect is driven by a causal mechanism that can be theoretically specified and is located within a particular context. Local contexts have a spatial dimension per definition. In this respect, we can speak of the spatial extension or reference of a theoretical mechanism, the space over which an independent theoretical factor exerts its expected impact. In empirical terms, we expect the geographical level of aggregation defined to correspond to this theoretical spatial reference.

I use small-scale georeferenced data to aggregate contexts within a defined radius around a persons' location. An indicator aggregated over such a radius can be considered to be the specific context experienced by the people living in the centre of the circle. This spatial operationalisation is well suited to my theoretically assumed ego-centred perception of the living environment by the relevant actors. Such flexible environments can cross one another, just as individuals' action areas can be tangent without being identical.

The potential mechanisms behind the effect of the proportion of university graduates in the immediate living area on individual educa-

Figure 13: Ego-centred operationalisation of living environments, exemplified on three cases



tional aspirations are collective socialisation and peer social capital. I assume that these processes result from direct interpersonal contacts. Therefore, its effect should be exerted in a close range of a few hundred metres, where the possibility of face-to-face interaction and familiarity with one's neighbours is highest. For this reason, I identify the area where the effect of the proportion of university graduates in the close living environment on young people's aspirations to attend higher education will be measured at a distance of up to 1,000 metres. Average area of units that can be identified within this radius is approximately 3 km<sup>2</sup>. Proportion of university graduates measured in this way has an average of 9% with a standard deviation of 6.8. The proportion of university graduates aggregated on a certain scale should provide a measure of the expected theoretical impact with a comparable theoretical spatial reference, even though which individual mechanism is at work cannot be identified. An important limitation is that this approach does not allow for causal interpretation.

Due to the GSOEP's data protection policy, I could not use respondents' exact addresses to identify their geographical positions. Instead, position was approximated using the geographical centroid of the corresponding market cell. By means of a GIS operation, I can identify all market cells located within a particular radius. A market cell is included if its geographical centroid lies within the defined radius of 1,000 meters. The proportion of university graduates can then be aggregated across all identified market cells, taking into consideration their population size.

Because some market cells are larger than the defined radii, especially on the small scale, I do not consider individual cases located in market cells with a radius greater than 1.5 km in my analysis in order to ensure the comparability of different spatial references. This was true for a total of 19,823 market cells and caused 799 observations to be dropped from the analysis. Figure 14 shows the areas that were considered in my analysis. Most of the gaps correspond to rural regions, many of which are uninhabited. Average population density in the excluded regions is 34 households per km<sup>2</sup>, compared to 1852 households per km<sup>2</sup>, in the remaining cells.

Research shows that proximity to universities also positively affects individual decisions to pursue higher education (Turley 2009, Frenete 2006, Sa et al. 2004). Furthermore, a good economic situation in terms of lower unemployment can discourage people from investing in further education, including university enrolment (Card & Lemieux 2001, Raffe & Willms 1989). Because the proportion of university graduates can correlate with the regional unemployment rate, university infrastructure, and degree of urbanisation, I expect to observe a positive effect on university plans when aggregating this indicator on a higher regional level as well. However, I expect that the conflicting effects of regional characteristics are expected to have a larger spatial reference than 3 km<sup>2</sup>.

### Methods

I analyse individual aspirations using a linear probability model. Linear probability models (LPM) make use of multivariate linear regression to explain qualitative events; using a binary-coded dependent variable (0/1) and under the zero conditional mean assumption, the coefficients of a linear model can be interpreted as the change in the probability of a defined event given a one-unit change in the independent variable, holding all other co-variables constant (Wooldridge 2010). The main advantage of

LPM compared to nonlinear models for categorical dependent variables such as logit or probit estimators lies in their relatively simple estimation and intuitive interpretation. Particularly in cases where models contain interaction terms, interpreting logits and probits as well as computed odds ratios is practically impossible without additional computational steps (Buis 2010, Norton et al. 2004), and remains quite demanding even then. Another problem of non-linear models which can be avoided by using LPM is that comparing effect sizes between different models is quite complicated (Mood 2010). One shortcoming of the method is that some combinations of values of independent variables can produce predicted probabilities less than zero or greater than one. Therefore, the results of LPM have to be checked for plausibility. The model usually works without difficulty for values of independent variables that are near the sample average (Woodridge 2010).

Figure 14: Market cells considered for the analysis (dark). Data: microm, own depiction





To more easily interpret the interaction effects, I additionally calculate average marginal effects for specific values of covariates. A so-called MER represents the average marginal effect<sup>5</sup> of a particular independent variable at specific values of a second variable in the model, holding all other co-variables constant (Williams 2012).

In the German federal system, education is under the control of each federal state. The characteristics of state-level educational systems might affect individual perceptions of given educational alternatives. To account for this, I apply a multilevel design with federal states as Level 2. I compute a random intercept on this level as well as a random slope for the proportion of university graduates.

### 5.1.6 Results

The results of the linear probability model are presented in Table 2. The dependent variable is aspiration to pursue higher education in the future. In order to assess the explanatory power of the models, I first present a null model to illustrate the initial distribution of the residual variance term of the dependent variable (Model 1). Model 2 considers only the central explanatory variable “proportion of university graduates” and the control for the number of households on the local level, Model 3 includes the corresponding interaction effect with parents’ education. Model 4 is the full model, which contains control variables on the individual level in addition to the main explanatory variables.

In Model 2, the effect of the proportion of university graduates in the market cell is highly significant and quite strong; a one percentage point increase increases the probability of aspiring to higher education by approximately 1.5%. In Model 3 the main effect of this variable

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<sup>5</sup>Average marginal effect (AME) is the average change in the probability of having a positive realisation of the dependent variable if the independent variable increases by one unit, holding all other variables in the model constant. It corresponds to the linear coefficient in a linear probability model.

decreases but remains at a high level of 1%. This effect size, however, is valid only for students from families with parents who are not university graduates: according to the interaction term, the effect is considerable smaller for students whose parents are themselves university graduates; the interaction term with family educational background reported in the model is not significant. To better understand the results, I additionally compute the average marginal effect of the proportion of university graduates at representative values of parental educational background (MER). I obtained two MER estimates and conducted tests of significance. Because of the model specification, the MER under the assumption that parents have no higher education automatically has the value of the main effect; 0.009 with  $p=0.000$ . The MER under the assumption that parents have higher education amounts to 0.004 with  $p=0.044$ . Thus, the proportion of university graduates has a smaller effect for this group. This meets my expectations.

By means of a multilevel design, I additionally account for a random intercept and random slope of the context indicator on the federal state level. Variances of both components are very small. Thus, there is no reason to conclude that there is noteworthy variation in students' general levels of aspirations or the effect of the proportion of university graduates across federal states. The considered variables explain about 15% of the initial residual variance in general ( $100 \cdot \text{var}(\text{residual})_{M1} / \text{var}(\text{residual})_{M3} \cdot 100$ ) and have considerable explanatory power (the contextual indicator alone explains about 5% of the initial residual variance).

In Model 4, almost all characteristics on the individual level have significant effects. Students in lower and intermediate secondary school tracks are, in general, less likely to aspire to higher education compared to students in the highest secondary school track (Gymnasium). The effect sizes are considerably high, with lower secondary school

Table 2: Linear probability model for aspirations to attend higher education in the future

	Model 1 (null)	Model 2	Model 3	Model 4
Intercept		<b>0.314***</b> (0.025)	<b>0.281***</b> (0.024)	<b>-16.955***</b> (3.748)
Survey year				<b>0.008***</b> (0.002)
Lower sec. school (ref. Gymnasium)				<b>-0.621***</b> (0.030)
Inter. Sec. school (ref. Gymnasium)				<b>-0.443***</b> (0.020)
Vocational training (ref. Gymnasium)				<b>-0.579***</b> (0.020)
Performance in German				<b>0.060***</b> (0.010)
Performance in Math				<b>0.028***</b> (0.008)
Sex (female)				0.000 (0.015)
Migration background				-0.028 (0.018)
Household income				0.000 (0.000)
Parents: at least one has univ. degree			<b>0.472***</b> (0.038)	<b>0.175***</b> (0.032)
Number of households in the area (appr. 3 km <sup>2</sup> )		0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
% of university graduates in the area (appr. 3 km <sup>2</sup> )		<b>0.015***</b> (0.001)	<b>0.009***</b> (0.002)	<b>0.003***</b> (0.001)
% of university graduates * parents: higher education			-0.005 (0.003)	-0.003 (0.002)
Federal state: var(% of university graduates)	0.000	0.000	0.000	0.000
Federal state: var(constant)	0.005	0.004	0.003	0.003
Var(residual)	0.243	0.234	0.207	0.135
N	2,608	2,608	2,608	2,608

\*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ;  
Standard errors in parentheses;  
Data: GSOEP, microm, own calculation

students having an almost 62% lower probability and intermediate secondary school students having a 44% lower probability. Analogously, young people who already have left school and entered the vocational training system have a lower probability (-58%) of having aspirations for higher education than students in higher secondary school. Be-

cause we are considering only adolescents not older than 17, most of these school leavers left the school system with a lower educational degree, and this result is probably not representative for vocational training students in general. Better performance in German and Maths is, as expected, positively associated with aspirations for higher education as it should increase individual prospects for success. Neither sex nor migration background was found to have a significant effect in the model. Parents' educational background, on the contrary, has a highly significant and strong positive effect. This effect exists independently of household income. The reason for the massive drop in effect size between Model 3 and Model 4 is the addition of a control for school performance and with it, the so-called "primary effects" of social background (Boudon 1974).

The main effect of the proportion of university graduates is still highly significant. The effect size is considerably smaller than in Model 3 but still relatively large. Considering the range of this variable (between 1 and 39), the proportion of university graduates can potentially explain up to 12% of the difference in the probability of aspiring to higher education. This result finally confirm my first hypothesis: adolescents in neighbourhoods with a higher share of educated people have higher chances of aspiring to higher education. The MER under the assumption that parents have no higher education automatically has the value of the main effect; 0.003 with  $p=0.036$ . The MER under the assumption that parents have higher education amounts to 0.001 with  $p=0.731$ . Thus, the proportion of university graduates has no effect for this group in the final model. I have to correct my first hypothesis: the proportion of university graduates in the close living environment has a positive effect on higher education aspirations only for young people from relatively poorly-educated families. This is in alignment with my second hypothesis.

### 5.1.7 Conclusion

Using individual data from the GSOEP panel and contextual data on the educational composition of micromarket cells, I investigated the effect of favourable educational environment on young people's educational aspirations. In my models, I found a clear significant impact of the proportion of university graduates on individual aspirations to pursue higher education, but only among young people whose parents have no higher education. I applied an ego-centred concept of aggregation to the close living environment in the form of circles around a person's place of residence with a radius of 1,000 meters or average area of 3km<sup>2</sup>.

Summing up, the local educational environment can be seen as an explanatory factor for individual aspirations to pursue higher education. However, it only applies to a specific group of young people, as a positive educational environment compensates to some degree for a lack of encouragement and support from uneducated parents. This effect can be attributed to various theoretical mechanisms like direct support and motivation from neighbours and peers.

Nevertheless, it has to be mentioned that the design of this study does not allow interpreting these effects in causal ways. There are several aspects that hinder causal interpretation; the results could potentially be produced by a competing mechanism that has not been under consideration. In this case the effects are traced back to unobserved factors that correlate with the academic composition in the considered area. Another potential problem is the self-selection of respondents into neighbourhoods. If families with higher educational motivation systematically move into certain neighbourhoods the observed effects would be merely produced by the composition processes. This aspect is partially accounted for by including relevant individual control characteristics that might explain residential behaviour.

A more significant causal interpretation demands the use of techniques of causal analysis and longitudinal data. In this study only cross-sectional information on individual aspirations and contextual characteristics was used. There also were only two contextual variables aggregated on the small-scale level. For this reasons it was not possible to include more control variables on the local level or to use instrumental variables.

Given general expectations about the spatial reference of the introduced theoretical mechanisms our results aligned with our theoretical assumptions. The observed interactions with individual characteristics also followed the expected differences in how different groups respond to the local situation. This allows at least an implicit interpretation of the effects in terms of the importance of favourable educational environment.

Thus, further research is needed for a deeper understanding of the impact of the close living environment on individual educational aspirations and success. The next step should be to test single theoretical assumptions. More specific information on interpersonal relations between individuals and their neighbours will help. Longitudinal data on the individual and contextual level should additionally allow self-selection and third variables influence to be controlled for.

Furthermore, the spatial references of individual mechanisms can be the more exactly defined when contextual data have more detailed resolution. Using small levels of aggregation or even geo-referenced individual locations can more precisely model theoretical spatial references.

Finally, from the perspective of educational inequality, educational aspirations are only relevant if they lead to particular educational decisions and performance. Thus, the next task is to link these components to the process of educational attainment, which will help to properly

understand whether and how contextual effects on educational success are mediated by changing educational goals and attitudes.

## **5.2 The Relevance of Regional Socio-Economic Conditions for Educational and Occupational Aspirations at the End of Secondary School**

### **5.2.1 Introduction**

As the end of general schooling approaches, young adolescents are faced with the question of which educational or occupational pathway to choose.<sup>6</sup> This transition is among the most significant in the individual life course and is known to be influenced by various individual and structural characteristics; among others, the regional socio-economic situation is of importance. In previous research, most studies focus on the relation between socio-economic conditions and fulfilled transitions (e.g. Clark 2011, Meschi et al. 2011, Rice 1999, Betts & McFarland 1995, Micklewright et al. 1990, Walters 1984). We aim to further disentangle the process of school-to-work transitions by investigating the direct influence of local labour-market conditions on educational and occupational aspirations of secondary school students (shortly) before the actual transition from school to further general education, vocational training, or the labour market takes place.

The paper has a twofold objective: First, we extend conventional theoretical concepts of aspirations by developing a multidimensional approach that includes educational and occupational goals simultaneously and discuss the relevance of regional socio-economic conditions on these dimensions of aspirations. Second, we empirically illustrate our concept and analyse to which extent the regional socio-economic situation affects these different aspects. For this purpose, we chose the case of Germany as it provides an interesting example due to the

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<sup>6</sup>This chapter is based on the original study: Hartung, Andreas, Katarina Weßling, & Hillmert, Steffen (2017): The relevance of regional socio-economic conditions for educational and occupational aspirations at the end of secondary school. Working paper.



strongly developed vocational training system (VET) and the close connection between the VET system and the labour market. It can be assumed that this relation between labour and training market makes regional socio-economic conditions particularly relevant for the formation of educational and occupational aspirations of students at the end of secondary school.

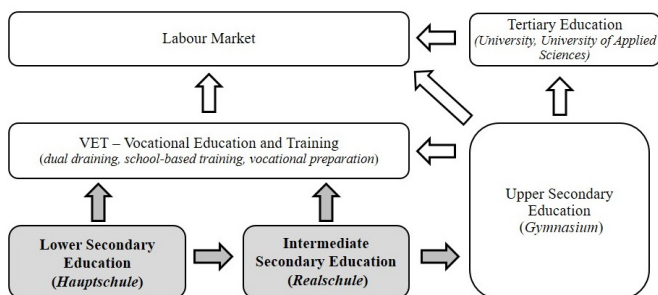
The paper is organised as follows: In the subsequent section 5.2.2, we provide a brief overview of the institutional specifications of the German school and training system. In section 5.2.3, we present a multidimensional concept on educational and occupational aspirations. Section 5.2.4 presents the current state of the art regarding the formation of educational and occupational aspirations and the relevance of regional contextual conditions. In the section 5.2.5 we present our research hypotheses that link several dimensions of aspirations to the regional labour-market conditions. Section 5.2.6 describes individual and contextual data sources and discusses relevant methodological decisions. After presenting the analytical results in section 5.2.7, section 5.2.8 concludes with a summary and critical discussion of our findings.

### **5.2.2 Transitions After Secondary Schooling in Germany: Institutional Preconditions**

For two reasons our paper concentrates on lower and intermediate secondary school students in Germany in their last compulsory year of schooling: First, the German school system is characterised by a considerably early tracking, usually after grade 4 or 6. According to their academic performance students are selected into either lower (Hauptschule), intermediate (Realschule) or higher (Gymnasium) secondary school. Already after nine or ten years of general schooling when students are aged 15 to 17, lower and intermediate secondary

school students face the decision regarding their future career. Figure 16 demonstrates their possible choices (grey arrows). Subsequent to school they can choose to either enter vocational training - and thereby already opt for a specific occupation -, to continue general school education, or to directly enter the labour market. This decision situation makes simultaneous analyses of educational and occupational aspirations at the end of secondary schooling particularly interesting.

Figure 15: Potential pathways after lower and intermediate secondary education



Second, the strongly developed VET system - in particular the dual training which is characterised by on-the-job training that is provided by employers directly - accounts for a close link between training and employment. This feature of the German education system ensures, on the one hand, a close relation between labour and training market and a smooth transition from training to employment; on the other hand, it makes the training system susceptible to (regional) socio-economic conditions. This makes the question on the influence of regional labour-market conditions on aspirations of students in their last year of schooling particularly relevant.

### 5.2.3 Theorising Dimensions of Educational and Occupational Aspirations

#### *The socio-psychological approach and the rational-choice model*

We differentiate two major theoretical traditions that are of relevance: (1) *the socio-psychological perspective* of educational and occupational status attainment and (2) *the rational-choice model of educational decision-making*. We aim to demonstrate that the crucial arguments of the two concepts complement each other quite fruitfully in explaining educational and occupational aspirations as central determinants of individual inequality in a life-course perspective.

The *socio-psychological perspective* stresses the importance of socialisation in the formation of attitudes towards education and occupation. The *Wisconsin model* of status attainment is a prominent representative of this perspective; it integrates individual educational and occupational aspirations in a path model and links them to psychological explanatory factors like mental ability as well as to the socio-economic context of the individual (Sewell et al. 1969). Both educational and occupational aspirations are shaped by so-called significant others. Their influence is, in turn, mediating the effects of socio-economic status, mental ability, and performance on aspirations. Significant others represent a specific group of persons playing a prominent role in everyday life of an individual. The individual obtains his level of aspiration via these significant others either because they serve as role models or because the individual is confronted with particular expectations concerning his/her educational and occupational behaviour (ibid.).

In socio-psychological research the importance of contextual social factors on the subjective process of educational and occupational goal formation has been stressed repeatedly (Hughes 2011, Rojewski 2005, Armstrong & Crombie 2000, Lent et al. 2000, Holland 1994, Roberts 1968). Occupational aspirations typically refer to preferences towards

several aspects of future occupation such as the occupational sector, the social status associated with an occupation or normative roles for specific social groups (e.g. gender-specific occupations (Osipow & Fitzgerald 1996, Reskin 1993, Betz & Fitzgerald 1987, Daymont & Adrisani 1984).

From a broader societal perspective, the formation of aspirations is consequential for the overall process of educational attainment as aspirations represent a significant influence on education and career choices (Holland et al. 1990), and these choices are closely related with actual educational outcomes (Paulus & Blossfeld 2007, Becker 2000). However, aspirations are rather loosely implemented into a conceptual model that focuses on the process of educational attainment in the life course.

Therefore, we integrate aspirations into the general *model of rational educational decision-making*, which is well-established and frequently applied when focusing on trajectories and transitions across the educational life course (e.g. Hillmert & Jacob 2003, Esser 1999, Erikson & Jonson 1996, Breen & Goldthorpe 1997). Here, the individual evaluation of given alternatives is represented as a function of anticipated costs, benefits, and success probability. The process of educational attainment is understood not only as a single decision but as a sequence of decisions that are observed in the form of transitions across the educational career (Boudon 1974). Obtaining a life-course perspective, it can be argued that educational and occupational aspirations are stages of a successive process of the formation, continuous adaptation, and realisation of individual plans and goals (Williams 1972). They continuously exist and develop and when a decision situation - so called turning-point (Hodkinson & Sparkes 1997) - approaches individuals have to finally evaluate their educational and occupational aims to make a decision which is (subjectively) associated with the largest individual benefit (Cameron & Heckman 1998, Breen

& Goldthorpe 1997, Boudon 1974).

Linking the central arguments of both perspective, we argue that expectations of significant others are to a certain extent based on the rational assessment of students' intellectual potential. In turn, students adapt these expectations by incorporating them into their own expectations based on (rational) self-reflection (Morgan 1998).

### *Dimensions of educational and occupational aspirations*

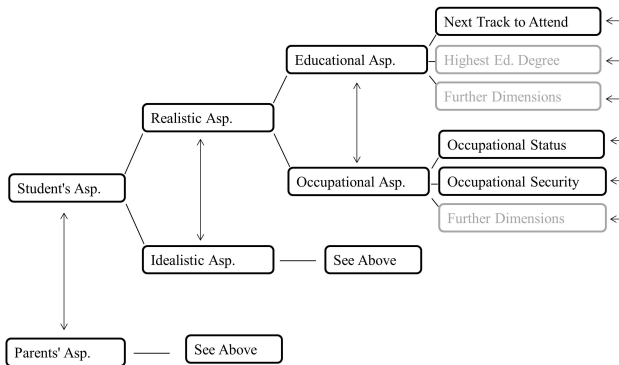
We generally assume that there are various aspirational dimensions that can be influenced by different social mechanisms at different points across the educational career. A first and simple distinction is made between *occupational* and *educational* aspirations. Our focus in this article is on the last year of secondary schooling. Shortly before general schooling is terminated dimensions of educational and occupational aspiration are closely linked and exist simultaneously because students are immediately faced with the decision situation; a specific occupation is usually related to a certain level of (general) qualification, therefore aspirations concerning the educational level and the specific occupation can be expected to be related and exist at the same time.

Apart from dropping out, the transition subsequent to secondary schooling marks the first opportunity to leave general school education. We argue that preferences to leave school are strongly based on the evaluation of given occupational and training opportunities in the regional context - because students are usually too young to move. Opportunities are in particular relevant considering functional dimensions of occupations. We differentiate among two functional aspects: job status and job security; which are most important with regard to individual training labour-market chances. Hence, with the end of general schooling approaching, we argue - more specifically - that occupa-

tional aspirations for *job status* and *job security* are linked to aspirations for general education. If occupational aspirations - in terms of job status and job security - are feasible by obtaining a higher (or lower) level of education, graduates should prefer to stay in (or leave) general school education.

Beyond the illustrated key distinctions in aspirational dimensions, we distinguish between actors that are relevant in the educational attainment process. We argue that, although the focus is on adolescents, *parental aspirations* are at this stage of the educational career still effective. They can be assumed to influence their *children's aspirations* (Zhang et al. 2011, Teachman & Paasch 1998). At the end of secondary school, we expect parental aspirations to not be identical with students' aspirations but to be still of relevance.

Figure 16: Differentiation of dimensions of educational and occupational aspirations



Furthermore, we make use of a differentiation that originates from the Wisconsin model; *realistic* aspirations are separated from *idealistic* ones. While the first are defined as what a person believes that he/she might really be able to attain, the latter are what he/she might hope to attain if all went well (Haller 1968). As rational evaluations are suspended, idealistic aspirations are assumed to be mainly based on educational norms. Realistic aspirations, on the other hand, are future plans that explicitly take costs and benefits into consideration. Over the course of their educational careers, individuals adapt their realistic expectations due to new information and feedback (e.g. grades), while idealistic aspirations are more likely to remain stable and higher than realistic ones (Beal & Crockett 2010).

The described distinctions between several aspects of aspirations are summarised in Figure 16. We propose a life-course theoretical perspective by arguing that the relevant dimension(s) of aspirations and their (inter-)relations depend upon the stage in the educational career that is observed.

#### **5.2.4 Educational and Occupational Aspirations - the Relevance of Local and Regional Contextual Conditions**

Previous research has consistently shown that educational and occupational aspirations appear to be mainly influenced by parents, peers, and the school (class) context (Chesters & Smith 2015, Wicht & Ludwig-Mayerhofer 2014, Minello & Barban 2012, Schoon & Parsons 2002, Davey & Stoppard 1993, Davies & Kandel 1981). With regard to conditions that refer to the local environment, previous research frequently considered neighbourhood conditions and their influence on educational outcomes (Sykes & Musterd 2010, Brännström 2008, Kauppinen 2008, Duncan 1994, Brooks-Gunn et al. 1993, Garner & Raudenbush 1991).

Research explicitly linking labour-market characteristics with aspects of educational processes argues that poor labour-market conditions lower the individual perception of employment chances and tend to discourage young adults from entering the labour market after the end of compulsory schooling (*discouraged worker effect*; e.g. Micklewright et al. 1990, Raffe & Willms 1989). Poor conditions in the residential area are associated with a higher individual risk of becoming unemployed. In that sense, further general education is used as an “escape” from unemployment. Results that support this assumption can be found in international research, particularly from the USA (Betts & McFarland 1995, Walters 1984), but also the UK (Clark 2011, Rice 1999), Italy (Carmeci & Chies 2002), and Spain (Peraita & Pastor 2000). Studies comparing local areas find that young people are aware of limited job opportunities in deprived areas which influence their subsequent labour-market decisions (Furlong & Cartmel 1995).

In Germany, the vocational training system and the labour market are closely related; therefore, training places are typically scarce when the overall socio-economic situation is poor. Empirical evidence for the case of Germany shows that regional differences in vocational training chances are particularly visible between East and West Germany (Ulrich 2013). These differences between federal states and regional districts reveal that the regional unemployment rate influences individual training chances (Weßling et al. 2015, Kleinert & Jacob 2012, Hillmert 2001).

Most studies link the actual (post-)educational transition with regional or local contextual conditions; much less attention is given to the link between labour-market contexts and individual educational and occupational aspirations.



### 5.2.5 Research Hypotheses

The overall assumption on the relation between dimensions of aspirations and the regional labour-market situation is that individuals associate poor conditions with an increased risk of becoming unemployed. This leads to two potential strategies for school graduates responding to this risk:

On the one hand, poor labour-market conditions can motivate individuals to aspire those occupations that promise the highest employment chances regardless of their status. *High job stability* promises a low risk of becoming unemployed and a stable income, with increasing monetary benefits expected over the life course. On the other hand, individuals may strive for *higher status* occupations associated with a higher monthly income. Even though individuals might risk phases of (temporary) unemployment, a high-status occupation could ensure a higher monthly income and hence increase the expected monetary benefits across the life course.

We focus on realistic aspirations as they are expected to be especially sensitive to the evaluation of costs, benefits, and the probability of success.

***Hypothesis 1a:*** (*Security-aspiration Hypothesis*): *Poor socio-economic regional contexts are expected to foster students' realistic aspirations for occupations with a lower occupation-specific unemployment rate.*

***Hypothesis 1b:*** (*Status-aspiration Hypothesis*): *Poor socio-economic regional contexts are expected to foster students' realistic aspirations for occupations with higher status.*

The impact of contextual conditions on status- and security-related as-

pects of occupational aspirations should be manifested in the actual intention of school graduates to remain in or leave general schooling. If they strive for high-status occupations and more secure jobs, they should subsequently intend to extend their general school career in order to gain required levels of qualification.

In addition, students who anticipate a poor regional labour-market situation should be aware of the lower supply with vocational training places. Participation in general education postpones the transition to training and employment and therefore the risk of unemployment.

***Hypothesis 1c: (General-aspiration Hypothesis): Poor socio-economic regional contexts are expected to foster students' realistic aspirations to continue general schooling after graduation from lower or intermediate secondary school.***

We take the specific institutional features of the German education system into account by considering that students in lower secondary schools (*Hauptschule*) are differently affected by poor local labour-market conditions than students in intermediate (*Realschule*) secondary schools. Employers providing vocational training tend to prefer graduates with a higher school qualification. This is particularly the case when training places are limited. Students in lower secondary schools might anticipate their competitive disadvantage and be more sensitive to poor labour-market situations.

***Hypothesis 2: (Qualification-specific Hypothesis): Effects of socio-economic regional context on all three dimensions of aspirations are stronger for lower secondary graduates compared to intermediate secondary graduates.***

Furthermore, we consider the socialisational environment in which individuals are embedded. We expect students' educational and occupa-

tional aspirations and their sensitivity to external factors to be interrelated with aspirations in the family. Idealistic aspirations of the parents serve as an indicator of the normative attitudes towards education predominant within the family. Students confronted with strong familial expectations should be less sensitive to economic macro conditions.

***Hypothesis 3: (Familial-norm Hypothesis): Effects of socio-economic regional context on the three dimensions of aspirations are weaker if there is an idealistic preference for higher education within the family.***

### **5.2.6 Data and Empirical Strategy**

#### *Data*

To test the five discussed hypotheses we utilise data from the National Educational Panel Study - Starting Cohort 4 - 9<sup>th</sup> Grade (NEPS-SC4, v.4.0.0). The NEPS-SC4 is a survey that initially targets 9<sup>th</sup> graders in lower-, intermediate-, and upper-secondary schools in Germany. We are interested in students from lower and intermediate tracks and their occupational and educational aspirations shortly before their graduation. As students in lower secondary school usually graduate after grade 9 they are sampled in the first wave in autumn 2010/spring 2011 while students in intermediate secondary school who graduate after grade 10 are first sampled in autumn 2011/spring 2012. In some federal states, lower secondary school lasts for 10 years. Therefore, we control for the federal state in the analytical models. Students who attend upper secondary school (Gymnasium) are excluded as they do not necessarily face the decision of staying in school versus entering vocational training. The NEPS-SC4 sample is clustered within classes and schools; in our sample, individuals are distributed within 545 classes in 332 institutions.

We define our three dependent variables as follows:

**Security-related occupational aspirations:** In NEPS students are asked about their realistic occupational aspirations; they are asked to report the profession they realistically expect to attend in the future. Reported occupational titles are provided in the data in different coding systems. We measure occupation-specific unemployment rates by using the Klassifikation der Berufe (KldB) 1988, a standard classification of the German Federal Labour Office, which is based on a distinction of up to 99 major occupational groups. The Federal Labour Office provides the number of currently occupied positions in each occupation and the number of unemployed persons assigned to each occupational group due to their last occupied position on a monthly basis. By connecting these occupation-specific unemployment rates with the reported aspired occupations we are able to conceptualise an indicator of current unemployment risk in the preferred occupation. For our analysis, we use occupation-specific unemployment rates from July of the previous year. This indicator represents security-related aspirations. The lower the occupation-specific unemployment rate in the aspired occupation the more secure the aspired occupation.

**Status-related occupational aspirations:** To measure the status of the aspired occupation, we use the International Socio-Economic Index of Occupational Status (ISEI) 2008 standard classification which is based on a distinction of up to 390 unique occupational groups. The ISEI variable is a metric representation of the status of the reported occupation based on the required level of education and income expectations, with a maximum value of 90 (Ganzeboom & Treiman 1996). The occupation that respondents prefer is coded accordingly.

**Education related aspirations:** The third dependent variable is the realistic aspiration to actually continue schooling. This information is based on the question of what the respondent realistically intends to do one year after the interview takes place and is coded as binary variable that captures the intention to continue versus leave general school.

We use the information on the respondents' place of residence to link

the individual sample with regional indicators. According to findings from our own previous research (Weßling et al. 2015), we consider NUTS-3 level units (administrative districts) and the adjacent neighbouring units as adequate size of “training areas” and will make use of this conceptualisation.

Table 3: Frequency distribution and summary of dependent variables and independent variables on the contextual level

	Percentage/ Mean (Std. dev), [Min-Max],	N
<b>Dependent variables</b>		
Unemployment rate (security) of the aspired occupation	7.4 (5.3) [1-29]	1,630
SES (status) of the aspired occupation	45.9 (18.2) [11-88]	1,657
Aspirations to continue schooling: yes	53%	1,102
Aspirations to continue schooling: no	47%	983
<b>Contextual indicators</b>		
Regional labour-market conditions	-1.3 (2.8) [-6-8]	2,211
Regional supply of voc. training positions	101 (2.6) [90-115]	2,211
<i>Data: NEPS-SC4, own calculation</i>		

The central *explanatory variable* is the unemployment rate in the regional unit that respondents live in. Information on unemployment rates is used for the years from 2000 to 2010 and was issued by the Statistical Service of the Federal Employment Agency. The unemployment data is used in time-series format to employ a method of unemployment-rate decomposition (Hillmert et al. 2017); using time series trends on regional and national level allows for decomposing each district-specific level of unemployment in a particular year into three components: the long-term national trend (1), the deviation of the local trend from the national trend (2), and the short-term deviation from the local trend (3) (see Figure 10). Component 1 is the predicted unemployment rate on the national level. Component 2 is the difference between component 1 and the predicted regional rate of unemployment, while component 3 is the regional residue i.e. the

deviation between component 2 and the empirically observed regional rate of unemployment.

For our study we separate and use a specific information by replacing unadjusted regional unemployment rates by deviations of regional and national linear trends (**component 2**): this shows the typical regional situation compared to the national level and relatively to other regions. It is plausible to assume that individuals can anticipate this relatively stable regional variation.

The unemployment situation in a region is highly correlated with a variety of relevant structural and economic characteristics that shape the situation on the regional vocational training market. Students start to actively search for vocational training positions during their final year of schooling and consequently adapt their aspirations to observed opportunities. To avoid possible biases, we additionally control for the number of available vocational training positions in the previous year.

Moreover, various control variables on the individual level are included. Parents' idealistic aspirations are controlled to account for normative attitudes towards education within the family. Additional effects of social background are captured via parents' educational status. Individual school performance is represented by grades in mathematics and German. Grades range between 1 (best) and 6 (worst). For a more intuitive interpretation of the models, grades are reversed. Further controls are age at the time of the interview, gender, and migration background.

### *Methods*

We apply linear regression techniques (OLS) for the analyses on status- and security-related aspirations. As the outcome of the third dependent variable (the general aspirations to continue general schooling) is binary coded. We apply a linear probability model (LPM). The

LPM uses a multiple linear regression to explain qualitative events using a binary dependent variable under the zero-conditional mean assumption. The coefficients of a linear model can be interpreted as the change in the probability of a defined event given a one unit change in the independent variable, holding all other covariates fixed (Wooldridge 2006). Due to the binary outcome of the dependent variable, the assumption of heteroskedasticity will necessarily be violated. To ensure the validity of the statistical tests we calculate heteroskedasticity-robust standard errors (White 1980). All three models are simultaneously computed within a structural equation modelling (SEM) framework. To avoid the confounding of regional and school effects due to the clustered sampling design, standard errors that adjust for school clustering are calculated. Moreover, we have to take the strong correlation between the dependent variables security of aspired occupation and job status of aspired occupation into consideration. The error terms of both linear regression models are adjusted with respect to this correlation between the two dimensions of occupational aspirations.

### 5.2.7 Empirical Analysis

The model specifications do not allow for presenting  $R^2$ -statistics. For this reason, we compute a null model to illustrate the initial distribution of residual variance terms of the dependent variables in order to calculate the explanatory power of the models. In a second step, control variables on the individual level are included, before including the main explanatory variable that represents the typical regional labour-market situation. Corresponding interactions as well as the control variable on the regional level are also integrated in the third model. A likelihood ratio test was estimated for each analytical step to ensure that the additional variables improved the explanatory power of the model. For reasons of comprehensibility, the results will be pre-

sented in separate tables (see Tables 2 - 4) for each dependent variable.

We first examine the effect of regional labour-market conditions on occupational aspirations. Table 4 shows the linear model for security-related aspirations. The comparison between the null model and the model including control variables on the individual level shows a 11% reduction in the error variance ( $100 - 24.667/27.778 * 100$ ), meaning that the included individual control variables explain 11% of the variation in the dependent variable. Hence, the included variables are important in explaining occupational aspirations. Model 1.2 shows a positive effect for students in lower secondary schools, meaning their expectations for obtaining secure jobs are lower compared with intermediate secondary school students. Moreover, better school performance in German and mathematics increases security-related aspirations. Male students tend to aspire more secure occupations than female students. The migration background has a significant but weak effect. Neither parents' educational status nor their aspirations show significant effects.

In Model 1.3 the regional-level indicators and corresponding interaction terms are introduced. None of the observed indicators has a significant effect on security-specific aspirations. Hence, the hypothesis 1a has to be rejected; security-related aspirations seem not to be subject to socio-economic regional characteristics. Moreover, they are not related to parents' educational wishes for their children.

In the next step, we focus on explaining status-related aspirations and the impact of regional labour-market conditions. Table 5 shows the linear model. The comparison between the null model and the models with independent variables on the individual level shows a reduction in the error variance by more than 25%.

We find significant effects for most of the individual characteristics; students in lower secondary schools have lower aspirations with re-



Table 4: Linear regression model, dependent variable: security-related occupational aspirations

	Model 1.1 (null)	Model 1.2	Model 1.3
Intercept	<b>7.387*** (0.159)</b>	6.154 (3.278)	7.093 (7.843)
Lower sec. in grade 9 (ref.: intermed. in 10)		<b>3.714*** (0.313)</b>	<b>3.480*** (0.400)</b>
Performance in German		<b>-0.539** (0.199)</b>	<b>-0.542** (0.199)</b>
Performance in Maths		<b>-0.281* (0.119)</b>	<b>-0.284* (0.119)</b>
Sex/gender (male)		<b>-0.699** (0.271)</b>	<b>-0.716** (0.270)</b>
Parents' aspirations for higher (ref.: no aspirations)		-0.013 (0.265)	-0.005 (0.307)
Parents: at least one has Abitur (ref.: no Abitur)		0.149 (0.264)	0.149 (0.264)
Migration background (ref.: no migration background)		<b>-0.758* (0.351)</b>	<b>-0.752* (0.351)</b>
Age		0.238 (0.200)	0.248 (0.203)
Regional labour-market conditions			0.031 (0.111)
Reg. cond. * low. sec. grade 9			-0.127 (0.125)
Reg. cond. * parents' aspirations			0.011 (0.101)
Regional supply with voc. training			-0.010 (0.067)
Var(residual)	27.778	24.667	24.661
N	1612	1612	1612

*Variable in the model not listed in table: federal states;*  
*\* p<0.05, \*\* p<0.01, \*\*\* p<0.001;*  
*Standard errors in parentheses;*  
*Data: NEPS-SC4, Federal Employment Office, BBSR, own calculation*

Table 5: Linear regression model, dependent variable: status-related occupational aspirations

	Model 2.1 (null)	Model 2.2	Model 2.3
Intercept	<b>45.917*** (0.567)</b>	<b>26.356** (9.723)</b>	-5.398 (21.369)
Lower sec. in grade 9 (ref.: intermed. in 10)		<b>-10.323*** (1.035)</b>	<b>-10.713*** (1.33)</b>
Performance in German		<b>3.478*** (0.555)</b>	<b>3.457*** (0.559)</b>
Performance in Maths		<b>1.959*** (0.417)</b>	<b>1.939*** (0.415)</b>
Sex/gender (male)		<b>-6.823*** (0.866)</b>	<b>-6.841*** (0.864)</b>
Parents' aspirations for higher (ref.: no aspirations)		<b>10.002*** (1.144)</b>	<b>8.858*** (1.231)</b>
Parents: at least one has Abitur (ref.: no Abitur)		<b>3.465*** (0.874)</b>	<b>3.474*** (0.868)</b>
Migration background (ref.: no migration background)		<b>3.952*** (1.082)</b>	<b>3.743*** (1.084)</b>
Age		0.157 (0.595)	0.146 (0.595)
Regional labour-market conditions			<b>0.840* (0.332)</b>
Reg. cond. * low. sec. grade 9			-0.239 (0.380)
Reg. cond. * parents' aspirations			<b>-0.945* (0.40)</b>
Regional supply with voc. training			0.325 (0.190)
Var(residual)	301.292	225.477	224.594
N	1639	1639	1639

*Variable in the model not listed in table: federal states;*  
*\* p<0.05, \*\* p<0.01, \*\*\* p<0.001;*  
*Standard errors in parentheses;*  
*Data: NEPS-SC4, Federal Employment Office, BBSR, own calculation*

gard to their future occupational status, which seems rather expectable as they are relatively disadvantaged on the training and labour market compared to intermediate secondary graduates. Also in line with what one would expect, better school performance is positively associated with higher status aspirations. We find a remarkably strong gender effect; male students are much more likely to expect a lower occupational status than females. Students of immigrant origin have higher expectations regarding their future occupational status. In contrast to the first model, we find that the social background of students is of great importance; parents' educational status has a positive but comparably weak effect, but if parents' idealistic aspirations for their child are high, their child's anticipated occupational status increases by more than ten ISEI points (the complete scale ranges between 16 and 90).

Regional labour-market conditions, corresponding interaction terms, and control variable on the regional level are included in Model 2.3. We find the main effect of regional unemployment on status-related occupational aspirations to be positive and significant. Hypothesis 1b can therefore be preliminary confirmed; aspirations for an occupation with a higher status increase when the regional unemployment is high. Potential explanations for this are on the one hand that young adults are discouraged from early labour-market entry and strive for jobs where a higher level of qualification is needed, and on the other hand that young adults can be argued to anticipate that their overall labour-market prospects increase with a higher qualification and they are most sensitive for such circumstance in tense labour-market regions. The interaction between regional unemployment and school track is not significant, which means regional labour-market conditions are equally relevant for status-related aspirations of lower and intermediate secondary school students. We find a significant interaction effect between regional labour-market conditions and parents' aspirations. The effect is negative and strong enough to compensate

for and even reverse the main effect of regional labour-market conditions which means hypothesis 3 can be confirmed with regard to status-related aspirations; families' attitudes towards education neutralise positive effects of regional socio-economic situation.

In Model 3.2 (see Table 6), almost all variables on the individual level show significant effects; students in lower secondary schools have much stronger aspirations to stay in the school system as they have lower prospects to find a suitable training place compared with intermediate secondary graduates. Better performance in German and mathematics is also positively associated with the intention to continue schooling, as it should increase individual prospects of successfully entering (higher) secondary school. Male school students tend to have lower motivation for more general education than female students, which is also in line with previous research where it could have repeatedly been shown that girls are more motivated than boys to obtain higher degrees and better grades (Mau & Bikos 2000). Moreover, the vocational training system, particularly the well-established successful on-the-job training, provides substantially more training in male-dominated professions. Aspirations of immigrants are higher than those of natives. Again we find this result to correspond with existing research showing that immigrants have considerably high motivation which is often explained by the so-called immigrant-optimism thesis (Kao & Tienda 2005). The familial educational norms have a strong significant effect on educational aspirations. This is in line with the general argument of the Wisconsin model of status attainment. Parents' educational status has an independent positive effect.

Labour-market conditions show a significant positive effect on students' aspirations to continue general education. The interaction term between school-leaving certificate and regional labour-market conditions indicates that the economic situation is different for specific subgroups; students in the lowest school track are more strongly influ-

Table 6: Linear probability model (LPM), dependent variable: education related aspirations

	Model 3.1 (null)	Model 3.2	Model 3.3
Intercept	<b>0.525*** (0.014)</b>	0.376 (0.249)	-0.723 (0.627)
Lower sec. in grade 9 (ref.: intermed. in 10)		<b>0.099*** (0.027)</b>	<b>0.144*** (0.032)</b>
Performance in German		<b>0.085*** (0.015)</b>	<b>0.085*** (0.015)</b>
Performance in Maths		<b>0.054*** (0.011)</b>	<b>0.054*** (0.011)</b>
Sex/gender (male)		<b>-0.079*** (0.021)</b>	<b>-0.076*** (0.022)</b>
Parents' aspirations for higher (ref.: no aspirations)		<b>0.227*** (0.025)</b>	<b>0.221*** (0.027)</b>
Parents: at least one has Abitur (ref.: no Abitur)		<b>0.067** (0.022)</b>	<b>0.066** (0.022)</b>
Migration background (ref.: no migration background)		<b>0.071** (0.027)</b>	<b>0.065* (0.027)</b>
Age		-0.024 (0.015)	-0.026 (0.015)
Regional labour-market conditions			<b>0.018* (0.009)</b>
Reg. cond. * low. sec. grade 9			<b>0.023* (0.010)</b>
Reg. cond. * parents' aspirations			-0.003 (0.008)
Regional supply with voc. training			0.011 (0.006)
Var(residual)	0.223	0.194	0.193
N	2057	2057	2057

*Variable in the model not listed in table: federal states;*  
*\* p<0.05, \*\* p<0.01, \*\*\* p<0.001;*  
*Standard errors in parentheses;*  
*Data: NEPS-SC4, Federal Employment Office, BBSR, own calculation*

enced by regional labour-market conditions. This is the only model where this interaction effect is in line with hypothesis 2; lower secondary school students particularly subject to the impact of regional labour-market conditions on aspirations. In contrast with our observations on occupational status aspirations (Model 2, Table 5) and in line with our observations on security-related aspirations, there is no interaction between labour-market characteristics and parents' idealistic aspirations.

In all three models on educational and occupational aspirations the introduction of regional indicators leads to a relatively small reduction in the observed error variance.

### 5.2.8 Summary and Discussion

The research interest in this paper was in the distinct dimensions of occupational and educational aspirations of school students at the end

of lower secondary and intermediate secondary schooling and on how they are influenced by regional socio-economic characteristics.

The paper pursued a theoretical as well as an empirical target: (1) Conventional concepts of aspirations should have been improved by developing a multidimensional approach that includes educational and occupational goals simultaneously and refers them to a specific stage in the educational career; (2) This multidimensional concept was analysed in terms of the influence of the regional socio-economic situation that school students are embedded in. We expected the socio-economic regional situation to be of particular importance for realistic aspirations shortly before the end of general schooling approaches because at this stage in the educational career young adults have to evaluate their wishes and chances against the background of given opportunities in a reachable area more seriously.

On the contextual level, we used unemployment data for administrative districts and aggregated them to the level of relevant training areas. On the individual level, data from NEPS-SC4 was utilised. The data sets were linked to analyse the aspirations of 9<sup>th</sup> and 10<sup>th</sup> graders with regard to the extent to which they are affected by the regional socio-economic situation.

Findings can be summarised as follows: status-related occupational aspirations that are measured by the ISEI score in the aspired occupation as well as the aspiration for further general education to continue schooling are affected by regional labour-market conditions. These findings are in line with our hypotheses. Security-related aspirations measured as unemployment rate in the aspired profession are, in turn, not significantly affected by regional socio-economic conditions.

Concerning status-related aspirations, we find that students in lower

and intermediate school tracks are to an equal extent positively influenced by tense labour-market conditions; meaning the poorer the regional conditions, the more likely it is for adolescents to strive for an occupation with a higher status. However, this only holds true for students whose parents have lower idealistic educational expectations. Students confronted with high familial expectations are less sensitive to economic macro conditions and generally more likely to aspire high-status professions.

Security related aspirations are not found to be either negatively or positively influenced by socio-economic conditions in the regional context. Hence, it seems that security compared with status is less important for young adults at that pre-stage of their occupational career. However, an additional explanation could be in the level of information among adolescents; school students do not - or only to a limited extent - gather and obtain information on sector-specific unemployment rates in their region, but rely - in terms of security - rather on subjective expectations regarding a specific occupation. These expectations could be less shaped by actual conditions in a specific sector than by significant others such as the family, peers, neighbours, and teachers. We assume that the perception of what is referred to as a secure job can be much different from the actual unemployment risks in a sector. Results that refer to the status of an occupation can be assumed to be more reliable because information on or perception of job status can be considered to be common knowledge.

We find clear positive effects of poor regional labour-market conditions on the general aspirations to stay in school. Students in lower secondary school are more strongly affected. This can be explained as students with lower secondary degrees have worse chances on the training labour market. Hence, they seem to be more sensitive to the socio-economic situation in their residential area. In Table 7 findings

are summarised for the three dimensions of aspirations and with respect to the central interaction variables (parents' aspirations and attended school track) to allow for a simple overview of the results.

Table 7: Result summary: effect of regional labour-market conditions on three dimensions of aspirations, differentiated by school track and parents' idealistic aspirations

Dependent variables	Lower sec. (Hauptschule) students		Intermediate sec. (Realschule) students	
	Parents expect university	Parents do not expect university	Parents expect university	Parents do not expect university
Model 1: Aspirations for occup. security	No effect	No effect	No effect	No effect
Model 2: Aspirations for occup. status	-	+	-	+
Model 3: Aspirations to continue schooling	+	+	+	+

In general, it seems necessary to refer to the rather weak explanatory power of regional socio-economic indicators. We find the importance of regional characteristics to be comparatively small given individual characteristics such as social background or the attended school track. These findings are mostly in line with previous research. However small the effects, we could demonstrate that structural conditions can have discouraging effects on young adults' motivation to quickly enter the training market and are relevant for this particular stage in the educational career within an expectable effect size.

We argue that, to reduce biases in the estimation of context effects, it seems relevant to quantify the importance of structural conditions more precisely in terms of specific educational stages. Therefore, additional research that links individual longitudinal data covering the development of several dimensions of educational aspirations throughout the entire educational career with contextual time-series data is highly relevant.

With regard to future research, it seems promising to adapt the analytical strategies for countries with similar strongly developed VET systems (e.g. the Netherlands, Switzerland, and Austria) and compare them. Moreover, in countries without strongly developed VET system the effects of the regional labour-market situation should also be expected as students can directly transfer from general school to employment. In addition to that, similar effects can be expected at later transition stages (e.g. after completion of vocational training) where the alternative to stay in general schooling is not given and individuals might have to decide between tertiary education, an additional vocational qualification, or entering the labour market. In this case, aspirations for tertiary education might represent an alternative to the labour-market entry in a socio-economic situation perceived as poor.

Analysing the relevance of regional contextual effects for aspirations has so far received surprisingly little attention in empirical research. Our findings suggest that the socio-economic situation is partly of relevance. A particularly relevant finding in terms of social inequality is that the regional situation is of strong relevance for lower secondary school students and for students with lower familial preferences for higher education. This finding can be considered of relevance for policy makers to create information, educational programs, and support for those who consider themselves without chances on the training and labour market.



### **5.3 Spatial Structure Counts: The Relevance of Regional Labour Market Conditions for Educational Transitions to Vocational Training**

#### **5.3.1 Introduction**

Acquiring vocational qualifications is a central determinant for individual life chances in many contemporary societies.<sup>7</sup> Vocational training opportunities are provided and shaped by the structure of the specific education and training system. In research on school-to-work transitions a great deal of attention is given to questions that deal with differential chances of entering vocational education or training (VET). It is well known that social contexts in which individuals are embedded have a strong impact on educational decision making behaviour and actual transition chances. Contexts that are known to have an impact in these terms are families, classrooms or schools, but educational differences between individuals even exist when these conditions are comparable. An additional source of explanation for these disparities can be varying regional context conditions representing, e.g. the local labour-market situation. This paper focuses on the relevance of regional labour-market conditions for transitions to vocational training. We address two main conceptual issues and illustrate them empirically for the case of Germany: *First*, previous research argues that high unemployment discourages young people from entering the labour market but encourages them to extend their general educational career instead. It is, so far, an open question if this assumption holds true for transitions from school to vocational training. In countries with well-developed apprenticeship programmes and a

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<sup>7</sup>This chapter is based on the original study: Weßling, Katarina, Andreas Hartung, & Hillmert, Steffen (2015): Spatial structure counts: The relevance of regional labour-market conditions for educational transitions to vocational training. In: Empirical Research in Vocational Education and Training 7(12).

strong linkage between training and labour market (e.g. Germany, the Netherlands, Switzerland) this question is highly relevant. *Second*, we focus on conceptualising *local* labour markets in terms of their spatial extension. The crucial question here is: *Where* is the regional labour market *located* that is assumed to influence young adults chances of obtaining a training position?

The paper is structured as follows: In the section 5.3.2 post-compulsory education and training alternatives in Germany are illustrated. In section 5.3.3 we provide a literature review focusing on disparities in education and training chances and the impact of local labour markets. Subsequently, we describe our theoretical model that combines a flexible spatial concept with models on educational transition chances and derive our hypotheses (sections section 5.3.4 and section 5.3.5). We further explicate how we prepare aggregated time-series data on labour-market conditions in administrative districts and neighbouring and surrounding districts (section 5.3.6). The time-series data is merged with individual panel data of the German Socio-Economic Panel Study (GSOEP). We then discuss descriptive findings and analytical results in section 5.3.7. In our conclusion we draw attention to practical implications following our results and to potentials for further research (section 5.3.8).

### **5.3.2 Education and Training Alternatives After Compulsory Schooling**

The German VET-system offers a well-developed apprenticeship programme with strongly emphasising on-the-job experiences in the so called dual system. The dual training is the most important track for obtaining an occupational qualification in Germany: in 2011, 57% of an age cohort started training in the dual system (Statistisches Bundesamt 2013). Beyond that, the VET-system offers school-based training

programmes in specific occupations. These two full-qualifying training programmes usually last for two to three years and lead to specific occupational qualifications. In addition to the full-qualifying opportunities, the German VET-system offers several preparatory tracks (BMBF 2012). These courses are aimed to bridge the gap for unsuccessful applicants to improve their level of educational qualification. Beyond vocational training opportunities, all school leavers - except those with the highest possible school-leaving certificate (*Abitur*) - have the opportunity to attend further general schooling. Another option is to enter the labour market directly without any vocational qualification. Due to the strongly developed VET-system and the obligation to stay in education up to a certain age this decision is rather unlikely in Germany.

Chances of entering one of the possible educational alternatives subsequent to general compulsory schooling vary considerably depending on the previously attended school track. In principle, all school leavers (even dropouts) have the possibility to enter dual training. In the dual system, employers decide the recruiting of apprentices. Hence, access to the dual system results from a bilateral matching process between applicant and employer. With respect to the recruitment mechanisms, entering an apprenticeship is therefore comparable to labour-market entry. Compared to the dual system, full-time school-based vocational training is far more subject to institutional specificities: an intermediate school degree often represents the minimum requirement (Dobischat 2010). Due to the strong ties between labour market and dual training, the dual training market and subsequently the entire VET-system is strongly linked to socio-economic characteristics and developments.

### 5.3.3 Training Prospects and Regional Socio-Economic Conditions

Previous research on transitions after compulsory schooling made the following observations: chances in post-school transitions, especially entering a vocational training track in the dual system, differ strongly according to previous school achievements. But gender differences can also be found along with disparities due to the social and ethnic origin (e.g. BMBF 2012, Bernardi & Requena 2010). These effects are not separate, but are mutually linked to one another: differences in previous school achievements are strongly influenced by social background (e.g. Beicht 2012, Müller & Haun 1994). These social disparities in the process of educational attainment are usually explained by differences in the parental social status. On the other hand, individual chances of entering vocational training differ considerably due to the familial background even when controlling for previous education (Hupka-Brunner et al. 2010), which - following status reproduction assumptions - can be interpreted as secondary effect (Boudon 1974) and a direct influence of social background on educational decisions in the later educational career (Hillmert & Weßling 2014). Beyond that, immigrant youth are to a greater extent concerned with aspects of social origin, especially the large group of migrant labourers in Germany has a below average educational level. Further independent impacts of immigrant background on training chances are caused by an under-supply of social and cultural capital, e.g. lack of language capital or information on the educational system of the host country (e.g. Kalter 2006).

We argue that regional socio-economic conditions contribute - in addition to, but also interacting with the set of individual aspects - to the explanation of inequality in education and training chances. The competitive pressure in search for a vocational training position has in-

creased in recent years, especially for students with no or lower school certificates (Kleinert & Jacob 2012). Focusing on competition draws attention to macro-level factors that determine the demand of vocational training opportunities, e.g. population development, labour-market conditions, and economic characteristics of a region. Research that explicitly links aspects of education and regional diversity draws upon a long tradition of descriptive studies. The main focus here lies on the infrastructural concentration of educational institutions on the one hand and dimensions of socio-structural composition of the population on the other (Ditton 2008, Eirnbter 1977, Meulemann & Weishaupt 1976). A remarkable body of international economic research has dealt with the role of labour-market expectancies for an investment in (further) general education. In empirical terms, these studies focus on the labour-market entry. The relevance of regional labour-market conditions for an investment in vocational education and training in countries with a strongly developed VET-system remains an open question. In theoretical terms, previous studies argue that investments in education depend on the expected returns to education. These expectancies are shaped by the individual perception of labour-market conditions (Carmeci & Chies 2002, Peraita & Pastor 2000, Betts & McFarland 1995). A central argument for a positive relation between unemployment and the enrolment in further education is that high unemployment tends to discourage young adults from quickly entering the labour market (*discouraged worker effect*; e.g. Micklewright et al. 1990, Raffe & Willms 1989). In that sense, higher education is used as an “escape” from unemployment. This relationship also applies when economic conditions improve: Young adults lack incentives to stay in the general school system and are more likely to enter the labour market (*warehouse hypothesis*; e.g. Walters 1984; Grubb & Lazerson 1982). The majority of studies put forward arguments for a positive impact of (local) unemployment on further general education, empirical evidence is less clear. Studies that make use of

aggregated data find a significant impact of local unemployment on participation rates in further general schooling. These studies mainly confirm the assumption of a positive effect (Clark 2011). Research using aggregate data that directly focuses on vocational training provides empirical evidence for regional differences in participation rates in vocational training depending on regional unemployment and cohort size in Germany (Heineck et al. 2011). Differences in participation rates are particularly visible between East and West Germany (Ulrich 2013). Furthermore, cyclical developments and demographic change have direct impacts on the number of apprenticeship programs offered by firms (Muehlemann et al. 2009, Wolter & Ryan 2011).

However, empirical evidence that combines individual micro-data with macro-information is less frequent and more ambiguous: Some studies fail to find any influence (Micklewright et al. 1990), while others find a weak impact of local labour-market conditions on post-secondary participation (Tumino 2013, Meschi et al. 2011, Rice 1999). Some studies that find an impact also show that the effect of unemployment differs with respect to individual characteristics. Especially low-qualified male graduates are positively influenced to enrol in further education when unemployment is high (Pissarides 1981, Rice 1999, Meschi et al. 2011). A major problem in these studies is that *regional* labour-market conditions are measured on different levels of aggregation - counties, districts or federal states - which makes interpretations and comparisons difficult. So far, it is an only partly resolved issue in social research to adequately conceptualise and determine the spatial extension of contextual settings individuals are embedded in (Weller 2008).

This paper aims to contribute to the ongoing discussions in two ways: first, we analyse the impact of local labour-market conditions for transitions chances to vocational training. Second, by means of spatial analysis techniques our purpose is to assess the geographic extension

of this local labour market.

### 5.3.4 Theoretical Considerations

The transition to training is a two-sided process depending on the graduates' educational decisions on the one hand and on the demand for trainees on the training market on the other. With respect to educational decisions we understand the processes of educational attainment as an accumulated result of educational decisions (Mare 1980, Boudon 1974), being based on the evaluation of three crucial factors: costs, utility, and (perceived) success probability. This theoretical perspective integrates the motive of *status maintenance* as a cost-benefit component into a more general framework of rational decision making. Educational inequality with respect to the parents' social status results, to a significant degree, from the wish of retaining this status over generations (e.g. Breen & Goldthorpe 1997). The cost-benefit calculation varies by social class origin, so that the subjectively expected utility determines educational decisions and accordant social inequalities. Aggregated socio-economic characteristics, such as regional unemployment, can additionally affect the perception of costs and benefits (Card & Lemieux 2001). Contextual settings such as local labour-market conditions supplement institutional characteristics that can be understood as a framework defining and limiting the scope of action (Hillmert 2004). Experiencing poor economic conditions diminishes the expected chances of successfully entering the labour market - in our case the training market - and hence the subjectively anticipated benefits of leaving general education.

Independent of the graduates' preferences, the availability of training places may be influenced by the general labour-market situation. Economic fluctuations can have two potential influences on employers' decisions. On the one hand employers might be reluctant to invest in

training as their need for additional skilled workers is uncertain and budgets tend to be tight. In times of economic downturns recruitment costs sink, so that even if firms train apprentices instead of employing skilled workers, the latter become relatively more attractive to employers. In both instances, poor labour-market conditions lead to a decreasing demand for apprentices (Wolter & Ryan 2011). These effects primarily refer to economic developments over time but they can in part be assumed to hold true for regional differences, too. In addition to that previous research that directly refers to regional differences could show that firms are less willing to train in more isolated and poor labour-market regions (Muehlemann & Wolter 2011).

To capture this two-folded transition process, we define two mechanisms through which regional unemployment might have an effect on young adults' chances of entering vocational training:

1. *Opportunities: Effective chances* of beginning a dual training after compulsory schooling are structured by labour-market conditions. Poor labour-market conditions can entail shortages in the demand for trainees. In addition, the number of applicants in an age cohort which is primarily a function of demographic development constitutes another determinant of competition on the training market.
2. *Preferences: Individual perception* of unemployment influences the evaluation of educational and occupational chances and shapes the perceived returns to education.

Although it is difficult to empirically differentiate between the two mechanisms when only analysing the outcome of an educational transitions, it seems crucial to theoretically distinguish between them as the conceptual differentiation of effects might be one explanation for the contradicting results on the impact of regional unemployment found in the literature.



### 5.3.5 Analytical Concept and Hypotheses

Previous research argues that high unemployment discourages young adults from quickly entering the labour market. By transferring the discussion on the impact of local unemployment on returns to education to an institutional context with a well-developed training system (e.g. Germany, the Netherlands, Switzerland) we expect - regarding this training system - the following general relationship between regional unemployment and post-compulsory educational transitions:

***Hypothesis 1a:** The higher the level of unemployment in the relevant regional unit(s), the lower the individual chance of entering a vocational training in the dual system compared to other educational alternatives (staying in school, vocational preparation, or school-based vocational training).*

Regarding the two outlined mechanisms we assume that effects of regional unemployment point in the same direction: the effect for the demand for apprentices refers to the availability of dual training. High unemployment should lead to limitations for employers and subsequently to a shortage in training opportunities. The second effect of unemployment refers to the individual perception of unemployment. High unemployment discourages graduates from starting a dual training and rather keeps students in more general tracks of education (general school or school-based vocational training). Beyond a general hypothesis on the effective direction, we assume that the impact of regional unemployment is different for different social groups:

***Hypothesis 1b:** This negative impact of unemployment is higher for drop-outs and school graduates with a lower secondary (Hauptschule) degree compared with an intermediate secondary (Realschule) certificate.*

With higher unemployment and fewer training places the competitive pressure in search for training is particularly high for students with no or lower school certificates (Kleinert & Jacob 2012, Hillmert 2001). Therefore, we argue that their chances decrease when higher unemployment is present.

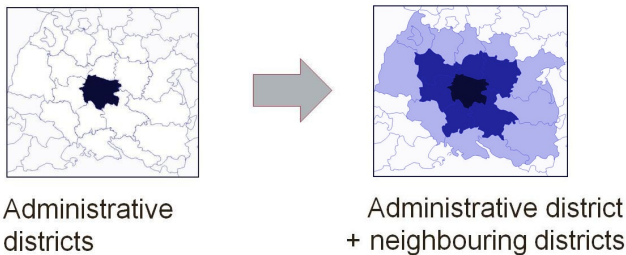
The main aim of this paper is to capture the spatial extension of the impact of these regional labour-market conditions on training chances. It is a typical observation in spatial context research that political borders are often not sufficient to define relevant areas. In particular, research on the *modifiable areal unit problem* (MAUP) has shown that the definition of areas affects the results, even when the same variables are analysed (Andersson & Malmberg 2015, Kwan 2012, Fotheringham & Wong 1991). As previous macro-level research suggest that regional training and labour markets differ in size, extension, and accessibility, it is appropriate to include spatial measurements such as contiguities as well as commuting or travel time distances (e.g. Sforzi 2012, Heineck et al. 2011, Eckey et al. 2007). Muehlemann and Wolter (2011) for example find evidence for the influence of regional labour-market conditions on the willingness of employers to train only when regional labour markets are conceptualised on the basis of travel time, but not when taking political borders into account. Therefore, we integrate concepts of spatial analysis (e.g. Elhorst 2014, Anselin 1995) into a conventional analytical model. We try to overcome the fixed limitations of administrative boundaries by constructing *concentric rings* of neighbouring territorial units of NUTS 3-regions<sup>8</sup> (administrative dis-

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<sup>8</sup>German administrative districts (*Kreise/Landkreise*) are an intermediate level of administrative units between the level of states (*Länder*) and the level of municipal districts (*Gemeinden*). They correspond to the administrative units of NUTS 3 (Nomenclature of Territorial Units for Statistics). In 2011, the total number of districts was 402, of which 295 were rural areas (*Landkreise*) and 107 were independent cities (*kreisfreie Städte*). The number of inhabitants varies greatly between approximately 50,000

tricts (*Kreise*). To capture the spatial extension of a labour-market region and to analyse where unemployment has an influence on the transition to training, we make use of the administrative district where young adults live, as well as the first-order and the second-order neighbouring districts. The spatial units are taken into account separately (see Figure 17). The neighbouring rings are identified by calculating contiguity matrices (e.g. Drukker et al. 2001) for the 412 (referring to the year 2009) NUTS 3-regions on the basis of geo-referred area codes.

Figure 17: Administrative districts and 1<sup>st</sup> and 2<sup>nd</sup> order neighbouring districts



The concentric ring model is considered particularly appropriate because it partly rules out the problem of multicollinearity by calculating the context indicators for the surrounding spatial districts, while excluding the already controlled contexts of lower order. This concept enables one to specify the overall effect of the regional contexts as an additive or a mediating effect. For the latter, interaction effects or effect thresholds have to be specified.

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(Landkreis Lüchow-Dannenberg) up to 1.1 mio (Region Hannover) for rural areas (*kreisfreie Städte*) and between 33,800 (Zweibrücken) and 3.5 mio (Berlin) for independent cities (*kreisfreie Städte*).

***Hypothesis 2:*** *The impact of unemployment on chances of entering dual training is higher for the regional unit of residence and the direct neighbouring regional units compared with the impact of the second-order neighbouring regional units.*

Regarding the spatial extension of the effect of unemployment it can be argued that the supply of training positions increases continuously: the larger the spatial ring, the more training opportunities available. Focusing on the individual demand for training the accessibility plays an important role. This refers to the spatial structure of job or training search behaviour and commuting distances. From previous research on job search behaviour it is known that workers are willing to accept lower wages in order to avoid additional travel distances (Manning & Petrongolo 2013, Rouwendal 1999). Daily work-related commuting distances in Germany vary according to regional differences, ranging between 15 and over 30 kilometres on average and are steadily increasing (Einig & Pütz 2007). Previous research shows that regional disparities in the demand for trainees, corresponds with the commuting activity of young adults (Bogai et al. 2008). In general, it can be assumed that the commuting radius of under-aged workers is more restricted because they need public transport systems. By calculating distance matrices from the centre of every administrative district to the centre of the neighbouring districts we find that the distances are on average about 34 kilometres. Due to the limitation of the search radius by the reachability of training places the demand for training should be higher in closer ranges. Regarding the spatial structure of the impact of local unemployment on training chances we expect the following:

***Hypothesis 3:*** *The impact of unemployment in the first- and second-order neighbouring regional units on the chance of entering training in the dual system is higher when unemployment is high in the regional unit of residence.*

We argue that the neighbouring rings are of particular relevance when training chances are low in the home district because young adults in search for a training position focus on areas further afield (i.e. the first and second neighbouring rings) when unemployment is high and subsequently chances of entering dual training are low in the close range. We test this hypothesis by introducing interaction terms between the unemployment rates of the different spatial units.

### 5.3.6 Data and Methods

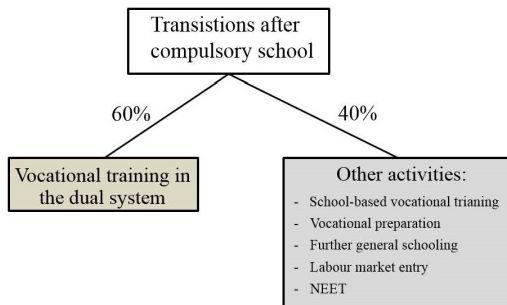
The *individual-level data* is from the German Socio-Economic Panel (GSOEP)<sup>9</sup>. The GSOEP is a household panel that has been carried out since 1984. Since 2000 young adults who live in households that are part of the survey are interviewed regarding their school career and career plans as a part of a special youth questionnaire. They are first interviewed at the age of 16 or 17 (Schupp & Fröhling 2007, 149ff.). For the years 2000 to 2012, individual-level data is available for 4,190 young adults containing information on their place of residence which enables us to merge contextual information about the local labour-market situation to the data set. The number of cases is reduced to 2,778 because young adults who are still in school at the time of the interview are excluded. School graduates with the highest school leaving certificate (*Abitur*) are not included in the sample because the focus of this paper lies on educational alternatives after compulsory schooling. This includes the opportunity of further general school attendance as an alternative to an apprenticeship in the dual system. Following our research hypotheses we argue that attending further schooling represents an opportunity to avoid or postpone the labour-market entry in a poor labour-market region. However, the decision situation

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<sup>9</sup>Socio-Economic Panel Study (SOEP), 1984-2012, version 29, doi:10.5684/soep.v29

changes fundamentally once the highest school-leaving certificate is obtained. Further schooling does no longer represent an educational option for young adults with *Abitur*. A more practical argument deals with regional mobility behaviour: The majority of lower- and intermediate secondary school graduates is still underage and it is likely that they stay in the local area where they obtained their school leaving certificate, a fact that reduces the complexity of our model. Subsequently the number of cases is reduced to 2,778. The sample is also adjusted with respect to young adults who answered the GSOEP youth questionnaire but not the yearly conducted individual questionnaire and vice versa. Information from both questionnaires is necessary to make use of the panel information. Eventually cases with missing information in the independent variables (see appendix Table 9) are excluded.

Figure 18: Binary outcome variable: observed transitions from lower and intermediate schooling within the first 3 years after leaving school. Data: GSOEP, 2012



2,144 individuals (3,970 person years) are available for our analysis. The potential educational alternatives (see Figure 18) are summarised into a binary variable that differentiates between entering vocational training in the dual system within the first three years after leaving school versus the other educational alternatives. We choose this operationalisation because the impact of socio-economic conditions is

assumed to be particularly important for the chances of starting vocational education in the dual training track due to close linkage to the labour market.

Important independent variables on the individual level are school-leaving certificate, gender as well as parents' school qualification and parents' vocational qualification. Immigrant background is also included in the analyses.

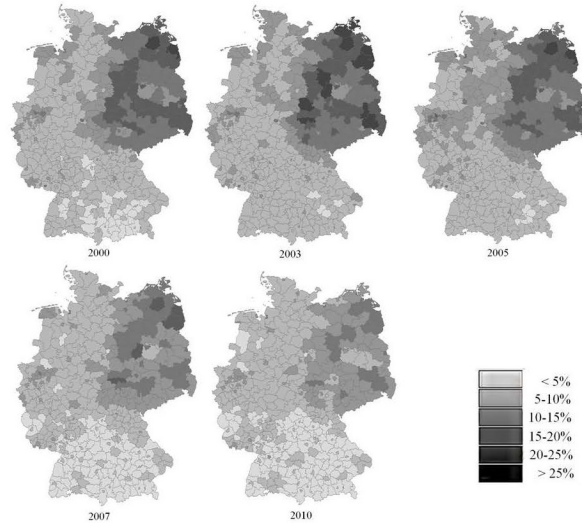
The *context data* originates from the *Federal Employment Agency* and the *Federal Statistical Office*, it allows considering labour-market information on the level of NUTS 3 regions (administrative districts (Kreise)) from 1999 onwards. Districts are administrative units that consist either of an association of small municipalities or of one larger district town. They vary considerably with regard to the number of inhabitants and their spatial extent, which is why age-specific population is included in our analysis. This measure of population is not only integrated so to capture the differences in population between the districts but also to illustrate the competitive situation on the training market.

The administrative districts can be matched to survey data by district codes. These identifiers change over time due to reforms within the administrative districts (Weßling & Wicht 2015). With an adjusted time series format a data set of unemployment rates and age-specific population from 1999 to 2011 on the level of districts is constructed.

A graphical representation of unemployment rates in administrative districts can be seen in Figure 19. Unemployment rates are displayed in six groups. The illustration shows that overall labour-market conditions were relatively tense during the mid-2000s and eased only in the last years of the observation period. We aim to analyse the impact that these spatial patterns of unemployment have on the transition from school to training.

As the GSOEP provides only yearly observations and the beginning of

Figure 19: District-specific unemployment rates for selected years of the observation period. Data: Federal Employment Office, 2014



vocational training courses is institutionally predefined to take place once a year (in September), we apply a discrete-time survival analysis (Yamaguchi 1991, Allison 1982). Discrete-time survival models treat time not as a continuous variable, but as being divided into discrete units. We analyse transitions using binary logistic regression, focusing on the first three years after leaving lower or intermediate secondary school. The model estimates the probability  $h_j$  of entering dual training at a discrete point in time ( $t$ ). Unlike in a cross-sectional logit model the discrete time survival model contains a baseline variable  $b_0(t)$  for the observed time points. Our observation period starts with the year when general schooling ends for the first time and ends after three years. The most important independent variables are the unemployment rate in the home district at the time when the individual



graduates from general compulsory schooling ( $b_a x_j(t)$ ), the first-order neighbouring ( $b_b x_j(t)$ ) districts, and the second-order neighbouring districts ( $b_c x_j(t)$ ). We include several control variables - e.g. school leaving certificate ( $b_z x_j(t)$ ) - in the model.

$$\begin{aligned} \text{logit}[h_j(t)] = \log \left[ \frac{h_j(t)}{1-h_j(t)} \right] = & b_0(t) + b_a x_j(t) + b_b x_j(t) \\ & + b_c x_j(t) + \dots + b_z x_j(t) \\ & + b_a x_j(t) * b_b x_j(t) \\ & + b_a x_j(t) * b_b x_j(t) * b_c x_j(t) \\ & + b_a x_j(t) * b_z x_j(t) + b_b x_j(t) * b_z x_j(t) \\ & + b_a x_j(t) * b_b x_j(t) * b_z x_j(t) \end{aligned}$$

A central component of our models are interaction terms: in addition to the additive effects of unemployment, we include interaction terms between unemployment rates in the home and first neighbouring region and a three-way interaction between home, first and second neighbouring regions. The interaction terms between the unemployment rates on the different regional levels represent the assumption that a specific unemployment situation in the home district changes the effects of unemployment in the first- and second-order neighbouring districts on the chance of entering dual training.

In hypotheses 1b it is assumed that young adults with lower previous school performance are to a larger extent affected by higher unemployment. To test this hypothesis, interactions between the unemployment rates on several regional levels and the school leaving certificates are included. As we observe the individuals repeatedly, the models are calculated with robust standard errors to account for clustering on the individual level. In models with categorical or binary dependent variables, unobserved heterogeneity can be a major problem because the coefficients (and subsequently odds ratios) are not only determined by the relation between the dependent and the independent variables, but also by the variances in the unobserved heterogeneity. This causes

problems especially when comparing between different models. As the comparison between models is highly relevant in our analysis, Average Marginal Effects (AMEs) are calculated (cf. Mood 2010). AMEs can be interpreted as the average change in the probability that dual training will be entered if the independent variable increases by one unit, holding all other independent variables in the model constant. To allow for an adequate interpretation of the interactions effects in the models, we additionally calculate conditional marginal effects and marginal effect plots for continuous predictors (Royston 2013).

### 5.3.7 Results and Discussion

In Model 1 (see Table 8) the socio-economic situation is controlled by the unemployment rate and the age-specific population in the administrative district. Population is measured as the change in the share of 15 to 18 year-olds between previous and present year. The variable is included to account for population differences between districts but also to capture the age-specific competitive situation. In model 2 and 3 unemployment rates and population in the two surrounding *rings* of neighbouring districts (see Figure 17 for illustration) and interactions between unemployment rates on the different spatial levels are included stepwise. In model 4 we calculated interaction effects between unemployment on regional levels and previously attend school tracks.

In the first model we find a highly significant negative effect of unemployment in the home district on the chance of entering dual training. An increase in the unemployment rate in the home district by 1 percentage point decreases the probability of entering an apprenticeship by approximately 1 percent. Also, an increase in the share of age-specific population decreases the training chances of school leavers. These contextual effects exist even when controlling for individual indicators that are known to have an impact on the chances of entering

training. This result meets the argument in our first rather general hypothesis: school leavers in regions with higher unemployment have lower chances of finding a position in the dual training system.

When including the average level of unemployment measured in the first-order neighbouring districts (Model 2), the effect of unemployment in the home district even increases. The average unemployment rate in the adjacent districts also has a significant negative impact on the probability of entering dual training. Beyond controlling for additional effects of the spatial levels we include interactions between the levels to describe a joint effect of regional unemployment. As a single AME is only valid if the covariates are held constant for all cases, it is not possible to simply sum up the interaction coefficients linearly (Norton et al. 2004). To give a precise interpretation, marginal effect plots are calculated. Figure 20 is based on Model 2 and shows AMEs for the impact of the average unemployment rate in the first neighbouring districts for specific plausible values of the unemployment rate in the home district. We find that a higher unemployment rate in the home region leads to an increase in the effect of the unemployment rate of the first neighbouring region.

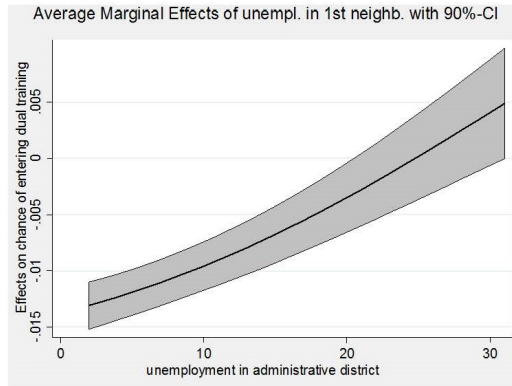
The observed interaction effect provides clear evidence for a variation in the search radius for dual training with respect to varying contextual conditions: in line with our third hypothesis we find that the impact of local unemployment in the home district is moderated by the unemployment rate in the neighbouring ring of districts. The higher the unemployment in the home district the more positive the effect of unemployment in the neighbouring districts. The effect of unemployment of the first neighbouring districts becomes insignificant when the unemployment rate in the home district exceeds 20 percent. It can be argued that the observed interaction effect refers to the discouragement of young adults: when unemployment is increasing in their own region, the effect of unemployment in their surroundings is decreas-

Table 8: Discrete time event history model for the transition to vocational training in the dual system after secondary schooling (observed within the first 3 years after school)

	Model 1	Model 2	Model 3	Model 4
Baseline1 year of school leaving (ref. 3 <sup>rd</sup> year after school)	0.062*** (0.015)	0.062*** (0.018)	0.062*** (0.017)	0.061*** (0.018)
Baseline2 1 <sup>st</sup> year after school leaving (ref. 3 <sup>rd</sup> year after school)	0.062*** (0.021)	0.062*** (0.024)	0.062*** (0.023)	0.064*** (0.024)
Baseline3 2 <sup>nd</sup> year after school leaving (ref. 3 <sup>rd</sup> year after school)	0.015 (0.035)	0.015 (0.039)	0.014 (0.039)	0.017 (0.044)
Unemployment information on regional level(s)				
Unemployment rate (district)	-0.010*** (0.002)	-0.016*** (0.003)	-0.009*** (0.004)	-0.016*** (0.005)
Average unemployment (1 <sup>st</sup> neighbour districts)		-0.008** (0.004)	-0.017** (0.002)	-0.013** (0.004)
Average unemployment (2 <sup>nd</sup> neighbour districts)			0.004 (0.001)	
Age-specific population information on regional level(s)				
Change in 15-18 year olds (district)	-0.007*** (0.007)	-0.008** (0.007)	-0.000024	-0.000035
Change in 15-18 year olds (1 <sup>st</sup> neighbour district)		-0.004 (0.015)	0.001 (0.016)	0.004 (0.021)
Change in 15-18 year olds (2 <sup>nd</sup> neighbour district)			-0.008	
Year (1999-2006) (ref. 2007-2011)	-0.019*** (0.023)	-0.019*** (0.022)	-0.014*** (0.022)	-0.017*** (0.022)
Personal information				
Sex (Males)	0.117*** (0.016)	0.119*** (0.016)	0.114*** (0.016)	0.114*** (0.017)
Dropout without certif. (ref. lower sec.)	-0.001196	-0.052** (0.027)	-0.055** (0.028)	-0.053** (0.028)
Intermediate secondary certif. (ref. lower sec.)	0.108*** (0.018)	0.107*** (0.017)	0.108*** (0.017)	0.109*** (0.018)
Parents have intermediate school degree (ref. no/lower school degree)	0.068*** (0.021)	0.073*** (0.021)	0.078*** (0.021)	0.073*** (0.023)
Parents have university entrance diploma (ref. no/lower school degree)	-0.130*** (0.022)	-0.129*** (0.021)	-0.127*** (0.021)	-0.127*** (0.025)
Parents have vocational training degree (ref. no voc. degree)	0.061*** (0.022)	0.063*** (0.021)	0.058** (0.021)	0.060** (0.022)
Parents have university degree (ref. no voc. degree)	0.002 (0.037)	0.000 (0.040)	-0.001 (0.041)	-0.000 (0.041)
Immigrant background	-0.034*** (0.020)	-0.037** (0.020)	-0.040** (0.021)	-0.034** (0.019)
Unempl. home district * Unempl. 1 <sup>st</sup> neighb. district		0.001** (0.002)	0.001** (0.003)	0.001** (0.004)
Interaction terms				
Unempl. home district * Unempl. 1 <sup>st</sup> neighb. district			0.000 (0.001)	-0.002 (0.001)
Unempl. home district * Unempl. 2 <sup>nd</sup> neighb. district				0.002 (0.002)
Unempl. home district * interned. school certif.				0.011 (0.014)
Unempl. 1 <sup>st</sup> neighb. district * dropout				0.016** (0.022)
Unempl. 1 <sup>st</sup> neighb. district * interned. school certif.				0.004 (0.021)
Unempl. home district * Unempl. 1 <sup>st</sup> neighb. district * dropout				-0.00011
Unempl. home district * Unempl. 1 <sup>st</sup> neighb. district * interned. school certif.				
(Mc Fadden's) Pseudo R <sup>2</sup>	0.1547	0.1571	0.1581	0.1688
LR	1726.07	1783.76	1794.33	1810.38
N person years (n persons)	3,970 (2,144)	3,970 (2,144)	3,970 (2,144)	3,970 (2,144)

\*p<0.1, \*\*p<0.05, \*\*\*p<0.001; Presented are average marginal effects (AMEs); Clustered standard errors in parentheses; Data: GSOEP 2012, Federal Labour Office 2014, Federal Statistical Office 2014, own calculations;

Figure 20: AMEs (Model 2) of unemployment rate in 1<sup>st</sup> neighbouring districts on the relative chance of entering dual training for specific values of unemployment in home district (with 90%-CIs). Data: GSOEP, Federal Employment Office, Federal Statistical Office

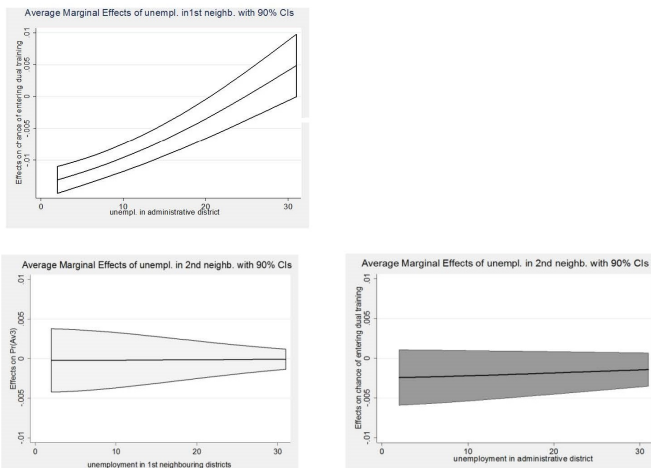


ing because educational alternatives - alternatives to an apprenticeship in the dual system - become more and more relevant. In addition, districts with unemployment rates higher than 20 percent - within the observation period between 1999 and 2011 - are found exclusively in East-Germany. Due to a low population density these districts are often larger than districts in West-Germany. In these large and rather rural districts with high rates of unemployment the commuting distances can be considered very large, so that, again, rather than finding a training position in the home district young adults opt for other educational alternatives, e.g. school-based vocational training, or further general schooling.

In a next step controls for unemployment in the second-order neighbouring district and a three-way interaction between unemployment in home district and first and second neighbouring ring are included in Model 3 to further explore the spatial structure of the unemployment

effect. This specification represents the idea of a stepwise extension of the search radius for a training position when the conditions in the close-range area are poor. While results for the home, the first neighbouring districts, and the interaction between them remain almost unchanged compared with Model 2, we find that the second neighbouring level does not provide significant results (Figure 21). Changes in the unemployment rate in home or first-order neighbouring districts do not impact the influence of unemployment in the second-order neighbouring districts on the relative chance of entering dual training. The conditional effects are almost zero and not significant. The spatial extension that impacts on the transition chances seems to be on average limited to the home and the direct neighbouring districts. Unemployment in further remote areas has no impact on the transition to training.

Figure 21: AMEs (Model 3) of unemployment rate in the 2<sup>nd</sup> neighbouring districts on the chance of entering dual training for specific values of unemployment rate in home district (*left*) and 1<sup>st</sup> neighbouring districts (*right*) (with 90%-CIs). Data: GSOEP, Federal Employment Office, Federal Statistical Office



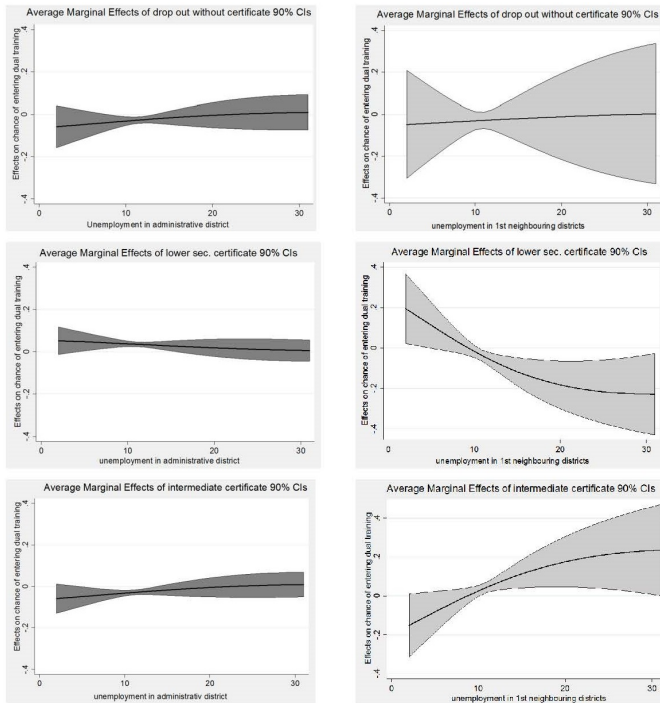
Beyond unemployment effects we find negative effects of the population variable for the home district. We argue that an increasing number of young adults of the same age increases the competitive pressure and decreases training chances. Also, we find significant effect for the time variable. This can be interpreted as additional indirect evidence for the importance of the macro-economic situation for individual chances of entering training. One explanation for the time effect is the general relaxation of the labour and training market in recent years (see Figure 19). These cyclical trends lead to an increasing total net supply of training positions (BMBF 2012). The time effect remains significant even when controlling for unemployment on several levels, suggesting that there might be more indicators than just regional unemployment as predictors for the economic situation.

With respect to the individual control variables the findings are consistent with previous research: chances of entering dual training are considerably higher for graduates with an intermediate certificate compared with a lower secondary certificate. Dropouts have the lowest chances of entering an apprenticeship programme. We find that school leavers of immigrant origin have lower chances of entering dual training.

In line with the argument of status reproduction we find that chances are higher when parents have an intermediate school certificate and are at occupational qualification level. In our second hypothesis we argue that the impact of unemployment on the chance of obtaining a training position is not equal to these personal variables. Especially young adults with low or no school certificates are expected to be more strongly influenced by poor regional conditions. Model 4 includes interaction effects between unemployment rates and school leaving certificates.

As our results on the relevant spatial extension of the socio-economic context indicate that the second-order neighbouring districts have no

Figure 22: AMEs (Model 4) of school leaving certificate [drop out without certificate (*first row*), lower secondary certificate (*second row*), intermediate secondary certificate (*third row*)] for specific values of unemployment in the home and the 1<sup>st</sup> neighbouring districts (with 90%-CIs). Data: GSOEP, Federal Employment Office, Federal Statistical Office



impact on training chances, Model 4 only focuses on home and first-order neighbouring districts. To illustrate the results we provided marginal effect plots for the three different types of school leavers - drop-outs and graduates with lower or intermediate secondary degree - for specific values of unemployment in home and first neighbouring dis-



tricts (see Figure 22). Unemployment rates in the neighbouring districts especially interact with school leaving certificates. While graduates with lower secondary (*Hauptschule*) certificates experience decreasing chances with increasing unemployment in adjacent districts, intermediate (*Realschule*) graduates' relative chances to enter dual training increase with higher unemployment. The interaction between school certificates and the unemployment rate in the home district point in the same direction but are weaker. Contrary to our expectations we do not find these effects for dropouts. Potential explanations are that catching up on a school qualification is the most important educational alternative for dropouts and direct transitions to training are generally highly unlikely. Results could also be underestimated due to the small number of cases in this category. As expected students with lower certificates are negatively influenced by high unemployment on regional level(s) and intermediate graduates have comparably better chances when unemployment is high. We argue that shortages in dual training opportunities are caused by poor economic conditions in the region that lead to increased competitive pressure for training positions. Lower qualified students are particularly affected by this.

### 5.3.8 Conclusions

On the basis of contiguity matrices, we calculated concentric rings of administrative districts to illustrate the contextual radius that impacts young adults' vocational training chances. We have applied this flexible concept of spatial modelling to analyse the impact of unemployment on transitions to dual training after lower and intermediate secondary schooling in Germany. In terms of the educational outcome we could show that it is not sufficient to only focus on the political districts where youngsters live in. Regional unemployment on several levels of aggregation - district and neighbouring districts - has a negative impact on the chance of entering the dual system. Our findings

clearly suggest that it is promising to take the spatial structure of indicators that are assumed to influence individual life events into account. We find that fixed administrative units, e.g. the districts where the respondents live do not adequately represent the spatial context where unemployment effects on the transitions to training should be measured. The radius in which labour-market conditions influence training chances includes the home district as well as the directly adjacent districts. In contrast to this, the second-order neighbouring districts seem to be too remote to affect transition chances.

Moreover, the spatial units interact with one another; the higher the unemployment rate in the home district the lower the impact of unemployment in the surrounding districts. This finding can be interpreted as a reduction of the search radius when unemployment is high in the close-range area, which can be traced back to the discouragement of young adults in search for vocational training: due to the poor economic situation in a region and the insufficient provision of training places school graduates' rather opt for educational and vocational alternatives (e.g. school-based training or further schooling), instead of extending their search radius. Also, we see that regional unemployment increases the competitive pressure among training applicants, which leads to lower chances for low-qualified graduates when unemployment on the regional level(s) is high.

Especially with respect to the fact that the transition to vocational training in the dual system is a two-folded process including both applicants' and employers' decisions, additional research steps should engage in disentangling the two sides of the decision making process: It is known that the (regional) economic situation has an impact on employers' needs for apprentices. But rather than on the impact of contexts on employers' willingness to train, our focus is on the decision making process of young school leavers and on the question of

how and where contextual settings influence these decision and transition processes. It is argued that graduates' educational decisions - their evaluation of success probability, costs and benefits - are shaped in a rather close-range by peers, parents and neighbours etc.. Moreover, the perception of labour-market chances is influenced by media coverage, which can be located in a rather wide spatial range. The provision of training places, on the other hand, is located in a commutable area. We argue that the two sides of the assumed effects point in the same direction and we can generally confirm that higher local unemployment leads to lower transition chances. Focusing on the impact of regional labour-market conditions on school graduates aspirations and wishes before the actual transition takes place is one way of separating supply- from demand-side effects. This would further explain the effect that contextual settings have on individuals' transitions to vocational training.

Another issue for future research is to analyse to what extent unemployment effects can be traced back to cyclical fluctuations rather than structural differences between regions. While controlling for the regional conditions we still find that the time in which a transition takes place influences training chances. This finding suggests that there are not only regionally effects but also temporally distributed effects of demand and supply. Moreover, direct effects of unemployment on individual transitions can be assumed to have greater relevance with the approaching individual labour-market entry. This implies that increased attention should be given to the consequences of labour-market conditions when studying the labour-market entry of young people finishing VET, also in terms of spatial patterns.

To conclude, the spatial reference of contextual characteristics is a relevant subject for sociological research that has so far received little attention. Our results implicate that research on the impact of contextual settings on individual life events should not be limited to a fixed

structure of proximate contexts. It is of relevance to theoretically raise and discuss the question of where to locate a relevant contextual setting with respect to the theoretical mechanisms. It seems useful to empirically overcome spatial limitations of fixed aggregation units by introducing advanced spatial measurement techniques and adequate data sources. Practically, our results implicate that training advertisements and the allocation of supply and demand of training positions can and should not be limited to individual requirements and administrative structures but should instead be much more tailored to specific local situations.

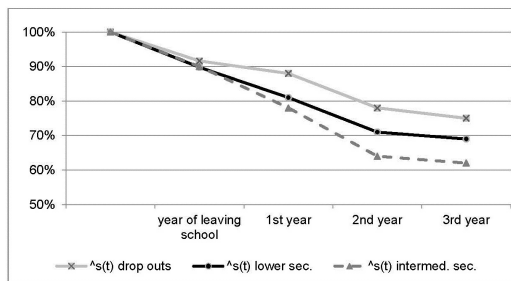
## Appendix

Table 9: Descriptions of independent model variables on individual level

Variable	Category	Percentage
Sex	male	53.1%
	female	46.9%
School certificate	drop out without certificate	11.2%
	lower secondary certificate	34.9%
	intermediate secondary certificate	53.9%
Parent' school certificate	no/lower secondary certificate	42.9%
	intermediate certificate	46.5%
	university entrance diploma	10.6%
Parents' vocational education	no vocational training	18.2%
	vocational training	70%
	university degree	11.8%
Migration background	immigrant of 1 <sup>st</sup> or 2 <sup>nd</sup> generation	19.1%
	natives	80.9%
<b>Total</b>		100 (N=2,144)

*Data: GSOEP 2012, own calculations*

Figure 23: Survivor function for different groups of school leavers (drop outs, lower secondary school graduates and intermediate secondary school graduates) to enter dual training within the first 3 years after school completion



## 6 General Conclusion

This dissertation dealt with the importance of local and regional socio-economic characteristics for the formation and consequences of educational and occupational aspirations. It was introduced by a theoretical framework that developed a general definition of individual educational and occupational aspirations and depicted possible pathways for how contextual characteristics, including local and regional factors, can affect them across the individual life course. Two empirical studies addressing educational and occupational aspirations as well as a study on the transition from general schooling to vocational training aimed to provide examples for the application of this general approach and give first insights into the empirical importance of local and regional factors for individual aspirations at the stage of secondary school completion. Table 10 gives an overview of the studies' aims, methods, and main results. In general, my co-authors and I could identify several theoretically expected associations. While what is known as a positive academic environment in close neighbourhoods positively affects young people's general educational aspirations, the regional socio-economic situation has a clear impact on prospective school graduates' career planning. It is related to different dimensions of their educational and occupational aspirations as well as to their objective behaviour in the form of fulfilled transitions.

All three studies follow the four fundamental questions formulated in the Chapter 1:

- What are the general underlying mechanisms that account for the impact of local and regional contextual characteristics on inequalities in educational and occupational aspirations (of young people at the end of secondary schooling)?

There are only a few studies - particularly in German contexts - that link educational and occupational aspirations to neighbourhood con-

Table 10: Summarised results of empirical contributions

Title	Central variables	Data	Methods	Results
<b>Study 1: Favourable educational living environment and educational aspirations to attend higher education</b>	- aspirations to attend higher education (dep.) - % of university graduates in the living environment (ind.)	- GSOEP (individual) - microm (context)	- flexible aggregation - linear probability model - multilevel modelling	- positive association - effect only if parents have no higher education
<b>Study 2: The relevance of regional socio-economic conditions for educational and occupational aspirations at the end of secondary school</b>	- status and security related occupational aspirations (dimension 1+2) (dep.) - aspirations for general education (dimension 3) (dep.) - regional socio-economic situation (ind.)	- NEPS-SC4 (individual) - Federal Employment Agency (context)	- unemployment rate decomposition - linear probability model - linear regression - SEM	- no effect on dimension 1 - positive effect on dimension 2, only if parents have no higher education - positive effect on dimension 3, stronger for low sec. school
<b>Study 3: Spatial structure counts: The relevance of regional labour-market conditions for educational transitions to vocational training</b>	- transition to dual vocational training (dep.) - regional unemployment rate (ind.)	- GSOEP (individual) - Federal Employment Agency (context) - Federal Statistical Office (context)	- flexible aggregation - discrete time event history modelling	- negative association - effect of surrounding districts lower if unemployment in own district higher - especially school leavers with lower certificates negatively influenced

ditions. In contrast to what is common in “classic neighbourhood research“, *study one* aimed to reveal individual theoretical mechanisms rather than measure the total importance of neighbourhood; in this example, the mechanisms were “collective socialisation“ and “provision of relevant resources“. I therefore combined the selection of the contextual indicator to be considered with a particular means of aggregation to satisfy my theoretical assumptions.

Furthermore, there are almost no studies that link educational and occupational aspirations directly to regional labour-market conditions. This is all the more surprising because the “discouraged workers” thesis explicitly argues in favour of such relations. Directly linking regional socio-economic conditions to individual aspirations is an important step to validating the general assumptions of the “discouraged worker“ hypothesis. These general assumptions were further supported by the results of *study three* in this dissertation.

In this respect this dissertation can be seen as innovative in two respects: from the perspective of neighbourhood research as well as from the perspective of research on the importance of socio-economic macro-conditions.

- What are appropriate techniques for measuring these effects? In particular: how to theoretically locate and empirically replicate the area where the assumed mechanisms are expected to be at work?

One of the main aims of the presented studies was to theoretically allocate the spatial reference of the assumed effects and to empirically prove these assumptions. In *study one*, small-scale contextual data was used to apply the ego-centred concept of aggregation to the close living environment in the form of circles with different areas. I limited the geographical range where these assumed effects are likely to be hosted to a radius of 1,000 metres, which corresponds to an area of 3 km<sup>2</sup> on average. Observed significant effects met my assumptions and



can be considered indirect proof for the assumed theoretical mechanisms at work and their spatial reference.

In *study three*, we calculated concentric rings of administrative districts to illustrate the contextual radius that impacts young adults' vocational training chances. Our findings clearly suggest that the effect of labour-market conditions on transitions (and supposedly on educational aspirations) has a clear spatial reference: the radius in which labour-market conditions influence training chances includes the home district as well as directly adjacent districts. In contrast to this, second-order neighbouring districts seem to be too remote to affect transition chances.

The application of flexible and overlapping areas to capture the effects of surrounding contexts is not new and has already been broadly applied, especially in human geography. However, this concept is much more rarely applied when dependent variables are measured on the individual level. Demonstrating such applications and dealing with the corresponding challenges was the main methodological contribution of this dissertation.

*Study two* did not directly deal with the correct localisation of contextual effects' spatial reference but tried to most appropriately operationalise contextual indicators once the spatial reference had been defined. For this reason, we applied the method of unemployment rate decomposition, which was developed in one of our preview studies. This enabled us to more appropriately capture persistent economic and structural regional differences by setting regional long-term trends in unemployment in relation to the general national trend.

- Are different social groups differently affected by local and regional characteristics in terms of their effects on educational and occupational aspirations?

One of the main purposes of all three papers was to evaluate whether different groups are differently affected by the contextual factors con-

sidered. In this respect, *study one* showed that the positive effects of a higher proportion of university graduates in the close living environment on young people's educational aspirations is stronger for students from lower status families.

In *study two* we found clear and complex group specific responses to the regional labour-market situation with respect to different dimensions of educational and occupational aspirations; concerning status-related aspirations, we found that students in lower as well as in intermediate school tracks are to an equal extent positively influenced by tense labour-market conditions. However, this only holds true for students from families with lower idealistic educational expectations. And with respect to general aspirations to stay in school, we found moderate influence of regional labour-market conditions for students in the intermediate school track while students in lower secondary schools were quite strongly affected by regional economic conditions. *Study three* also addressed interaction effects between earning a school leaving certificate and the regional unemployment situation, but with respect to (potential) fulfilled transitions to the vocational training market. The findings suggest that young adults with no school leaving certificate or one from a low track are expected to be more strongly influenced by poor regional economic conditions.

- Are educational and occupational aspirations important for actual educational and occupational success, and if yes, how does their role relate to the importance of factors aside from individual preferences and decisions?

This fourth objective has great importance for the development and consequences of educational and occupational aspirations in general; it has been argued that educational and occupational aspirations and their various dimensions and forms are primarily significant due to their possible effects on objective transitions and attainment. In this dissertation, only *study three* directly addresses one such transition.

Thereby, the importance of different educational preferences and aspirations was not directly empirically evaluated but only theoretically assumed; together with the regional opportunity structures, changing individual aspirations are one of two main theoretical explanations for the link between transition behaviour after compulsory school and regional labour-market conditions. However, it was not empirical possible to disentangle and quantify both potential parts of this effect.

In this respect, it seems necessary to discuss the rather weak explanatory power of the regional indicators in *study two*. We found that regional unemployment can have discouraging effects on young adults' motivation to quickly enter the labour market, but the importance of regional characteristics is subordinate compared to other factors. This also means that the effects of regional labour-market conditions on the actual transitions from school to training or work that we observe in *study three* are likely to be produced by contextual factors that shape objective opportunities regarding vocational education rather than by individual expectations and preferences. However, this is only an indirect conclusion.

In general, one of the most important questions in view of the obtained results is whether they can be interpreted in a causal way. In my argumentation, I have repeatedly stressed the role of theoretical mechanisms that produce the expected effects of local and regional factors on young people's educational and occupational aspirations. Such mechanism-based explanations necessarily imply a causal argumentation (Hedström & Ylikoski 2010). Gambetta provides one of the most popular definitions of theoretical mechanisms: "mechanisms have the form, "given certain conditions K, an agent will do x because of M with probability p." M refers either to forms of reasoning governing decision-making (of which rational-choice models are a subset) or to subintentional processes that affect action both directly (as impulsiveness) or by shaping preferences or beliefs" (Gambetta 1998: 102).

In this respect results obtained in the presented studies fit in this definition: there are individual agents that could be shown to change their preferences and behaviour under certain local and regional conditions with a certain probability. However, in all three studies the part containing the “because” and directly referring to the causal relationships was always only theoretically implied, without explicit causal inference.

There is broad discussion among researchers about how to provide causal inference in non-experimental designs (Morgan & Winship 2015, Holland 1986). It also has been called one of the most fundamental methodological problems in studies of geographical contextual effects that often only associations are observed while conclusions are presented as if they were about causal effects (Bernelius & Kauppinen 2012, Small & Feldman 2012). One of the main challenges is the problem of selection bias or the endogeneity problem (Hedman 2011, Galster 2008, Cook 2003); given a non-random selection of persons in each context, inference is not possible unless the researcher has prior information specifying the composition of reference groups. The prospects for inference critically depend on the relationship between the variables that define reference groups and those that directly affect outcomes (Manski 1993). Inference is difficult to impossible if these variables are functionally dependent. There is also only a small probability that the individual dataset used will provide all of the information necessary to control for possible self-selection behaviour; in many cases, the researcher is not even aware of every process that can affect self-selection.

Many techniques of causal analysis have been developed. Some techniques like fixed-effects models require longitudinal data allowing for the study of the temporal ordering of events in order to establish causal relationships (Morgan & Winship 2015). Other techniques like instrumental variables can be applied using cross-sectional data (Angrist & Kruger 2001, Angrist et al. 1996), but only if the researcher has

enough information on the contextual level to build suitable constructs. In general, there is no evidence that theoretical argumentation is subordinate to the statistical techniques of causal analysis. On the contrary, and especially from the standpoint of methodological individualism, sociologists have strongly criticised the position that statistical techniques can per se provide adequate causal explanations of social phenomena. Such techniques can show only relations among variables, not how these relations are actually produced through the actions and interactions of individuals (Goldthorpe 2001). For example, theoretical knowledge that there is a mechanism through which X influences Y supports the inference that X is a cause of Y. On the other hand, the absence of a plausible mechanism linking X to Y gives us good reason to be suspicious about the relation being a causal one even if it is statistically valid (Hedström & Ylikoski 2010). However, this is not an argument against the usage of appropriate techniques of causal statistical analysis. Rather, the right statistical techniques have to be combined with substantiated theoretical assumptions in order to interpret results in causal ways:

In *study one*, only cross-sectional information on individual aspirations and contextual characteristics was available. There also was only one contextual variable aggregated on the small-scale level, so it was not possible to compute instrumental variables. It has, however, been argued that we can use different geographical definitions of the living environment to test assumptions about underlying theoretical mechanisms. Given general expectations about which theoretical mechanisms unfold their impact within which spatial reference can serve as an indication of the theoretical mechanisms that are actually at work. In this respect, my results aligned with my theoretical assumptions. The observed interactions with individual characteristics also followed the expected differences in how different groups respond to the local situation. However, it was not possible to reach a final conclusion on whether it is exactly the academic background of one's peers that

elicits the observed effect because it remains possible that different theoretical mechanisms with a similar spatial reference are working at the same time and in the same direction. Furthermore, expected theoretical pathways like collective socialisation and provision with relevant resources do not necessarily require that a person's peers had experience with higher education.

In the *second study*, we had to deal with cross-sectional data on the individual level. Furthermore, the selection of economic indicators on the contextual level did not include variables that could be used as appropriate instrumental variables. Again, however, the results perfectly fit the theoretical pre-assumptions. In particular, the observed interaction effects between parents' aspirations and attended school track align with assumptions about the subjective decision-making process. In the *third study*, we argued that the effects of regional unemployment on actual educational transitions can be produced via two kinds of mechanisms: by individual educational aspirations and preferences and by objective regional opportunities with respect to the situation on the vocational training market. The design of the study made it impossible to disentangle these two theoretical paths. GSOEP has no sufficient indicators on individual aspirations and preferences that could be controlled for or used as mediator variables. Theoretically, we can expect that the association between regional unemployment and regional opportunity structures is not causal and that unemployment is instead an indicator of the general economic situation in a given region; this is in turn one variable that affects the readiness of companies to provide vocational training positions. In contrast, the link between individual preferences and regional unemployment can be assumed to be of a more causal kind: unemployment is visible and noticeable information that individuals use to evaluate their future opportunities in decision-making situations. This assumption also refers to *study two*. The strongest evidence for this assumption in our results is the interaction effect between unemployment rates in one's own and

(close and more distant) neighbouring regions; this interaction effect provides clear evidence of a reduction in the individual search radius for dual training given a bad economic situation in the home region. This is in line with the theoretical mechanism of subjective discouragement among young adults.

This marks the first important point of the future research agenda: with respect to the fact that the transition to the labour and vocational training markets is a two-sided process including both applicants' and employers' decisions, additional research steps should engage in disentangling the two sides of this decision-making process. Focusing on the impact of local and regional conditions on school graduates' aspirations and wishes before the actual transition takes place would be one way of separating supply-side from demand-side effects. A further necessary step will be to relate these to objective outcomes in the form of transitions from school to vocational training or further general education. This will necessarily demand larger longitudinal datasets containing information on individual educational and occupational aspirations and objective transitions and allowing these to be linked to contextual time-series data. This is already possible with the data from the ongoing NEPS-SC4 panel study. Moreover, the proposed research design has potential for various international applications; in our studies, we considered a specific feature of the German education system with its strong focus on vocational training. With regard to future research, would be highly promising to adapt our analytical strategies to countries with comparable education systems (e.g. the Netherlands, Switzerland, Austria). In addition to that, similar effects can be expected at later transition stages (e.g. after completion of vocational training) where an alternative involving staying in general schooling does not exist and individuals might have to decide between tertiary education and direct labour-market entry. In this case, aspirations for tertiary education might represent an alternative to labour-

market entry in a socio-economic situation perceived as poor.

Another important aspect that can be addressed with longitudinal data is the development of educational and occupation aspirations. This aspect was discussed in the theoretical part of this dissertation but not addressed empirically. For example, new data from the NEPS-SC3 study provides information about different dimensions of pupils' educational and occupational aspirations from Grade Five onwards. With this data, we can observe when students start exhibiting different preferences according to their social background and contextual conditions. It is also plausible to expect that regional economic conditions become more important as the end of students' school years approaches and students have to evaluate their prospects on the labour market, while socialisation processes in immediate neighbourhoods have a stronger effect on younger children.

Another issue for future research is to analyse to what extent the effects of local and regional socio-economic contexts on educational and occupational aspirations can be traced back to cyclical fluctuations rather than structural differences between regions. For example, from a theoretical perspective, the “discouraging“ effect of regional unemployment found in *study two* could be caused by individual perceptions of the typical regional economic situation as well as by temporary, immediate economic conditions. Research on the link between regional unemployment and the transition into dual vocational training indicates that inter-regional variation of socio-economic conditions plays a greater role than temporary crises (Hillmert et al. 2017). The next step will be to evaluate whether this also applies to the underlying educational and occupational aspirations.

With respect to the analysis of the importance of the immediate neighbourhood environment for individual educational and occupational aspirations, the most promising developments concern not only the time series nature of new contextual data but also their level of aggregation. Contextual indicators aggregated on a very small level will provide



new opportunities for flexible operationalisation of local contextual conditions. Especially in Germany, access to small-scale geographical data has been largely restricted, and researchers have had to use costly and non-transparent products from private providers. The first steps to providing high quality small-scale regional data have been taken, for example, by the German census<sup>10</sup>. Additional possibilities to operationalise local conditions and their spatial references according to theoretical expectations and over time will allow more substantial conclusions to be made about the causal processes that shape individual educational and occupational aspirations.

To generally conclude, a refreshed perspective on individual aspirations introduces various scopes for application that might help us gain a deeper understanding of the process of educational attainment. It would be promising to systematically link socialisation-based with rational decision-based theoretical perspectives and to understand the formation and development of individual educational and occupational aspirations as a part of a general educational and occupational orientation and decision-making process that finds its realisation in the form of actual educational and post-educational transitions. Within this, it would be relevant and plausible to integrate several dimensions of aspirations that are simultaneously relevant at specific stages in the individual life course. In doing so, different contextual influences can be disentangled and their complex importance for the formation of individual educational and occupational preferences can be observed. Furthermore, directly linking educational and occupational aspirations and their implementations in the form of transitions will finally close the gap between theoretically assumed individual cognitive decision-making processes and objective educational attainment (at equal levels

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<sup>10</sup>[www.zensus2011.de](http://www.zensus2011.de)

of educational performance) and reveal the mechanism of the so called secondary effects of social background.

On the other hand, analysing the relevance of local and regional contextual conditions on aspirations has so far received surprisingly little attention in empirical research. Nevertheless, the spatial reference of contextual characteristics is a relevant subject for sociological research. The proposed general theoretical concept of aspirations does not differentiate between spatial and non-spatial contexts. It has, however, been argued that local and regional factors can be important for individual dimensions of educational and occupational aspirations at individual stages of the life course. In this case, the spatial dimension represents an additional challenge for researchers; it is important to make meaningful theoretical presumptions about the size and shape of relevant areas and to reproduce them using the geographical levels available empirical indicators are aggregated on. The conceptual considerations and empirical findings of this dissertation reveal that a deeper and more systematic engagement with the concept of spatial contexts and spatial effects as well as the integration of appropriate techniques of preparation and analysis for spatial data provide many opportunities to not only develop new research questions but also to revise possibly outdated ideas about the importance of local contexts for individual educational and occupational success.

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