

Longitudinal Perspectives on Ethnic Diversity and Social Cohesion

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Mass Media, Neighborhoods and Residential Mobility

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Stephan Dochow

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Supervision:

Prof. Dr. Michael Windzio (University of Bremen)
Prof. Dr. Céline Teney (University of Bremen)
Prof. Dr. Merlin Schaeffer (Copenhagen University)

Bremen International Graduate School of Social Sciences

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I. Introduction: Social Cohesion in Diverse Settings – Time for a Dynamic Research Agenda

I.1 Introduction and Motivation

In the past years, debates among researchers, pundits, journalists and politicians on the consequences of immigration to Europe became increasingly prevalent. One could say they became prevalent *again*, since the topic always was controversial. The best examples are the debates during and after the refugee crisis on how much immigration a nation can bear and the political disputes that followed. As an illustrative example, Horst Seehofer, the current German Minister of the Interior, Building and Community, recently claimed that the migration question is “the mother of all political problems” after images of extreme right-wing demonstrations featured prominently in the German news.¹

In the social sciences, a growing strand of research about the consequences of immigration was stimulated by Putnam (2007), who empirically demonstrates that social trust and other indicators of social cohesion are lower in ethnically diverse U.S. localities. This negative association between ethnic diversity and different measures of cohesion has since Putnam’s seminal paper reached the status of what can adequately be called a “stylized fact” (Hirschman 2016), an empirical regularity that lays foundations for and stimulates a host of empirical and theoretical work which tries to explain, contest and replicate the association (Hirschman 2016).

Putnam’s (2007) claim is not only about localities and their cohesiveness. He also links his empirical findings about local ethnic diversity to the question of whether

¹<https://www.zeit.de/politik/deutschland/2018-09/chemnitz-horst-seehofer-stellungnahme-kommentar> (accessed September 9, 2018).

immigration affects societal integration, and thus to a topic that is of interest to sociologists since the early beginning of the discipline (Durkheim 1972; Lockwood 1999; Portes and Vickstrom 2011).

Against the backdrop of this larger scholarly debate, the three studies that comprise this thesis provide fresh theoretical and empirical perspectives on the relationship between immigration, local ethnic diversity and social cohesion in the wake of Putnam (2007). The thesis can be seen as part of a broader research agenda that not only empirically investigates the association between neighborhood diversity and social cohesion itself (as in study III), but focuses on the processes that “surround” this association. One pillar of this agenda is a focus on processes of ethnic segregation and individual residential choice which create what is later measured as neighborhood ethnic composition (see study II). A second pillar moves the debate on social cohesion to higher levels of analysis by focusing on macro-level sources of group threat such as the national media (see study I).

This introduction provides a broad theoretical background for the three studies that comprise this thesis and sums up their main findings. In the remainder, I first define the most crucial concepts that appear in all three studies in sections I.2.1. In section I.2.2, I lay out a framework that distinguishes sources of group threat at different contextual levels. In I.2.3, I theorize on interactions between individuals in ethnically diverse neighborhoods, building on previous theoretical accounts from prior research. Section I.3 summarizes the three studies that make up the main part of this PhD thesis and shows how they build on one another, how they intersect, and where they deviate from one another. In my concluding discussion in section I.4, I lay out how to further pursue the outlined research agenda.

I.2 Theory and Concepts

This section provides a broad theoretical framework that serves both to structure the three studies comprising this thesis and to refine theoretical accounts that are prominent in research on the effects of ethnic diversity. I will first clarify the main concepts that will be used throughout this thesis. Then, I will analytically separate macro-level origins of group conflict from local level threats. I hope that this distinction allows researchers to specify theoretical mechanisms within group conflict accounts for specific geographical levels more clearly. In the third part of this section, I interpret already existing accounts on the association between diversity and cohesion on the neighborhood level by focusing on the type of interactions between neighbors these accounts imply.

Throughout this chapter I will refer to *figure I.1.*, which gives an overview over the different studies in this thesis, how they relate to the different concepts used in the single studies and to the bigger questions raised in this introductory chapter.

I.2.1 Main concepts: Social Cohesion and Immigration Related Ethnic Diversity

Social Cohesion: Explaining the cohesion of societies is the holy grail of sociology from the very early beginning (Durkheim 1972; Lockwood 1999). Thus, it is no surprise that this topic still features prominently in current sociology (Chan, To, and Chan 2006; Schiefer and van der Noll 2017). This is also apparent in the more specific debate on social cohesion and immigration that presents the backdrop of this thesis (Portes and Vickstrom 2011). Here, I want to briefly clarify my conception of social cohesion.

I mostly follow Schiefer and van der Noll (2017: 592) in their definition of social cohesion: “The essential elements of social cohesion are social relations,

identification, and orientation towards the common good. Subsequently, we define social cohesion as a descriptive attribute of a collective, indicating the quality of collective togetherness”.

Social cohesion might be distinguished by the relevant actors that form the “collective” that is more or less cohesive, and the collective’s geographical scale. First, I use the term *societal integration* to refer to cohesion on the level of nations or societies. I use this rather abstract conceptualization of social cohesion mostly in the theoretical elaboration here in chapter I. Second, I refer to *neighborhood social cohesion* when I discuss theoretical approaches or research findings that pertain to neighborhoods or regions in particular or *local social cohesion* for geographical contexts that also include bigger contexts such as districts. To some degree this distinction matches with the more elaborate distinction between social integration and system integration by Lockwood (1999).

I conceive of societal integration as a macro-level emergent property that results from interactions between individuals (Mäs 2018) in small scale contexts and between societal sub-systems (Lockwood 1999). The notion of emergence implies that it is not possible to infer the state of integration of a society by merely looking at its single members, but it develops out of their interactions (Mäs 2018). As an example, consider Durkheim's (1972) idea of organic solidarity, one influential attempt to capture what is behind societal integration. It is sustained by the dependencies between individuals who engage in more and more fine-grained division of labor. That is, it emerges from the interactions and expectations between individuals.

In study I, my colleague Christian S. Czymara and I investigate how concerns about immigration change over periods with differing media coverage on immigration. Study I can thus be seen as an investigation of one specific element of societal cohesion, namely tolerance towards minorities (Schiefer and van der Noll 2017),

given that concerns about immigration are indicative of attitudes towards ethnic minorities to some degree.

The process of emergence that leads to *neighborhood or local social cohesion* might be more tangible, as it depends on direct face-to-face interactions and thus is closer related to the relational element of social cohesion (Schiefer and van der Noll 2017). The effects and nature of interactions on the local level will be a re-occurring topic within this introduction.

Study II and III analyze outcomes that relate to the individual attachment to the neighborhood. For example, study III measures one aspect of neighborhood social cohesion directly: contact with neighbors and an assessment of the overall network between neighbors. Study II indirectly deal with the attachment of households to neighborhoods by investigating their probability to leave a neighborhood.

As a word of caution, I would like to note that social scientists might be able to measure variables that relate to the state of social cohesion at several levels (Chan et al. 2006; Janmaat 2011), but given the notion of cohesion as an emergent property, statistical measures of individual integration into specific units will only give tentative indications of the overall integration without capturing the relevant interactions that are behind societal integration. I will pick this issue up in the last section of the introduction.

Ethnic diversity: I use the term ethnic diversity, or just diversity, to refer to the composition of ethnic groups within a geographically confined region. Ethnicity is defined following the Weberian definition by Wimmer (2013: 7): “ethnicity is understood as a subjectively felt belonging to a group that is distinguished by a shared culture and by common ancestry”.

The motivation to explore the effects of contextual characteristics such as the ethnic composition is that they describe the social environment of individuals. This

environment is then expected to affect outcomes like individual prejudice or social cohesion through a variety of mechanisms. On the contextual level of neighborhoods, ethnic diversity is likely to capture mechanisms such as everyday exposure, competition or contact with other groups (see section I.2.3). These can be subsumed under the heading of “social-interactive mechanisms” of neighborhood effects (Galster 2012: 25).

One issue that arises when operationalizing ethnic diversity is whether statistical group compositions match with the everyday experiences of individuals.

For the purposes of many statistical analyses, including this thesis, the operationalization of ethnic diversity relies on “objective” group size measures of ethnic groups which are defined by either official statistical offices (for example based on citizenship from official administrative statistics as in study I), or on other external agents like private companies (as in study II and III). This implies that the categorization into different ethnic groups is in essence done by the actor who compiled the data.

To assess the consequences of local ethnic composition, it is useful to think in terms of ethnic boundaries (Wimmer 2013). An ethnic boundary is based on both, a classification into a certain ethnic group, that is perceptions of belonging or not belonging, and the fact that this classification involves behavioral consequences (Wimmer 2013: 9). In Wimmer’s ethnic boundary making approach, ethnic boundaries are amendable to change through a complex interplay of actions by individuals and collective actors and their opportunity structures (Wimmer 2013). That is, in contrast to the objective group size measures, ethnic boundaries within contextual units might change over time.

Under the assumption that a mechanism based on ethnicity is at work within a certain context, statistical diversity measures that rely on pre-defined ethnic categorizations are more likely to capture this mechanism when the ethnic groups for which population size is available are groups that exhibit strong ethnic

boundaries in real life. In other words, the more the statistical measure of diversity and the subjective perceptions of salient group boundaries in everyday life align, the more the statistical measure can be expected to yield an effect in line with a mechanism that is based on perceptions of ethnic differences.

For the purpose of this introductory paper, I subsume different operationalizations of ethnic composition under the heading of ethnic diversity. In many of the reviewed studies that resemble that of Putnam (2007), “ethnic diversity” is often measured with the Hirschman-Herfindahl index (Hirschman 1964). This index takes both the proportion of groups in a population and the number of groups into account. In the three studies that comprise this thesis, I instead rely on ratios of some ethnic minorities to the overall population within the geographic unit. I do so mostly to capture adequately the out-group contact opportunities of the native group, instead of relying on the “color-blind” diversity index (Abascal and Baldassarri 2015). However, it should be noted that indices of diversity and mere group share measures, as I use them, strongly overlap in the German case (Schaeffer 2013a).

Furthermore, the scale of the geographical unit where diversity is measured is central to the mechanisms that can be assumed to follow from this variable. The three studies in this thesis vary in the contextual unit at which diversity is measured from the neighborhood level (study II and III) to the regional/district level (study I). The neighborhood level might be particularly well suited to study everyday exposure or encounters between ethnic groups. However, selectivity through residential mobility might be pronounced, and must be carefully investigated before turning to the estimation of neighborhood diversity effects (see study II).

On higher contextual levels than the neighborhood, such as wider regions, selection effects might be lower, but diversity measured at such contexts might conflate different mechanisms that add to those of everyday exposure. For example, if ethnic diversity is high but the ethnic groups are highly spatially segregated, we cannot easily assume everyday contact between ethnic groups as one mechanism leading

from regional diversity to local cohesion (Sturgis et al. 2014; Uslander 2011). On even higher levels, like the nation state, a measure of ethnic diversity might not capture everyday experiences between ethnic groups at all and group size might lose its theoretical appeal (see section I.2.2).

I.2.2 The Contextual Layers of Group Conflict

A large stream of social scientific research on prejudice against ethnic minorities or local social cohesion is centered around the hypothesis that the larger the relative group share of ethnic minorities in an area, the more the ethnic majority reacts with prejudice which might further translate into acts of discrimination against ethnic minorities. This is what I will call the “*local conflict hypothesis*”.

This hypothesis is rooted in theoretical frameworks which go under the names of racial threat or power threat (Hopkins 2010), conflict theory (van der Meer and Tolsma 2014) or competition and group threat theories (Schaeffer, 2014: 38). In the sociological tradition, this line of studies can be traced back to early work by Blalock (1957, 1967), who stressed the importance of minority group size to explain anti-minority prejudice. Generally, the theoretical argument of these sociological studies is strongly related to theories in the tradition of realistic group conflict from social psychology (Esses, Jackson, and Armstrong 1998; Stephan, Renfro, and Davis 2009), because they explain prejudice towards certain groups, or its consequences, by referring to feelings of *threat* which are triggered by perceptions of zero-sum competition between groups for valued resources (Bobo and Hutchings 1996).² Originally developed to explain prejudice and discrimination, these theoretical

² Blumer (1958) is also often cited in this regard, presumably because he stressed proprietary claims on part of the ethnic majority and the perceived threats posed by the ethnic minority concerning these claims. These claims might indeed be assumed to be threatened by group size, though as I will note below, Blumers scope was generally more broad and not focused on local demographics and interactions.

assumptions have been extended to explain lower local social cohesion in diverse areas of various sizes (van der Meer and Tolsma 2014; Schaeffer 2014).

In fact, there are good reasons to expect realistic group competition between ethnic groups at the local level such as the neighborhood. For example, the early experiments that had a strong influence on the development of theories of realistic group conflict were conducted in small scale localities (Sherif et al. 1988) and also recent experimental or quasi-experimental studies show results in line with the local group conflict account in small scale contexts (Enos 2014, 2016). In the next section, I will take up this account in an attempt to more clearly specify the mechanisms at work at the neighborhood level.

Here, I propose to distinguish this local conflict account from a higher order threat account that focuses on determinants that are beyond characteristics of local environments such as the neighborhood (see also Pettigrew, Wagner, and Christ 2010). These determinants are not only found on higher contextual levels than regions or neighborhoods, but, as I will argue, they are also less likely to be captured by variables of ethnic composition.

Stressing such higher order sources of tensions between groups or within ethnic groups is important for two strands of research: Research that asks for the links between increasing immigration and societal integration and research within the local group conflict paradigm. Concerning the first strand, taking into account macro-level sources of group conflict is important because these sources affect those who are *not* exposed to ethnic diversity themselves. Thus, the dynamics triggered by higher order sources of group conflict might be of more relevance for societal integration than the experiences of those ethnic majority members that actually live in diverse localities. Research arguing within the group conflict account to explain prejudice or lower local cohesion could benefit from a focus on higher order sources of threat to explain where *collective* feelings of threat, or “group threats” as opposed to “individual threats” (Stephan et al. 2009) originate from.

These higher order sources of threat can be either found in historically formed macro-level group relations or meso-level societal sub-systems like national media coverage or political actors. The notions discussed within this section can also be found on the left side of figure I.1, which illustrates the main concepts and contextual levels of the three studies in this thesis and serves as a guide through the thesis.

That group relations are complex product of past aggregate experiences is acknowledged in Blumer's (1958) theory of race relations (see also Bobo and Hutchings [1996]). The "sense of group position" that according to Blumer drives prejudice and discrimination against ethnic minorities is a "historical product" (Blumer 1958: 5). It exists on the group level and relatively independent of individual sentiments and experiences. One example of such historical circumstance could be group histories marked by exclusion and ethnic closure which create strong ethnic boundaries in terms of value differences (Wimmer 2013: 174ff). "Big and slow moving" social phenomena, like these historically grown group relations, are difficult to grasp with current methods in social science (Pierson 2003). In empirical research, they are thus often treated as exogenous factors. For example, the choice of specific group share measures such as in study II and III could be justified by arguing that they match historically grown ethnic boundaries that guide behavior in everyday life. This is indicated in the left part of figure I.1: The historical roots of group relations are shown in grey, because they are assumed as exogenous and are expected to influence all other concepts in the graph.

The second, more variable higher order factors in turn include salient political rhetoric (Hopkins 2010, 2011) or the media (Boomgaarden and Vliegenthart 2009). Blumer (1958) recognized both as crucial factors in the formation of collective group positions. These influences stem from the meso-level, that is, specific subsystems within society, which impact individuals in their everyday life. For example, the realm of journalists can be considered a separate system from everyday interactions,

following its own logic (Windzio and Kleimann 2009). In study I, Christian S. Czymara and I show that the national media indeed presents a viable source of concerns about immigration, though with very different implications for different individuals (see left part of figure I.1). Another subsystem that affects public threats is the political realm. By speaking to a large audience, political elites also play a crucial role in this process of defining group positions (Blumer 1958; Hopkins 2011; Pettigrew et al. 2010).

Furthermore, I also argue that the prime sources of collective threat are not likely to be manifest in ethnic composition variables. In other words, assessing ethnic diversity at higher levels such as the nation state is not enough to measure the type of macro-level factors that I just described. Rather, I claim that objectively measured ethnic diversity becomes more and more theoretically negligible as a source of perceived collective threat the larger the geographical context. This is because the higher the level in the geographical contextual hierarchy, the less directly ethnic composition on this level translates into direct experiences of ethnic majority individuals, and additional information channels such as the media become necessary to explain sources of threat. Some evidence for this proposition is that individuals are quite good in estimating on average the share of minorities in the region they live in (Koopmans and Schaeffer 2015), but overestimate the share of minorities on the national level (Herda 2010). Further arguments in a similar vein are provided in study I.

Apart from systematizing research by the contextual level, the idea of higher order threats offers new perspectives on research on prejudice and social cohesion. Instead of assuming that demographic environments shape individual attitudes like the local conflict account, the macro- and meso-level sources of group threat affect *all* ethnic majority members including those who are not exposed to ethnic minorities. Such a perspective is needed as discourses about migration can impact and mobilize members within the society at large, not only those exposed to diversity. This steers

our focus towards group formation processes *within* the ethnic majority through perceptions of collective threat that affect migration attitudes and ultimately societal integration.

One further drawback of the local conflict thesis is that individuals need to perceive of other ethnic groups as competitors in the first place in order to be able to explain why local ethnic composition affects attitudes towards immigrants (Hopkins 2010, 2011). It is indeed difficult to conceive of local encounters, such as those under the local conflict thesis, as something that happens on the group level without additional background assumptions about group boundaries. One could imagine many situations that trigger “individual realistic threats” (Stephan et al. 2009) through negative encounters with members of certain groups that in turn cause fear for one’s safety. However, these are foremost individual experiences. To perceive such negative encounters as group threats or perceive group competition that threatens the privileges of the collective in-group as claimed by theories underlying the local conflict hypothesis, individuals need to have internalized frames that let them interpret the situation as one that is related to ethnic boundaries, not individual experiences (Hopkins 2011: 506). This again shows the importance to take higher order sources of group threat into account.

The latter point was also recognized by Blalock, who notes that intergroup competition can only be high when “competitors perceive and act as though a coalition has been formed, so that potential competitors from one group are aligned against competitors from another, with rewards being allocated so of greater rewards than if they belonged to the losing coalition” (Blalock, 1967: 74). In other words, without existing ethnic boundaries that bound together “coalitions” of individuals, group competition and threat are unlikely to exist.

The aim of this section was to show that scholars interested in prejudice and social cohesion should also focus on macro- or meso-level dynamics that might explain why collective attitudes change over time (Blumer 1958). This is one reason I

include study I in this thesis, which deals with the effects of media coverage about immigration on concerns about immigration.

That being said, I do not agree with Blumer on “the relative unimportance of the huge bulk of experiences coming from daily contact with individuals of the subordinate group” (Blumer 1958: 6). Quite the contrary, I believe that analyzing the effects of neighborhood diversity adds much to our knowledge on living together in ethnically diverse settings. The goal of the next section is thus to carve out theoretical schemes to capture interactions in diverse neighborhoods. I will also come back to the *local* ethnic conflict accounts that I introduced in this section.

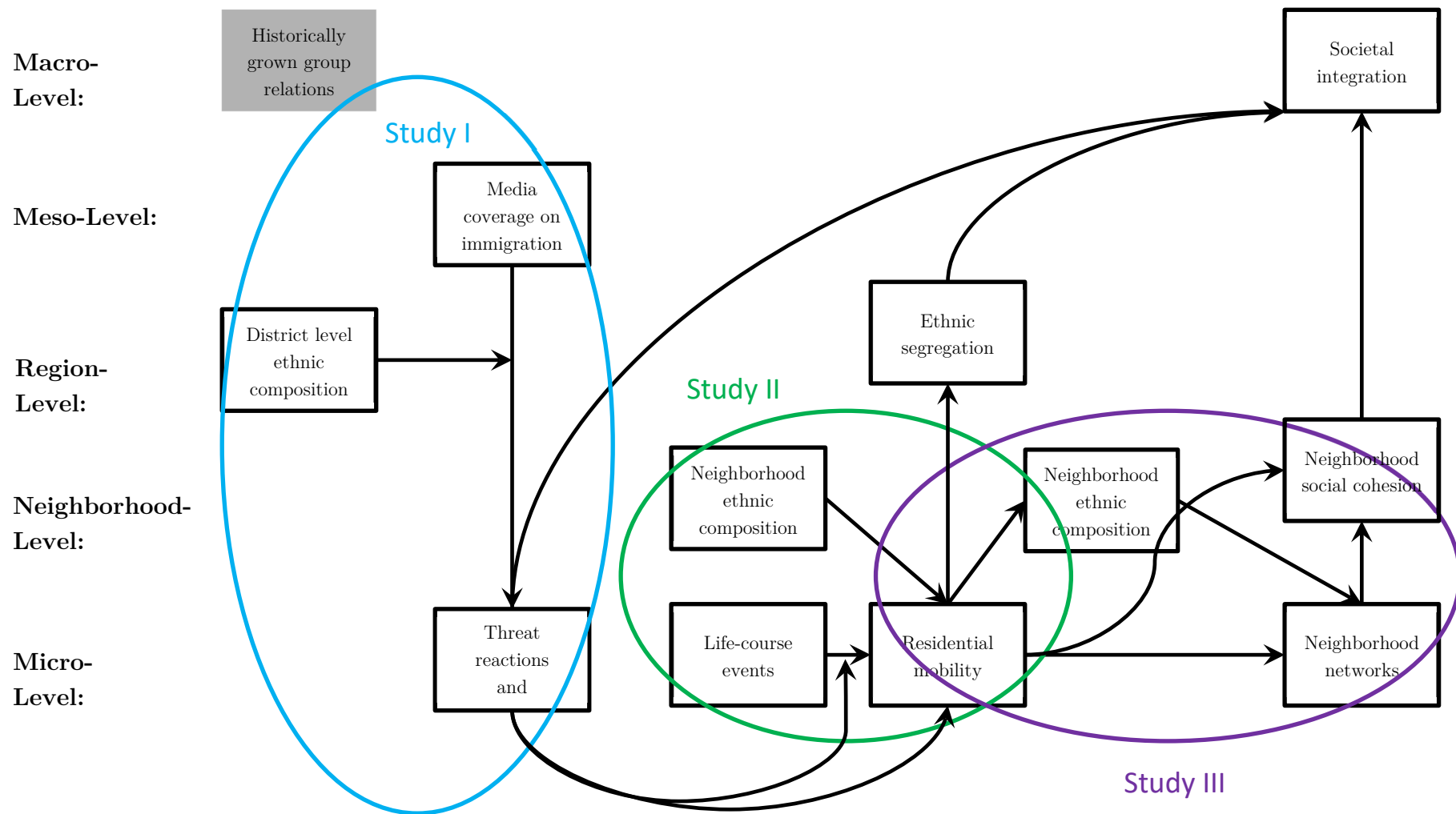


Figure I.1: Reduced representation of the thesis: Contextual levels, main concepts and theoretical relations (arrows) between the three studies. Note: Group relations are expected to affect all other concepts.

I.2.3 Theorizing Interactions in Diverse Neighborhoods

In the previous section, I primarily focused on threat perceptions that stem from the macro- or meso-level, such as the national media (left part of figure I.1). In this section, I turn to the site of my studies II and III which is the neighborhood (right part of figure I.1).

The following theoretical elaboration will mostly interpret prior theoretical approaches that aim at explaining the negative association between diversity and social cohesion. I have two aims: first, I want to specify how the interactions between ethnicities in neighborhoods under different theoretical approaches can be conceived in game theoretical terms. Second, I want to theorize on the consequences in terms of shared norms (e.g. collective efficacy) and networks within neighborhoods that these interactions likely have. I will also refer to literature from the long tradition of economic and sociological research about the emergence of social norms and conventions (Coleman 1990; Voss 2001). When discussing the last explanation, coordination dilemmas between ethnicities, I also introduce the notion of a “norm of indifference” in ethnically diverse neighborhoods. I refrain from making empirical assessments of different explanations because this has already been tackled by Schaeffer (2014) and Dinesen and Sønderskov (2018) and focus on theoretical implications.

A concept that matches with an everyday conception of what constitutes a “decent” neighborhood is Sampson's (2004) “collective efficacy”. It describes shared expectations about the possibility of collective action on part of the neighbors to provide certain public goods or to intervene in case of certain neighborhood problems. Collective efficacy is task specific (Sampson 2004: 160), and when I use the term neighborhood collective efficacy I mean a bundle of norms towards certain actions (by neighbors or third parties) that are shared by all neighbors. For example, one norm within that bundle could be that neighbors intervene in case they see a person litter the street.

Sociologists usually deem dense networks an important facilitator of the emergence of norms (Coleman 1990; Voss 2001). According to Sampson, a neighborhood must not be densely connected at all times to have high levels of collective efficacy. Rather, neighborhood networks can be activated in case they are needed for certain collective goals. However, collective efficacy still requires a certain degree of working trust and thus a certain degree of connectedness (Sampson 2004: 161). It certainly also requires a consensus on what the relevant problems of a neighborhood are (as I will argue when talking about ethnic preferences and anomie). In the following, I am interested in how norms towards certain tasks (in the sense of collective efficacy) emerge, and how neighbors form social ties with each other under different theoretical constellations.

The local conflict hypothesis (see I.2.2) basically assumes that individuals between different groups perceive a *zero-sum game* when interacting with another group (Bobo and Hutchings 1996). For conflict to develop within neighborhoods, the source of this competition should be found on the neighborhood level (Galster 2012: 25). Thus, in comparison to the higher order threat account introduced above, the local group conflict account assumes that feelings of collective threat endogenously follow from neighborhood ethnic composition. For example, the neighborhood could be seen as an arena of competition for housing or public space. One further resource that might also be subject to group competition from the view of the majority population is exclusive access to schools, which is often considered as one reason of “White Flight” (see study III).

This implies that neighbors should be generally unwilling to engage in social exchange or build ties with persons of another ethnicity, because gains of the other ethnic group are perceived as losses for the own group. According to group threat theories, already existing ethnic boundaries should get stronger because of the prejudice that arises from perceptions of threat due to competition (Bobo and Hutchings 1996). Newcomers would encounter a neighborhood marked by these

sharp boundaries and thus be unable to engage in inter-group interactions. For long term stayers it could even mean that they are less integrated in the neighborhood than newcomers because they have gone through a downward spiral of conflict, where both groups feel more and more disadvantaged (for qualitative evidence, Hanhörster [2000]). Neighborhood networks are expected to be ethnically segregated. It could even be that contact with the own in-group is higher in diverse neighborhoods than in less diverse areas (Sluiter, Tolsma, and Scheepers 2015). But despite the possibility of ethnically clustered, and probably dense, networks, the overall social cohesion would still be lower in diverse areas as in less diverse neighborhoods. This situation might lead to disassociation from the neighborhood in general, including the own in-group, because of lower neighborhood attachment and trust in all neighbors that results from overall disorganization in the neighborhood (van der Meer and Tolsma 2014).³

Research has shown that threat reactions to local minority composition depend on a variety of conditions, for example the location of the neighborhood in the ethnic topography of a city (Legewie and Schaeffer 2016) or rapid *increases* in short time periods coupled with political rhetoric that draws attention to these changes (Hopkins 2010). Furthermore, certain individuals are more likely to show threat reactions than others, for example depending on whether individuals have inter-group contact (Stolle et al. 2013). Qualitative evidence shows that native German established *long term inhabitants* express reactions in line with threat theory when their neighborhood undergoes changes due to the in-mobility of certain immigrant groups (Hanhörster 2000). However, despite the possibility of threat reactions due

³ In addition to local group competition proper, sometimes another mechanism that links local diversity to threat perceptions is mentioned that refers to the mere presence of the out-group, which might activate negative stereotypes (Enos 2014: 3700). This is indeed likely but prompts the question where these stereotypes come from: are they produced by interaction with ethnic others or do they originate from other sources? This might not matter for certain empirical investigations, but is certainly important as soon as one theorizes on the origins of neighborhood diversity effects.

to ethnic composition in neighborhoods under specific circumstances, it should be noted that, for the German case, the overall prevalence of threat is higher in regions with lower numbers of foreign citizens (Wagner et al. 2003; Weins 2011).

Another account of lower social cohesion in diverse areas focuses on cultural differences between groups: Through culturally determined and asymmetrically distributed preferences about neighborhood norms or behavior, cooperation is hindered (Schaeffer 2014: 43f). In my reading this is closely related to the anomie account which argues that through the diversity in cultural norms and other cultural differences in ethnically diverse settings, uncertainty about the way to appropriately behave between neighbors arises (van der Meer and Tolsma 2014). The similarity between the two accounts is that they both imagine situations where neighbors are unable to find a common normative consensus towards certain neighborhood tasks, let alone, on how the neighborhood community should look like.

From a game theoretical perspective, a good description for this type of situation is a cooperation dilemma, such as in the prisoner's dilemma. Here, the individual best response is not a consensus about preferable behavior with members of the other group (both cooperate), but rather to stick to the own cultural preferences or behavior (both defect). The cooperation dilemma is due to the fact that the perceived benefit from the own cultural behavior or norms is preferred over a cultural consensus with the other party and giving up one's cultural behavior when the other group does not is perceived as the worst outcome. This leads to a dilemma where everybody sticks to her own preferred cultural behavior, even if a cultural consensus on shared neighborhood norms would be better for all ethnic groups.

In a neighborhood characterized by this type of interactions, neighbors cannot find a consensus on how to behave towards certain neighborhood problems. This leads to a multitude of norms that are displayed by certain ethnic groups and a lack of shared norms on the neighborhood level. Thus, anomie (van der Meer and Tolsma

2014) as a situation of normlessness is an appropriate description for this situation. In such an uncertain environment it is likely that individuals retreat into their private sphere as suggested by Putnam (2007). This uncertainty should also spill over to individuals who recently moved in.

Note that this account obviously only holds for strong and essential cultural preferences that individuals hold more dear than a cultural consensus with the other ethnicity, and giving up these preferences is associated with higher costs than to cooperate by curling down one's preferences. Otherwise the dilemma situation would give way to something more like a coordination game. In these games there might still be differing preferences, but the situation is less "stuck" as in the cooperation dilemma situation (McAdams 2009).

A third possible explanation for lower social cohesion in ethnically diverse neighborhoods are coordination problems across ethnic boundaries due to cultural differences, for example differences in language or symbolic behavior (Schaeffer 2014: 45).

The logic of a pure coordination problem in game theory (Diekmann and Przepiorka 2016: 1312) implies that neighbors of different ethnicities do have shared interests, for example in providing support for neighbors in everyday life or building up relationships which could on aggregate result in rising collective efficacy. In some cases these interests might not perfectly align, like in a "battle of the sexes" game, but there still exist equilibria that are better for both parties than if they would not coordinate (McAdams 2009). When interacting with ethnic others, coordinating on a possible equilibrium might fail in a coordination game because, for example due to misunderstandings, at least one player might play the wrong strategy.

If we change from a one-shot situation to a scenario where the same individuals interact over time, classical game theory would predict that these neighbors should be able to solve the coordination problem with repeated interactions (Diekmann and Przepiorka 2016; Voss 2001). This is because once a Nash-equilibrium is

reached in the ongoing interactions, this solution becomes focal and thus the standard option in future interactions (Voss 2001). Unlike the cooperation dilemma situation there also exists no temptation to deviate from this equilibrium. Thus, conventions that solve coordination problems are path dependent on former interactions and their outcomes within the neighborhood (Voss 2001).

This raises questions about the conditions in ethnically diverse neighborhoods that might lead to an abruptness of the coordination process so that no stable conventions can be reached. I propose to search for an explanation for the abruptness of coordination by introducing a second type of actors who either have no interest in investing in neighborhood ties, or have high probability to move out of the neighborhood and thus can “leave the game”. I will call these individuals “short term stayers”. Thus, I assume not only heterogeneity in ethnicity, but also in the interest of investing in neighborhood ties, irrespective of ethnic group membership. In the language of game theory, short term stayers differ in their discount parameters from long term stayers (Voss 2001). Their incentive to not reciprocate ties, to not engage in neighborhood activities or not investing in collective efficacy is relatively high. This might be a common situation in urban environments, for example because households stay for a short period only, have no resources to engage in neighborhood contact or value the anonymity of the city over contact with their neighbors. Attempts of building up ties and coordinating interests with short term stayers fail or are not lasting very long.

The main idea behind the theoretical mechanism proposed here is that the presence of short term stayers is especially detrimental for coordination in ethnically diverse neighborhoods. Whereas in the homogenous neighborhood, a network among the long term stayers develops, the loss of neighbors through out-mobility or the non-reciprocation of ties weighs larger for the development of the neighborhood network in ethnically diverse neighborhoods. This is because there it is in general more difficult to build up, and thus to replace ties (Windzio 2018). That is, a loss of a

neighbor or an unsuccessful attempt of coordination is not easily replaced and the holes through unsuccessful tie formation in the neighborhood network stay longer. Game theoretical experiments show that even strong players who benefit from providing a public good curl down their efforts when other players are not taking part (Diekmann and Przepiorka 2016). Such a phenomenon of resignation among neighbors is what I also expect in the case of diverse neighborhoods. Over time individuals get used to this feeling of resignation and react with what might best be described as indifference towards the neighborhood.

In contrast to anomie, I assume that this indifference does not lead individuals to hunker down into their own private sphere through uncertainty due to normlessness, but leads them to curl down efforts that might benefit the neighborhood at large. Thus, a norm of indifference arises in ethnically diverse neighborhoods: a lack of shared responsibility for the public goods within neighborhoods.

Let me finish this section by noting that the coupling of research on neighborhood ethnic diversity effects and game theoretical foundations is a promising venture and should be further developed. The elaboration provided in this section might serve as a starting point.

I.3 Three Studies of Social Cohesion: A Brief Guide

In the following, I summarize the three studies that comprise this thesis. I will point to similarities and differences between them and relate them to the overall schematic theoretical framework suggested above. I start by noting the most important commonalities and core aspects of the single studies. These will re-occur when I go into further detail by describing each study in turn.

First, all studies are longitudinal in nature in different aspects and thus “dynamic” as the title of this thesis suggests. Concerning the data used, they all make use of

individual or household level panel data from the German Socio-Economic Panel study (SOEP). This longitudinal nature is a unique feature and constitutes one of the main contributions in all studies.

Second, study I and III share a focus on one specific ethnic group, namely native Germans, and their reaction to immigration related diversity. This focus is prompted by the fact that the ethnic majority is still central to the political processes within nation states (Wimmer 2013: 135), so questions of societal integration depend primarily on the actions of the ethnic majority and their reaction to immigration. In study II, I compare the residential mobility of German native and immigrant households in order to assess possible effects on residential ethnic segregation.

Third, all studies focus on different aspects of social cohesion. Study I can be best described as linking to societal integration by analyzing an outcome indicative of tolerance towards minority ethnic groups and thus a part of the concept of social cohesion (Schiefer and van der Noll 2017), and by showing that strong attitudinal divides in the population are created through mass media coverage on immigration. Study II relates to local social cohesion through the tendency of native German parents to act in ways that might be detrimental to neighborhood cohesion. The third study directly analyzes neighborhood embeddedness, and thus an aspect of local social cohesion.

Fourth, all studies include local ethnic diversity as one important independent variable. Note however that in the three studies this contextual characteristic is used very differently. In the first study, it acts as an important moderator for the effects of media salience on attitudes towards immigration. In the second study, it acts as a background factor that provides different incentives for action once a relevant life course event sets in. In the third study it is used as a main independent variable, together with time, in the statistical models developed.

Table I.1 shows all studies and their main characteristics on several aspects that are of relevance. Figure I.1 shows a schematic illustration of where the single studies can be located in the broader framework of this introduction.

Table I.1: Table of studies included in dissertation.

Study no.	Study I	Study II	Study III
Title	Mass Media and Concerns about Immigration in Germany in the 21st Century: Individual-Level Evidence over 15 Years	Parental White Flight? Neighborhood Ethnic Composition, Children and Residential Mobility in Germany	Neighborhood Ethnic Composition and Individual Neighborhood Embeddedness: The Role of Length of Residence
Authorship	Co-authored by Christian Czymara	Single authored	Single authored
Research question	Does exposure to media coverage of immigration related issues lead to higher worries about immigration in the general population? Which groups are especially prone to media effects?	Does having children lead ethnic majority Germans to leave diverse neighborhoods?	How does neighborhood embeddedness develop with the length of residence in neighborhoods of different diversity?
Findings	Media salience of migration related issues is strongly related to higher concerns about immigration. This relationship is strongly moderated by party preferences, education and the regional share of foreigners.	Having children increases the probability to move out of neighborhoods substantially more in diverse than in non-diverse areas. Households with migration background do not show such a tendency.	Households form relationships in diverse neighborhoods over time, but are less likely to perceive a close-knit community in diverse areas even after five years of residence.
Significance within thesis/ interpretation of results with regard to cohesion	Shows that meso-level background factors like media coverage are important drivers of migration worries, beyond objective demographic developments.	Shows that life course events on part of the majority population might have impacts on neighborhood cohesion. Also: Investigates sources of selective mobility and thus informs design of further studies of neighborhood diversity effects (e.g. study III)	Shows that Putnam's (2007) hunkering down claim might not be an appropriate description, but also that networks among neighbors in diverse are more anonymous. When taken together with prior studies: shows importance of distinguishing different cohorts of diversity dwellers

Outcome	Concerns about immigration	Probability to leave a neighborhood, share of minorities in the destination neighborhood	and what happened in the neighborhood's past. Neighborhood social embeddedness in the form of contacts with neighbors and relations among neighbors
Main explanatory variables	Media salience as measured by the number of articles on specific topics in German newspapers	Presence of new born children in the household and neighborhood ethnic minority share	Neighborhood ethnic minority share in interaction with time
Data	SOEP (2001-2015) + quantitative content analysis + official statistics on district level + statistics on immigration to Germany	SOEP (2007-2015) + microm neighborhood data	SOEP (2009-2014) + microm neighborhood data
Strengths and Contributions	First study employing a fixed-effects design for showing within-individual change due to media coverage. Harmonized data over a long time period. Periodically fine grained media salience measure.	Fixed-effects design with explicit sample restrictions targeted towards the effect of children. Analysis of potential timing of moves (newborn or pre-school age). Analysis of both migrant and native perspective.	One of the few longitudinal studies in the field. Focus on growth of embeddedness instead of static conception.
Limitations	Broad measures of media salience and attitudes, despite several robustness checks there might be issues of reverse causality between concerns and media	Small, undifferentiated sample of immigrant households, having children not a clear cut event	Short time frame: no analysis of long term stayers
Publication status	Published in European Sociological Review: https://doi.org/10.1093/esr/jcy019	Working paper, prepared for soon submission	Working paper, prepared for soon submission

I.3.1 Study I: Mass Media and Concerns about Immigration

In Study I, “Mass Media and Concerns about Immigration in Germany in the 21st Century: Individual-Level Evidence over 15 Years”, Christian S. Czymara and I use panel data to predict how within individual changes in concerns about immigration from 2001 to 2015 are predicted by the attention that the topic of migration was given by the media shortly before an individual was interviewed. This media attention is what we refer to as “media salience”.

We take a macro contextual perspective in terms of regional context. The media reports we study are from media outlets that are active all over Germany. We assume that they generate an information environment which reaches all individuals within Germany at a certain time (see also Hopkins [2011]). This means that the context which affects individual attitudes is much larger than in the following two studies which focus on the neighborhood.

Such macro-level sources of group conflict are often discussed in past and present work on prejudice (Allport 1979; Pettigrew et al. 2010), but scholars only recently began to analyze the link between media reporting about immigration and attitudes in detail (Hopkins 2011; van Klingeren et al. 2015; Schlueter and Davidov 2013). Our study contributes to the larger literature on the effects of media salience on individual attitudes by analyzing changes within the same individuals over time and employing a more fine-grained measure for the current information environment that is produced by the media.

Furthermore, we study media effects over a period of more than a decade. Debates featured in the media in this period comprise terror attacks, discussion of European migration law, controversial book publications, statements by political actors and the refugee crisis, among others. We thus aim at a generalizable estimate of the association between media salience and individual concerns about immigration.

Our results show a stable and robust effect of media salience on individual concerns about immigration to Germany. Moreover, we find strong interactions of media salience with political party preference, educational degree and the share of foreigners in the region a respondent lives.

Immigration rates increased steadily over the period of the study, yet concerns about immigration fluctuated highly over time and are better explained by media salience than by actual in-migration rates. This fact is difficult to square with an account that stresses national out-group size as an important determinant of threat. Furthermore, we interacted the regional share of immigrants with media salience and found that those individuals living in regions with higher numbers of foreigners are *less* susceptible to the concerns inducing effect of the media. This shows that the implications of immigration on attitudes towards immigration are not in the direction that a local conflict account would suggest.

For scholars concerned with societal integration, our results also show that the discourse surrounding immigration can deeply divide the population. The association between media salience and individual concerns is moderated by a number of individual and context level characteristics. For example, we found a large discrepancy in the reception of media salience between voters of the Green Party and the more Conservative CDU where the latter are substantially more affected by media salience. This stresses the fact that immigration and its surrounding discourses might not only create divisions between immigrants and natives, but also between groups within the majority population. One might argue that these within majority processes are even more important for societal integration, given that the ethnic majority is still central to the political processes within nation states (Wimmer 2013: 135). As recent experiences show, divides triggered by immigration discourses within the majority population of EU countries along the lines of immigration related issues are strong and politicized.

Such threat perceptions might influence how individuals behave when they encounter certain minority groups in their local social environment (Hopkins 2010, 2011), which links this study to the next two studies. This effect of macro-level media coverage on local behavior can happen through two channels. First, reporting on migration related issues activates already existing stereotypes and more stable attitudes in individual minds towards certain ethnic groups or the group of immigrants in general. This is also in line with our finding that the media salience-concerns association is strongly moderated by political party preferences, which indicates that media salience increases worries in those who already have certain political attitudes. Once these stereotypes are activated, behavior towards ethnic minorities might be adapted accordingly. Second, in case of repeated and durable exposure to certain media framings of certain topics, the media can create threat perceptions of their own and thus impact rather stable attitudes in the long run. Our study shows that immigration is a re-occurring theme and other studies showed that certain frames are often used repeatedly to describe immigration related topics (Bauder 2008). In the long run repeated media exposure to similar framings of immigration might create stereotypes and certain behavioral reactions towards out-groups (Esses, Medianu, and Lawson 2013). That is, the mass media can create and make salient ethnic boundaries, as indicated by the left part of figure I.1.

I.3.2 Study II: Parental White Flight?

In study II, I analyze a phenomenon that is widely known in the U.S. American literature and general debates on ethnic segregation. “White Flight” describes mobility flows of White majority individuals out of neighborhoods which are undergoing ethno-demographic changes. In particular, I focus on one plausible mechanism for White Flight, which did not receive much scholarly attention yet: having children (e.g. Skifter Andersen 2017: 298f).

In contrast to study I, study II zooms in on the neighborhood level and analyzes selection processes out of neighborhoods. Such selection processes are of utmost importance for our understanding of neighborhood diversity effects. In this case, the out-mobility of households with children might present an important explanation for lower social cohesion in diverse neighborhoods because children have been found to be important for neighborhood networks which prevent households from leaving the neighborhood (Dawkins 2006) and intergroup contact (Schaeffer 2013b).

Previous studies indirectly lend evidence to the “Parental White Flight” proposition by investigating the relationship between ethnic diversity and children in an area (Drever 2008; Iceland et al. 2010), but the effect of having children on moving out within household panels has, to my knowledge, only been studied by Goyette and colleagues (2014). This is where this study steps in. Methodologically, I employ a panel fixed-effects design which controls for all time-invariant stable characteristics of households and the neighborhood.

I find substantive increases in the probability to leave a neighborhood when having children with higher share of ethnic minorities for German native households. What makes these results even more intriguing is that I do not find this effect for households in which members have migration background, which gives evidence for a Parental White Flight pattern of mobility. In addition, native households that leave ethnically diverse neighborhoods are likely to settle in less diverse areas which points towards tendencies of ethnic segregation.

These results can be related to social cohesion in the neighborhood and ethnic residential segregation. Parental White Flight could prevent the development of neighborhood level cohesiveness through increased turnover and the resulting lowered stability stable of neighborhood networks. Furthermore, a reduction in the number of children in diverse areas could diminish neighborhood contact between ethnic groups (Schaeffer 2013b).

Focusing on changes in the living conditions of majority households is of crucial importance when studying mobility behavior that is related to neighborhood diversity. The reason is that if we take a dynamic perspective on neighborhood choice, it becomes apparent that these households mostly choose to live in or did not move out of these neighborhoods before. That is, it is difficult to explain out-mobility merely based on ethnic preferences and changes of contextual diversity, particularly over short time periods. Instead of analyzing an effect of diversity per se, I thus ask what the more dynamic factors behind White Flight are. Children are one such dynamic factor because they change either preferences for neighbors of certain ethnicity or the needs for certain neighborhood amenities abruptly.

The avoidance of other ethnic groups by moving out of a neighborhood might to some degree be the result of ethnic stereotypes or ethnic preferences. This links this study to the previous one which investigates how macro-contextual characteristics shape individuals opinions and salience. However, it should be kept in mind that moving decisions are the results of a mix of opportunities, restrictions and (ethnic) preferences that households face when they make moving decisions. I will discuss factors which affect the probability to move when having children in more detail in the theory section and conclusion of study II.

Study II is relevant for the general literature on neighborhood diversity effects on local social cohesion, because it explicitly investigates selection processes out of diverse neighborhoods. Figure I.1 depicts this by placing study II before study III. Often, assumptions about the kind of selection processes are made (Dawkins 2008; Putnam 2007), but they are rarely studied in detail (one exception is Kaufmann and Harris [2015]). My results clearly show that in studies that investigate the association between diversity and any variable that might be affected by children out-mobility must be carefully modelled (as in study III).

The results of study II can thus also be related to societal integration through ethnic segregation. The political importance of residential segregation rests on the

assumption that proximity fosters familiarization and contact between groups which are essential for ethnically diverse societies. For example, proximity is an important pre-condition for intergroup contact which reduces negative sentiments towards the out-group (Pettigrew and Tropp 2008; Pettigrew et al. 2010).

I.3.3 Study III: Neighborhood Ethnic Composition and Individual Neighborhood Embeddedness

Study III touches a core element of social cohesion: individual social connections (Schiefer and van der Noll 2017). I analyze how households that recently moved into a new neighborhood develop contacts with their neighbors and perceive the density of neighborhood networks over time dependent on the ethnic diversity of the neighborhood.

Extending prior research, I add a dynamic element to the analysis: the length of residence in a neighborhood. Previous studies on the association between ethnic diversity and local social cohesion are mostly cross-sectional. However, an investigation of the development of neighborhood embeddedness over time is prompted by two observations. First, the probability to leave diverse neighborhoods is usually higher than moving away from less diverse neighborhoods (see for example the descriptive statistics in study II) and initiating ties with ethnic others requires more time than building up ties with co-ethnics because ethnic boundaries need to be crossed (Windzio 2018). Research that does not differentiate individuals by their length of stay, for example by failing to include an interaction between length of residence and diversity, might thus overestimate the effect of neighborhood diversity. This is because the sample in diverse areas consists of many individuals who only stayed a short period and did not have time to build up neighborhood ties.

Second, in order to take into account selection bias due to out-mobility, we require data about the probability to move out of the neighborhood from the very beginning of the time of residence. This allows us to adjust for residential histories, dependent on the most important variables that drive both local embeddedness and out-mobility. This is where I make my main methodological contribution: I propose a method for dealing with selection bias due to dynamic out-mobility that is affected by past ethnic diversity and neighborhood contacts and time-varying covariates, based on the logic of inverse probability of censoring weighting (Robins, Hernán, and Brumback 2000). Here I build cumulatively on knowledge gained from study II to inform my selection models in study III, which include children as an important predictor.

I find that in both diverse and non-diverse areas, embeddedness increases after staying five years in both diverse and non-diverse areas. However, the probability to perceive the neighborhoods as having close-knit relations among neighbors stays at a relatively low level in diverse areas even after five years of residence. This suggests that households are able to build up individual local ties in diverse areas, but also that these attempts are not sufficient to perceive the neighborhood as a dense community.

These trajectories of embeddedness give us interesting insights about the mechanisms that underlie the local diversity-social cohesion association. The local conflict and anomie account would not suggest that social embeddedness rises in diverse neighborhoods over time to similar levels as in less diverse neighborhoods. This is because if households moved into ethnically diverse neighborhoods, they would be confronted with either a conflict ridden environment or neighborhoods characterized by anomie. Both would lead them to have lower social embeddedness than in homogeneous areas, even after five years of stay. Thus, for the cohort of recent in-movers that make up the sample of this study, I find that these mechanisms are not at work.

I.4 Conclusion, Open Questions and Suggestions for a Dynamic Research Agenda

Conclusion. From this rather diverse set of studies, three conclusions might be drawn about different theoretical approaches to ethnic diversity effects on social cohesion.

A first conclusion pertains to perceptions of group threat as a theoretical mechanisms for the effects of ethnic composition in different contextual units. Taken together, my findings are in contrast to several aspects of the local group conflict account. Study III shows that there is no decline or stagnation of individual embeddedness in ethnically diverse neighborhoods over time for households that recently moved into diverse neighborhoods. Furthermore, concerns about immigration fluctuate much more over time than we would expect given mere local demographics or larger migration in-flows, and individuals in diverse regions are *less* likely of being concerned about immigration when media salience is high (study I). Study II in itself is less informative of whether group threat or other mechanisms are active in ethnically diverse areas. However, it should be noted that *if* we assume that perceptions of threat can explain why parents leave ethnically diverse neighborhoods, study II also suggests that these perceptions are triggered by the life-course event of having children. Whether this is likely depends on the stability of threat perceptions and how much they depend on prior attitudes towards ethnic diversity. If we assume that attitudes are rather stable characteristics, other explanations such as the search for appropriate neighborhood amenities for one's children become a more likely explanation than perceptions of group-threat.

This conclusion is in line with other research on the association between local ethnic diversity and local social cohesion (e.g. Laurence, Schmid, and Hewstone 2018: 4f;

van der Meer and Tolsma 2014: 464). Laurence et al. (2018) argue that group threat should be seen as a moderator of the diversity-local cohesion association rather than as a mediator. This suggests that group threat does not directly follow from exposure to diversity, but rather from other sources in society (Laurence et al. 2018: 5), as also suggested in section I.2.2. Furthermore, Oliver (2010) shows that there is lower community engagement of White U.S. Americans in neighborhoods with large out-group shares, but also that this share is negatively associated with prejudice. This speaks for other reasons than group conflict for lower cohesion on the neighborhood level, even in the context of marked ethnic categories as in the U.S.

However, it is important to recognize the conditionality of threat reactions to local diversity (Legewie and Schaeffer 2016; Stolle et al. 2013). For example, even though the cohort of diversity dwellers that I analyzed in study III are able to build up ties in diverse areas, there might also be established native inhabitants that experience threat through rising ethnic diversity because they fear to “lose their neighborhood” (Hanhörster 2000).

My second conclusion pertains to the scope and level of research questions on how immigration relates to social cohesion. Within the fields that work on these questions, scholars should not only consider the effects of local diversity, but also take into consideration that the majority population builds up perceptions of immigration through other macro-level channels. These can be disintegrative as they strongly divide the majority population, as study I shows.

From a philosophy of science perspective, this is important because stylized facts like “local diversity is associated with low local cohesion” and “a higher share of out-group members in the area increases threat” are not only positive claims, they also emphasize what is worth studying and are thus normative (Hirschman 2017). The substantial associations in study I show that macro-contextual determinants

of threat beyond demographic shifts and local ethnic environments deserve more scrutiny.

Third, studies II and III are in line with the idea that local diversity is associated with reactions on part of the native majority that might be described as “indifference” towards the neighborhood as a whole. Study II shows that parents are ready to leave ethnically diverse areas once they have children. Study III shows that ethnically diverse areas are unlikely to develop a close-knit community, even though individual households form contacts similar to households in homogenous neighborhoods. These results might not be due to prejudice or stereotypes, but rather to a general unwillingness to engage in neighborhood affairs and networks in diverse neighborhoods (see also Blokland and van Eijk [2010]). This phenomenon deserves more attention in future research.

Open questions and further research. From the dynamic perspective taken in this thesis, a number of critical issues become apparent for the broader research on the effects of local ethnic diversity.

First of all, we should consider the history of neighborhoods more prominently to arrive at predictions for the long term stayers in neighborhoods. Often no quantitative data is available for long historical periods. However, Agent Based Models (Squazzoni 2010) could help to study how different initial conditions and assumptions about the behavior of individuals (such as those I laid out in I.2) could explain the current state of a neighborhood in terms of neighborhood fluctuation (Schelling 1971) or networks. Ideally, such simulation studies would be informed by historical data on the establishment and build environment of neighborhoods and the relevant in- and out-mobility of certain inhabitant groups in certain periods.

The latter issue is connected to striving for an exact definition of the causal effect of diversity by clearly defining the “treatment” (Hernán 2005; Hernán and Taubman 2008; Holland 1986). This may sound like a methodological issue, but the precision of the causal questions we ask refers to the very heart of science (Hernán 2005). One problem is that there are many ways to hypothetically “intervene” on the variable ethnic diversity, and the mechanism for intervention, not diversity itself, might change the outcomes. I want to stress two basic hypothetical interventions that also play a role in this thesis: One could either randomly put individuals into neighborhoods of different diversity or one could change the ethnic composition around them while they stay put (see also Oakes et al. 2015). Even if both mechanisms would set diversity randomly to the same level, they would probably yield different results. This is obvious when the outcome was neighborhood networks: if people stay put, individuals already might have a network in the neighborhood, if they move they have to build neighborhood ties from scratch. The issue with this example is that neighborhood networks look different depending on the assignment process, not through the value of diversity itself, and thus the causal effect of ethnic diversity is ill-defined (Hernán and Taubman 2008). Taking a dynamic perspective as in this thesis might be a way to arrive at more precise questions about the causal role of ethnic diversity (see also Laurence and Bentley 2016). However, taking such a view also shows how complex the interplay between neighborhood composition and neighborhood effects is. In the end we require models that incorporate both mobility flows of individuals (to model the composition of neighborhoods), as well as the cumulative effects of individual interactions within the neighborhood (to model the context effect) to grasp how neighborhood diversity affect individuals (e.g. Oakes et al. 2015).

Finally, much sociological work needs to be done on how local interactions and attachment to small scale units like the neighborhood translate into macro-level cohesion. Note that when scholars like Putnam (2007) make claims about societal

integration, they assume either that local experiences with diversity translate to the macro context, or extrapolate their findings into the future when migration related diversity increases. Considering the state of theory building and empirical possibilities that are prevalent in sociology at the time being, it might be preferable to pursue studies on small units of analysis like the neighborhood before turning to the societal level. Neighborhoods might be suited to study norm development in diverse settings without strong institutional influence. However, given pleas to center sociological research around the macro-level emerging properties that are created by individual interactions (e.g. recently, Mäs 2018), future work should consider how interactions in small scale units affect societal integration (Lawler, Thye, and Yoon 2015).

The latter issue connects to a debate within the diversity-cohesion literature in sociology and political sciences. Some researchers argue that societal integration in modern societies does not require strong dense and local networks and trust relationships (Abascal and Baldassarri 2015; Portes and Vickstrom 2011). From a Durkheimian perspective, it is claimed that arguments such as put forward by Putnam miss the great picture by focusing on local networks and attachment that are neither required nor functional in modern societies. The main line of this argument is vividly expressed by Abscal and Baldassarri (2015: 758), who note that “given the complexity of modern societies, we would do well to move beyond a bucolic communitarian conceptualization of social capital that relies on mechanisms of mechanical solidarity rooted in similarity and homogeneity”. Three years later, with the rise of far right parties all over Europe and Donald Trump in the U.S., both fueled by the topic of immigration, such a view seems too optimistic. Apparently, modern societies are far from stable, despite their growing division of labor from which “organic solidarity”, the counterpart of mechanical solidarity, originates (Durkheim 1972).

The question that this debate raises is in how far societies and their integration hinge upon individual integration into small level social structures. If we accept the notion that positive interactions in small contexts lead to stability of relations and positive emotions towards the greater unit (Lawler et al. 2015), we are well advised to pay attention to the cohesion in those units. Neighborhoods have the potential to bring together groups of different social background, which is a great potential in comparison to other foci of social life like the family or the job, where homophily is likely to be higher. Much of this potential seems still unused.

II. Study I: Mass Media and Concerns about Immigration in Germany in the 21st Century: Individual-Level Evidence over 15 Years^{4,5}

With Christian S. Czymara (Goethe-Universität Frankfurt)

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The online appendix is also attached at the end of this chapter (section II.10),
because it provides important additional analyses.

II.1 Abstract

Mass media has long been discussed as an essential determinant of the threat perceptions leading to anti-immigration attitudes. The field of empirical research on such media effects is still comparatively young, however, and lacks studies examining precise measures of the media environment an individual is likely to be actually exposed to. We employ a nuanced research design which analyses individual differences in the yearly levels of both media salience and attitudes in panel data of 25,000 persons, who were at least interviewed twice, and a time span over 15 years, from 2001 to 2015. We find a substantive and stable positive effect: comparing periods of vivid discussions with times where the issue was hardly discussed in the German media results in an increase in the predicted probability of being very concerned by about 13 percentage points. Deeper investigations reveal that the media effect is most potent for individuals living in areas with lower share of ethnic minorities and for those with lower education or conservative ideology, stressing the importance of individual receptiveness. In sum, our findings strengthen the line of reasoning stressing the importance of discursive influences on public

⁴ This chapter has been co-authored with Christian S. Czymara. Please refer to the chapter “Declarations” at the end for a list of the contributions of the single authors to this work.

⁵ Acknowledgments: The authors thank Marijn van Klingeren, Merlin Schaeffer, and Moshe Semyonov, the PhD supervisors (in alphabetical order): Hans-Jürgen Andreß, Eldad Davidov, Céline Teney, and Michael Windzio, as well as the anonymous reviewers, and colleagues for useful suggestions and feedback, and Lewis Taylor for proofreading. All remaining errors are, of course, the authors’. Moreover, the authors express their thanks to their graduate schools, the BIGSSS, and the CGS for their support.

opinion and cast doubt on the argument that threat perceptions stem primarily from the size of ethnic out-groups.

II.2 Introduction

Immigration is a re-occurring, hotly debated topic in most European countries. The past 2 years are examples with lively debates on rising numbers of migrants and refugees, immigrant integration, and terror attacks, accompanied by various, large-scale anti-immigration protests. We investigate the fluctuations of media reporting on immigration and its impact on individual concerns about this issue on the example of Germany, investigating very extensive and rich data. We combine about 26,000 news articles from four major German newspapers and news magazines with panel data of 25,773 unique individuals in total and a time span of 15 years. Because we rely on yearly measures over a long time span, our period of investigation covers individual attitudinal reactions to various and diverse discursive triggers, enabling us to make more generalizable inferences about the relationship between media reporting and public opinion.

In search for contextual explanations of immigration attitudes, many sociological studies in the tradition of the group threat-paradigm (Quillian 1995) explain attitudes towards ethnic minorities and immigration with objective demographics like the share of immigrants in a country, arguing that the presence of a sizeable ethnic minority leads to competition for different resources which, in turn, leads to negative sentiments towards this out-group (for an overview, see Ceobsanu and Escandell 2010). However, this reasoning has been challenged by scholars who found that threat perceptions are only loosely connected to objective immigration rates (Pottie-Sherman and Wilkes 2017; Semyonov et al. 2004; Sides and Citrin 2007). From this perspective, it is not surprising that objective demographics often fail to be reliable predictors of migration-related attitudes (Hainmueller and Hopkins 2014: 231).

Therefore, it is important to empirically assess other contextual explanations for the fluctuation of threat perceptions, and ultimately of anti-immigration attitudes (Ceobanu and Escandell 2010: 318). A potent explanation is concerned with the coverage of immigration-related issues in mass media (e.g. Allport [1954] 1979: 200ff; Blumer 1958). In the lion's share of social science literature on the formation of attitudes towards immigrants, however, the importance of mass media is often simply assumed. But with the increasing availability of large-scale quantitative media and survey data, the role of mass media has increasingly come into focus of empirical research in recent years (e.g. Boomgaarden and Vliegenthart 2009; van Klingeren et al. 2015; Schlueter and Davidov 2013).

We contribute to this growing field by employing a design which offers a very fine-grained view on the relationship between mass media and individual attitudes. To the best of our knowledge, we are the first to investigate how the same ethnic majority individuals change their opinion when going through periods of differing levels of media attention on the immigration issue (media salience), fluctuating on a daily level. In contrast to previous research, our design also accounts for individual unobserved heterogeneity which might bias the relationship between media presence of immigration related news and concerns about immigration.

Subsequently, we also investigate under which conditions effects of frequent media reporting are particularly potent. We distinguish two sets of moderators: (i) contextual aspects, stressing the importance of the local opportunity structure for first-hand experiences (Voci and Hewstone 2003) and (ii) personal characteristics, identifying who is more prone to media effects (cf. Ward and Masgoret 2006).

Germany is a very interesting case to study because it has been among the most popular destination countries in Europe since the turn of the millennium⁶ and,

⁶ According to the International migrant stock 2015 database of the UN as well as the Organisation for Economic Co-operation and Development (OECD) Statistics, both retrieved 6 January 2018.

accordingly, has an increasingly diverse ethnic composition.⁷ The media attention on immigration and integration, on the other hand, has fluctuated considerably (Boomgaarden and Vliegenthart 2009). This is related to certain events such as the reform of the German immigration policy in 2005 (Bauder 2008), several Islamist terrorist attacks in Europe (Legewie 2013), and the emergence of the anti-immigration PEGIDA protests in 2014. Moreover, Germany has been the most important country of destination for refugees in Europe in the course of the so-called immigration crisis (Connor 2016). Violent acts performed by individuals reported as refugees (Czymara and Schmidt-Catran 2017) as well as performed against refugees (Jäckle and König 2017) both lead to significant levels of media attention and started extensive national debates. Mass media will hence continue to play an important role in the formation of public opinion on immigration in the in the foreseeable future.

II.3 Mass Media as a Source of Perceived Threat: Theory and Previous Research

International migration, immigrant integration, and their social consequences are complex, multifaceted phenomena, hardly assessable by single individuals. This gives mass media considerable leeway in shaping individual opinion because they are one of the main sources providing information exceeding personal experiences (Blumer 1958; McLaren, Boomgaarden, and Vliegenthart 2017). Moreover, the media can potentially transform the uncertainty surrounding immigration related issues into threatening stereotypes (Esses et al. 2013).⁸ Even without directly

⁷ <https://de.statista.com/statistik/daten/studie/28347/umfrage/zuwanderung-nach-deutschland/> (retrieved 16 August 2017).

⁸ Mass media may affect the political public negatively through primarily focusing on negative news (Robinson 1976). However, whether Western media indeed reported immigration-related news more often in a negative tone (ter Wal, D'Haenens, and Koeman 2005) or in a rather balanced one (Lawlor

evoking negative stereotypes, increasing the visibility of immigration topics in public discourse heightens the attention given to such topics and makes information related to migration accessible in people's minds. Issue salience hence sets the terms by which the topic is evaluated, a process called priming in communication sciences (Iyengar and Kinder 2010: 63ff) (also see Zaller 1992). Similarly, the agenda-setting approach argues that issue salience transfers "from the mass media's pictures of the world to those in our heads" (McCombs and Ghanem 2001: 67). In other words, what is prominent and important in the media becomes prominent in the audience. This can be reinforced further when different media outlets decide to copy what is newsworthy and what is not, also referred to as intermedia agenda-setting (McCombs and Ghanem 2001). Both priming and agenda setting should lead to an increased awareness of the immigration topic for natives, which can raise anti-migration sentiments or feelings of anxiety in the individual.

Moreover, effects of media reports are not limited to direct consumers. Rather, mass media shape the information environment and the public discourses at large. The information reported in certain outlets is not only picked up by other outlets but also disseminates within the public through indirect channels such as interpersonal communication (Schmitt-Beck 2003) (also see Boomgaarden and Vliegenthart 2009; van Klingeren et al. 2015; Schlueter and Davidov 2013).

Previous research on various West and Central European countries found mixed evidence regarding the relationship between mass media, actual demographic and economic conditions, and different aspects of (anti)immigration attitudes. Schlueter and Davidov (2013) show that negative news about immigration correlated with more negative attitudes in Spain, and that this relationship was especially strong in contexts with low shares of migrants. In contrast, the comparison of The Netherlands and Denmark conducted by van Klingeren et al. (2015) suggests that

2015) is far from clear. Since our study covers a large time span, it is very likely to include very different debates, topics, and sentiments.

different toning of news seemed to have mattered only regarding positive news and only in The Netherlands. Once the effect of immigrant inflow is statistically controlled, however, mere issue salience was associated with more negative attitudes in The Netherlands, which have a relatively long history of immigration, while the same relationship was somewhat smaller in Denmark, where immigration became relevant not until the late 1990s (van Klingeren et al. 2015). Similarly, media salience correlated with the vote intention for anti-immigrant parties in The Netherlands (Boomgaarden and Vliegenthart 2007). On the other hand, Boomgaarden and Vliegenthart (2009) find that salience itself was not connected to citizens' concerns in Germany, but that the framing of immigrant actors in news reports mattered. This is in line with the results of Schemer (2012), who finds an increasing effect of negative news portrayals of immigrants on stereotypic attitudes based on a two-wave panel study before and after a political campaign about immigration in Switzerland.

In sum, prior research suggests that the role of mass media remains rather ambivalent and context dependent. However, comparing results is somewhat complicated due to differing methodology, which is not only related to particular benefits but also to different drawbacks: studies either measured subjective media consumption habits without taking into account the actual content of mass media (e.g. Vergeer, Lubbers, and Scheepers 2000), covered only short periods of time (Schemer 2012), remained purely on the aggregate macro-level (Boomgaarden and Vliegenthart 2007, 2009; McLaren et al. 2017), or in experimental contexts (e.g. van Klingeren, Boomgaarden, and de Vreese 2017). Some recent studies tackled these issues by combining data on media coverage with cross-sectional individual-level data from surveys pooled over several years (Hopkins 2010; van Klingeren et al. 2015; Schlueter and Davidov 2013). This is an important step towards ensuring external validity of media effects outside artificial or short-term contexts. These studies, however, observed different individuals in different survey waves and

modelled media characteristics as varying only between but not within waves. In contrast, we investigate the same individuals each year and employ a fine-grained, day-specific measure of media salience. We thus aim to advance the state of research on mass media effects on individual perceptions and attitudes by employing a more nuanced design than previous studies with similar scope (also see below).

Subsequently, we test the conditionality of the effect of media salience. It seems reasonable that the influence of media is more powerful under certain circumstances and that not everyone is equally affected by the media.

First, media information can fall on more fruitful ground if natives have less opportunity to collect information on immigrants based on own first-hand experience. This is the case for individuals living in areas where regular exposure or interpersonal contact (Pettigrew and Tropp 2006) with ethnic minorities is unlikely. In the case of Germany, districts have been shown to be potent contexts in which individuals are likely to act regularly (e.g. Wagner et al. 2006). A high share of migrants in these contexts is likely to lead to inter-ethnic exposure during daily routines like work, shopping, and leisure time (Weber 2015). Studies have shown that a high share of migrants in these contexts is associated with less exclusionary attitudes towards immigrants (Pettigrew et al. 2010; Wagner et al. 2006). We hence expect that the media salience effect is weaker for respondents living in districts where ethnic minorities are relatively prominent, since there are more opportunities for first-hand information (Schlueter and Davidov 2013) (also see Zucker 1978).⁹

Second, the impact of media reports also depends on individual receptiveness and political sophistication (cf. Zaller 1992). We test if the media salience effect differs

⁹ Based on US data, Hopkins (2010) argues that media salience is more potent under strong changes of the ethnic environment. However, given that the ethnic composition of districts in Germany is rather stable during our period of investigation, this mechanism should be less important in our case.

across individual party preference and education. Both characteristics have repeatedly shown to be strong predictors of immigration attitudes (for party preference in the German case, see, e.g., Blinder, Ford, and Ivarsflaten [2013]; for education see, e.g., Hainmueller and Hiscox [2007]). Party affiliation is directly connected to liberal and conservative ideology on which grounds information is processed. Voters are more open for information that is in line with their existing beliefs because they aim to uphold their long term values (Bechtel et al. 2015).

Education correlates with political knowledge which, in turn, determines how open individuals are towards political information (Schemer 2012; Zaller 1992). This is because those who are less informed are likely to have less stable attitudes, are less likely to have been exposed to similar political messages before, and have less informational resources to counter arguments (Bechtel et al. 2015: 687). These individuals should hence be more prone to effects of media reporting.

II.4 Hypotheses

We expect that higher levels of media attention on immigration issues (media salience) increase the accessibility of related information in people's minds and consequently raises individual concerns about these issues (Iyengar and Kinder 2010; Zaller 1992):

Hypothesis 1: High visibility of immigration issues in the media triggers individual concerns. (Salience Hypothesis)

We furthermore expect that individuals in ethnically more diverse contexts perceive news about immigration as less threatening due to regular exposure to ethnic outgroups (Schlueter and Davidov 2013):

Hypothesis 2: The negative effect of media salience as postulated in Hypothesis 1 is stronger (weaker) for individuals who live in districts with a lower (higher) share of foreigners. (Information Substitution Hypothesis)

We furthermore hypothesize that the effect of media salience depends on personal characteristics. First, preferences of certain parties signal a more liberal or a more conservative ideological disposition, affecting the receptiveness to certain political information. Because of their political predisposition, natives who prefer more liberal parties should be less receptive to negative discursive triggers than those who prefer more conservative parties. In the German parliament, the Green and, arguably, the Left Party are more liberal, the Social Democrats are centre-liberal, and the Free Democrats as well as the Christian Democrats are centre-conservative.

Hypothesis 3: The negative effect of media salience postulated in Hypothesis 1 is weaker (stronger) for natives who identify with more liberal (conservative) parties. (Party-Hypothesis)

Finally, we hypothesize that natives with higher education are less vulnerable to media effects. This is because we assume that natives with higher education not only exhibit a more differentiated worldview in general (cf. Hainmueller and Hiscox 2007) but that they are also more likely to take the ambivalence and complexity of most political information into account. Assuming that education is a proxy for political knowledge, it furthermore determines motivation and ability to evaluate political information against previously stored information (Bechtel et al. 2015; Schemer 2012; Zaller 1992).

Hypothesis 4: The negative effect of media salience postulated in hypothesis 1 is weaker (stronger) for natives with higher (lower) education. (Education Hypothesis)

II.5 Data

We use the German Socio-Economic Panel (GSOEP), an annual, household-based long-term panel study (Wagner, Frick, and Schupp 2007) for yearly information on

individual characteristics from 2001 to 2015. To focus on the ethnic majority, we drop respondents with migration background.

II.5.1 Dependent Variable: Concerns about Immigration

Respondents are asked to rate how much they are concerned about certain topics in each year, including immigration to Germany on a three-point scale. We use a dichotomized version for our main analyses (0: “not concerned” or “somewhat concerned”, 1: “very concerned”; for similar procedure see, e.g., Lancee and Pardos-Prado 2013; Lancee and Schaeffer 2015) and the ordinal variable for robustness checks. This item is likely to capture a combination of two things: a negative evaluation of immigration and individual salience of immigration issue. According to Wlezien (2005), concern measures capture the importance of issues as well as whether these issues are perceived as problematic (also see Lancee and Pardos-Prado 2013: 116; Lancee and Schaeffer 2015: 43f; Pardos-Prado, Lancee, and Sagarzazu 2014: 855).

Hence, our dependent variable measures whether respondents express an opinion that is both negative and salient. Since our main explanatory variable is capturing macro-level issue salience, the relationship between our treatment and our outcome can theoretically be decomposed into the associations between, first, salience in the media and salience for (direct or indirect) consumers and, second, into the effect of media salience on negative opinions. While the latter, in our view, is especially interesting, the GSOEP unfortunately does not offer the possibility to disentangle both concepts empirically. However, the outcome is related to well-established predictors of negative attitudes towards immigration (see Online Appendix II.O1). Independent of the conceptual shortcoming, we understand threat perceptions to be the theoretical mechanism relating media salience and individual concerns, analogous to Lancee and Pardos-Prado (2013).

II.5.2 Media Salience of Immigration-related Issues

We combine the GSOEP with data from a quantitative content analysis of German newspapers and news magazines to measure the presence of issues related to immigration at a given day. To this end, we use digital full texts of the two weekly news magazines with the highest circulation in Germany: Der Spiegel and Stern, as well as one of the most highly circulated daily, non-tabloid national newspapers: the conservative Die Welt and the left taz.die tageszeitung. In combination, these outlets reach a large audience and have a balanced ideological position, likely to capture the broader national information environment. The full texts were provided by Nexis.¹⁰

We scanned the content of all newspaper articles in our period of investigation with a search string based on a keyword list of immigration-related terms based on reoccurring content from random newspaper articles and previous literature (e.g. van Klingeren et al. 2015; Schlueter and Davidov 2013). This search string identifies articles which simultaneously include (i) at least one of several terms directly referring to immigration, (ii) the term “Germany” or synonyms, and (iii) at least one of several terms more broadly connected to immigration.¹¹ We manually checked the validity of the sample by investigating the content of randomly chosen articles. We deleted duplicates, letters from readers, table of contents, and short news.

¹⁰ <https://www.nexis.com/>

¹¹ The search string reads as follows (! are wildcards): (!wander! OR !migration! OR !migrant! OR !flücht! OR !flucht! OR !ausländer! OR !asyl!) AND (deutschland OR bundesrepublik OR brd) AND (!integration! OR !abschieb! OR abgeschob! OR !einbürgerung! OR aufenthaltsgenehm! OR ausländerkriminalität OR (!kriminalität! w/5 (!wander! OR !migrant! OR !flücht! OR !ausländer!)) OR (!kriminell! w/5 (!wander! OR !migrant! OR !flücht! OR !ausländer!)) OR !fachkr! OR (!qualifi! w/3 (!wander! OR !migrant! OR !flücht! OR !ausländer!)) OR (arbeit! w/3 (!wander! OR !migration! OR !flücht! OR !ausländer!)) OR (!erwerbs! w/3 (!wander! OR !migrant! OR !flücht! OR !ausländer!)) OR (!beruf! w/3 (!wander! OR !migrant! OR !flücht! OR !ausländer!)) OR ((!terror! OR !anschlag!) w/5 !islam!) OR zwangshochzeit OR zwangsheiratOR !parallelgesellschaft! OR !kopftuch! OR ehrenmord OR hasspredigerOR !burka! OR (!islam! OR !muslim! w/5 (!wander! OR !migrant! OR !flücht! OR !ausländer!)) OR mohammedkarikatur OR (mohammed w/3 karikatur!).

For our final media salience measure, we ran an exploratory factor analysis with four count variables indicating the number of articles in each of the four outlets in the past 21 days¹² with the single days as units of analysis and extracted the factor values. These values measure media salience on specific days, higher values implying higher media salience. The factor has an eigenvalue of 1.98. The factor loadings and uniqueness values (in brackets) of the media outlets are Die Welt: 0.78 (0.39), taz. die tageszeitung: 0.73 (0.46), Der Spiegel: 0.68 (0.54), Stern: 0.61 (0.62).

Our period of investigation covers a heterogeneous set of debates. This means that our approach aims at showing the universal effect of salience rather than a particularistic effect of certain topics or tones. On the one hand, we do not want to conceal that this partly relates to the complexities associated with building a detailed, topic related measure of media over a long time. But on the other hand, we are convinced that investigating a universal effect of mere presence of issues is highly interesting itself because it tells something about the power of media independent of certain idiosyncratic debates. Finding a general effect of media salience on individual concerns is actually more striking than finding an effect of negative news only. At worst, we underestimate the maximum effect of mass media on public opinion.

II.5.3 Contextual Variables

In the models interacting media salience and the local ethnic composition (Hypothesis 2), we also include several local context variables on the district level (Kreise, NUTS 3 level) provided by the German Federal Institute for Building,

¹² While the time span of 21 days is somewhat arbitrary, it ensures that the topic was salient for long enough to be a discussed topic but short enough to be remembered at the time the interview took place. Generally, the results hold for different specifications of the chosen time span (see robustness checks).

Urban Affairs and Spatial Research.¹³ Most importantly, we include the share of individuals without German citizenship in a respondent's district to test whether the effect of media salience varies with ethnic exposure. With 402 different districts, this is a fine grained yet efficacious measure of ethnic exposure (Wagner et al. 2006; Weber 2015). To control for economic conditions, we also add local unemployment rate, number of training positions, number of students, average household income, and population density to the models (all measured on the district level).

We also include monthly immigration inflow to account for possible demographic developments that could confound the relationship under study.¹⁴

II.5.4 Individual-Level Variables

We include individual time-varying controls to adjust for confounding influences which are correlated with immigration concerns and possibly also influenced by macro level developments. For example, individual economic worries partly capture periods of economic deprivation taking place at a certain time in Germany. These variables encompass general interest in politics, age, employment status, satisfaction with own household income, concerns about the own economic situation, and concerns about the general economic situation in Germany. Table II.A1 contains descriptive statistics and the coding for all variables included in our models.

II.6 Research Design and Statistical Models

To capture individual exposure to media salience as precise as possible, we merge the public media salience measure with the GSOEP data based on the day each

¹³ Source: <http://inkar.de/>. Values for 2015 were forwarded from 2014. We also run models with a time-stable share of foreigners to rule out that artificial fluctuations affect our results (e.g. through changes in measurement in certain districts).

¹⁴ Data on monthly migration inflows from 2006 to 2015 stems from the German Statistical Office through email contact. We imputed monthly inflows from before 2006 by dividing the available yearly inflow by 12 for each year.

interview took place. Figure II.1 illustrates our design based on two hypothetical respondents being interviewed in 2001, 2002, 2003, and 2012. The black dots represent the interview date and the two areas illustrate that we aggregate the numbers of articles from the four newspaper outlets 21 days before the interview for respondent 1 and respondent 2, respectively, in each year.

This operationalization increases the likelihood that an individual has been exposed to the assigned level of media salience at the day of the interview, either directly through individual news consumption or indirectly through information diffusion via other types of communication. As discussed above, prior research with similar scope modelled media variables as stable characteristics within surveys waves (e.g. Hopkins 2010; van Klingeren et al. 2015; Schlueter and Davidov 2013). Assuming the same media environment for everyone within one wave can be critical, however, when media salience strongly fluctuates periodically in short-term intervals. Figure II.2 indicates that this is indeed the case in our data. It is hence reasonable to employ a measure of media salience which varies between individuals who were interviewed at different days within the same survey wave (see Figure II.1).

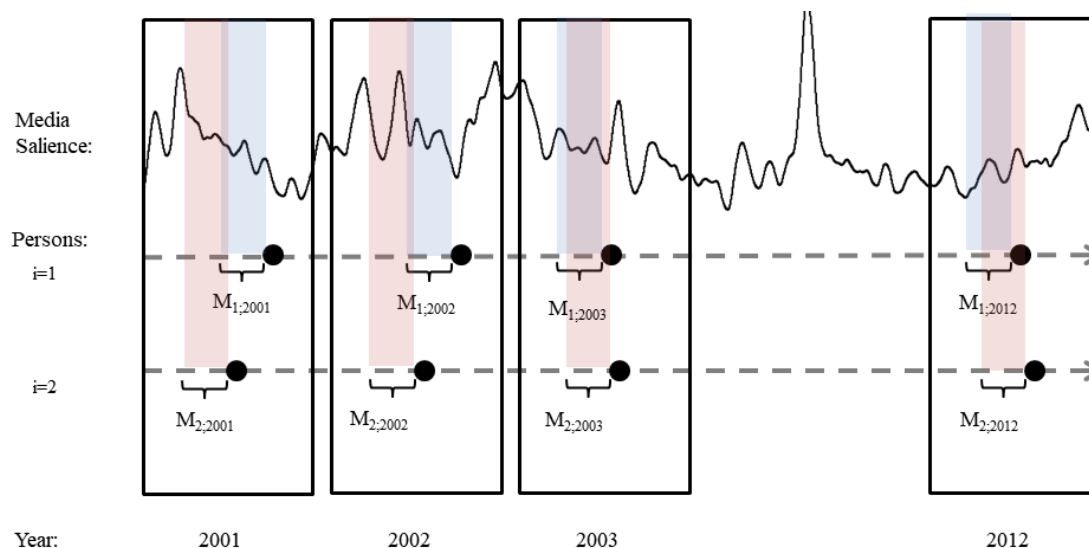


Figure II.1: Stylized research design.

The measure of media salience is most likely exogenous of respondent-specific characteristics in our models for two reasons. First, it is highly unlikely that the

national level of media salience is influenced by individual level characteristics that are also related to concerns about immigration. This is because the day of the interview, and thus the level of media salience a respondent is assigned to, is out of a respondent's control. Even if respondents with certain characteristics time their interviews differently than others, it is very unlikely that these characteristics affect individual concerns about immigration. Neither is it plausible that these respondents set the dates for their interviews dependent on the amount of articles on immigration in the media.¹⁵ Second, we statistically account for all constant person specific confounding influences by analysing within variation only, such as stable prejudice, social class, race, sex, and culture.¹⁶ To this end, we estimate panel fixed-effects (FE) linear probability models (LPMs) which eliminate time-constant unobserved heterogeneity (Andreß, Golsch, and Schmidt 2013).¹⁷

¹⁵ If there is geographical variation in the timing of the interviews (for example between the regional sampling points that underlie the stratified GSOEP sampling procedure), it is highly unlikely that this geographical variation is related to the debate on immigration as captured by our media salience measure.

¹⁶ However, there may still be confounding factors on the aggregate level, that is, unmeasured period effects. See the Online Appendix II.O2 for a variety of strategies how we dealt with these issues.

¹⁷ We use Stata 13.1's xtreg command for our RE and FE LPMs and xtlogit command the RE logistic regression models. The use of robust standard errors did not change our results in any substantive way. The analyses including district level variables were conducted with "SOEPremote", a remote access possibility offered by the DIW Berlin. All do-files are available at: <http://dx.doi.org/10.17605/OSF.IO/W8UZ9>

II.7 Results

II.7.1 Immigration Issues in Germany: Time Trends and Key Events

The overall time trend in immigration-related news is shown in Figure II.2. The figure illustrates the weekly total numbers of all articles and periods of 21 days after certain immigration related key events (coloured dots).¹⁸

In the beginning of the millennium, various Islamist terror attacks happened, which were unprecedented in terms of fatalities and impact for Western countries. This includes 9/11 (Boomgaarden and Vliegenthart 2009), the Madrid bombings in 11 March 2004 (Legewie 2013), and the murder of Theo van Gogh 2 November 2004 (Finseraas, Jakobsson, and Kotsadam 2011). Consequently, immigration and Islam were much debated during this time, although with quite some fluctuation, as Figure II.2 indicates. Moreover, politicians and the German public vividly discussed the new migration law (Zuwanderungsgesetz, cf. Pardos-Prado et al. 2014: 858), which became effective in January 2005. According to Bauder (2008), considerations about the “economic utility” of immigration were a rather stable topic in the German immigration discourse during the period from 2001 to 2005.

¹⁸ For certain events, the coloured dots are not very likely to mark the actual time of the main public debate. For example, the Eastern Expansion of the EU was discussed before it legally became effective and the main debate on the Mohammed cartoons took place several months after their original publication. Moreover, we do not use these weekly totals in our statistical analysis but a measure on a daily basis.

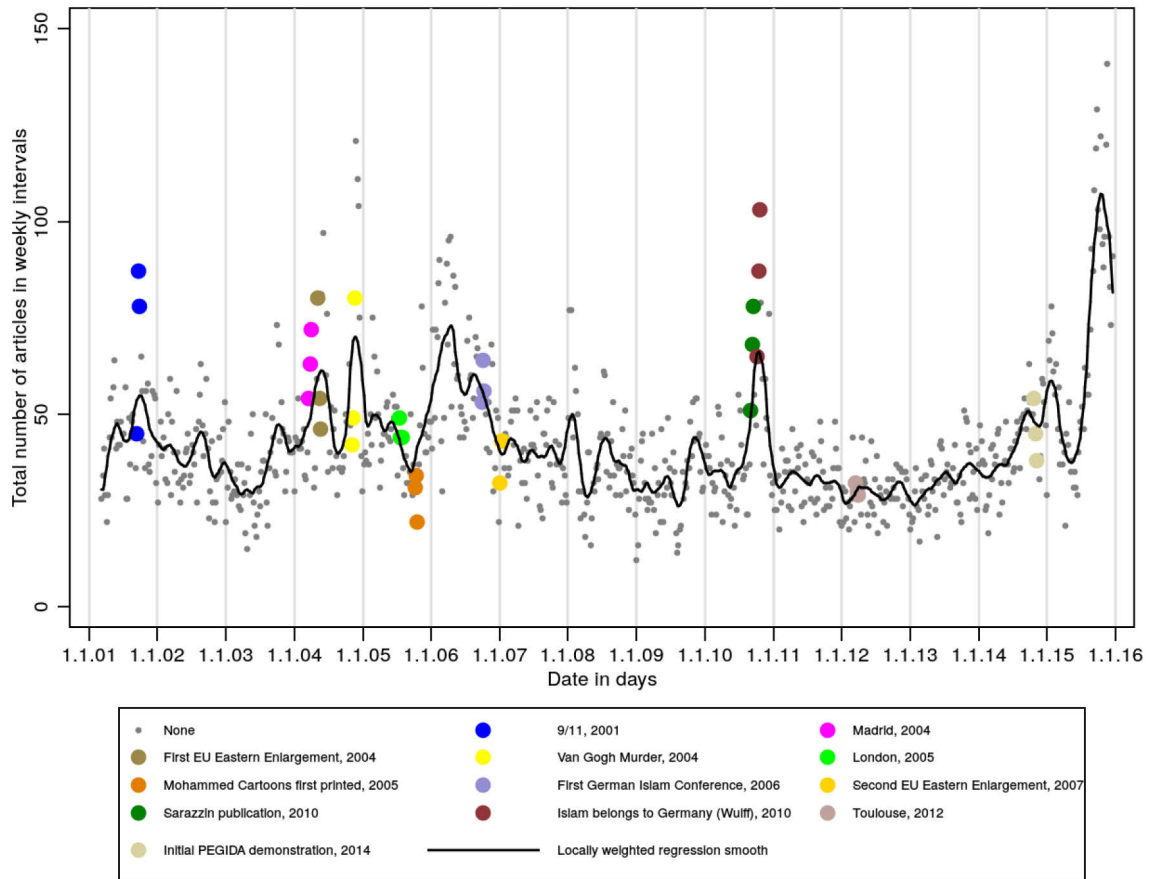


Figure II.2: Total number of articles related to immigration per week, and immigration-related key events.

Note: Coloured dots indicate a period of 21 days after each event.

In September 2005 until the beginning of 2006, media attention increased due to the Mohammed caricatures published in the Danish newspaper Jyllands-Posten and the subsequent protests in many Islamic countries. Further debates revolved around the two Eastern Enlargements of the European Union (EU), the first taking place in May 2004 (e.g. Boehnke et al. 2007) and the second in January 2007. Both EU expansions were debated in the press, dealing with the potential consequences regarding immigration-related crime, and economic costs and benefits. A third outstanding peak is around 2006. Note that two Islamist terrorist attacks do not seem to have led to major public debates on immigration, London in 2005 and the series of attacks in France in 2012.

Apart from economic and terror-related news, culturalistic discussions were repeatedly part of the immigration discourse in recent years. One trigger of these discussions was the former Federal President Christian Wulff's statement that "The Islam belongs to Germany" in 3 October 2010. Almost simultaneously, Thilo Sarrazin's bestseller book "Deutschland schafft sich ab" ("Germany is abolishing itself") was released in 30 August 2010, in which highly controversial theses about the impact of immigration on German society are put forward. Both events make sense of the steep increase in 2010. Finally, the peak in 2014 coincides with the first PEGIDA demonstrations in Dresden which were primarily targeted against immigration from Muslim countries.

From late summer 2015 on, Europe faced a strong increase in immigration and asylum rates with more than twice as many first-time asylum applications in the EU compared to the year before, including a disproportionate high share of individuals from Syria, Afghanistan, and Iraq (Connor 2016). From all European countries, Germany received more than a third of these asylum applications, making it by far the most popular destination for these refugees (ibd.). These turbulent times were accompanied by several acts of violence and terrorism. One of the most prominent events was the sexual assaults in various German cities on New Year's Eve 2015/2016, where victims described the perpetrators as men of Arab or North African appearance, leading to a direct connection to the strong increase in asylum rates (Czymara and Schmidt-Catran 2017). Other events include fatal Islamist terror attacks on the staff of the satirical newspaper Charlie Hebdo and on a Jewish supermarket (January 2015), the attacks on a cultural centre and a Synagogue in Copenhagen (February 2015), the series of attacks in Paris with 130 fatalities (November 2015), and the cancellation of a football match in Germany due to a terror warning (November 2015). At the same time, violence against refugees and refugee shelters erupted during this time (Jäckle and König 2017). It

is hence hardly surprising that Figure II.2 shows its strongest increase during the time between 2015 and 2016.

Hence, the information environment our media measure is meant to capture fluctuates strongly, encompassing a heterogeneous set of different discourses and aspects of the immigration issue.

Looking at the association between our media salience factor and individual immigration concerns, we clearly see a similar trend, shown in Figure II.3: the trajectories of concerns about immigration (upper panel) and of our media salience factor (lower panel) apparently show similar patterns. This means that respondents were more likely to show higher concerns about immigration when they were interviewed on days with high media salience.¹⁹ This lends initial support to the Issue Salience-Hypothesis, although some debates (in terms of peaks in the time series) seem to be more influential than others. In the following, we put this relationship more rigorously to the test.

The upper panel of Figure II.3 also shows the number of interviews per day. It clearly decreases over the year, with very few interviews taking place during the end of each year and in January. Hence, debates happening during these times are unfortunately hardly covered in our analysis. The light grey dots in the lower panel of Figure II.3 represent the raw media salience including days when no interviews took place to capture actual trends in media salience.

¹⁹ Note that there are seasonal fluctuations with highest concerns in winter. This is in line with research on the seasonality of depression and other negative moods (Harmatz et al. 2000) and could further reflect the yearly summer slump. We control for seasonal effects in our regression models.

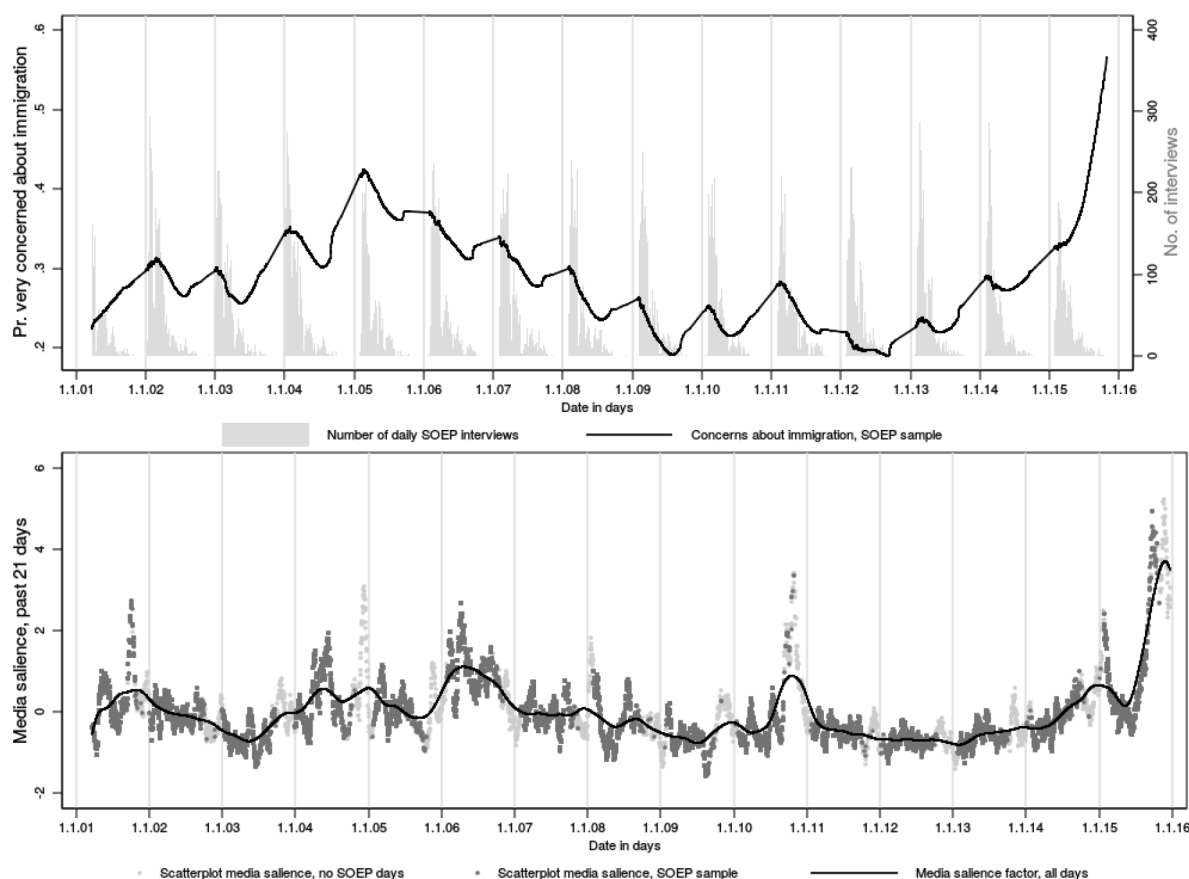


Figure II.3: Locally weighted regression trends of concerns about immigration (upper panel) and media salience (lower panel), and distribution of SOEP interviews over time.

Note: Trend in lower panel shows the full trend going through all data points, those on which SOEP interviews took place (and make up the sample of analysis) and those where no SOEP interview took place.

II.7.2 Media Salience Effects on Concerns about Immigration

The association between media salience and worries about immigration in the FE models is substantial. The coefficient of media salience is 0.05 (Table II.1), implying that a one unit increase of our media salience factor predicts an increase in the probability of being very concerned by 5 percentage points. Respondents interviewed during periods when media salience was at its 95 per cent quantile value (1.65) have a 12.76 percentage points higher average predicted probability of being very concerned about immigration than those who were interviewed during times where immigration was not a salient issue (5 per cent quantile: 0.92). In comparison, preferring the conservative Christian Democrats increases this

probability by about 3 percentage points (relative to no party preference) and being very concerned about one's own economic situation increases it by about 6 percentage points (relative to not concerned). In addition, monthly immigration rates also have a statistically significant positive association with public concerns.

To give a better interpretability of the results from our first model in Table II.1, we predict changes in concerns about immigration for changes in media salience related to a selection of important events discussed above. For example, our media salience factor increases by 2.57 units between 9/11 and 21 days after 9/11. This predicts an increase in concerns about immigration of 12.81 percentage points according to our model. Similarly, the Madrid terror attacks lead to an increase of 1.90 units in media salience predicting an increase of 9.44 percentage points in concerns. The publication of Sarrazin's book "Deutschland schafft sich ab", a major event influencing German wide debates on immigration, went along with an increase of media salience of 2.60 units which predicts an increase in concerns of 12.91 percentage points.

Mind that the substantial association between media salience and worries may partly reflect feedback mechanisms and unmeasured periodic shocks. Mass media may partly respond to changes in attitudes, although scholars have argued that, on average, journalists rarely directly take public opinion into account when evaluating what qualifies as "news" (Patterson 2008). We present various additional analyses in an attempt to rule out these alternative explanations in the Online Appendix Table II.O2. These analyses include measures of aggregate worries, general time trends, or restricting the analysis to certain years. In all cases, the effect remains statistically significant, with a minimum effect size of 0.01.

Table II.1: Panel Fixed-Effects Linear Probability Models of effect of media salience on concerns about immigration, and effect heterogeneity by education and party.

	(1) Main model	(2) Education interaction	(3) Party preference interaction
Media salience, past 21 days	0.050*** (0.001)	0.053*** (0.002)	0.052*** (0.002)
Party preference (ref.: no preference)			
CDU/CSU (Christian Democrats)	0.027*** (0.004)	0.027*** (0.004)	0.028*** (0.004)
SPD (Social Democrats)	-0.007+ (0.004)	-0.007+ (0.004)	-0.007+ (0.004)
Gruene (Greens)	-0.012+ (0.007)	-0.012+ (0.007)	-0.019** (0.007)
Linke (Left)	-0.005 (0.008)	-0.006 (0.008)	-0.007 (0.008)
FDP (Free Democrats)	0.019* (0.009)	0.020* (0.009)	0.019* (0.009)
Others and mixed	0.015 (0.010)	0.015 (0.010)	0.014 (0.011)
Radical right	0.144*** (0.013)	0.143*** (0.013)	0.143*** (0.013)
Interest in politics (ref.: very strong)			
Strong	-0.020*** (0.005)	-0.020*** (0.005)	-0.020*** (0.005)
Not so strong	-0.026*** (0.005)	-0.026*** (0.005)	-0.026*** (0.005)
Not at all	-0.025*** (0.006)	-0.025*** (0.006)	-0.025*** (0.006)
Income satisfaction categories (ref.: low)			
1	-0.012+ (0.006)	-0.012+ (0.006)	-0.012+ (0.006)
2	-0.015* (0.006)	-0.015* (0.006)	-0.015* (0.006)
3	-0.021*** (0.006)	-0.021*** (0.006)	-0.021*** (0.006)
high	-0.020** (0.006)	-0.020** (0.006)	-0.021** (0.006)
Worries German economy (ref.: not concerned)			

Somewhat concerned	0.037*** (0.003)	0.037*** (0.003)	0.037*** (0.003)
Very concerned	0.120*** (0.004)	0.119*** (0.004)	0.120*** (0.004)
Worries own economic situation (ref.: not concerned)			
Somewhat concerned	0.019*** (0.003)	0.019*** (0.003)	0.019*** (0.003)
Very concerned	0.062*** (0.004)	0.062*** (0.004)	0.062*** (0.004)
Age categories (ref.: <25)			
25-34	-0.001 (0.006)	-0.002 (0.006)	-0.001 (0.006)
35-49	-0.009 (0.008)	-0.011 (0.008)	-0.010 (0.008)
50-64	-0.014 (0.009)	-0.015 (0.009)	-0.014 (0.009)
>65	-0.014 (0.011)	-0.015 (0.011)	-0.015 (0.011)
Employment status (ref.: not working)			
In training/apprentice	-0.010 (0.008)	-0.009 (0.008)	-0.010 (0.008)
Registered unemployed	-0.009 (0.007)	-0.009 (0.007)	-0.009 (0.007)
Pensioner	-0.009 (0.007)	-0.009 (0.007)	-0.009 (0.007)
Working	0.001 (0.005)	0.001 (0.005)	0.001 (0.005)
Month of interview (ref.: January)			
Feb.	0.016*** (0.004)	0.016*** (0.004)	0.016*** (0.004)
Mar.	0.017*** (0.004)	0.017*** (0.004)	0.017*** (0.004)
Apr.	0.019*** (0.004)	0.018*** (0.004)	0.019*** (0.004)
May	0.022*** (0.005)	0.022*** (0.005)	0.023*** (0.005)
Jun.	0.015** (0.006)	0.015* (0.006)	0.015** (0.006)
Jul.	0.002	0.002	0.003

	(0.006)	(0.006)	(0.006)
Aug.	0.022** (0.008)	0.022** (0.008)	0.022** (0.008)
Sep./Oct./Nov.	-0.005 (0.010)	-0.004 (0.010)	-0.004 (0.010)
Monthly in-migration/1000 (imputed before 2006)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Elementary X Media salience (ref.)			
Secondary I X Media salience		0.005 (0.003)	
Secondary II (FHR) X Media salience		-0.008 (0.006)	
Secondary II (Abitur) X Media salience		-0.020*** (0.004)	
Other degree/no degree X Media salience		0.000 (0.009)	
In school X Media salience		-0.023** (0.007)	
No party preference X Media salience (ref.)			
CDU/CSU (Christian Democrats) X Media salience			0.008* (0.003)
SPD (Social Democrats) X Media salience			-0.006+ (0.004)
Gruene (Greens) X Media salience			-0.036*** (0.006)
Linke (Left) X Media salience			-0.012+ (0.007)
FDP (Free Democrats) X Media salience			-0.004 (0.010)
Others and mixed X Media salience			-0.005 (0.014)
Radical right X Media salience			-0.025+ (0.015)
Constant (as calculated by Stata's xtreg , fe)	0.191*** (0.013)	0.191*** (0.013)	0.191*** (0.013)
No. person-years	190,049	190,049	190,049
No. persons	25,073	25,073	25,073
Min. no. person-years per person	2	2	2
Max. no. person-years per person	15	15	15

Note: Standard errors in parentheses. Data: SOEP v32.1. April 2001–2015 and media data from Lexis.

*p < 0.10; **p < 0.05; ***p < 0.01; ****p < 0.001

II.7.3 Who Is Prone to Media-induced Concerns?

To investigate the conditionality of the media salience effect, we interact the variable with the share of foreigners on the district level, controlling for all context characteristics depicted in Figure II.4 clearly supports our reasoning: the marginal effect of media salience (y-axis) gets substantially smaller as the percentage of foreigners in one's district increases. This means the concern increasing effect of media salience is most substantial for inhabitants of areas with a relatively small to medium share of foreigners. Since the ethnic composition of one's district is a rather stable characteristic in our data, the interaction effect is likely primarily due to the within-variation of the media salience variable. Our results support Information Substitution-Hypothesis, proposing that obtaining information about immigrants from contextual sources prevents fears caused by increasing media attention. One should note, however, that the effect of media salience is still statistically larger than 0 also for individuals living in districts with many foreigners. Hence, it seems that even for those who are used to immigrants in their day to day life, this firsthand information does, on average, not completely substitute the information coming from mass media.

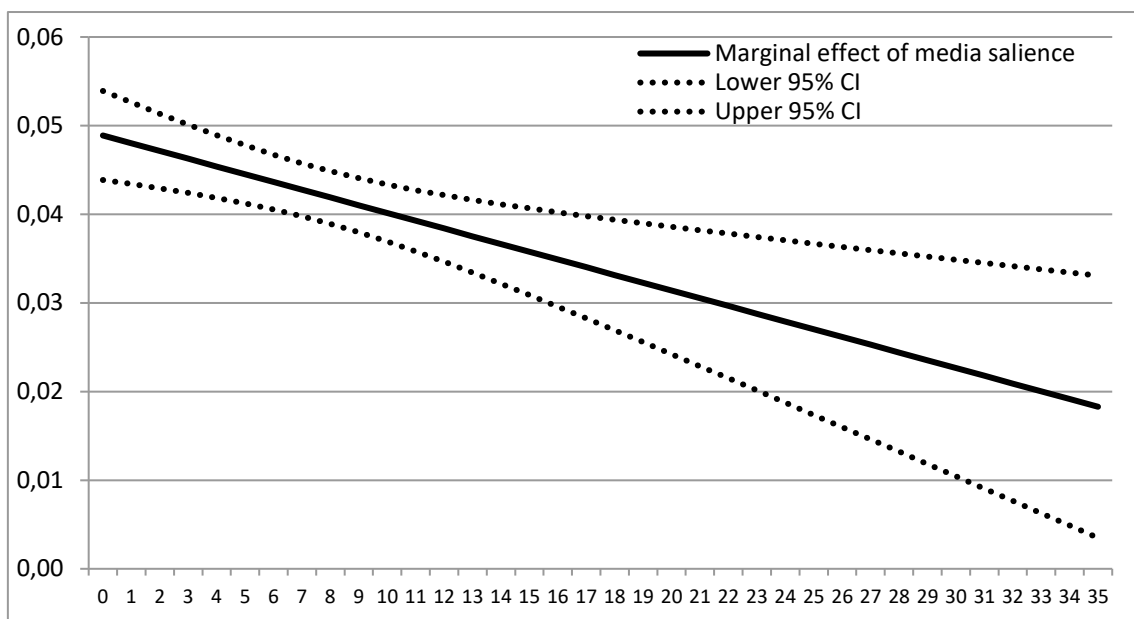


Figure II.4: Marginal effect of media salience on concerns about immigration conditional on the local share of foreigners (x-axis), with 95 per cent confidence interval (based on models in Table II.A2).

We also hypothesized that the effect of media salience differs with individual characteristics because media information is less important for those holding a more liberal world view or having more political knowledge. The former should apply mainly to natives with a preference for the Green or the Left Party, and the latter to those with higher education.

And indeed, the effect of media salience is substantially lower for natives who favour more liberal parties, as Figure II.5 indicates (also see Model 2 of Table II.1). Relative to individuals without party preference, the differences for those adhering to the Social Democrats or the Left party are moderate, but preferring the Green Party is clearly associated with a smaller effect of media salience. In contrast, the media effect is strongest for those preferring the Christian Democrats. This is in line with our Party-Hypothesis and with previous findings indicating that voters converge to the position of their preferred party when exposed to media information, independent of the toning of this information (Bechtel et al. 2015).²⁰ Finally, the effect of media salience on individual concerns primarily holds for respondents with low or medium education, but it is close to 0 for those with higher education, as can be seen in Figure II.6 (or Model 3 in Table II.1). This supports our Education-Hypothesis.

²⁰ We refrain from making inferences about the interaction between radical right party preference and media salience because the number of observations is too small. The category is hence not included in Figure I.5 (but it is included in the underlying model).

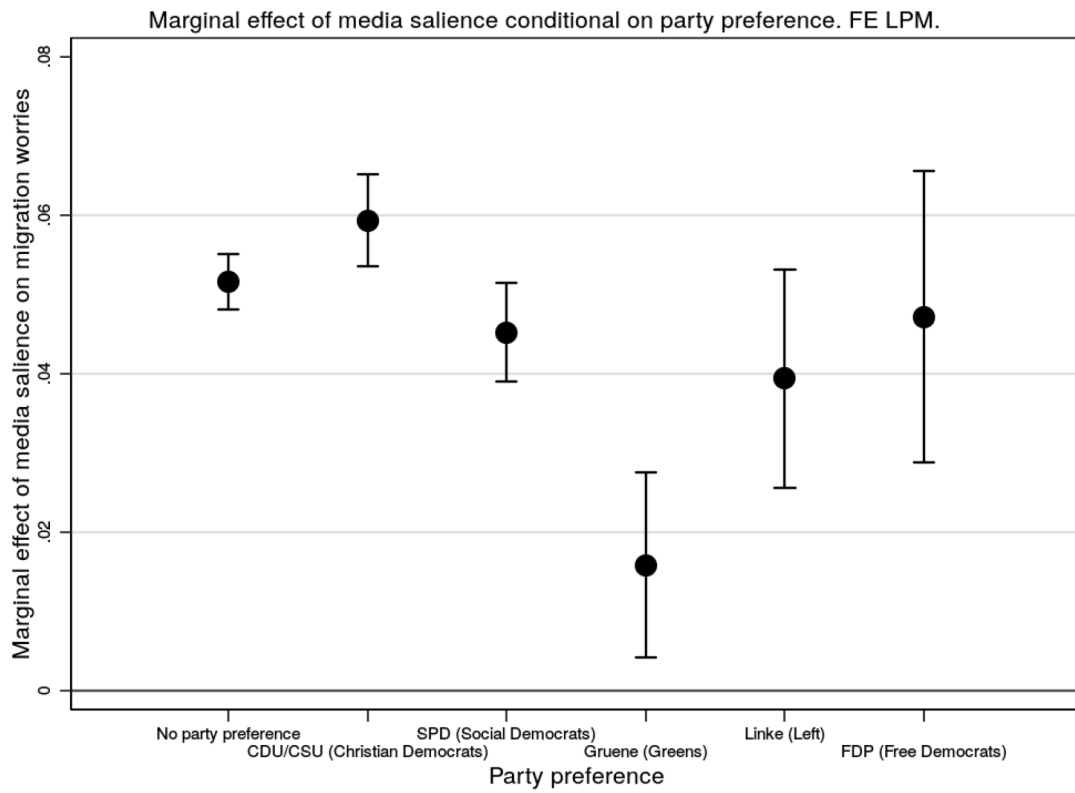


Figure II.5: Marginal effects of media salience on concerns about immigration conditional on party preference, with 95 per cent confidence intervals (based on Model 2 in Table II.1).

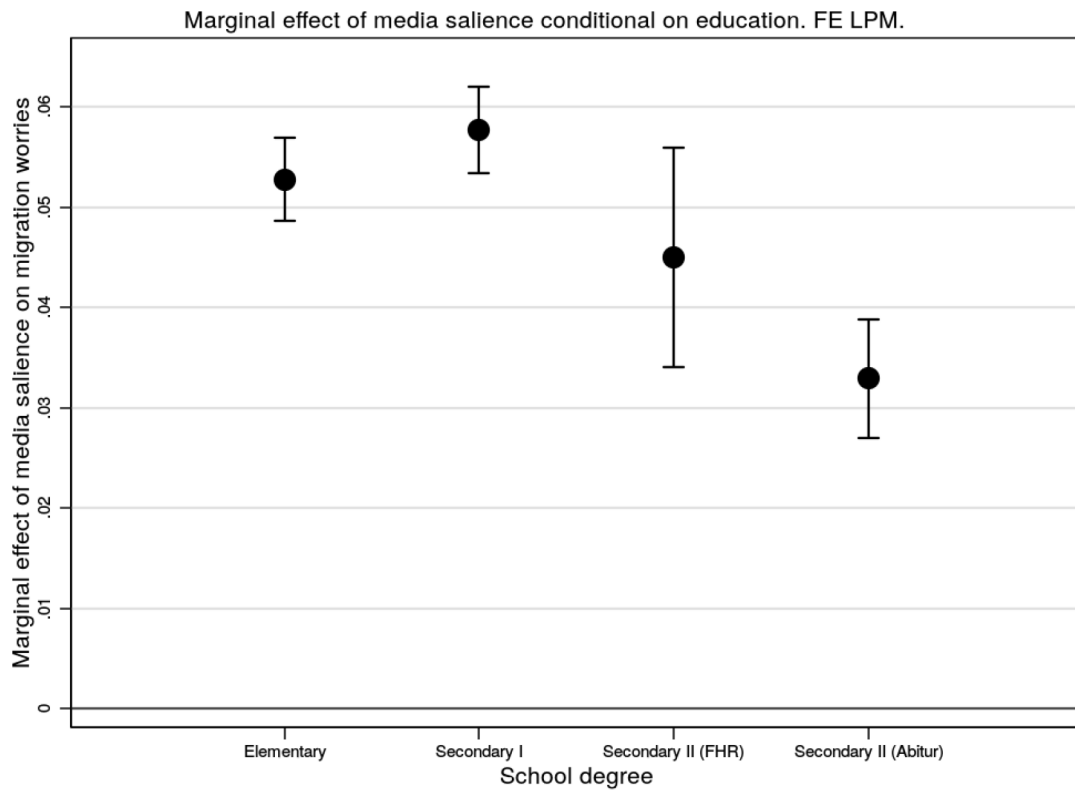


Figure II.6: Average marginal effects of media salience on concerns about immigration conditional on education, with 95 per cent confidence intervals (based on Model 3 in Table II.1).

FHR: Fachhochschulreife.

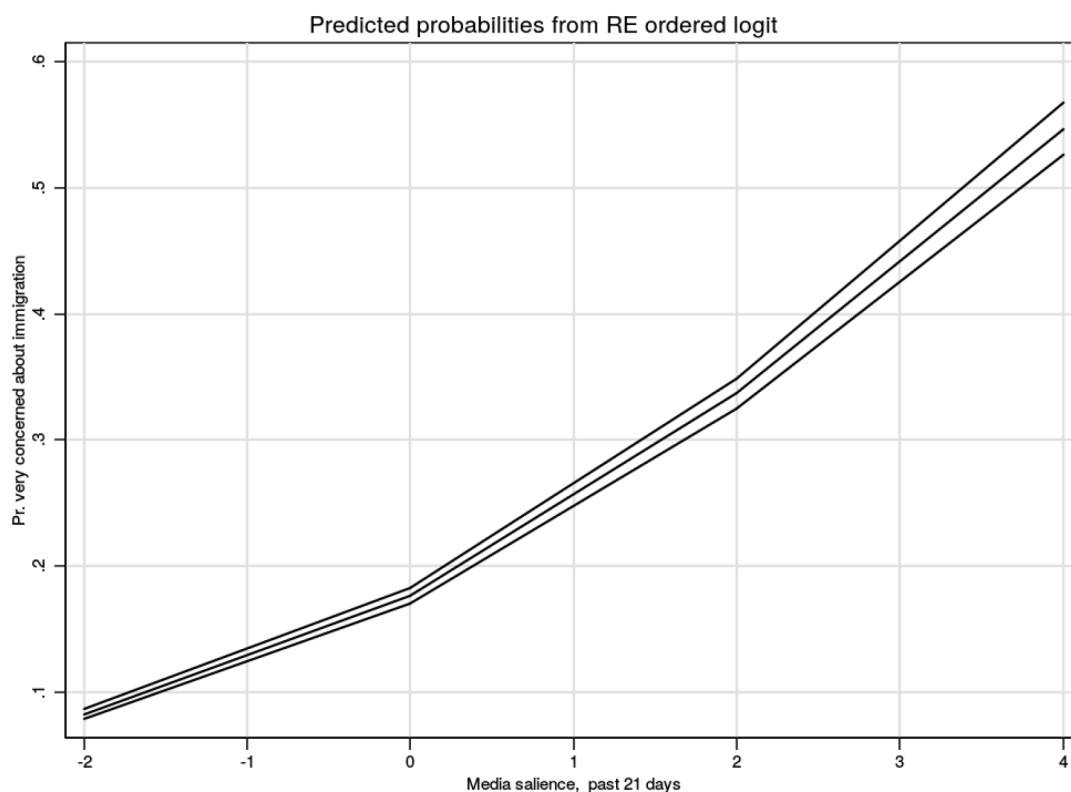


Figure II.7: Predicted probabilities from an RE ordered logistic regression. Variables set at means.

II.7.4 Robustness Checks

We intensively tested the robustness of our findings. First, we restricted the analysis to years with similar distributions of media salience to check whether results are driven by excessively high media salience in single years. Second, we restricted the sample to oral interviews to ensure that the date of the interview is not biased due to wrong dates for postal questionnaires. Third, we checked whether our results are affected by the construction of our media salience measure, generating other versions based on 7, 14, or 28 days before each interview instead of 21. Fourth, we checked whether replacing the factor with a weighted count variable changes the results (for past 21 days'-treatment: dailies divided by 18, weeklies by 3). Fifth, we ran panel random effects-(RE) and FE-ordered logistic regression models to see whether the regression link function affects results (for results of RE logistic

regression model see Figure II.7). Sixth, we included the moderate left Frankfurter Rundschau to the media salience variable.²¹ Finally, we allowed for effect heterogeneity of media salience between years and calculated the average effect over all years. In all cases, the results are similar to the ones of our main analyses (see the Online Appendix in II.10 for selected robustness checks, all further results are available upon request).

II.8 Summary and Discussion

Investigating a period of 15 years, we find that public concerns about immigration in Germany vary systematically with the amount of media attention on this issue. The probability of being very concerned about immigration is about 13 percentage points higher when immigration was vividly discussed before an interview compared to times when the issue played a minor role in the press. Moreover, we have shown that media attention varies considerably on a short-term basis. Hence, we suggest that it is very well suited to explain fluctuation in public opinion, adding theoretical and statistical explanatory power beyond general immigration rates.

Deeper analyses reveal that individuals who live in districts with a higher share of ethnic minorities are much less likely to be concerned in times of high media salience. These findings are contrary to the realistic group threat paradigm according to which feelings of ethnic competition should increase in contexts with high or increasing shares of out-group members, particularly when this outgroup is made salient (see Hopkins 2010). These different findings might be due to the comparatively stable regional share of foreigners within districts in our data, pointing to the importance of familiarization with ethnic minorities.

²¹ We did not include this outlet in our final analysis because data from the Frankfurter Rundschau is only available from 2003 onwards and because its distribution is limited.

Furthermore, the negative impact of media salience diminishes for natives with higher education and those who prefer the Green Party. Hence, it seems that prior knowledge and more stable attitudes as well as a liberal ideology can be effective barriers for such media effects (cf. Bechtel et al. 2015).

We stated that we are interested in analysing a universal effect of general issue salience over a long time span covering various debates. While we stressed our motivation behind this above, it is of course also associated with shortcomings, reflecting a general dilemma between the identification of generalizable, universal effects and an in-depth understanding and identification of effects of particular discourses.

First, we did not differentiate the toning of our news measure. It is reasonable to assume that negative news have a stronger negative effect than neutral or positive ones. However, recent research on media effects suggest that reports in high-quality print media are actually too balanced to classify as primarily negative or positive (Lawlor 2015). Hopkins (2010) even argues that one “cannot draw conclusions about whether the tone of coverage matters above and beyond the fact that there is coverage at all” (Hopkins 2010: 58). Moreover, the fact that we find a statistically significant and robust effect using an undifferentiated measure actually strengthens the general importance of mass media as a determinant of individual concerns about immigration. Put differently, finding an effect of negative news on negative attitudes may also be seen as more trivial.

Second, we also neither differentiate topics nor aspects of our attitudinal outcome. Again, this is also due to data restrictions. But specifying which types of debates (e.g. McLaren et al. 2017) affect which kinds of attitudes (e.g. Czymara and Schmidt-Catran 2017) would certainly be a promising endeavour for future research.

Moreover, individuals differ in their media consumption habits. Although we understand our media measure as a proxy of both direct individual exposure and

the indirect information environments, frequent consumption most probably increases the media effect. Unfortunately, there is no measure of individual media consumption available in the GSOEP.

Finally, we investigated the impact of print media outlets only. First, this misses the dominating medium for political news: TV. Second, with the growing supply of (free) online news, sales of print media are decreasing steadily. Social media are of increasing importance as platforms for political debates. How these developments affect public opinion and the political culture is hardly known yet, although there are pioneering studies (e.g. Bakshy, Messing, and Adamic 2015). The increasing availability and comprehensiveness of media data provides many promising opportunities for more nuanced research regarding the impact of such media in the future.

We see our study as a step towards a more fine grained, yet generalizable understanding of mass media effects on public opinion. We aimed at developing a nuanced design that extends previous research by drawing on within individual variation and fluctuations in the media on a daily basis. Yet, our observational “real-world” approach complicates the identification of the causal media effect (see Online Appendix in II.10). To obtain a picture of the impact of media, our results are, thus, ideally complemented by (quasi-)experiments (e.g. van Klingereren et al. 2017; Legewie 2013).

While we believe that the general effect of media salience is highly interesting, we certainly do not deny the additional insights a more differentiated media measure could bring. As manual coding with such a large number of articles is impossible, the rapidly growing field of text as data in the information sciences should be of great help here, offering methods like topic modelling or sentiment analysis (similar to, for example, Greussing and Boomgaarden 2017). Such quantitative investigations of the media discourses on immigration over such a long time span, however, would already be a study on its own. Still, adding such information to our

approach could lead to further insights and, thus, deepen the understanding of the relationship between mass media and public opinion formation.

II.9 Study I Appendix

Table II.A1. Descriptive statistics of sample of analysis.

Continuous Variables	Mean	No. person years
Monthly in-migration/1000	66.05	190049
Categorical Variables	%	No. person years
<i>Very concerned about immigration</i>		
Not/somewhat concerned	70.79%	134527
Very concerned	29.21%	55522
<i>Party preference</i>		
No party preference	54.38%	103351
CDU/CSU (Christian Democrats)	18.27%	34730
SPD (Social Democrats)	16.05%	30509
Gruene (Greens)	4.80%	9117
Linke (Left)	3.09%	5876
FDP (Free Democrats)	1.77%	3355
Others and mixed	0.92%	1755
Radical right	0.71%	1356
<i>Interest in politics</i>		
Very strong	7.64%	14518
Strong	31.15%	59209
Not so strong	48.52%	92208
Not at all	12.69%	24114
<i>Household income satisfaction on 10 point scale, five categories</i>		
low	3.25%	6171
	9.41%	17893
	21.74%	41309
	32.01%	60831
high	33.59%	63845
<i>Concerns general economic development</i>		
Not concerned	10.96%	20832
Somewhat concerned	54.31%	103218
Very concerned	34.73%	65999
<i>Concerns own economic situation</i>		
Not concerned	27.70%	52641
Somewhat concerned	51.73%	98304
Very concerned	20.58%	39104
<i>Age, five categories</i>		

<25	7.61%	14463
25-34	12.83%	24382
35-49	29.55%	56152
50-64	25.33%	48147
>65	24.68%	46905
<i>Employment status</i>		
Not working	5.84%	11103
In training/apprentice	5.70%	10825
Registered unemployed	5.43%	10315
Pensioner	27.99%	53196
Working	55.04%	104610
<i>Month of interview</i>		
Jan.	7.27%	13821
Feb.	33.10%	62908
Mar.	27.64%	52531
Apr.	14.54%	27639
May	7.39%	14048
Jun.	4.38%	8325
Jul.	3.06%	5809
Aug.	1.73%	3279
Sep./Oct./Nov.	0.89%	1689
<i>State of Residence</i>		
Schleswig-Holstein	3.06%	5825
Hamburg	1.49%	2833
Lower Saxony	9.18%	17447
Bremen	0.59%	1119
North-Rhine-Westfalia	19.18%	36445
Hessen	5.85%	11126
Rheinland-Pfalz	4.61%	8753
Baden-Wuerttemberg	9.77%	18573
Bavaria	13.44%	25541
Saarland	1.17%	2221
Berlin	3.85%	7315
Brandenburg	5.31%	10086
Mecklenburg-Vorpommern	2.82%	5355
Saxony	8.97%	17040
Saxony-Anhalt	5.21%	9906
Thuringia	5.51%	10464
<i>Survey year</i>		
2001	3.64%	6921
2002	7.72%	14673
2003	7.72%	14669
2004	7.54%	14327
2005	7.21%	13696

2006	7.61%	14471
2007	7.42%	14106
2008	7.04%	13384
2009	6.58%	12514
2010	6.02%	11444
2011	6.30%	11977
2012	6.67%	12678
2013	6.56%	12466
2014	6.22%	11812
2015	5.74%	10911
<hr/>		
N		190,049

Table II.A2 Moderating effects of district level share of foreigners.

Variable	FE-LPM	FE-LPM with time stable contextual covariates	FE-LPM with categorical share foreign variable
Share foreign	0.011***		
Media salience factor	0.049***	0.058***	0.049***
Share foreign X media salience factor	-0.001**		
Share foreign 2001 X media salience factor			-0.001***
Share foreign categorical			
2-6%			0.015
6-10%			0.027*
10-15%			0.033*
15-35%			0.035*
Share foreign categorical X media salience factor			
2-6%			-0.005
6-10%			-0.001
10-15%			-0.012**
15-35%			-0.020***
<i>Contextual controls:</i>			
Unemployment rate	0.005***		0.005***
Vocational training positions	-0.002***		-0.002***
Number of students	-0.000		-0.000
Av. household income	0.000***		0.000**
Population density	0.000		0.000
Constant	0.127*	0.191***	0.183***
Number person-years	166,399	166,399	166,399
Number persons	22,487	22,487	22,487
Min. observations per person	2	2	2
Max. observations per person	15	15	15

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Results from FE LPMs. All models control for the full set of individual level covariates (not shown), plus additional district level controls (unemployment rate, training positions, number of students, average household income, population density). The sample is restricted to those who had no changes in district over time to rule out individual selection into contexts. Complete table available upon request.

II.10 Study I Online Appendix

Table II.O1: Mean values of various established correlates of migration attitudes for original three valued ordinal item and the dichotomous operationalization

Correlates of migration attitudes	Migration concerns	Migration concerns
School degree		
Elementary	2.188	0.360
Secondary I	2.090	0.317
Secondary II (FHR)	1.856	0.204
Secondary II (Abitur)	1.683	0.142
Other degree/no degree	2.089	0.342
In school	1.788	0.199
Total	2.031	0.292
Party preference		
No party preference	2.077	0.310
CDU/CSU (Christian Democrats)	2.126	0.329
SPD (Social Democrats)	1.943	0.24
Die Grünen (The Greens)	1.456	0.07
Die Linke (The Left)	1.928	0.267
FDP (Free Democrats)	1.916	0.259
Others and mixed	1.952	0.288
Radical right	2.786	0.824
Total	2.031	0.292
Political left-right self-placement		
[0] 0 very left	1.949	0.288
[1] 1	1.843	0.232
[2] 2	1.803	0.205
[3] 3	1.821	0.202
[4] 4	1.887	0.224
[5] 5	2.120	0.334
[6] 6	2.117	0.332
[7] 7	2.263	0.433
[8] 8	2.424	0.523
[9] 9	2.573	0.637
[10] 10 very right	2.572	0.650
Total	2.058	0.313

Study I Online Appendix O1: What does our outcome measure?

In line with usual findings from the literature on attitudes towards immigration and immigrants, our measure is highly associated with education, party preference, and political ideology as Table O1 shows. This favours the argument that SOEP respondents interpret this item similar to other items on attitudes towards immigration and relate the question to negative consequences of immigration.

Study I Online Appendix O2: Is the Effect of Media Salience Causal? Considerations on Reverse Causality and Unmeasured Confounding

Our design assumes no effects of aggregate concerns in the population on media salience and that the effects of external events are mediated through mass media. If we do not allow for these assumptions, however, causal inference is complicated by two interrelated issues: feedback between aggregate concerns and media salience and unmeasured period effects.

Feedback mechanisms are present if the media increases aggregate public concerns, which, in turn, fuels interest in migration related topics, which then prompts journalists to write even more about the topic. Aggregate concerns sometimes even may precede media reports. If aggregate concerns also affect individual concerns, e. g. through social networks, they may confound our relationship of interest. In other words, it is hard to separate the effects of media salience and the aggregate mood in the population on individual concerns if these factors themselves correlate. To adjust for potential feedback mechanisms, we include a variable measuring the lagged mean concerns of respondents, covering the period of 42 to 22 days before each interview in Model 1 in Table O1. The coefficient of the LPM is clearly reduced but still substantial at 0.02.

As an additional analysis, we restrict the sample to years with no large fluctuations in media salience. The assumption behind this analysis is that feedback mechanisms between public opinion and media reports are mainly present in those debates which result in peaks in salience. In those years where there were no peaks in media salience we assume that there were no major reinforcing mechanisms of public opinion on media salience, or at least they were quite small. In addition, this restriction ensures that we compare years which are more similar in terms of media salience. The results are shown in Table O3. We find that such restrictions do not change our overall conclusions.

The second causal issue is that external events are assumed to have no direct additional influence on individual concerns given media salience and conditional on the variables in our model. We think this assumption is reasonable because most of the topics discussed among the public do not fall out of thin air due to some event which is not visible in media reports. Rather the issues are present in people's minds because the media reported about them in the first place.

These period events might, however, confound the relationship if their effects on individual concerns are not primarily channelled through media reports but for example through private communication or social networks. To account for periodic idiosyncrasies of certain years, we completely net out all variance between years by

including year fixed-effects (Model 2) or include a restricted cubic spline specification of the date variable (Model 3). In both models, the effect of media salience remains statistically significant, but the effect size is substantively reduced when year fixed effects are included in Model 2. Year dummies are commonly employed to adjust for unmeasured macro-level trends. By definition, netting out all variance between years adjusts for everything that could possibly confound the relationship between media salience and individual concerns that is related to each year. However, an alternative interpretation of such modelling is that the year dummies capture similarities between individuals within each year which are *caused* by media salience in this year. In that case, the inclusion of year fixed-effects leads to over-control bias, which results in an underestimation of the “true” effect of media salience because variation that is actually caused by media salience is partialled out.

Generally, identifying the correct model for the media effect over a range of temporal contexts depends on the assumptions about the theoretical emergence of the media effect: is it the effect of merely the media itself or does it also include the public discussion surrounding it? What exactly one assumes to be part of such a media effect influences the strength of the association between media salience and individual concerns. While we opted for the most general (and arguably easiest to interpret) media effect for our main analyses, we offer some additional, more conservative, specifications in the models presented here. In the end, we believe that what matters is that even under strict conditions, the media salience effect remains statistically and substantively significant.

Table II.O2: Possible adjustment strategies for feedback mechanisms and unmeasured confounding through period effects. Dependent variable: concerns about migration. Main independent variable: linear specification of media salience factor (*Welt*, *TAZ*, *Spiegel*, *Stern*)

	(1) Aggregate concerns ¹	(2) Year dummies	(3) Date splines
Media salience, past 21 days	0.02*** (0.00)	0.01*** (0.00)	0.02*** (0.00)
Control Variables:			
<i>Party preference</i> (ref.: no preference)			
CDU/CSU (Christian Democrats)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)
SPD (Social Democrats)	-0.01+ (0.00)	-0.01 (0.00)	-0.01 (0.00)
Die Grünen (The Greens)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Die Linke (The Left)	0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)
FDP (Free Democrats)	0.02* (0.01)	0.03** (0.01)	0.02* (0.01)
Others and mixed	0.02 (0.01)	0.02+ (0.01)	0.02+ (0.01)
Radical right	0.15*** (0.01)	0.14*** (0.01)	0.14*** (0.01)
<i>Interest in politics</i> (ref.: very strong)			
Strong	-0.02*** (0.01)	-0.02*** (0.00)	-0.02*** (0.00)
Not so strong	-0.03*** (0.01)	-0.03*** (0.01)	-0.03*** (0.01)
Not at all	-0.03*** (0.01)	-0.03*** (0.01)	-0.03*** (0.01)
<i>Income satisfaction categories</i> (ref.: low)			
1	-0.00 (0.01)	-0.01+ (0.01)	-0.01+ (0.01)
2	-0.01 (0.01)	-0.01* (0.01)	-0.01* (0.01)
3	-0.01* (0.01)	-0.02** (0.01)	-0.02** (0.01)
high	-0.01* (0.01)	-0.02** (0.01)	-0.02** (0.01)
<i>Concerns about German</i>			

<i>economy</i> (ref.: not concerned)			
Somewhat concerned	0.03*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Very concerned	0.11*** (0.00)	0.12*** (0.00)	0.11*** (0.00)
<i>Concerns about own economic situation</i> (ref.: not concerned)			
Somewhat concerned	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)
Very concerned	0.06*** (0.00)	0.06*** (0.00)	0.06*** (0.00)
<i>Age categories</i> (ref.: <25)			
25-34	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
35-49	0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)
50-64	0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
>65	0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
<i>Employment status</i> (ref.: not working)			
In training/apprentice	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Registered unemployed	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Pensioner	0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Working	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
<i>Month of interview</i> (ref.: January)			
Feb.	0.02* (0.01)	-0.00 (0.00)	0.00 (0.00)
Mar.	0.02** (0.01)	0.00 (0.00)	0.00 (0.00)
Apr.	0.03*** (0.01)	0.01+ (0.00)	0.00 (0.00)
May	0.05*** (0.01)	0.01** (0.01)	0.01+ (0.01)
Jun.	0.05*** (0.01)	0.01 (0.01)	-0.00 (0.01)

Jul.	0.04 ^{***} (0.01)	-0.00 (0.01)	-0.01 ⁺ (0.01)
Aug.	0.06 ^{***} (0.01)	0.01 (0.01)	0.00 (0.01)
Sep./Oct./Nov.	0.05 ^{***} (0.01)	0.01 (0.01)	-0.01 (0.01)
Monthly in- migration/1000 (imputed before 2006)	0.00 ^{**} (0.00)	0.00 ^{**} (0.00)	0.00 ^{***} (0.00)
Aggregate concerns	0.57 ^{***} (0.02)		
<i>Survey year</i> (ref.: 2001)			
2002		0.04 ^{***} (0.01)	
2003		0.00 (0.01)	
2004		0.06 ^{***} (0.01)	
2005		0.13 ^{***} (0.01)	
2006		0.08 ^{***} (0.01)	
2007		0.08 ^{***} (0.01)	
2008		0.04 ^{***} (0.01)	
2009		-0.01 ⁺ (0.01)	
2010		-0.01 (0.01)	
2011		0.03 ^{***} (0.01)	
2012		-0.02 ^{**} (0.01)	
2013		0.01 (0.01)	
2014		0.06 ^{***} (0.01)	
2015		0.09 ^{***} (0.01)	
Date spline term 1			-0.00 ^{***} (0.00)
Date spline term 2			0.00 ^{***} (0.00)

Date spline term 3			-0.01*** (0.00)
Date spline term 4			0.02*** (0.00)
Date spline term 5			-0.01*** (0.00)
Date spline term 6			-0.00* (0.00)
Date spline term 7			-0.00 (0.00)
Constant	0.00 (0.02)	0.18*** (0.02)	0.99*** (0.21)
No. person-years	149945	190049	190049
No. persons	24747	25073	25073

Standard errors in parentheses. Data: SOEP v32.1. April 2001 to 2015. ¹ Calculated as mean concerns in period 42 days to 21 days before interview with at least 15 observations (hence the reduced sample size). ⁺ $p < 0.10$, ^{*} $p < 0.05$, ^{**} $p < 0.01$, ^{***} $p < 0.001$

Table II.O3: Restricting the analysis to subsets of years does not change the results. Dependent variable: concerns about migration. Main independent variable: linear specification of media salience factor (*Welt*, *TAZ*, *Spiegel*, *Stern*).

	(1)	(2)	(3)	(4)	(5)
	Without refugee crisis year 2015	Excluding years with most salient debates (2004, 06, 10, 15)	Excluding years with most and relatively salient debates (04 to 06, 10, 14, 15)	Low salience years only (2003, 11, 12, 13)	Restrict to years with 6 quantiles of media salience
Media salience, past 21 days	0.05*** (0.00)	0.06*** (0.00)	0.04*** (0.00)	0.05*** (0.01)	0.04*** (0.00)
<i>Party preference</i> (ref.: no preference)					
CDU/CSU (Christian Democrats)	0.03*** (0.00)	0.03*** (0.00)	0.02*** (0.01)	0.02+ (0.01)	0.03*** (0.01)
SPD (Social Democrats)	-0.01+ (0.00)	-0.01+ (0.00)	-0.01 (0.01)	-0.00 (0.01)	-0.02** (0.01)
Die Grünen (The Greens)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.02 (0.01)
Die Linke (The Left)	-0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02 (0.02)	-0.03* (0.01)
FDP (Free Democrats)	0.02+ (0.01)	0.02* (0.01)	0.02 (0.01)	-0.02 (0.02)	0.01 (0.01)
Others and mixed	0.02 (0.01)	0.02 (0.01)	0.02+ (0.01)	0.01 (0.02)	0.02 (0.02)
Radical right	0.14*** (0.01)	0.13*** (0.02)	0.15*** (0.02)	0.14*** (0.04)	0.16*** (0.02)
<i>Interest in politics</i> (ref.: very strong)					
Strong	-0.02*** (0.00)	-0.02*** (0.01)	-0.03*** (0.01)	-0.03** (0.01)	-0.01+ (0.01)
Not so strong	-0.02*** (0.01)	-0.03*** (0.01)	-0.04*** (0.01)	-0.03** (0.01)	-0.02* (0.01)
Not at all	-0.02*** (0.01)	-0.03*** (0.01)	-0.04*** (0.01)	-0.05*** (0.01)	-0.01 (0.01)
<i>Income satisfaction</i> (ref.: low)					
1	-0.01* (0.01)	-0.02* (0.01)	-0.01+ (0.01)	-0.02 (0.01)	-0.01 (0.01)
2	-0.02** (0.01)	-0.02* (0.01)	-0.01+ (0.01)	-0.02 (0.01)	-0.01 (0.01)
3	-0.02*** (0.01)	-0.02** (0.01)	-0.02* (0.01)	-0.04* (0.01)	-0.02+ (0.01)
high	-0.02***	-0.02**	-0.02*	-0.03*	-0.02+

	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
<i>Concerns about German economy</i>					
(ref.: not concerned)					
Somewhat concerned	0.04*** (0.00)	0.04*** (0.00)	0.03*** (0.00)	0.04*** (0.01)	0.04*** (0.01)
Very concerned	0.12*** (0.00)	0.12*** (0.00)	0.10*** (0.01)	0.11*** (0.01)	0.14*** (0.01)
<i>Concerns about own economic situation</i> (ref.: not concerned)					
Somewhat concerned	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)	0.01* (0.01)	0.02*** (0.00)
Very concerned	0.06*** (0.00)	0.06*** (0.00)	0.06*** (0.00)	0.06*** (0.01)	0.07*** (0.01)
<i>Age categories</i> (ref.: <25)					
25-34	-0.00 (0.01)	0.01 (0.01)	-0.01 (0.01)	-0.01 (0.02)	0.01 (0.01)
35-49	-0.01 (0.01)	0.00 (0.01)	-0.02+ (0.01)	-0.02 (0.02)	0.01 (0.01)
50-64	-0.01 (0.01)	0.01 (0.01)	-0.02 (0.01)	-0.01 (0.02)	0.01 (0.01)
>65	-0.01 (0.01)	0.02 (0.01)	-0.01 (0.01)	0.01 (0.03)	0.02 (0.02)
<i>Employment status</i> (ref.: not working)					
In training/apprentice	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.02)	-0.02 (0.01)
Registered unemployed	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.01)	-0.02 (0.02)	-0.01 (0.01)
Pensioner	-0.01+ (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.02 (0.02)	-0.00 (0.01)
Working	0.00 (0.01)	0.00 (0.01)	0.01 (0.01)	-0.01 (0.01)	0.00 (0.01)
<i>Month of interview</i> (ref.: January)					
Feb.	0.01*** (0.00)	0.03*** (0.00)	-0.00 (0.01)	0.02+ (0.01)	0.01** (0.01)
Mar.	0.02*** (0.00)	0.03*** (0.00)	0.01 (0.01)	0.03*** (0.01)	0.01* (0.01)
Apr.	0.02*** (0.00)	0.03*** (0.01)	0.01 (0.01)	0.04*** (0.01)	0.02** (0.01)
May	0.02** (0.01)	0.03*** (0.01)	0.01 (0.01)	0.05*** (0.01)	0.01 (0.01)
Jun.	0.01	0.02**	-0.00	0.03*	0.00

	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Jul.	-0.00	0.01	-0.01	0.04**	-0.01
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Aug.	0.02*	0.03**	0.01	0.05**	0.02
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Sep./Oct./Nov.	-0.01	-0.00	-0.00	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Monthly in- migration/1000 (imputed before 2006)	0.00***	0.00***	-0.00***	-0.00 ⁺	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	0.20***	0.19***	0.29***	0.29***	0.19***
	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)
No. person-years	179138	138896	113388	51790	100363
No. persons	25073	25060	24650	22537	24110

Standard errors in parentheses. Data: SOEP v32.1. April 2001 to 2015. ⁺ $p < 0.10$, * $p < 0.05$, ** p

< 0.01 , *** $p < 0.001$

Table II.O4: Regression models of concerns about immigration. Dependent variable: concerns about migration. Main independent variable: linear specification of media salience factor (*Welt*, *TAZ*, *Spiegel*, *Stern*).

	(1) FE linear probability model	(2) FE ordered logit ¹	(3) RE ordered logit
Media salience, past 21 days	0.050*** (0.002)	0.428*** (0.009)	0.432*** (0.009)
<i>Party preference</i> (ref.: no preference)			
CDU/CSU (Christian Democrats)	0.027*** (0.005)	0.236*** (0.029)	0.294*** (0.025)
SPD (Social Democrats)	-0.007 (0.004)	0.006 (0.028)	-0.136*** (0.025)
Die Grünen (The Greens)	-0.012* (0.006)	-0.205*** (0.054)	-0.919*** (0.048)
Die Linke (The Left)	-0.005 (0.009)	-0.013 (0.057)	-0.211*** (0.056)
FDP (Free Democrats)	0.019* (0.009)	0.145* (0.066)	0.043 (0.063)
Others and mixed	0.015 (0.010)	0.072 (0.072)	-0.052 (0.069)
Radical right	0.144*** (0.015)	1.075*** (0.128)	1.861*** (0.128)
<i>Interest in politics</i> (ref.: very strong)			
Strong	-0.020*** (0.005)	-0.099** (0.034)	-0.018 (0.031)
Not so strong	-0.026*** (0.006)	-0.110** (0.038)	0.120*** (0.034)
Not at all	-0.025*** (0.007)	-0.152*** (0.045)	0.153*** (0.041)
<i>Income satisfaction</i> (ref.: low)			
1	-0.012+ (0.007)	-0.050 (0.043)	-0.096* (0.044)
2	-0.015* (0.007)	-0.049 (0.044)	-0.099* (0.044)

3	-0.021** (0.007)	-0.091* (0.045)	-0.184*** (0.046)
high	-0.020** (0.008)	-0.077+ (0.046)	-0.215*** (0.047)
<i>Concerns about German economy (ref.: not concerned)</i>			
Somewhat concerned	0.037*** (0.003)	0.612*** (0.026)	0.819*** (0.027)
Very concerned	0.120*** (0.004)	1.091*** (0.029)	1.437*** (0.032)
<i>Concerns about own economic situation (ref.: not concerned)</i>			
Somewhat concerned	0.019*** (0.003)	0.270*** (0.019)	0.368*** (0.018)
Very concerned	0.062*** (0.004)	0.508*** (0.027)	0.700*** (0.026)
<i>Age categories (ref.: <25)</i>			
25-34	-0.001 (0.008)	-0.155** (0.052)	-0.063 (0.045)
35-49	-0.009 (0.010)	-0.323*** (0.067)	0.040 (0.047)
50-64	-0.014 (0.011)	-0.425*** (0.076)	0.179*** (0.049)
>65	-0.014 (0.013)	-0.487*** (0.086)	0.250*** (0.057)
<i>Employment status (ref.: not working)</i>			
In training/apprentice	-0.010 (0.008)	-0.027 (0.057)	-0.252*** (0.051)
Registered unemployed	-0.009 (0.007)	-0.022 (0.048)	0.007 (0.044)
Pensioner	-0.009 (0.008)	-0.027 (0.052)	0.139** (0.043)
Working	0.001	0.046	-0.021

	(0.006)	(0.039)	(0.033)
<i>Month of interview (ref.: January)</i>			
Feb.	0.016*** (0.005)	0.063* (0.026)	0.012 (0.028)
Mar.	0.017*** (0.005)	0.083** (0.027)	-0.006 (0.029)
Apr.	0.019*** (0.005)	0.090** (0.030)	-0.008 (0.031)
May	0.022*** (0.006)	0.100** (0.035)	-0.001 (0.036)
Jun.	0.015* (0.007)	0.006 (0.040)	-0.091* (0.041)
Jul.	0.002 (0.007)	-0.049 (0.046)	-0.152** (0.046)
Aug.	0.022* (0.009)	0.144* (0.057)	0.010 (0.056)
Sep./Oct./Nov.	-0.005 (0.011)	-0.035 (0.080)	-0.224** (0.073)
Monthly in-migration/1000 (imputed before 2006)	0.001*** (0.000)	0.007*** (0.000)	0.006*** (0.000)
Constant	0.191*** (0.015)		
Cut-off 1			-0.123 (0.090)
Cut-off 2			3.251*** (0.090)
No. person-years	190049	209509	190049
No. persons	25073		25073
Min. no. person-years per person	2		2
Max. no. person-years per person	15		15

Standard errors in parentheses. Data: SOEP v32.1. April 2001 to 2015. ¹Panel Fixed-Effects ordered logit model (BUC estimator) according to (Baetschmann, Staub, and Winkelmann 2015). ⁺ $p < 0.10$, ^{*} $p < 0.05$, ^{**} $p < 0.01$, ^{***} $p < 0.001$

Study I Online Appendix O3: Results for different periods of measuring media salience before date of interview

We assessed whether changing the number of days before the individual interviews took place changes our results. The results showed to be very similar for periods of 7 days, 14 days, 21 days and 28 days before the interview.

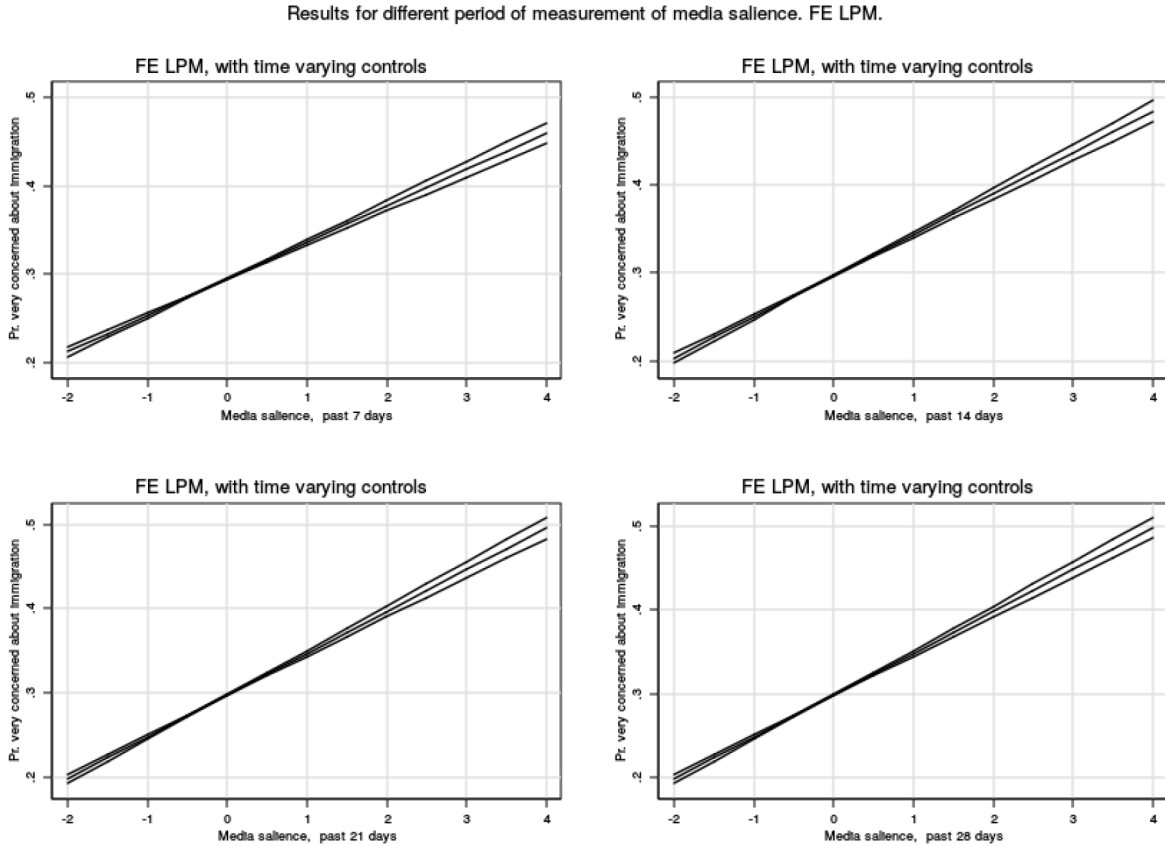


Figure II.O1: Additional operationalizations of media salience and their association with concerns about immigration. The four media salience variables vary by the time span before the interview in which a day's media salience was measured.

Study I Online Appendix O4: Using counts of articles as treatment variable (weighted by days of weekly publication frequency)

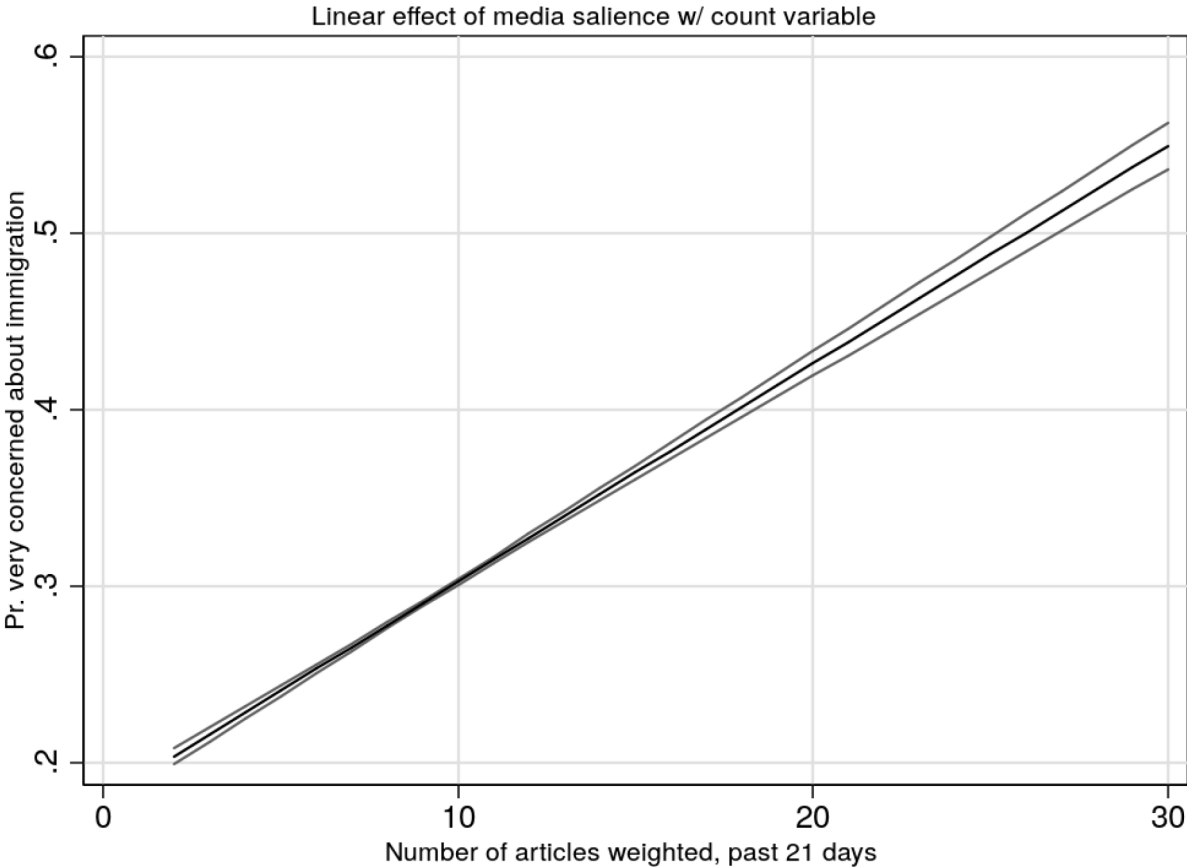


Figure II.O2: Association between a weighted count of articles in the past 21 days (instead of the factor variable) and concerns about immigration.

III. Study II: Parental White Flight? Neighborhood Ethnic Composition, Children and Residential Mobility in Germany

III.1 Abstract

The mobility of ethnic majority households out of areas with sizable shares of ethnic minorities in Western countries, or “White Flight”, has been discussed as a driver of ethnic segregation and might contribute to less cohesion in diverse neighborhoods. This paper analyzes one explanation for White Flight, namely, whether households leave ethnically concentrated areas when having children. There is a clear lack of longitudinal studies on the interconnection between children, ethnic composition and residential mobility. Even less is known about whether households with migration background leave ethnically diverse neighborhoods once they have children, and whether Parental White Flight can be found in Germany. This paper closes these gaps by drawing on the German Socio-Economic Panel from 2007 to 2016, merged with fine-grained neighborhood data and by employing a fixed-effects design. Results indicate that the probability of ethnic majority households to leave neighborhoods after having children is substantially higher when they live in neighborhoods with higher shares of ethnic minorities. Both native households with newborn and pre-school children are likely to move out, which is tentative evidence against school choice as sole explanation of Parental White Flight. I do not find such mobility patterns for households with migration background. Furthermore, after leaving ethnically diverse neighborhoods, native Germans tend to settle in less diverse areas. Overall, this study indicates that children might be one reason for White Flight, but more studies are needed to guide policies which help to understand the individual reasons behind these moves and the overall extent of White Flight in Germany.

III.2 Introduction

Two empirical observations about ethnic diversity in European cities are noteworthy. On the one hand, research demonstrates a considerable extent of ethnic segregation in European countries (e.g. Glitz, 2014; Musterd, 2005). This might be

problematic if spatial ethnic segregation limits inter-group contact in everyday situations and can thus contribute to worsening group relations (Pettigrew and Tropp 2008; Windzio and Trommer 2017). On the other hand, scholars have repeatedly shown that social cohesion is lower in ethnically diverse neighborhoods than in homogenous areas (van der Meer and Tolsma 2014; Schaeffer 2014). Beyond these empirical regularities, public discourse on ethnic segregation in Europe often attributes existing segregation to a low willingness to assimilate on part of the minority population, for example featuring stories on so-called "parallel societies", but neglects the residential choice behavior of the ethnic majority (Phillips 2010). Against the background of these research findings and public debates, this study contributes to knowledge about a type of residential mobility behavior that is of importance to both segregation and neighborhood cohesion, namely "White Flight", the tendency of ethnic majority households to leave areas with high shares of ethnic minorities.²² In particular, I investigate whether households are likely to "flee" after having children, or when their child is of pre-school age (Goyette et al. 2014). By comparing the tendency to leave ethnically diverse areas when having children between households with migration background and native German households, I furthermore show whether it is only German natives who "flee" or whether immigrant households show similar behavior.

The out-mobility of families with children can have severe consequences for both cities and single neighborhoods. If fundamental assumptions of theoretical models of ethnic segregation hold, the out-movement of few ethnic majority members can trigger cascades of out-mobility and future avoidance of a neighborhood which leads to high aggregate segregation (Schelling 1971). Even if those models were incorrect, "Parental White Flight" has the potential to erode local social cohesion. Research shows that families with school-aged children are less mobile (Michielin and Mulder

²² I will use the terms share minorities, ethnic concentration and ethnic diversity or simply diversity interchangeably to refer to this neighborhood characteristic.

2008), making it more likely that they have interest to develop ties to their neighbors. Furthermore, children have been found to facilitate ties between members of different ethnic groups (Schaeffer 2013b). Families with children are thus likely to contribute to social cohesion of neighborhoods which is typically lower in ethnically concentrated areas (van der Meer and Tolsma 2014; Schaeffer 2014). The out-movement of families with children might also be detrimental for immigrant integration because of lacking ethnic majority peers for minority children, most notably in school (Windzio and Trommer 2017).

I theorize that parents evaluate neighborhoods differently once having children, and move to neighborhoods with lower shares of ethnic minorities to fulfil these changed expectations. Empirically, my strategy is first to isolate the effect of children on the probability to leave a neighborhood conditional on the share of ethnic minorities in the neighborhood using a fixed-effects design. I then investigate whether the neighborhoods of destination after moving display lower levels of ethnic concentration than the neighborhood of origin. My findings lend credibility to the assertion that life course events on part of the ethnic majority population should be given more consideration by researchers explaining mobility out of diverse areas. This study advances previous research in three ways. First, this paper goes beyond cross-sectional perspectives (Drever 2008) by longitudinally analyzing *changes* in the presence of children by comparing the same households before and after they have children (see also Goyette et al. [2014]). Second, extending research by Goyette and colleagues (Goyette et al. 2014), this paper compares households with migration background and native households. Third, this study extends knowledge about mobility from ethnically diverse neighborhoods to the German context which is largely under-studied in comparison to the U.S. or Northern European countries. Germany is characterized by relatively low overall levels of ethnic segregation (Musterd 2005; Schönwalder and Sohn 2009), despite its sizable migrant population; and residential mobility is not as prevalent as in other countries (Caldera Sánchez

and Andrews 2011). Based on these contextual characteristics one could thus see Germany as a least likely case for White Flight. Thus, should “Parental White Flight” be a phenomenon in Germany, it might be even more so in other countries.

III.3 Theory

This paper brings together two research traditions on residential mobility decisions of households in an attempt to understand mobility out of ethnically concentrated areas. Researchers interested in ethnic segregation naturally focus on the association between neighborhood ethnic composition and moving propensity (Crowder 2000). Another line of research explains individual mobility decisions with life course events like getting a new job, marriage or having children (Clark 2013). I combine both approaches by assuming that life course events, in this case having children, change individual perceptions: These may be towards the ethnic composition per se, or demands for amenities in their neighborhood, that are less likely to be fulfilled in neighborhoods with sizable minority populations. This focus on changes in evaluations of neighborhoods adds to research on ethnic segregation by considering the household level dynamics that underlie ethnically connoted mobility streams.

III.3.1 Ethnic Segregation and the Importance of Life Course Events

Research on out-mobility of White households from ethnically concentrated, most often Black, neighborhoods (“White Flight”) has a long tradition in the U.S. to explain the persistence of high levels of ethnic segregation between Blacks and Whites (seminal, Crowder [2000]). It has long been debated as one major source of residential segregation and found substantial support in U.S. studies (Crowder, Hall, and Tolnay 2011; Hall and Crowder 2014; Quillian 2002).

Studies in Europe mostly support the White Flight thesis also, with “White” describing the “native” majority population moving out of areas with high share of ethnic minorities which migrated to Europe from non-Western countries. Skifter Andersen (2017) analyzes residential mobility of ethnic majorities and minorities in Denmark and concludes that White Flight contributes to residential segregation. Bolt, van Kempen, and van Ham (2008) similarly find that native Dutch are more likely than non-Western immigrants to move out of ethnically concentrated areas and settle in less concentrated neighborhoods. In line with these findings, wishes to leave neighborhoods are associated with neighborhood concentration of ethnic minorities (van Ham and Feijten 2008). Swedish studies rather find evidence for White Avoidance (the tendency of majority household to avoid ethnic neighborhoods when moving) when explaining the production and maintenance of ethnically concentrated areas, e.g. for the largest cities (Bråmås 2006) or the case of Stockholm in particular (Andersson 2013).

The main focus of studies on White Flight is the association between ethnic composition and moving. Some of these studies are rather descriptive (Bråmås 2006), showing the extent of White Flight in comparison to other ethnic mobility patterns. Other studies adjust the association between ethnic composition and moving propensity for a variety of confounding variables, most notably socio-economic neighborhood and household characteristics (Hall and Crowder 2014; Skifter Andersen 2017). Since the association prevails after controlling for these variables they conclude that it is the ethnic compositions of the neighborhood, and not proxies of ethnic composition, that drives ethnic majority individuals out.

III.3.2 Life-Course Events, Children and White Flight

While the reviewed studies above present evidence for the existence of White Flight as an aggregate residential mobility flow, some of their authors note that individual

reasons for White Flight are not well known (Bolt et al. 2008: 1381; Skifter Andersen 2017: 298). The present study aims at deepening our understanding about household level dynamics behind White Flight by focusing on life course events like having children (Goyette et al. 2014) which might trigger a change in neighborhood perceptions and preferences of individuals who live in ethnically diverse areas.

This change in perception is important because the current inhabitants in ethnically diverse areas are the product of selection processes that took place before the start of a given empirical investigation. For example, White Avoidance, the reluctance of Whites to move into ethnically concentrated areas, plays a large role in explaining residential segregation (Bråmås 2006; Quillian 2002; Skifter Andersen 2017). If this avoidance is associated with certain individual characteristics, like being less open towards ethnic diversity (Schlueter et al. 2018), those living with ethnic minorities can be expected to be somewhat more tolerant towards ethnic minorities than the rest of the population. This prompts the question, what makes them leave?

A promising research agenda for the analysis of White Flight thus asks which household level events trigger changes in the assessment of the neighborhood, which then leads to an out-movement of established diversity dwellers. This line of argument fits with research on the contradiction between liberal attitudes and behavior, exemplified e.g. by Dutch majority individuals who favor diversity, but are reluctant to invest in social ties in ethnically mixed neighborhoods (Blokland and van Eijk 2010), or highly educated Whites in the U.S. who choose alternative schooling when living in neighborhoods with high share of Blacks (Sikkink and Emerson 2008).

One such event might be having children. Having children is a fundamental life course event for research on residential mobility. Whereas the presence of children in households is seen as an inhibitor of residential mobility, the *event* of having

children is associated with a higher probability of residential moves (Clark 2013; Michielin and Mulder 2008).

There is cross-sectional evidence that ethnic majority families with children are less likely to live in neighborhoods with other ethnic groups than other ethnic majority families for the German case (see also Iceland et al., 2010, for the U.S.). Drever (2008) finds that the proportion of Germans with school-aged children living in postal code areas with high shares of foreign born is lower compared to Germans living in neighborhoods with low shares of foreign born. Similarly, Teltemann and colleagues find substantial ethnic segregation in major German cities for families with 15 year old children (Teltemann, Dabrowski, and Windzio 2015). Note that these findings leave open the question where this lack of school-aged children comes from, that is, whether natives really move out when they have children or because of other reasons.

Goyette, Iceland and Weininger are among the few who apply panel regressions to study the effects of transitions into parenthood and having school aged children on out-mobility of White families (Goyette et al. 2014). Using the data for the U.S., their results show that White households' probability to move with children below the age of six increases with the neighborhood share of Blacks and diversity in a neighborhood, thus providing evidence for the "Parental White Flight" thesis. My study has a similar scope, but extends their work by distinguishing between different age groups of children and by analyzing both migrant and native households.

Several potential mechanisms can explain why the propensity to leave areas when having children should vary with ethnic composition of the neighborhood (Goyette et al. 2014; Krysan 2002). First of all, perceptions of neighborhood ethnic composition might change because individuals start to associate the ethnicity of their neighbors with negative consequence for their children. These subjective preferences might be affected by media portrayals of crime in ethnically diverse

areas or worries about ethnic closure on part of the migrant population (for example in schools) and involve some degree of prejudice or perceived threat (Krysan 2002). Second, other conditions that are often found in ethnically concentrated neighborhoods but are not caused by the ethnic composition itself (Krysan 2002) might be given more significance after having children. Certain amenities of neighborhoods gain importance after having children, kindergartens and medical services (e.g. pediatricians) and the quality, size, and availability of housing. Studies also find higher pollution levels in ethnically concentrated neighborhoods (Rüttenauer 2018). In addition, parents might pay more attention to the socio-demographic composition of neighborhoods than non-parents and areas with high concentrations of households with immigration background are often socio-economically disadvantaged (Drever 2004, 2008; Schönwalder and Sohn 2009).

These considerations lead me to the first hypothesis which applies to native families after having children:

H1: The probability to leave a given neighborhood after having a child (in contrast to before having a child) of native households increases with the share of ethnic minorities in the neighborhood (Parental White Flight Hypothesis).

The same can be assumed for households with migration background. However, immigrant households typically face additional challenges when looking for new dwellings. For example, they often face discrimination on the housing market (Auspurg, Schneck, and Hinz 2018). Furthermore, some migrant households might also want to stay in neighborhoods with ethnic concentrations to stay near co-ethnics (Boschman and van Ham 2015). Both mechanisms could detain migrant households to move when having children. Since it is unclear what to expect for households with migration background, and there is reason to believe that the problems faced in specific neighborhoods are the same for both families with and without migrants, I remain with the following working hypothesis, which expects the same as for native households:

H2: The probability to leave a given neighborhood after having a child (in contrast to before having a child) of households with migration background increases with the share of ethnic minorities in the neighborhood (Parental Flight Hypothesis).

Whereas the above hypotheses expect a rise in the probability to leave a neighborhood when having children to remain constant after the child is born, there is reason to expect that parents are particularly susceptible to move out of diverse areas when their children are *of pre-school age* (defined here as three to five years of age). Often the quality of schools is referred to as an essential cause of White Flight (Owens 2017; Schindler Rangvid 2009). This can also be expected in the German case. In most German states, children are assigned to primary schools close to their parents' place of residence based on catchment areas. Though it is sometimes possible to sidetrack this assignment by applying for private or integrated schools (Breidenstein, Krüger, and Roch 2014; Noreisch 2007), the large majority of pupils still visit public schools (Statistisches Bundesamt 2017). In this institutional context, parents might be especially inclined to base their residential decisions on the availability and perceived quality of schools in that neighborhood. Assuming that these considerations are particularly prevalent for parents when their children are of pre-school age, this leads me to the "school flight" hypothesis, which is an extension of H1 with a focus on the timing of moves with respect to the age of the children:

H3: The interaction between the presence of children and neighborhood share of ethnic minorities from H1 is particularly pronounced for native households when children are of pre-school age, as compared to shortly after birth (School White Flight Hypothesis).

The same can be assumed for households with migration background:

H4: The interaction between the presence of children and neighborhood share of ethnic minorities from H1 is particularly pronounced for households with migration

background when children are of pre-school age, as compared to shortly after birth (School Flight Hypothesis).

III.4 Data and Methods

III.4.1 Data

To address my research question I use data on households from the German Socio-Economic Panel (SOEP) from 2007 to 2016, merged with geo-coded data on the neighborhoods of SOEP households from the microm-SOEP dataset (Goebel et al. 2014).

The SOEP is a Germany-wide panel study that is conducted since 1984 (Wagner et al. 2007), where each individual above the age of 18 in a sampled household is interviewed annually. Panel data allows researchers to follow the household's residential choices over time and to study the effects of the *event* of having children, as households are observed before and after children of specific age are present. In addition, the SOEP provides rich information on the living conditions of respondents and thus allows for the adjustment of a comprehensive set of confounding factors.

Information on SOEP respondents' neighborhoods comes from microm, a private company which gathers data mostly for marketing purposes (microm 2015). Microm relies on sources like the German postal service, official administrative data and real estate services. More and more scientific studies make use of this unique data source (Dittmann and Goebel 2010; Lancee and Schaeffer 2015; Lersch 2013) because it offers information on fine-grained, neighborhood-like contextual units

(Goebel et al. 2014) and thus greatly exceeds possibilities of German administrative data for neighborhood research.²³

Neighborhoods are represented by so-called “Marktzellen” from 2007 to 2010, an own regional classification by microm, which are then replaced by “Postleitzahl 8” regions from 2011 onwards, which are fine-grained subdivisions of German postal code areas. These classifications aim at encompassing homogeneous areas in terms of spatial and building related characteristics. On average 500 households live in one PLZ8 region (microm 2015).²⁴ In additional analyses both neighborhood classifications show to encompass similar numbers of inhabitants and there are no major breaks in average ethnic composition between 2011 and 2012.

I restrict the sample to household years where the youngest woman is between 18 and 45 years old (in single households the same rule is applied to men), and households which were at least interviewed twice. In addition, I restrict the analysis to areas which are classified as “urban” by the German Federal Institute for Research on Building, Urban Affairs and Spatial Development to have a more homogenous sample.²⁵ Furthermore, my empirical analyses are stratified by migration background of the household members. Households of migration background are defined as having either, zero native German members and at least one of migration background, or one native member and more members of migration background. The reverse definition applies for native households. Migration background in the SOEP encompasses individuals who themselves migrated to Germany, or whose parents migrated to Germany (indirect migration background).

²³ The microm-SOEP dataset is provided by the German Institute for Economic Research (DIW) in Berlin (Goebel et al. 2014), and is only accessible at site for reasons of data protection.

²⁴ Own analyses show that the average population density of SOEP households’ neighborhoods is higher, presumably a result of the SOEP’s random sampling process (where naturally higher populated areas are over-represented).

²⁵ Even though this restriction affects many observations, it does not change the overall conclusions. The information on urban areas is provided in the hbrutto dataset.

I will provide more information on migrant households in the section “Descriptive Results”.

III.4.2 Variables

The primary outcome variable indicates whether a household moved between this and the next measurement occasion. A move is defined as encompassing (a) having a new address and (b) having a new neighborhood identifier, which means a change in neighborhood.²⁶

My main independent variables are based on indicators for the presence of children in the household. To test hypotheses 1 and 2, I use a variable which stays unity once a new born child entered the household (the *post-child or post-treatment indicator*). I consider the first transition from not having a new born child into having a new born child that I can observe in each household panel as my treatment. That is, there needs to be at least one measurement occasion within household panels where there is no new born child before a child enters the household to qualify as my treatment. The reason for only considering one possible transition into having a child within household panels is that it indicates a clear before and after, which is preferable for the kind of fixed-effects design that I aim at.

Note that I do not restrict the sample to childless households for my main analyses. This means that some households that already have children get treated when they experience a transition into having a new child. I am aware of the fact that this is not an ideal solution because some households already got treated in the past. However, it is prompted by the low number of households that have their first child in my sample which limits statistical inference. As robustness check I still restrict

²⁶If there is missing information whether a household crossed neighborhood boundaries when moving, I treated condition (a), having a new address, as sufficient to classify as a move.

the sample to childless households to check whether the results largely deviate from my main models.

I further add two variables that capture whether the first transition in having a new born child occurred either in two years or in the next year (e.g. during or shortly before pregnancy) to capture *anticipation effects* in all models (Michielin and Mulder 2008). To test hypotheses 3 and 4, I refine the treatment indicator into three periods: one period up to 2 years (new born), one from 3 to 5 years (pre-school age), and 6 years or later (school age) after the first transition in having a new born child occurred.

The third main variable which I expect to moderate the effect of children on residential mobility is the percentage of ethnic minorities in a neighborhood, or “ethnic concentration”. Information on the cultural origin of inhabitants of certain neighborhoods comes from a name analysis which traces the linguistic origin of household heads living in PLZ8 regions (microm 2015). For the German case, I consider ethnic minorities as those of African, Asian, Balkan, Eastern European, Turkish and non-European Muslim origin.²⁷ For my main models I interact a time-stable operationalization of this variable with the children variables of interest (see “Statistical Models and Analytic Strategy”). I also use the share minority in the destination neighborhood for those households which moved to study where the households in my sample move.

For some analyses I also use a categorical version of the share minority variable. The cut-off points are informed by the mean minority share within categories of an item asking for the perceived share of “families who are not from Germany” which was asked in the SOEP 2014. Household heads responding “none” have a mean of

²⁷ See also Goebel and Hoppe (2015) for a double check comparison of the microm data on ethnic minorities with the German census in 2011. Furthermore, in the SOEP there is a strong relationship between the subjectively perceived share of minorities in a neighborhood in 2014 and the minority share variable obtained with the microm data (own analyses, available upon request).

around 3 on the percent minority variable which is then chosen as a cut-off for the first category (0-3% minorities). The other categories are 3-7% (“less than a quarter”), 7-10% (“about a quarter”) and 10-64% (“about half” and “most”).²⁸ The thresholds 3%, 7% and 10% seem rather low when thinking of diverse neighborhoods, but a number of studies show that relevant tipping thresholds that trigger out-mobility might be located at seemingly low levels of minority shares (see Aldén, Hammarstedt, and Neuman [2015] for the case of Sweden; and Card, Mas, and Rothstein [2008] for the U.S.).

The SOEP includes measures for a variety of variables that might confound the relationship between children and moving out of a neighborhood. Especially competing life course events within households might affect the probability to have children and to move. I include measures of whether at least one individual within a household is not working, in training, unemployed, working or experienced a job transition; whether singles, couples, or spouses live in the households; how many adults live in the household (to capture household composition); whether other children are present; homeownership; household post-government income (an imputed version from the SOEP pequiv data file, I also add an indicator for the share of household income that was imputed); and a categorical age specification to capture unmeasured life-course effects. Additionally, I add dwelling related variables: a subjective assessment of the appropriateness of its size (5 point scale with responses “far too small”, “somewhat too small”, “about right”, “somewhat too big” to “far too big”), and an indicator of room stress (number of persons divided by number of rooms). I also control for the time a household spent at a certain address to compare those households that spend the same time in a neighborhood but do not have children with those that have children. This variable

²⁸ Original wording: “Wie viele Familien hier im Wohngebiet stammen nicht aus Deutschland?”. There is also a response “all”, which was chosen only by extremely few household heads. In the German context it also makes little sense to speak of neighborhoods where “all” neighbors are of migration background, so I dropped this category.

is based on information on the year a household moved into a certain address, and after the household enters my sample, increases by one year with each successive year until a household moves. This variable is added as a cubic term in all regression models to allow for a flexible functional form.

III.4.3 Statistical Models and Analytic Strategy

My design aims at comparing households before and after having children. Effects estimates are obtained via Fixed-Effects Linear Probability Models (FE-LPM). The main advantage of these models is that they account for all time invariant unobserved heterogeneity (Allison 2009). In my set-up, this means that I adjust for all stable household and neighborhood characteristics that might affect having children and residential mobility. For example, stable household preferences to live in neighborhoods with certain shares of ethnic minorities are controlled. This is a powerful approach for social science research where unmeasured characteristics are ubiquitous. In contrast to non-linear alternatives, Linear Probability Models have the advantage of being easily interpretable and their coefficients can be compared between groups. All reported standard errors are clustered within household panels. Linear Probability Models might give appropriate estimates of marginal effects in many empirical settings (Breen, Karlson, and Holm 2018). However, note that in the face of low outcome probabilities, which can be expected with a rare outcome like moving, the caveat of the FE-LPM to not bound probabilities between zero and one could nonetheless be problematic. I adopt two strategies to rule out that my final conclusions are mainly driven by inconsistent estimation of the FE-LPM: (1) I estimate FE-LPMs without controls. These turn out to predict almost no values below zero, but overall lend support to similar conclusions as my full models. Note also, that, should the FE-LPM overestimate the true effect, this should be the case for both migrants and natives and thus we might still learn from comparing

results between the two groups. (2) I run Random-Effect probit regressions (“RE-probit”) and calculate Average Marginal Effects from these. Unfortunately, these do not control for unobserved heterogeneity, but might help to make my results more plausible when considering the direction of the effect.

I additionally censor household panels after their first move, resulting in a sample that comprises only one neighborhood for each household. This might seem like a loss of information, but is prompted for two reasons. First, it takes full advantage of the fixed-effects models. As every household lived in just one neighborhood for the period of observation the fixed-effects regressions also control all time-invariant neighborhood characteristics that a household experiences within the time in my sample. This may include many local conditions, like the broader housing market or the socio-economic make up of a neighborhood, which usually do not change in the short run.²⁹ Second, it allows for the estimation of the effect of interest within the outlined methodology, as it assures that the share of minorities, with which the children variable is interacted, clearly pertains to the neighborhood where the child is born. I define this stable pre-treatment minority share variable as the mean minority share of households within a neighborhood over time. One might add that causal models in which moderators are allowed to vary over time require more complex methods (Robins, Greenland, and Hu 1999), which do not naturally control for unobserved confounders. I discuss shortcomings of the design in the final section.

²⁹ The potential of fixed-effects models to account for unobserved characteristics is limited to the degree in which the (unobserved and dynamic) household history of neighborhood characteristics affects the current outcome and treatment. This information is for the most part not available due to left-censoring. That is, I assume that residential mobility histories before the onset of this study do not affect fertility decisions. This assumption is almost always made in the social sciences when dealing with panel data and new data is needed to relax it.

III.5 Results

I will present the results in three sections. The first is descriptive, giving information on my sample of analysis and the neighborhood conditions of those living in neighborhoods of different diversity. I then present my main models of the effect of children on the probability to leave neighborhoods, dependent on the share of minorities. In the third section, I descriptively show where those households that leave certain neighborhoods move to.

III.5.1 Descriptive Results

Table III.1 and table III.2 report household-year statistics for my sample of analysis, stratified by categories of neighborhood minority share and by migration background. Most of the results are in line with expectations and findings from other studies. Table III.1 shows the variables that are used in my regression models. Among other things, it shows that both native and migrant diversity dwellers are more likely to be unemployed, primarily rent their dwelling and earn lower incomes than those living in less diverse areas. For natives, one can clearly see that they stay in diverse neighborhoods for shorter time periods and have a higher probability to move (van Ham and Clark 2009).

Table III.2 shows additional information on the living conditions and household composition of households living in diverse and less diverse areas. Inhabitants of diverse areas also live in areas with higher unemployment rate and lower purchasing power. Interestingly, among the native households we can also see drastically lower percentages of school-aged children in the neighborhoods that are more diverse than in the less diverse neighborhoods, lending first support for the overall thesis of this study (Drever 2008). The percentage of households with newborn children is about the same in categories of high concentration of ethnic minorities, compared to the lower concentrated neighborhoods.

As already noted in “Data and Methods”, an ideal sample for the research question at hand would include only childless households. In table III.2 we can clearly see why: the low percentage of households with school aged children might be due to the fact that many households moved away before the beginning of my study when they had children, leaving me with a less clear cut effect estimate of having children. If this selection account is true, the effect estimates found in this paper are likely to be lower than in a sample of individual that do not have any children.

Table III.1 also shows children variables, but this time they indicate the transition which is of relevance for the regression models below. Of particular relevance is the fact that in each of the categories of neighborhood ethnic diversity, the probability of having a transition into entering the period after having a child is relatively similar, which makes it the more interesting whether households move away after having a child.

The overall distribution of the percent minority variable is heavily skewed to the left with a mean of 5.31 in the sample of native households and 8.36 for migrant households. These seemingly low values are due to two reasons. First, the SOEP is a random sample of the German population does not sample many individuals from very diverse neighborhoods. Thus, the most diverse of neighborhoods are not represented well in my data. Second, my operationalization of ethnic composition is restricted to certain ethnic groups which might result in a lower value of minority share than if one would use all non-natives.

Finally, I want to note that my sample of households with migration background presents a very heterogeneous sample in terms of country of origin. The individuals living in households with migration background in my sample are primarily from Turkey (19%), Russia (11%), Kazakhstan (11%), Poland (10%), Kosovo (5%) and Italy (4%). Despite this heterogeneity, it is of prime interest to compare results between natives and households of migration background to give first indications about whether a White Flight pattern exists. This information on the composition

of the migrant sample might help researchers to make their own assessment about possible generalizations from this sample.

Table III.1: Sample descriptives, mean values of variables by categories of neighborhood share of ethnic minorities for native and migrant households.

	Native Households				Migrant households			
	0-3%	3-7%	7-10%	10-64%	0-3%	3-7%	7-10%	10-64%
Outcome variable:								
Move out neighborhood until next year	0.025	0.048	0.051	0.070	0.039	0.054	0.047	0.052
Post-child indicator:								
Child variable, post-treatment indicator	0.13	0.13	0.12	0.13	0.17	0.14	0.12	0.17
More differentiated age of child transitions:								
New born, up to 2 years	0.088	0.090	0.086	0.100	0.13	0.10	0.092	0.14
Pre-school age, 3 to 5 years	0.038	0.034	0.029	0.029	0.040	0.032	0.021	0.032
School age and beyond	0.0062	0.0050	0.0038	0.0034	0.0053	0.0039	0.0032	0.0014
Control variables:								
More than one child	0.40	0.37	0.29	0.29	0.48	0.42	0.42	0.47
Homeownership	0.57	0.44	0.34	0.24	0.44	0.38	0.30	0.16
Family relations in HH: - No partner	0.37	0.39	0.44	0.42	0.40	0.38	0.37	0.35
- Partner in HH (ref. no partner)	0.14	0.13	0.15	0.22	0.071	0.049	0.059	0.035
- Spouse in HH (ref. no partner)	0.49	0.49	0.41	0.36	0.53	0.57	0.57	0.61
Mean HH age, five categories: - <25	0.16	0.16	0.18	0.15	0.12	0.15	0.14	0.13
- 25-29	0.13	0.13	0.16	0.18	0.15	0.15	0.17	0.16
- 30-39	0.45	0.42	0.41	0.46	0.54	0.54	0.56	0.58
- 40-45	0.26	0.29	0.26	0.21	0.19	0.16	0.13	0.13
At least one HH member not working	0.15	0.14	0.12	0.13	0.25	0.23	0.26	0.30
At least one HH member in training	0.17	0.15	0.18	0.18	0.14	0.19	0.20	0.18
At least one HH member unemployed	0.069	0.064	0.090	0.093	0.10	0.10	0.14	0.19
At least one HH member working	0.67	0.68	0.62	0.61	0.56	0.58	0.54	0.48
At least one HH member changed jobs	0.20	0.21	0.20	0.24	0.25	0.27	0.26	0.29
Household income in EUR	44312.6	45780.8	40183.7	38429.4	41017.2	37629.6	35792.1	30510.4
HH income imputation flag	0.12	0.12	0.100	0.11	0.13	0.10	0.085	0.096
No. of adults in HH	2.15	2.00	1.96	1.91	2.17	2.10	2.15	2.14
Persons per rooms	0.78	0.78	0.79	0.82	0.89	0.95	1.02	1.13
Dwelling size assessment	2.85	2.78	2.78	2.69	2.78	2.67	2.62	2.49
Years at current address	10.7	9.06	9.55	8.50	8.65	8.22	8.45	8.14
Observations	5611	6198	1847	1784	749	1804	933	1468

Table III.2: Neighborhood and child composition of households in sample of analysis. These variables are not used in the statistical models and just serve the purpose of describing the sample.

	Native Households				Migrant households			
	0-3% mean	3-7% mean	7-10% mean	10-64% mean	0-3% mean	3-7% mean	7-10% mean	10-64% mean
Household children composition								
(not transition):								
Child of age 0 to 2	0.14	0.14	0.13	0.15	0.19	0.18	0.18	0.21
Child of pre-school age	0.23	0.22	0.19	0.20	0.26	0.25	0.26	0.26
Child of school age	0.50	0.45	0.36	0.35	0.56	0.51	0.53	0.54
No. children	1.24	1.15	0.95	0.93	1.49	1.30	1.32	1.49
Neighborhood characteristics:								
Type of housing: - Rural housing	0.040	0.014	0.0055	0.015	0.020	0.0028	0.0022	0.0027
- Detached one or two family house	0.44	0.26	0.19	0.12	0.36	0.19	0.10	0.028
- One or two family terrace house	0.21	0.22	0.14	0.11	0.25	0.17	0.096	0.073
- Residential building 3-4 dwellings	0.091	0.12	0.14	0.098	0.13	0.16	0.089	0.14
- Residential building 5-8 dwellings	0.13	0.21	0.26	0.36	0.13	0.31	0.36	0.40
- Residential building 9 or more dwellings	0.072	0.15	0.23	0.28	0.10	0.14	0.31	0.27
- High-rise	0.011	0.017	0.021	0.015	0.017	0.022	0.031	0.082
Unemployment rate	5.48	6.30	8.88	12.8	4.35	6.22	9.12	13.3
Number of inhabitants	1233.8	1456.5	1512.1	1388.0	1358.4	1512.3	1531.5	1371.6
Purchasing power	21342.0	22188.4	20697.0	18842.4	22228.0	22359.8	21018.1	18691.9
Number of houses	350.8	330.5	257.5	174.6	391.4	336.7	255.4	170.0
Observations	5611	6198	1847	1784	749	1804	933	1468

III.5.2 Leaving the Neighborhood

In the following, I will first present my findings about the association between leaving a neighborhood and being in the period after the first transition into having a new born child that I can observe in a household panel (post-child indicator) for varying values of the share of minorities in the neighborhood. I will do so in detail, showing results for both natives to test H1 and migrants to test H2, and also discuss additional model specifications. I then turn to models that consider the succession of different age stages of the first newborn child to test H3 and H4.

Figure III.1 shows the marginal effects of the first newborn child that enters the household in the period of observation (post-child indicator) conditional on the neighborhood share of ethnic minorities for both native and migrant households. The underlying regression models, shown fully in table III.A1, all include an interaction term between three child variables (the two anticipation indicators and the post-child indicator) and a time-stable version of neighborhood share minorities. This interaction is of prime interest because it signals whether those in diverse neighborhoods react differently when they have children. Note that I chose a quadratic minority share specification with the post-child indicator because further data analysis suggests a declining effect of having children at upper values of the minority share variable.

The left part of figure III.1 shows the effect of children for native households on the probability to move, conditional on share minorities. Of the native group, 590 experienced a transition into having children. Figure III.1 clearly shows that the probability to move when having children steadily and substantially increases with the share of ethnic minorities in the neighborhood. To better understand these results, note that the probability of moving due to children is about 19 percentage points when living in a neighborhood with 14% minorities (the 95% percentile in the sample of native households), as compared to almost no effect when living in a

neighborhood with 1% minorities (the 5% percentile). Especially when considering that moving is a rare event in the German population, these effects are substantial. Furthermore, model 1 in table III.A1 indicates a significant interaction with the one year and two year anticipation effect, suggesting that households move out of the more diverse areas during or shortly before pregnancy more often than out of less diverse areas. This also hints at violations of the parallel trend assumption as the interaction of minority share with the two year lead is also quite strong. In further models (not shown), I also include a three year lead of the treatment dummy whose coefficient does not display a higher probability to move. This is reassuring, as it indicates that the probability to move increases around the time a child is born, and not before. However, when interpreting these results it should be kept in mind that having children is often planned in advance which makes estimating effects of precise events like birth or pregnancy difficult. Still, these models show that compared to households of similar mean age and length of residence (and other covariates), those that have or are about to have children are by far more likely to leave diverse neighborhoods.

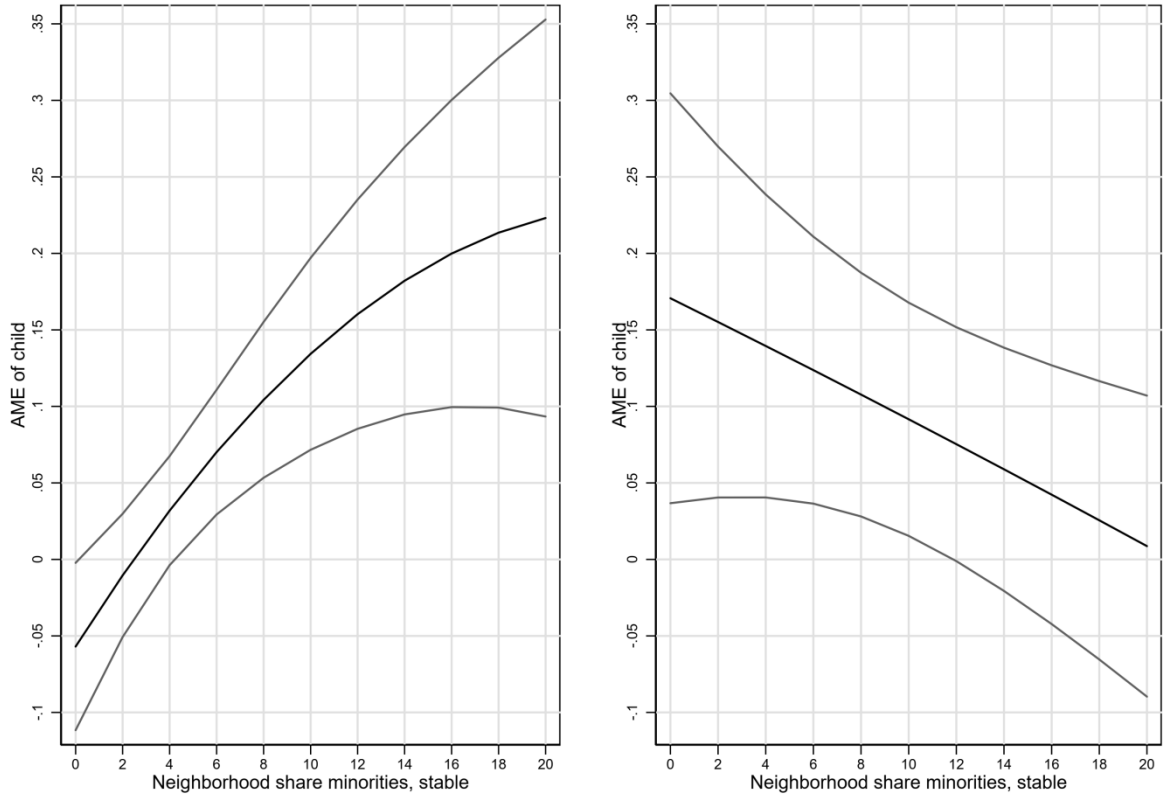


Figure III.1: Marginal effect of post-children indicator on probability to move out of a neighborhood from Fixed-Effects Linear Probability Models for native (left) and migrant background (right) households with 95% Confidence Bands.

In order to claim that there is “White Flight”, and not just “Parental Flight”, I also show that households with migration background do not display similar residential mobility behavior. I run the same models as with native households in a sample of households with migration background. The marginal effects of having children conditional on share minorities are shown in the right panel of figure III.1 (from model 4 in table III.A1). It turns out that in my sample, households with migration background are *less likely* to move out when having children, the higher the share of ethnic minorities in the neighborhood.

Precise statistical inference for households with migration background over the whole range of the share minority variable is difficult, which is also apparent from the large confidence intervals in the right panel of figure III.1. This is also due to the small sample and small number of transitions into having a child: Only 287

households with migration background experience such a transition. Thus, the exact size of this effect should not be over interpreted, and it might be likely that there is a null effect (the interaction terms are also not significant in table III.A1). However, taking into consideration the large effect I found for native households (left panel of figure III.1), I propose that we can learn from the comparison of the two models by concluding that native households show more substantial out-mobility behavior when having children than households of migration background. To check the robustness of these results, I also estimate models similar to those underlying figure III.1 with probit link function and random household intercepts (“RE-probit”). The left panel of figure III.2 plots the corresponding average marginal effects for native households. In line with the previous findings, the higher the percentage of ethnic minorities in the neighborhood of origin, the higher the probability of moving out of this neighborhood when having children. It suggests that newborn children increase the probability to leave a neighborhood by around 10 percentage points in areas with 12 percent minorities, whereas in less diverse areas with 1 percent minorities the increase is about 4 percentage points. For households with migration background I find, again, a decreasing effect of children on the probability to move with increasing share of minorities in the neighborhood. The increase of the average marginal effect of children on moving with increasing minority share from the RE-probit is far less substantial than in the FE-LPM case, which could be due to two reasons. First, the RE-probit does not control for unobserved heterogeneity. Should unobserved heterogeneity have a large influence, the RE-probit would be biased. Second, it could be because the RE-probit bounds the probabilities correctly between zero and one, in which case the FE-LPM may give biased effect estimates. A conservative interpretation suggests that the true effect might lie somewhere in between.

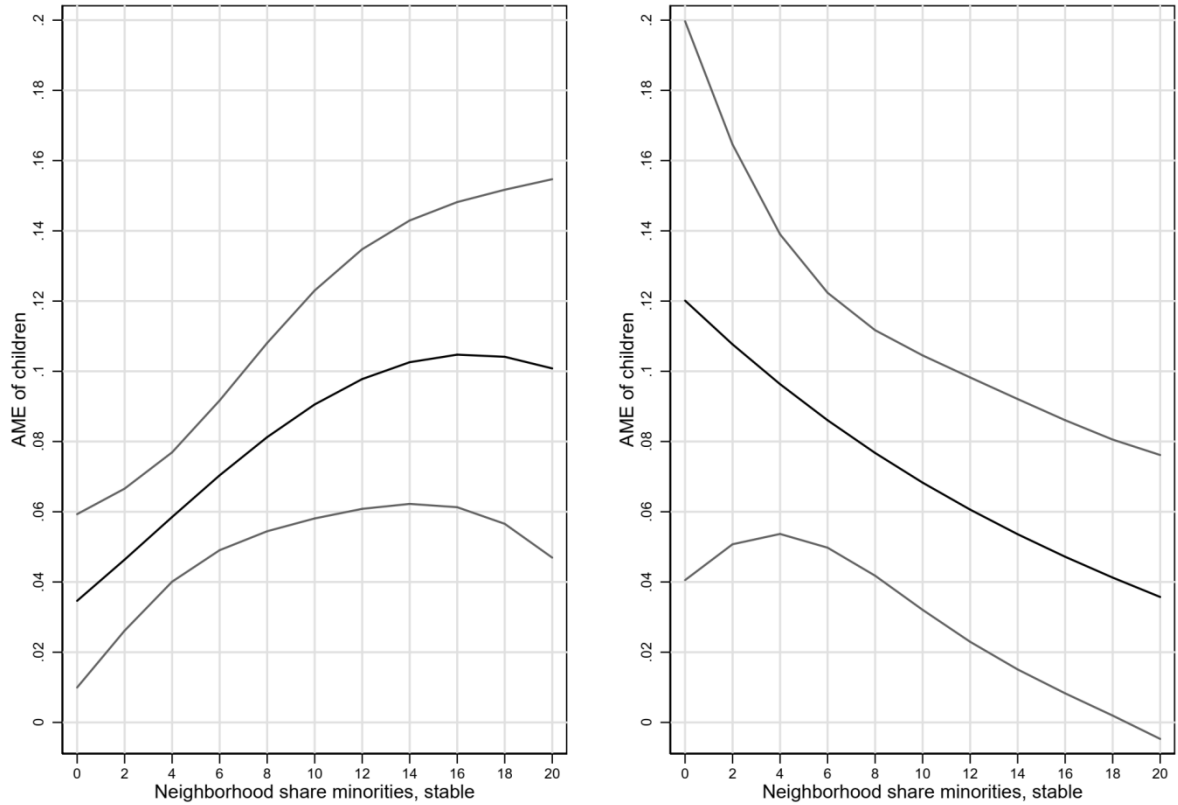


Figure III.2: Average marginal effect of post-children indicator from Random-Effects probit (RE-probit) regression models for native (left) and migrant background (right) households with 95% Confidence Bands.

An often noted reason why parents leave ethnically concentrated neighborhoods is the availability of high quality schools. Under the assumption that parents make schooling decisions once their children are about to be in school and not shortly after birth, we can expect that they move away when their children are of pre-school age. Indeed, model 3 in table III.A1 shows that an interaction term between a dummy variable which turns one when the child turns into pre-school age and share minorities, is larger than for new born children. However, model 3 also indicates that new born children trigger out-movement out of the more diverse areas, suggesting that the search for schools alone does not suffice as an explanation for Parental White Flight. The data thus reject hypothesis H3: Parental White Flight does not happen primarily when children are of pre-school age.

As an important robustness checks, I run models with an interaction between children and a categorical share minorities variable with similar categories as in table III.1 which showed descriptive statistics (see table III.A2 in the appendix). Interestingly, these models show that main fluctuations of families with children out of neighborhoods occur in mildly diverse areas, and not only in the most diverse areas in my sample. Additionally, in table III.A3, I report models with households which have no children in their first household year. Here again, the main conclusions remain the same.

To sum up, the findings presented show a substantial increase in mobility for native households living in neighborhoods with high shares of ethnic minorities when having children. I do not find such a pattern for migration background households. In the next section, I will describe the destination of mobile native households.

III.5.3 Moving into a New Neighborhood

After establishing a robust association between having children and mobility out of diverse neighborhoods, I now turn to the destination of those native households that move. To understand whether the higher probability to move has the potential to impact ethnic segregation, it is necessary to know whether those that move also settle in neighborhoods with fewer minorities. I am focusing on native households since the former analyses suggest that it is those households that move out of diverse areas when children are present.

Figure III.3 shows the share of minorities in the neighborhood of origin and destination for native households before and after a move, separately for household years in which households did not transition into having a newborn child (dark grey bars) and household years after a household transitioned into having a new born child (light grey bars). It indicates that both movers with and without children from origin neighborhoods in the upper two categories of share minorities end up

in areas with lower share of minorities than their neighborhoods of origin. It is important to note that the results from the previous section still apply: Households with children from diverse areas have a higher probability to move than those without children. Even if they end up in similarly diverse areas as those that move without children, they have higher potential to add to segregation by leaving neighborhoods more often than those without children.

Concerning the destination neighborhoods of German ethnic majority households, we can thus conclude that they do not only leave neighborhoods with high shares of ethnic minorities when they have children with a higher probability than those that do not have children, but also settle in new neighborhoods with a lower share of ethnic minorities than where they lived before.

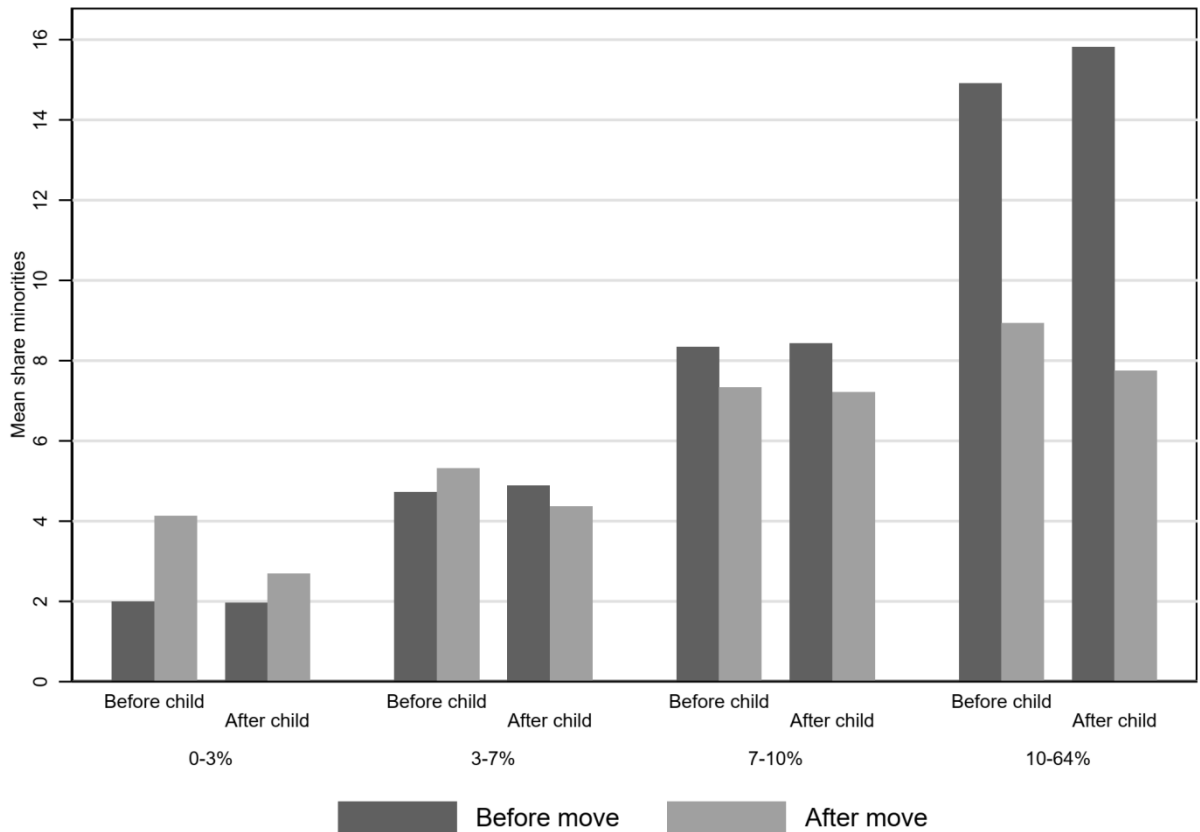


Figure III.3: Mean share minorities for native households before and after move, by categories of share minorities of origin neighborhood and before and after first transition into having a child within household panels (households having no child in the period of observation fall in the “before child” category).

III.6 Discussion and Conclusion

This study tests the “Parental White Flight” thesis which states that ethnic majority families move away from ethnically diverse areas when having children for the case of Germany. I extend prior studies (Goyette et al. 2014) by investigating whether households with migration background display similar mobility behavior as native households, and by distinguishing two different age categories of children at which households are theoretically expected to move (before and after birth; and at pre-school age). My fixed-effects design controls for all time-constant effects of stable unobserved neighborhood or household characteristics that could affect both having children and moving.

Results from a variety of models show that the effect of children on moving out of neighborhoods substantially increases with the share of ethnic minorities in the neighborhood. This effect is evident for newborn children and children of pre-school age. I do not find evidence for such effects for households with migration background. Furthermore, native movers more often settle in neighborhoods with a lower share of ethnic minorities than their neighborhood of origin.

This paper thus demonstrates the significance of young children for ethnic majority families' mobility behavior out of ethnically concentrated neighborhoods (Goyette et al. 2014). It also matches findings from other studies that show that preferences for isolation are more pronounced among Whites than minorities (Van Der Laan Bouma-Doff 2007).

My findings point to several possible consequences for neighborhoods and cities. The consequences for aggregate ethnic segregation are difficult to assess, as those households that have children are only a small fraction of all majority households and knowledge is needed about who replaces those who left. Nonetheless, children are a plausible channel through which segregation might take place and further studies about aggregate mobility patterns are needed (Skifter Andersen 2017) to assess the overall impact on segregation. In addition, detrimental effects for social cohesion in a neighborhood as noted in the introduction might still occur, and the readiness of young native parents to leave might be the expression of a greater unawareness of the effects of their individual mobility decisions for the neighborhood. Tragically, it is particularly families with children who could stabilize such neighborhoods (Schaeffer 2013b). My findings also have implications for theoretical models of ethnic segregation in the wake of Schelling (1971), where neighborhood preferences are assumed to be stable. My results suggest that neighborhood preferences change with specific events and thus, depending on the precise assumptions about group-specific behavior, a segregated state is attained

faster because those leaving trigger cascades of out-mobility, or no equilibrium state of segregation may be attained if other households fill in the vacant place.

Despite the robust results, this study has several shortcomings. First, the sample size of young households, whose inhabitants are about to become parents and live in diverse neighborhoods is naturally relatively small in random samples like the SOEP. This does not allow me to relax parametric assumptions of my statistical models or to restrict the sample to childless households in all analyses.

A second, and related, problem certainly pertains to the undifferentiated migration background variable that is used to stratify the analyses between native and migrant households. Further differentiation between the origins of immigrant households is necessary to see whether certain minority groups show specific mobility behavior.

Third, though fixed-effects approaches are a powerful approach for the social sciences in the presence of unmeasured confounders, my design is also quite restrictive as it only looks at a small part of individual life courses. If the aim would be to assess effects of whole fertility histories on residential mobility (for example, mobility after the first and the second child), data over the whole life course is needed to avoid left-censoring, and more sophisticated models are in order. One statistical method of choice to deal with time-varying moderator variables (share minorities), which change with the outcome event moving, and time-varying confounders could be Structural Nested Models (Robins et al. 1999), but these methods do not naturally adjust for unmeasured cofounders.

Fourth, concerning generalization, the German-wide scope of this study does not allow me to investigate how having children affects mobility under specific local circumstances. For example, in areas with competitive housing markets or neighborhoods undergoing gentrification one might expect White Flight to be less pronounced. In addition, my findings mainly apply to neighborhoods with low to

medium shares of ethnic minorities, though it can be expected that the effect of children is even stronger in the most diverse of neighborhoods in Germany.

It also needs to be stressed that this study leaves open whether ethnic composition per se or other neighborhood or household characteristics that are correlated with ethnic composition drive families away once they have children. Most likely candidates are quality of schools and the socio-economic make up of neighborhoods. However, before endeavors of identifying further causes that interact with parenthood are undertaken, it makes sense to first establish the effect of children dependent on share minorities. This is because the potential detrimental consequences of mobility out of diverse neighborhoods of native families occur irrespective of the actual individual reasons. Certainly however, to guide policies to counter Parental White Flight, we need more studies on the specific individual reasons of those who “flee”.

These shortcomings are natural implications of a sample that is not perfectly designed for the research question at hand. Still, it is of importance to assess the plausibility of the “Parental White Flight” thesis with existing data before engaging in new costly data collection. Given the robust and substantial association between children and mobility out of diverse areas, the differences between native households and those of migration background, my results demonstrate that this might be a worthwhile endeavor. I thus hope that future studies investigate further how life course events, residential mobility and diversity interact, and in how far they contribute to ethnic segregation and affect social cohesion.

III.7 Study II Appendix

Table III.A1: Fixed-Effects linear probability models and Random-Effects probit models of move until next survey year. Share minorities is entered as a time-invariant variable, therefore no coefficients of share minorities can be estimated in the Fixed-Effects models. The main coefficients of interest are indicated by bold letters. Robust standard errors in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
	FE-LPM: Native households: after having child indicator	RE probit: Native households: after having child indicator	FE-LPM: Native households: newborn and pre-school indicator	FE-LPM: Migrant households: after having child indicator	RE probit: Migrant households: after having child indicator	FE-LPM: Migrant households: newborn and pre-school indicator
Child born, t+2	-0.016 (0.026)	-0.047 (0.162)	-0.018 (0.026)	0.074 (0.061)	0.478 ⁺ (0.268)	0.073 (0.061)
Child born, t+2 X Neighb. share minorities	0.009* (0.004)	0.033* (0.017)	0.009* (0.004)	-0.006 (0.004)	-0.034 (0.025)	-0.006 (0.004)
Child born, t+1	0.005 (0.026)	0.233 ⁺ (0.134)	0.002 (0.026)	0.151* (0.061)	0.463* (0.192)	0.148* (0.061)
Child born, t+1 X Neighb. share minorities	0.009* (0.004)	0.017 (0.016)	0.010* (0.004)	-0.006 (0.004)	-0.013 (0.015)	-0.006 (0.004)
After child born	-0.057* (0.028)	0.436*** (0.127)		0.171* (0.068)	0.786*** (0.199)	
After child X Neighb. share minorities	0.024*** (0.006)	0.034 (0.029)		-0.008 (0.007)	-0.022 (0.033)	
Neighb. share minorities ²		-0.002** (0.001)			0.000 (0.000)	
After child X Neighb. share minorities²	-0.001* (0.000)	-0.001 (0.001)		-0.000 (0.000)	-0.000 (0.001)	
New born, up to 2 years			-0.020			0.173**

			(0.026)			(0.062)
New born, up to 2 years X			0.012**			-0.009*
Neighb. share minorities			(0.004)			(0.004)
Pre-school age, 3 to 5 years			-0.067*			0.131+
			(0.031)			(0.076)
Pre-school age, 3 to 5			0.019***			-0.005
years X Neighb. share			(0.005)			(0.006)
minorities						
School age and beyond			-0.026			0.221+
			(0.054)			(0.116)
School age and beyond X			0.007			-0.025*
Neighb. share minorities			(0.007)			(0.011)
More than one child	-0.015	-0.488***	-0.013	0.001	-0.410***	0.003
	(0.011)	(0.062)	(0.011)	(0.024)	(0.090)	(0.024)
Owns home (ref. rents home)	-0.026*	-0.651***	-0.026*	0.004	-0.565***	0.003
	(0.011)	(0.064)	(0.011)	(0.026)	(0.101)	(0.027)
Partner in HH (ref. no partner)	-0.018	-0.032	-0.019	0.003	0.142	0.002
	(0.016)	(0.074)	(0.016)	(0.050)	(0.149)	(0.050)
Spouse in HH (ref. no partner)	-0.001	0.017	-0.000	0.018	0.203+	0.017
	(0.014)	(0.074)	(0.014)	(0.036)	(0.105)	(0.036)
25-29	0.036**	0.117	0.035**	0.004	0.141	0.003
	(0.012)	(0.076)	(0.012)	(0.023)	(0.129)	(0.023)
30-39	0.049***	-0.102	0.049***	0.007	-0.123	0.008
	(0.014)	(0.078)	(0.014)	(0.030)	(0.130)	(0.030)

40-45	0.021 (0.016)	-0.305** (0.094)	0.020 (0.016)	-0.012 (0.033)	-0.201 (0.158)	-0.010 (0.033)
At least one HH member not working	0.013 ⁺ (0.007)	-0.197** (0.075)	0.012 ⁺ (0.007)	0.005 (0.013)	-0.301** (0.097)	0.003 (0.013)
At least one HH member in training	-0.016* (0.008)	-0.093 (0.076)	-0.016* (0.008)	-0.007 (0.015)	-0.079 (0.112)	-0.007 (0.015)
At least one HH member unemployed	0.017 ⁺ (0.010)	-0.244** (0.087)	0.016 ⁺ (0.010)	-0.012 (0.017)	-0.164 (0.116)	-0.012 (0.017)
At least one HH member working	0.011 ⁺ (0.007)	-0.066 (0.063)	0.010 (0.007)	0.011 (0.014)	-0.049 (0.091)	0.011 (0.014)
At least one HH member changed jobs	0.009 (0.006)	-0.025 (0.060)	0.008 (0.006)	0.012 (0.013)	0.106 (0.088)	0.011 (0.013)
Household income	0.000** (0.000)	0.000* (0.000)	0.000** (0.000)	0.000 (0.000)	0.000 ⁺ (0.000)	0.000 (0.000)
HH income imputation flag	0.002 (0.010)	-0.031 (0.089)	0.003 (0.010)	0.005 (0.017)	0.005 (0.139)	0.005 (0.017)
No. of adults in HH	-0.010 (0.007)	-0.281*** (0.053)	-0.010 (0.007)	-0.020 (0.018)	-0.176** (0.063)	-0.019 (0.018)
Persons per rooms	0.040 ⁺ (0.021)	0.160 ⁺ (0.083)	0.041 ⁺ (0.021)	0.074 ⁺ (0.039)	0.171 (0.121)	0.076 ⁺ (0.039)
Dwelling size assessment	-0.016** (0.006)	-0.178*** (0.034)	-0.017** (0.006)	-0.005 (0.010)	-0.137** (0.051)	-0.005 (0.010)
Years at current address	0.045***	0.003	0.046***	0.044***	0.029	0.045***

	(0.003)	(0.013)	(0.003)	(0.007)	(0.027)	(0.007)
Years at current address ²	-0.002***	-0.001	-0.002***	-0.001**	-0.002	-0.001**
	(0.000)	(0.001)	(0.000)	(0.001)	(0.002)	(0.000)
Years at current address ³	0.000***	0.000 ⁺	0.000***	0.000*	0.000	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.199***	-0.623***	-0.203***	-0.262***	-1.082***	-0.270***
	(0.030)	(0.170)	(0.030)	(0.064)	(0.262)	(0.064)
No. household-years	15440	15440	15440	4954	4954	4954
No. households	3693	3693	3693	1471	1471	1471
Min. no. person-years per person	2	2	2	2	2	2
Max. no. person-years per person	9	9	9	9	9	9

Cluster robust standard errors in parentheses. Data: German Socio-Economic Panel 2007 to 2016 and microm neighborhood data (microm 2015). X indicates interaction terms. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table III.A2: Fixed-Effects linear probability models of move in next time period with categorical share of ethnic minority specification.

Share minorities is entered as a time-invariant variable, therefore no coefficients of share minorities can be estimated in the Fixed-Effects models. The main coefficients of interest are indicated by bold letters. Robust standard errors in parentheses.

	(1) Native households: categorical share minor., no covariates	(2) Native households: categorical share minor., covariates	(3) Migrant households: categorical share minor., no covariates	(4) Migrant households: categorical share minor., covariates
Child born, t+2	0.061* (0.028)	0.005 (0.028)	-0.001 (0.086)	-0.032 (0.086)
3-7%	Ref.	Ref.	Ref.	Ref.
7-10%	Ref.	Ref.	Ref.	Ref.
10-64%	Ref.	Ref.	Ref.	Ref.
Child born, t+2 X 0-3%	Ref.	Ref.	Ref.	Ref.
Child born, t+2 X 3-7%	-0.003 (0.036)	0.003 (0.036)	0.152 (0.115)	0.144 (0.115)
Child born, t+2 X 7-10%	0.112+ (0.065)	0.119+ (0.064)	-0.016 (0.095)	-0.037 (0.094)
Child born, t+2 X 10-64%	0.097 (0.066)	0.093 (0.066)	0.049 (0.100)	0.031 (0.100)
Child born, t+1	0.068** (0.022)	-0.016 (0.023)	0.092 (0.069)	0.031 (0.070)
Child born, t+1 X 0-3%	Ref.	Ref.	Ref.	Ref.
Child born, t+1 X 3-7%	0.083* (0.037)	0.093* (0.036)	0.211* (0.106)	0.204+ (0.108)
Child born, t+1 X 7-10%	0.098 (0.070)	0.110 (0.069)	0.019 (0.090)	-0.013 (0.091)
Child born, t+1 X 10-64%	0.182** (0.069)	0.174* (0.069)	0.018 (0.081)	-0.005 (0.082)
After child	0.114*** (0.022)	-0.040+ (0.024)	0.193** (0.068)	0.061 (0.072)
After child X 0-3%	Ref.	Ref.	Ref.	Ref.
After child X 3-7%	0.095** (0.034)	0.108** (0.034)	0.192+ (0.106)	0.175 (0.108)
After child X 7-10%	0.155*	0.165**	-0.056	-0.093

	(0.063)	(0.062)	(0.090)	(0.091)
After child X 10-64%	0.209** (0.065)	0.207** (0.063)	0.006 (0.081)	-0.019 (0.083)
More than one child		-0.016 (0.011)		0.002 (0.024)
Owns home (ref. rents home)		-0.026* (0.011)		0.007 (0.026)
Partner in HH (ref. no partner)		-0.018 (0.016)		0.008 (0.049)
Spouse in HH (ref. no partner)		-0.001 (0.014)		0.019 (0.036)
25-29		0.037** (0.012)		0.003 (0.023)
30-39		0.050*** (0.014)		0.004 (0.030)
40-45		0.021 (0.016)		-0.015 (0.033)
At least one HH member not working		0.012+ (0.007)		0.006 (0.013)
At least one HH member in training		-0.016* (0.008)		-0.006 (0.015)
At least one HH member unemployed		0.017+ (0.009)		-0.011 (0.016)
At least one HH member working		0.011+ (0.007)		0.011 (0.014)
At least one HH member changed jobs		0.009 (0.006)		0.013 (0.013)
Household income		0.000** (0.000)		0.000 (0.000)
HH income imputation flag		0.003 (0.010)		0.005 (0.017)
No. of adults in HH		-0.010 (0.007)		-0.023 (0.018)
Persons per rooms		0.041+ (0.021)		0.079* (0.040)

Dwelling size assessment		-0.016** (0.006)		-0.007 (0.010)
Years at current address		0.045*** (0.003)		0.044*** (0.007)
Years at current address ²		-0.002*** (0.000)		-0.002** (0.001)
Years at current address ³		0.000*** (0.000)		0.000* (0.000)
Constant	0.010** (0.003)	-0.201*** (0.029)	-0.001 (0.008)	-0.259*** (0.064)
No. household-years	15440	15440	4954	4954
No. households	3693	3693	1471	1471
Min. no. person-years per person	2	2	2	2
Max. no. person-years per person	9	9	9	9

Cluster robust standard errors in parentheses. Data: German Socio-Economic Panel 2007 to 2016 and microm neighborhood data (microm 2015). X indicates interaction terms. ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table III.A3: Regression with families without children in first household year only.

	(1) Native households: after children indicator	(2) Native households: newborn and pre- school	(3) Migrant households: after children indicator	(4) Migrant households: newborn and pre- school
Child born, t+2	-0.070 (0.046)	-0.075 (0.046)	0.131 (0.179)	0.132 (0.178)
Child born, t+2 X Neighb. share minorities	0.014⁺ (0.008)	0.014⁺ (0.008)	-0.014 (0.013)	-0.014 (0.013)
Child born, t+1	-0.027 (0.053)	-0.047 (0.054)	0.273 (0.185)	0.274 (0.183)
Child born, t+1 X Neighb. share minorities	0.019[*] (0.009)	0.022[*] (0.009)	-0.022⁺ (0.012)	-0.021⁺ (0.012)
After child	-0.167 ^{**} (0.059)		0.443 ⁺ (0.245)	
After child X Neighb. share minorities	0.062^{***} (0.015)		-0.021 (0.029)	
After child X Neighb. share minorities²	-0.002^{***} (0.001)		-0.000 (0.001)	
Owns home (ref. rents home)	-0.073 ^{**} (0.027)	-0.077 ^{**} (0.027)	0.139 (0.115)	0.169 (0.125)
Partner in HH (ref. no partner)	0.032 (0.024)	0.031 (0.024)	0.040 (0.084)	0.038 (0.084)
Spouse in HH (ref. no partner)	0.035 (0.027)	0.038 (0.027)	0.082 (0.065)	0.076 (0.065)
25-29	0.027 ⁺ (0.016)	0.024 (0.016)	0.032 (0.032)	0.033 (0.032)
30-39	0.021 (0.023)	0.016 (0.023)	0.035 (0.053)	0.045 (0.053)
40-45	-0.023 (0.031)	-0.029 (0.031)	-0.045 (0.065)	-0.032 (0.065)
At least one HH member not working	-0.008 (0.023)	-0.016 (0.023)	0.027 (0.040)	0.034 (0.039)
At least one HH member in training	-0.035 [*] (0.017)	-0.037 [*] (0.017)	0.007 (0.030)	0.011 (0.030)

At least one HH member unemployed	0.008 (0.020)	0.010 (0.020)	0.019 (0.040)	0.023 (0.041)
At least one HH member working	0.015 (0.014)	0.012 (0.014)	0.052 (0.032)	0.056 ⁺ (0.032)
At least one HH member changed jobs	-0.003 (0.013)	-0.007 (0.013)	0.045 (0.031)	0.049 (0.031)
Household income	0.000* (0.000)	0.000* (0.000)	0.000 (0.000)	0.000 (0.000)
HH income imputation flag	-0.011 (0.021)	-0.009 (0.021)	-0.006 (0.040)	-0.008 (0.040)
No. of adults in HH	-0.008 (0.016)	-0.011 (0.016)	-0.064 (0.058)	-0.064 (0.058)
Persons per rooms	-0.004 (0.042)	0.004 (0.042)	-0.035 (0.108)	-0.022 (0.106)
Dwelling size assessment	-0.022* (0.011)	-0.023* (0.011)	-0.002 (0.023)	-0.001 (0.023)
Years at current address	0.069*** (0.005)	0.072*** (0.005)	0.104*** (0.017)	0.103*** (0.017)
Years at current address ²	-0.002*** (0.000)	-0.002*** (0.000)	-0.005*** (0.001)	-0.005*** (0.001)
Years at current address ³	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
New born, up to 2 years		-0.050 (0.055)		0.497* (0.204)
New born, up to 2 years X Neighb. share minorities		0.023*		-0.031*
		(0.009)		(0.014)
Pre-school age, 3 to 5 years		-0.159** (0.059)		0.292 (0.269)
Pre-school age, 3 to 5 years X Neighb. share minorities		0.023*		-0.015
		(0.010)		(0.021)
School age and beyond		0.039 (0.216)		-0.140 (0.373)
School age and beyond X Neighb. share minorities		-0.011		0.008
		(0.030)		(0.028)
Constant	-0.206*** (0.049)	-0.212*** (0.049)	-0.329* (0.144)	-0.357* (0.146)
No. household-years	6321	6321	1534	1534

No. households	1632	1632	490	490
Min. no. person-years per person	2	2	2	2
Max. no. person-years per person	9	9	9	9

Cluster robust standard errors in parentheses. Data: German Socio-Economic Panel 2007 to 2016 and microm neighborhood data (microm 2015). X indicates interaction terms.⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

IV. Study III: Neighborhood Ethnic Composition and Individual Neighborhood Embeddedness: The Role of Length of Residence

IV.1 Abstract

The association between local ethnic diversity and social cohesion has received widespread scientific attention. However, empirical studies on this topic are mostly cross-sectional and hypotheses are formulated statically. This study advances this field of research by taking a longitudinal perspective on how households get embedded, that is, form contacts with neighbors and perceive the density of ties among neighbors, in dependence of neighborhood ethnic diversity. I first derive hypothetical trajectories of embeddedness from canonical theories in the field. I then test these predictions by using panel data from the German Socio-Economic Panel study. I follow households that recently moved into a neighborhood for a period of five years, comparing their embeddedness at the beginning and at the end for different levels of neighborhood ethnic diversity. In addition, I propose a methodological approach to deal with potential selective out-mobility between the two time points. I find substantial increases of embeddedness after staying five years in both diverse and non-diverse areas. This suggests that network formation processes unfold which are not easily explained by either anomie or threat theories. However, the probability to perceive close-knit relations among neighbors stays at a relatively low level in diverse areas. I end by pointing to possible effects of past neighborhood experiences of long term inhabitants that might explain loose networks in diverse neighborhoods.

IV.2 Introduction

For over a decade there has been widespread social scientific interest in the stylized fact that higher local ethnic diversity is associated with lower social cohesion (seminal, Putnam [2007]). The debate is still far from reaching a consensus about the substantive importance and causal implications of this association. However, on the very local level of the neighborhood, diversity has been shown to be robustly

associated with less local embeddedness (Dinesen and Sønderskov 2018; van der Meer and Tolsma 2014; Schaeffer 2014).

Putnam (2007), one of the seminal contributors to this debate, made two claims: First, the “hunkering down” thesis states that individuals retreat from social life in diverse settings. Second, immigration societies are able to overcome these negative effects of ethnic diversity in the long run by forming new forms of identities and solidarity. While the “hunkering down” claim received a great deal of attention, the second claim is less debated. This study translates Putnam’s (2007) second claim to the neighborhood level by asking whether households living in diverse neighborhoods can achieve a level of embeddedness which is comparable to those living in less diverse areas with increasing length of residence.

This study’s main goal is to draw attention to the temporal dynamics of network formation in diverse neighborhoods as an important future way of research on the effects of diversity on neighborhood cohesion, both in theory and empirical analysis. This is because tie formation between groups divided by salient ethnic boundaries might potentially be slower and more uncertain than building up ties with similar others (Windzio 2018). From this dynamic perspective, the question of interest is whether embeddedness increases or stays low with length of residence in diverse areas or whether inhabitants can reach similar levels as in homogeneous areas.³⁰

Neighborhood embeddedness, which presents the outcome under investigation in this study, is here understood as the closeness of contact with neighbors, and how individuals perceive the density of relations among their neighbors. Neighborhood embeddedness is directly related to other forms of neighborhood cohesion: A certain

³⁰ The importance of length of residence has occasionally been noted or at least implicitly assumed, but did not receive a more elaborate empirical and theoretical treatment yet. In most studies an indicator of length of residence is included in the models as control variable or used for robustness checks. For example, in his famous U.S. study, Putnam (2007: 168) restricted the analysis to individuals who lived in neighborhoods for a long time as a robustness check, but these analyses are not described in detail. Dinesen and Sønderskov (2015: 563) find that the effect of diversity on generalized trust remains constant over the time lived in small scale contexts.

density of networks is considered a pre-requisite to establish trust and cooperation (Schaeffer 2013: 41f, Coleman, 1988) and collective efficacy (Sampson 2004: 161) in the neighborhood. In ethnically diverse neighborhoods dense networks are able to overstretch ethnic boundaries, stimulating intergroup contact which might reduce prejudice (Pettigrew and Tropp 2008). Note that the benefits of effective neighborhood ties are probably highest for the most marginalized societal groups: Ethnic minorities benefit from contact with majority individuals, single parents from higher social control in the neighborhood and elderly people from everyday support. Focusing on the connectedness of individuals with others also presents a direct way of testing Putnam's (2007) "hunkering down thesis", which suggests that individuals retreat from social life and thus should form fewer ties with both in- and out-group members in diverse settings.

This study extends research on neighborhood diversity effects in several ways. First, by analyzing the development of embeddedness with the length of residence in diverse and less diverse neighborhoods, it helps to make a better assessment of the relevance of diversity for local cohesion. For example, if forming ties in diverse neighborhoods requires more time than in less diverse areas and households stay shorter in diverse areas on average, previous studies that do not distinguish stayers by their length of residence might overstate the effect of diversity. However, differentiating individuals by their length of residence brings a second problem to the fore: selective residential sorting out of neighborhoods. Households might not only stay shorter in diverse neighborhoods, it might also be households with specific traits that leave. Some of these traits might in turn affect future embeddedness into the neighborhood. To adjust for this kind of selective out-mobility, I propose a methodological approach based on the logic of Inverse Probability of Censoring Weighting (Robins et al. 2000).

IV.3 Previous Research and Theoretical Mechanisms

In the following two sections, I first review studies on ethnic diversity effects on indicators of social cohesion. I then put forward my theoretical assumptions and hypotheses. The review focuses mainly on research with a scope similar to this study. This includes the measurement of diversity on the neighborhood level and outcomes that can be subsumed under the relational aspect of social cohesion (Schiefer and van der Noll 2017). The sole focus on the neighborhood is motivated by the assumption that neighborhood level processes, which involve everyday interactions and exposure to neighbors, are quite distinct from processes that link ethnic diversity and social cohesion on higher levels of aggregation, such as the nation state (e.g. Janmaat 2011).³¹

IV.3.1 Prior Research on Diversity and Neighborhood Social Cohesion

There is much supportive evidence for Putnam’s (2007) “hunkering down” claim on the neighborhood level. Several systematic reviews note that the majority of studies that measure ethnic diversity within small scale, neighborhood like, units yield negative associations between diversity and various indicators of social cohesion (van der Meer and Tolsma 2014; Schaeffer 2014). This is particularly the case when those indicators are targeted at the neighborhood, that is, involve trust or contacts with neighbors or attachment to the neighborhood (Gundelach 2017; van der Meer and Tolsma 2014). The general observation that neighborhood diversity is related to less neighborhood cohesion is also found in German data. For

³¹ I use the term “ethnic diversity” to refer to the ethnic composition of a neighborhood which I use to describe the ethno-social context a person lives in. I treat diversity in terms of the number of groups and the mere share of groups as interchangeable. Please refer to the data section for more information on how to operationalize ethnic diversity.

example, there is evidence that neighborhood diversity is associated with less connections with neighbors, lower satisfaction with the neighborhood and lower collective efficacy (Koopmans and Schaeffer 2016).

Moreover, there is quasi-experimental evidence which sustains the causal implications of the association. Algan et al. (2016) make use of a natural experiment in the French public housing sector where applicants are assigned in a random fashion to their dwellings. They find lower social cohesion, measured indirectly as housing quality measures caused through vandalism or lacking cooperation, in more ethnically diverse blocks.

Even though the general connectedness is lower in diverse neighborhoods, they still present an opportunity structure for casual inter-ethnic contacts. Considering German neighborhoods, Schönwalder and colleagues (2016: 61ff) find that neighborhood diversity, as measured by the share of inhabitants not having German citizenship, is positively related to casual face-to-face contacts with out-group members within neighborhoods. These findings are complemented by another recent study, which measured diversity in the proximity of native Dutch at different neighborhood scales and found a *positive* association with contacts with non-Western immigrant neighbors and a *negative* association with contact with Dutch neighbors up to a scale of 2000 meters (Sluiter et al. 2015). Close inter-group contact, in contrast, is not robustly predicted by neighborhood ethnic composition. For example, in the case of Germany, no association was found between the proportion of foreigners and weak or strong ties with out-groups in overall ego-networks when controlling for other factors (Schönwälder et al. 2016: 83ff).

Note that most of these studies are cross-sectional and there is still a huge gap in the literature concerning longitudinal studies. In one of the few longitudinal studies, Laurence and Bentley (2016) employ a panel fixed-effects design and British data over almost 3 decades (with attachment measured in 1991, 2001 and 2009) to study how changes in neighborhood composition for both stayers and movers affect

neighborhood attachment, which is measured by a dichotomous variable. They find that increasing diversity is associated with less attachment for stayers. For movers, they find that moves into diversity are not associated with a decline in attachment, but moves from diverse to homogeneous areas experience a rise in attachment.

To sum up, previous research suggest that measures of neighborhood attachment and “trust-related sentiments” (Schaeffer 2014), like perceived embeddedness within the neighborhood, are negatively associated with neighborhood ethnic diversity. My study aims at refining these findings by taking a longitudinal perspective. It departs from Laurence and Bentley (2016) by analyzing how social cohesion indicators develop with the length of residence in neighborhoods of differing diversity, instead of analyzing how changes in neighborhood composition relate to changes in social cohesion indicators. Furthermore, I use a broader set of embeddedness measures.

IV.3.2 Theorizing Trajectories of Neighborhood Embeddedness

A variety of theoretical approaches have been proposed to explain diversity effects on social cohesion, with most studies referring to either conflict dynamics through perceived threats or theories stressing cultural differences between ethnic groups (for a review, see Schaeffer [2014]). However, these theories have mostly been used to derive static hypotheses. In the following, I will derive hypotheses about how the development of neighborhood embeddedness of individuals or households should differ between diverse and non-diverse neighborhoods under different theoretical assumptions.

As vantage point, I assume that individual integration into a neighborhood requires a period of familiarization after moving in, a period in which individuals get acquainted or form close relations with their neighbors. From the review above we

know that diverse areas have lower connectedness. This prompts the question what precludes individuals in diverse areas from forming more ties with their neighbors? To study the dynamics of individual embeddedness, it is helpful to distinguish the period shortly after moving in from later points in time. From a social exchange and network perspective, the initiation of ties is more based on the assessment of uncertainty of success of an exchange than sustaining the tie (Windzio 2018). Initial exchange across ethnic boundaries (Wimmer 2013) is to some degree more uncertain than ties with persons of similar ethnic background, because both partners might anticipate differences in shared norms and interpretations of behavior (Windzio 2018). Once a successful exchange occurred however, it can trigger positive emotions (Lawler 2001) and obligations of reciprocity (Gouldner 1960) which are able to extend and sustain the relationship (Windzio [2018], and see Carlin & Love [2013] for exchange over ideological boundaries). In accordance with this, social network studies often find strong reciprocal tie formation, also between ethnic groups (Munniksmma et al. 2017; Windzio 2018).

When applied to neighborhood networks, such processes of reciprocating social exchange should foster individual integration into the neighborhood, which can get further strengthened when other neighbors get involved. This in turn creates the conditions to establish mutual trust and general trust in neighbors (Coleman 1988). Particular kinds of exchange can then lead to positive emotions towards the relationship or the larger social unit (Lawler 2001), in this case the neighborhood, leading to further integration attempts. Thus, what Putnam (2007) envisages on the country level, an inclusive identity, could be created on the neighborhood level through the interaction of individuals.

However, according to “conflict theory” (van der Meer and Tolsma [2014]: 463; see also Schaeffer [2014]: 38f), the size of an ethnic out-group leads to perceived threats on part of members of different ethnic groups. These threats might stem from competition over scarce resources and translate into prejudice or discrimination

against other ethnic groups (Bobo and Hutchings 1996; Quillian 1995). The neighborhood can be seen as arena of such conflicts if there is competition for example for housing or public space, but negative contact experiences (Koopmans and Veit 2014) and discriminatory practices in the neighborhood could also be motivated by perceived conflict at higher levels (for example for symbolic resources or political power, see Bobo & Hutchings [1996]).

If neighborhoods were the arena of such conflicts, the strong ethnic boundaries characterized by prejudice would lead newcomers to be less likely to engage in inter-group interactions. This would lead to a lower embeddedness into the neighborhood in comparison to homogeneous areas, simply because not so many same ethnic peers are available. In addition, the avoidance of inter-group encounters might spill-over to others with the same ethnic background, because of low neighborhood attachment and general distrust in neighbors that results from overall disorganization in the neighborhood (van der Meer and Tolsma 2014). If conflict aggravates over time, it could even mean that long term stayers are less integrated in the neighborhood than newcomers because they have gone through a downward spiral of conflict and thus shun neighborhood life even more.

In addition to conflict theory, another prominent set of explanations sees cultural differences as a cause of low social cohesion in ethnically diverse areas. This might include differing cultural preferences for certain public goods, which make finding a common denominator more difficult, or coordination problems between inhabitants because of language differences or symbolic behaviors (Schaeffer 2014: 43ff). In a similar fashion, van der Meer and Tolsma (2014) note that cultural diversity could lead to anomie through a lack of consensus on shared norms and lack of communication, which negatively relates to embeddedness. These shared feelings of anomie should affect both relations to majority and minority individuals due to a felt lack of common ground with others (Algan et al. 2016). This suggests that individuals in diverse areas are generally more uncertain and reserved towards

their neighbors and thus less ready to engage in contact with newcomers. The cultural accounts thus leads us to expect constant low levels of individual embeddedness in diverse areas.

A third argument is particularly concerned with the link between small scale contextual diversity and social cohesion. According to Dinesen and Sønderskov (2015) encountering cues that are associated with untrustworthiness reduces generalized trust. In this framework, visible ethnicity of others is assumed to be a marker of untrustworthiness, for example through internalized stereotypes (Dinesen and Sønderskov 2015). As cumulative exposure to cues of untrustworthiness is at the core of this explanation, we would expect that the more time an individual spends in ethnically diverse areas the less it trusts others.

The above leads me to the following hypotheses. In the absence of both conflict and anomie, the increase in embeddedness with length of residence should be similar in diverse and less diverse areas:

Hypothesis H1: The level of neighborhood embeddedness increases substantially after staying in the same neighborhood for a similar period of time in both diverse and less diverse neighborhoods.

Hypothesis H1 allows for different scenarios. For example, the level of embeddedness shortly after moving into a neighborhood could be lower in diverse neighborhoods but these households could improve their neighborhood relations with the time of residence and even catch-up with those in less diverse areas. This is what we would expect if there is some natural limit of the number of neighborhood ties for all individuals, for example caused by limited resources like time.³² In contrast, under the conflict and anomie assumptions, individuals in

³² This implies that individuals reach a plateau of contacts with neighbors. This plateau could be reached sooner by those living in homogenous areas.

diverse neighborhoods will stay at low levels of embeddedness compared to homogeneous areas:

Hypothesis H2: The level of neighborhood embeddedness is substantially lower after staying in a diverse neighborhood than after staying in a less diverse neighborhood for a similar period of time.

IV.4 Data and Methods

IV.4.1 Data and Measurement of Diversity and Embeddedness

This study uses data from the German Socio-Economic Panel (SOEP; Wagner, Frick, & Schupp, 2007) from the years 2009 to 2014, combined with neighborhood data provided by the private company microm (Goebel et al. 2014).³³ In 2009 and 2014 three neighborhood embeddedness indicators are available, thus 2009 is treated as the baseline year and 2014 constitutes the endpoint. Neighborhood embeddedness is only assessed by one respondent per household (the household head), leaving me with one observation per SOEP household. Neighborhoods are captured by small scale geographical areas, so-called “Marktzellen” (microm 2015), which encompass on average 1305 inhabitants in my sample. I restrict my analyses to ethnic majority households (defined as those households without members with direct migration background) to avoid a color-blind analysis which mixes the experiences of different ethnic groups uncritically (Abascal and Baldassarri 2015).

To measure ethnic diversity I use the share of ethnic minorities in a neighborhood. As most of the mechanisms are related to either ethnic categorization or cultural

³³ SOEPlong v33.1: Socio-Economic Panel (SOEP), data for years 1984-2016, version 33.1, SOEP, 2018, doi: 10.5684/soep.v33.1. The microm-SOEP dataset is provided by the German Institute for Economic Research (DIW) in Berlin (Goebel et al. 2014), and is only accessible at site for reasons of data protection.

differences between ethnicities, I focus on groups that are likely to be perceived of as foreign by the native German population and are thus able to trigger the types of mechanisms outlined above. I consider ethnic minorities as those of African, Asian, Balkan, Eastern European, Turkish and non-European Muslim origin. Information on the origin of inhabitants of certain neighborhoods comes from a name analysis which traces the linguistic origin of household heads living in the “Marktzellen” (Kruse, Kruse, and Dollmann 2017; microm 2015). I will include this variable as a linear continuous variable in all models for the sake of comparability with the results of most other studies in the field.

Diversity is often seen as consisting of the dimensions variety and balance (Koopmans and Schaeffer 2015), and this study focuses on ethnic minority group size and thus the balance dimension. As Schaeffer notes for the German case, different indices of diversity that tap these different dimensions are almost indistinguishably correlated with each other and most of the times measure high concentrations of ethnic minorities vis-à-vis majorities (Schaeffer 2013a). This is in line with the observations that high concentrations of single minority groups are rare in Germany (Schönwalder and Sohn 2009), and German natives most often represent the majority within local contexts.

The embeddedness measures used in this study are confined to the neighborhood and targeted at the perception of social ties with and between neighbors irrespective of their ethnic group. They are measured in the 2009 and 2014 wave of the SOEP. These measures have benefits and drawbacks. On the one hand, the fact that there is no reference to the ethnic belonging of the neighbors allows us to compare behavior that is guided by trust and senses of belonging, the main concepts behind what is typically conceived of as social cohesion (Schiefer and van der Noll 2017), between homogeneous and diverse areas more easily. Consider in contrast a question that asks for contact with out-group members. This would confound the theoretical mechanisms listed above with a mere opportunity structure effect and

it would not be surprising to find that those living with few minorities have few contacts with them in their neighborhood. On the other hand, these items do not allow us to test in how far the local networks are ethnically segregated, which might be important to test the conflict account. I will return to these issues in the discussion.

Table IV.1 shows the three different measures with their respective questionnaire items. The first item refers to the respondent's closeness of contact with others in the neighborhood. This is a promising measure of neighborhood cohesion, as it involves trust in neighbors and has a behavioral aspect. Stating to have close relationships with neighbors implies that the respondent trusts her neighbors, and also a certain frequency of interaction. The second item asks for an assessment of the relations between neighbors, irrespective of the respondent's own contact with her neighbors. It is informative on how tight the networks within the neighborhoods are perceived by the respondent, beyond her own ego network. The response categories for this item include four items (see table IV.1). I merged the categories "people barely know each other" and "varies/can't tell" into the lowest category since both responses signal either unfamiliarity with the neighborhood or low cohesion. This allows me to run ordered logistic regression with this outcome which requires less data than a multinomial logit model.³⁴ The third item asks whether the respondent visits her neighbors. Thus, it is about the behavioral aspect of social cohesion and indicative of close relationships with neighbors.

³⁴ Coding "varies/can't tell" as missing does not change the results. Furthermore, a multinomial logistic regression of the original four category variable yields similar results as well, though precision suffers markedly compared to the ordered logistic regressions.

Table IV.1: Measures of social ties in the neighborhood employed in this study.

Dimension of Social Cohesion	SOEP Item	Item responses and coding	Statistical model used
Perception of closeness of <i>own</i> contact with neighbors	“How close is your contact with your neighbors in this building or in this neighborhood?”	-2. Fleeting -1. No contact 0. Moderate 1. Close 2. Very close	OLS linear regression
Perception of relations <i>among neighbors</i>	“How would you evaluate the relationships among people in this neighborhood? Which statement fits best?”	1. “People barely know each other”; plus: “It varies widely / unable to comment on this” (former fourth response option) 2. “People talk to each other occasionally” 3. “It’s a fairly close-knit neighborhood”	Ordered logistic regression
Neighborhood visits	“Do you have neighbors who you get along with so well that you visit each other at home?”	1. “yes” 0. “no”	Binary logistic regression

IV.4.2 Analytical Strategy and Controls

To ideally address my research question, one would track respondents from the day when (or even before) they move into a neighborhood, following them over a long period, regularly measuring neighborhood integration and time-varying factors that could both lead to out-mobility and affect social integration. I approach such a set-up by preparing the data in the following manner.

I restrict my sample to households who moved into their dwelling no longer than four years ago in 2009. I chose four years because of a tradeoff between having a sufficient number of cases for statistical inferences and a theoretically sound sample of households that recently arrived. These newcomers in 2009 constitute my baseline sample, and I will follow them until they either drop out due to out-mobility (see below), get lost due to panel attrition or are interviewed in 2014, where they are again asked about their embeddedness.

As the covariates measured in 2009 are measured around the time of the move into the dwelling I consider them as informative about selective residential sorting into the neighborhood. In addition, these variables measured at baseline might affect future embeddedness. To capture the social context, I control for unemployment

rate, log number of residents, the type of building a household lives in (measured in five categories), self-reported distance to the next bigger city center (in categories), and the type of residential area (mere residential, business/industrial, or mixed). Additionally, I control for German state fixed-effects. On the household level, I control for the presence of new born children, children of pre-school age, children of school-age; homeownership; family status (single, married or cohabiting); mean age of household members; whether at least one household member is either not working, in training, unemployed or working; log household income³⁵; a subjective assessment of the appropriateness of the size of the dwelling and an indicator of the maximum educational degree in the household. Furthermore, the SOEP offers attitudinal indicators that ask respondents about their worries about immigration to Germany, about hostility towards immigrants in Germany, and about their own economic situation (on a three point scale: “not at all worried”, “somewhat worried” and “very worried”). The first two might be indicative of openness toward diversity and thus an often discussed driver of residential selection into diverse areas. I aggregate these worries-indicators within the household by taking the mean of all household members per year. Note that I mostly use household characteristics instead of characteristics of the household head since it is the household context which usually matters for moving decisions. Table IV.A1 in the appendix shows descriptive statistics of these baseline variables and the outcomes in 2009 and 2014.

Second, because I am interested in neighborhood integration after a household stayed in the *same* neighborhood for five years, I censor individuals after they moved out between 2009 and 2013. The reason is that I cannot observe their neighborhood embeddedness within this neighborhood if they moved away. Of the 2,401 households which are present in 2009, 761 were censored because they moved

³⁵ Income is used as an imputed version from the SOEP pequiv data file. Leaving income out of the regression did not change results substantively.

before 2014 (864 are lost due to panel attrition, see also table IV.A2 in the appendix).

To account for possible selection bias through mobility out of areas due to household characteristics that both affect staying in a neighborhood and the outcome, I apply the logic of “Inverse Probability of Censoring Weighting” (Robins et al. 2000: 557). This involves estimating the probability of being censored (in my case, due to moving out) and then constructing weights out of these probabilities to adjust for selection bias. To estimate probabilities of out-mobility I run a pooled logistic regression of moving out in the period from 2009 to 2013, treating each household year as a unit of analysis (Hernán, Brumback, and Robins 2002; Robins et al. 2000). These probabilities are then used to construct what I will call “inverse probability of out-mobility weights” (IPOW). Applying these weights in the outcome regressions for observations in the year 2014 up-weighs households with characteristics that make them likely to have moved away between 2009 and 2014, such that out-mobility is independent of those variables that were used to estimate the probabilities. This procedure implies that even though individuals who are censored due to moving out are not included in the outcome regression in 2014, these observations add information to the estimation of the weights. Further information on the logic of this method can be found in the appendix.

To avoid overfitting, I keep the mobility models simple and only include factors that are often discussed to drive this sort of selection process. These include a measure of the share of minorities in 2009 and neighborhood contacts in 2009 to account for mobility based on past values of the outcome itself, a yearly varying measure of whether a newborn child entered the household in a given year, whether there was a change in employment for persons within a household, and the three worries indicators. I interact neighborhood contacts in 2009, having a child and concerns about immigration with the share of minorities in 2009. See the appendix for regression tables (table IV.A3) of these selection models, descriptive statistics

of the time-varying variables (table IV.A2) and for further elaboration on the methods.

Concerning the composition of individuals who recently moved in, I need to make the same assumptions as other studies in the field: in order to interpret the coefficient of minority share as causal, all confounding variables must be included in the outcome regression. Due to the panel data structure, I can measure these confounders shortly after moving into the neighborhood, and thus clearly before the measurement of the outcome in 2014, respecting the timely succession of events. Standard errors are clustered at the household level to account for both the weighting procedure and correlations within households. Please refer to the appendix for further justifications for the model used.

IV.5 Results

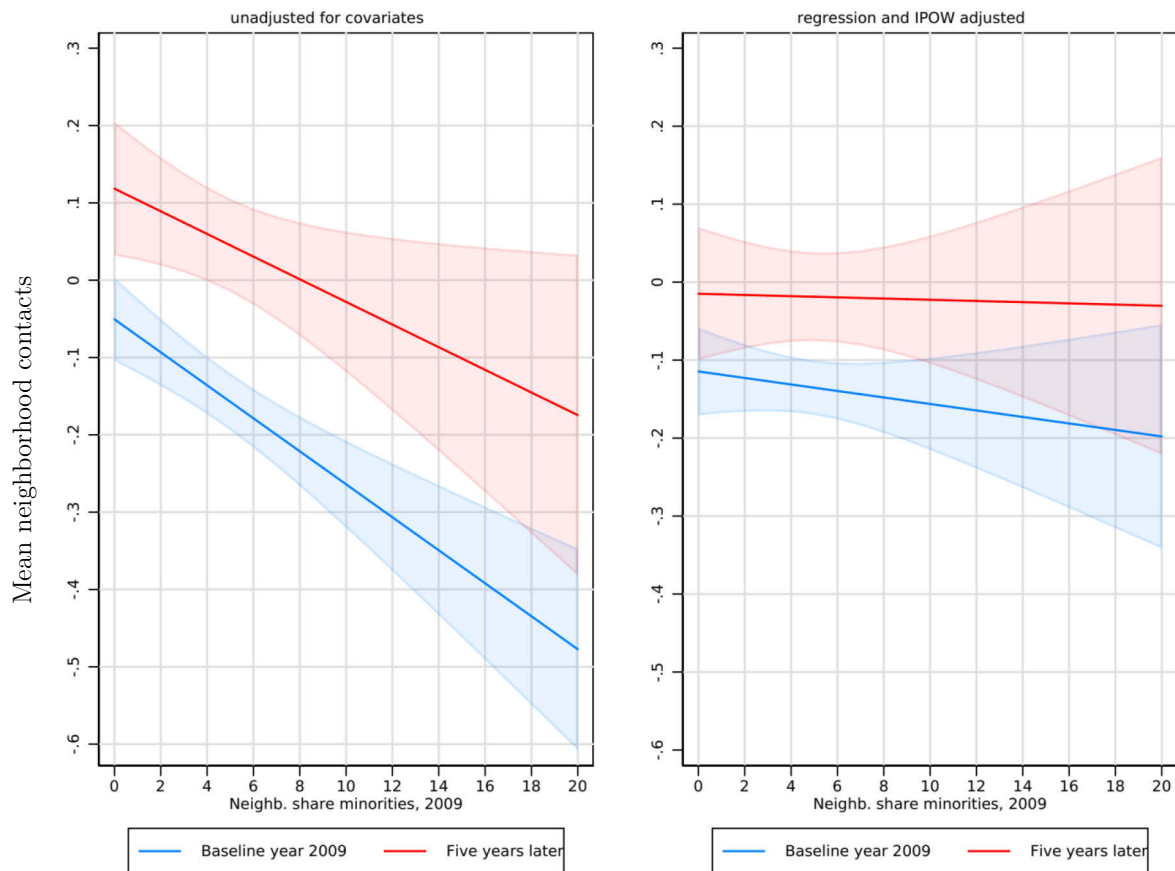


Figure IV.1: Predicted values of closeness of neighborhood contacts, results from OLS regressions. Full models are shown under (1) and (3) in table IV.2.

The first outcome under study is an indicator of the quality of neighborhood contact which I analyze by Ordinary Least Squares regressions. In the left panel of figure IV.1 I plotted predicted values from a regression model just including the minority share in 2009, a dummy indicating whether the observation is in 2009 or 2014, and their interaction (see model 1 in table IV.2). This figure shows that (a) the closeness of neighborhood contact increases substantially over the course of the five years (comparing the red and blue line), and (b) that closeness to neighbors is negatively associated with the percentage of ethnic minorities in the neighborhood (indicated by the steep negative slope). Both the strong negative association with minority

share and the increase with five years of stay get substantially smaller once baseline variables and selective out-mobility are adjusted for (model 3 in table IV.2). However, most important with respect to my hypotheses, the increase within the five years is still visible, showing that in both diverse and non-diverse areas individuals get more embedded into the neighborhood over time. Further analyses show that the contrast between the two years is significant at the $p=0.05$ level over the range of values of share minorities (not shown). These results favor hypothesis H1. There is even a tendency that individuals staying in more diverse areas catch-up with the households living in homogenous areas (the red slope is slightly more horizontal than the blue one, meaning that the differences between diverse and less diverse areas are smaller five years later). However, the wide confidence bands indicate that we should not overemphasize such trends and more research is needed.

As a second outcome variable, I consider an item asking about perceived neighborhood relations to measure perceptions of community. Again, I show adjusted and non-adjusted predictions in figure IV.2. Since my outcome is ordinal, I plot predicted probabilities for all three possible outcome categories from an ordered logistic regression. The upper row of figure IV.2 shows unadjusted predictions and the lower row predictions which were adjusted for baseline differences between households and for their probability to move out between 2009 and 2014. Even after adjustment for baseline variables and selective out-mobility the probability to perceive relations among one's neighbors as "barely knowing each other" or "varying/can't tell" has a substantial positive association with the share of ethnic minorities, whereas a negative association is visible with the probability to perceive a close-knit community. In addition, although staying in the neighborhood for five years marginally raises the probability to perceive a close-knit community, this increase is not enough for residents in ethnically diverse areas to reach similar levels as in non-diverse areas after five years. This is indicated by the negative slope of the red lines and substantiates hypothesis H2. Further analysis

also shows that the average marginal effect of minority share is significant for the probability of barely knowing ones neighbors and the probability to perceive a close-knit community in 2014, which indicates significant differences between diverse and non-diverse areas, even after five years of residence (not shown). As a final note concerning this outcome of perceived neighborhood relations I want to stress that the category “people talk occasionally” is the option which is chosen most often with no differences between areas of different ethnic diversity.

The final outcome under study, visiting neighbors, is negatively predicted by the share of ethnic minorities (left panel in figure IV.3), though after covariate adjustment this association gets rather small (see the right panel of figure IV.3). Further analysis substantiate the visual impression: the average marginal effect of share minorities is insignificant for both years (not shown). In addition, the probability to visit neighbors rises substantially with five years in the neighborhood in both diverse and non-diverse neighborhoods. This contrast in probabilities to visit neighbors in 2014 compared to 2009 is statistically significant over almost the whole range of values of minority share (not shown). Thus, these results substantiate hypothesis H1.

Note that visiting neighbors, to an even larger degree than the two other outcome measures, is likely to capture ties within ethnic groups in diverse areas (i.e. bonding social capital). If ethnic boundaries are strong, these visits might be primarily with co-ethnics even in ethnically diverse areas. Even if this was true, it is important to note that this finding shows that inhabitants of diverse areas have similar probabilities of visiting others as in homogeneous areas, thus providing evidence against the strong hunkering down claim by Putnam (2007) which relates to both in-group and out-group ties.

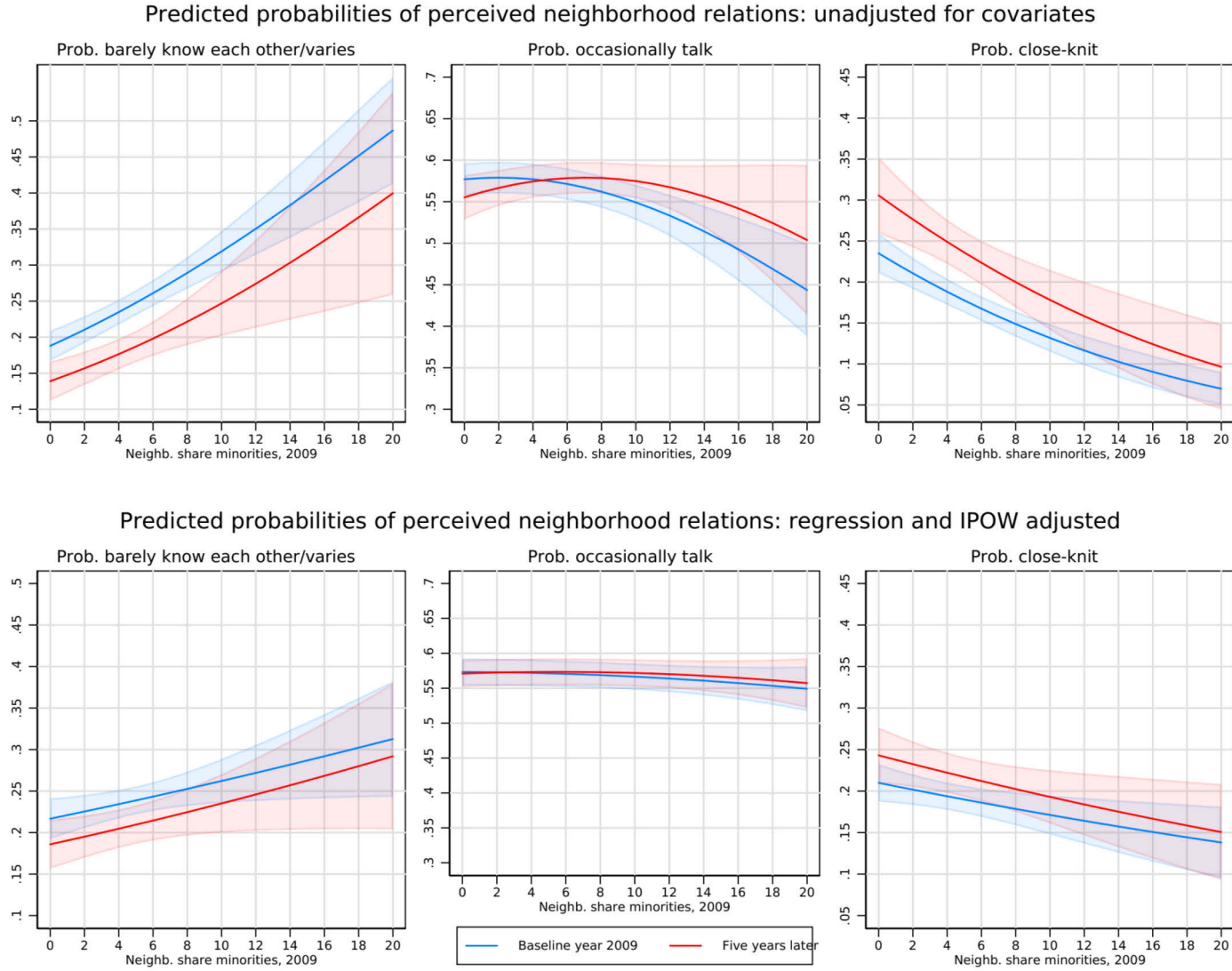


Figure IV.2: Predicted probabilities of perceived neighborhood relations (variables fixed at their empirical values). Results from ordered logistic regression models. Full models are shown under (4) and (6) in table IV.2.

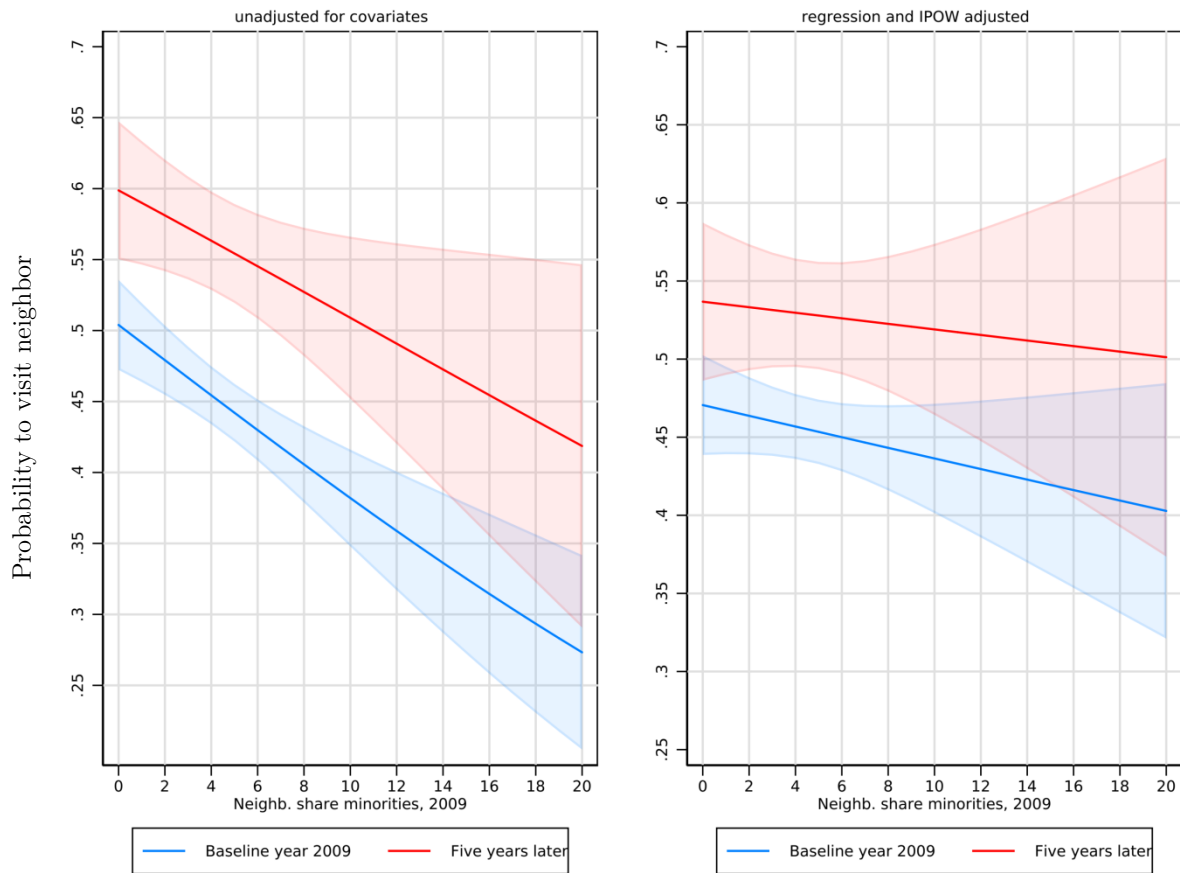


Figure IV.3: Predicted probabilities of visiting neighbors. Results from binary logistic regression models. Full models are shown under (7) and (9) in table IV.2.

Before discussing these results in more detail, note that inclusion of baseline variables greatly reduces the association between neighborhood diversity and all three social cohesion indicators. Additional analyses show that particularly variables on the neighborhood level and on the built environment (the type of building) strongly decrease the effect of ethnic diversity (this is in line with Letki [2008]).

Furthermore, adjustment for potential selective out-mobility does not largely change the results after baseline variables are adjusted by weighting with the inverse probability of out-mobility. This can be seen by comparing the second model

with the third model of each outcome in table IV.2. This is an interesting finding in its own right, as I included factors that are often discussed to trigger selective out-mobility (see appendix A2). Evidence against selection out of diverse neighborhoods based on the social cohesion measure itself is also in line with other studies (Dinesen and Sønderskov 2015; Havekes, Coenders, and Van der Lippe 2014).

To test the robustness of my results I conducted two series of robustness checks. First, for each outcome I ran a corresponding random-effects regression model in a sample of households that are present at both 2009 and 2014 and without weighting to adjust for out-mobility. The results were mostly similar to the ones reported. Through the inclusion of random effects, clustering at the household level is explicitly modeled. Thus, the fact that there is no large deviation from my original results suggests that my main results are not influenced by the hierarchical structure of my data. Furthermore, these analyses also show that my main results are most likely not affected by selective panel attrition as the results from the full household panels (both years) are similar to the ones from my main sample which includes some households only in 2009. Second, to see whether observations with high values on the skewed minority share variable substantially influence my results, I truncated minority share at 20 percent and 15 percent and run the same models as in table IV.2 (3), (6) and (9). The results are mainly similar to the ones reported.

Table IV.2: Outcome regressions of three measures of neighborhood embeddedness. Standard errors clustered within households (in parentheses). Table continues over several pages.

	Contact closeness with neighbors (OLS)			Perceived relations among neighbors (ordered logit)			Neighborhood visits (binary logit)		
	(1) without covariates	(2) with covariates	(3) with covariates IPOW- weighted	(4) without covariates	(5) with covariates	(6) with covariates IPOW- weighted	(7) without covariates	(8) with covariates	(9) with covariates IPOW- weighted
Neighb. share minorities, 2009	-0.021*** (0.004)	-0.004 (0.005)	-0.004 (0.005)	-0.071*** (0.010)	-0.028* (0.012)	-0.027* (0.012)	-0.050*** (0.011)	-0.014 (0.012)	-0.015 (0.012)
Survey year=2014	0.169*** (0.044)	0.112** (0.043)	0.100* (0.043)	0.360** (0.115)	0.242* (0.106)	0.208+ (0.107)	0.384*** (0.111)	0.300* (0.117)	0.287* (0.117)
Survey year=2014 X Neighb. share minorities, 2009	0.007 (0.006)	0.004 (0.006)	0.003 (0.006)	-0.000 (0.020)	-0.006 (0.017)	-0.005 (0.017)	0.013 (0.018)	0.008 (0.019)	0.007 (0.019)
Baseline controls measured in 2009:									
Unemployment rate, 2009		-0.008+ (0.004)	-0.008+ (0.004)		-0.009 (0.009)	-0.009 (0.009)		-0.019* (0.010)	-0.019* (0.010)
log(No. of inhabitants), 2009		-0.074* (0.029)	-0.075* (0.029)		-0.262*** (0.078)	-0.264*** (0.078)		-0.224** (0.077)	-0.222** (0.077)
One or two family terrace house		0.030 (0.056)	0.033 (0.056)		0.056 (0.145)	0.051 (0.145)		0.321* (0.143)	0.324* (0.143)
Residential building 3-4 dwellings		0.000 (0.062)	-0.003 (0.062)		-0.351* (0.146)	-0.360* (0.146)		0.163 (0.140)	0.166 (0.140)
Residential building 5-8 dwellings		-0.130* (0.054)	-0.129* (0.054)		-0.627*** (0.119)	-0.632*** (0.118)		-0.207 (0.132)	-0.200 (0.132)
Residential building 9 or more dwellings		-0.315***	-0.317***		-0.888***	-0.898***		-0.115	-0.117

	(0.061)	(0.061)	(0.135)	(0.135)	(0.149)	(0.149)
Distance to next big city center, below 10km	0.112* (0.056)	0.110* (0.056)	0.045 (0.119)	0.042 (0.120)	0.270+ (0.138)	0.263+ (0.138)
10 to 25km	0.176** (0.061)	0.170** (0.061)	0.358** (0.133)	0.348** (0.133)	0.193 (0.147)	0.182 (0.147)
25 to 40km	0.221** (0.069)	0.219** (0.069)	0.447** (0.155)	0.435** (0.155)	0.379* (0.167)	0.377* (0.167)
40 to 60km	0.146+ (0.076)	0.144+ (0.076)	0.400* (0.182)	0.397* (0.182)	0.197 (0.189)	0.191 (0.189)
60km or more	0.216** (0.074)	0.217** (0.073)	0.486** (0.157)	0.482** (0.158)	0.332+ (0.180)	0.334+ (0.179)
Mere residential area, new buildings	-0.151*** (0.042)	-0.152*** (0.042)	-0.078 (0.097)	-0.081 (0.097)	-0.105 (0.103)	-0.105 (0.102)
Mixed area	-0.076+ (0.042)	-0.075+ (0.042)	-0.250** (0.092)	-0.247** (0.092)	-0.113 (0.104)	-0.111 (0.104)
Business/industrial area	-0.212 (0.164)	-0.214 (0.162)	-0.397 (0.292)	-0.395 (0.289)	-0.352 (0.298)	-0.355 (0.297)
log(household income), 2009	-0.026 (0.033)	-0.024 (0.033)	0.025 (0.078)	0.024 (0.078)	0.023 (0.077)	0.025 (0.077)
Homeownership, 2009	0.192*** (0.044)	0.197*** (0.044)	0.298** (0.107)	0.307** (0.107)	0.373** (0.115)	0.380*** (0.114)
Child of age 0 to 2, 2009	0.018 (0.058)	0.018 (0.058)	0.291* (0.144)	0.289* (0.144)	0.213 (0.155)	0.204 (0.155)
Child of pre-school age, 2009	0.280*** (0.055)	0.283*** (0.055)	0.560*** (0.134)	0.565*** (0.134)	0.591*** (0.135)	0.604*** (0.136)
Child of school age, 2009	0.022	0.020	-0.057	-0.059	0.115	0.115

		(0.045)	(0.045)	(0.098)	(0.099)	(0.110)	(0.109)	
Partner in HH (ref. no partner)		0.036 (0.049)	0.033 (0.049)	0.111 (0.118)	0.108 (0.118)	0.022 (0.121)	0.020 (0.121)	
Spouse in HH (ref. no partner)		0.076 (0.048)	0.074 (0.048)	0.007 (0.105)	0.004 (0.105)	0.180 (0.117)	0.177 (0.117)	
Concerns about immigration in HH, 2009		0.033 (0.027)	0.035 (0.026)	0.047 (0.058)	0.051 (0.058)	0.058 (0.061)	0.059 (0.061)	
Concerns about hostility towards foreigners in HH, 2009		0.087** (0.030)	0.085** (0.029)	0.054 (0.066)	0.052 (0.066)	0.148* (0.069)	0.148* (0.069)	
Mean household age, 2009		0.004** (0.001)	0.004** (0.001)	0.014*** (0.003)	0.015*** (0.003)	0.006 (0.003)	0.006 (0.003)	
At least one HH member in training, 2009		-0.049 (0.058)	-0.043 (0.058)	0.066 (0.138)	0.069 (0.139)	-0.263+ (0.147)	-0.250+ (0.147)	
At least one HH member unemployed, 2009		-0.085 (0.061)	-0.087 (0.061)	-0.168 (0.130)	-0.175 (0.130)	-0.106 (0.139)	-0.112 (0.138)	
At least one HH member working, 2009		0.026 (0.043)	0.025 (0.043)	0.128 (0.100)	0.131 (0.100)	-0.082 (0.103)	-0.090 (0.103)	
German state fixed-effects								
		Yes	Yes	Yes	Yes	Yes	Yes	
Constant	-0.051+ (0.027)	0.232 (0.404)	0.233 (0.404)			0.016 (0.065)	0.443 (0.954)	0.421 (0.953)
Ordered logit cut-off 1				-1.463*** (0.070)	-2.483* (1.006)	-2.511* (1.007)		
Ordered logit cut-off 2				1.180*** (0.069)	0.438 (1.006)	0.405 (1.007)		
No. household-years	3151	3151	3151	3151	3151	3151	3151	3151

Clustered standard errors in parentheses. Data: German Socio-Economic Panel 2009 to 2014 and microm neighborhood data. IPOW calculated with SOEP from 2009 to 2013.

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

IV.6 Discussion and Conclusion

The purpose of this study is to assess the trajectories of household embeddedness into neighborhoods of differing ethnic diversity. The literature on diversity effects has reached a point where theoretical explanations abound (Dinesen and Sønderskov 2018; van der Meer and Tolsma 2014; Schaeffer 2014), but often these theories are implemented in a static fashion. In contrast, this study derives dynamic hypotheses from canonical theories in the field. To put these hypotheses to an empirical test, I focus on the dynamics of neighborhood embeddedness in the first couple of years after households move into a new neighborhood. I propose a methodological approach to take into account selective mobility out of the neighborhood over time, which is based on the idea of Inverse Probability of Censoring Weighting (Robins et al. 2000). This approach takes into account that many factors that lead to out-mobility are themselves affected by the neighborhood characteristics of interest and might affect future embeddedness, heightening the problem of selection bias (Elwert and Winship 2014).

My first important finding is that embeddedness measured by neighborhood closeness of contact with neighbors and neighborhood visits increases after five years of residence in the neighborhood. These results reject the hunkering down claim (Putnam 2007): inhabitants of diverse neighborhoods do not retreat from social neighborhood life over time. Furthermore, as my findings pertain to recent in-movers, they are in line with a British study which suggests that those who sort *into* ethnically diverse neighborhoods are less susceptible to ethnic diversity (Laurence and Bentley 2016).

Theoretically, this finding is not easily explainable by cultural differences that lead to disorganization of diverse areas (van der Meer and Tolsma 2014). Were individuals to retreat from social life due to an uncertain environment caused by perceived cultural differences and lack of shared norms, we would not expect that

households are getting more embedded with their length of stay in diverse areas. Likewise, there is no support for group conflict if we assume that conflict affects general ties in the neighborhood. The results for the cohort of diversity dwellers that I analyzed are rather consistent with an account that allows for the possibility that specific households are as able to form individual ties in diverse as in homogenous neighborhoods over time.

Secondly, my results also show that the perception of community differs between more diverse and less diverse neighborhoods: After five years of stay individuals in diverse neighborhoods more often perceive that their neighbors rarely talk to each other compared to less diverse neighborhoods. Thus, even though households are able to build up individual contacts in diverse neighborhoods, the density of networks between neighbors still perceived less close-knit as in homogeneous areas. This finding shows that there are differences in neighborhood networks between diverse and less diverse areas which are not easily overcome by single households. These differences are likely due to historical developments of the networks in diverse neighborhoods which are already present when the households in my sample enter the neighborhood.

How do these results relate with the negative association between neighborhood diversity and social cohesion found in the reviewed cross-sectional and quasi-experimental (Algan et al. 2016) studies of neighborhood cohesion? Taking a clear focus on early changes in embeddedness after moving in, this study indicates that it is not the individual networks of newcomers that are negatively affected by diversity (Laurence and Bentley 2016). I thus propose that future research should take a long term view to explain aggregate cohesion in ethnically diverse areas. Such a view should take into account how the neighborhood historically developed and how changes in ethnic composition are related to the networks of long term stayers. The relevance of such a view is again backed by Laurence and Bentley (2016), who find that an increase in diversity for those who stay in a neighborhood

over a decade is associated with a decrease in neighborhood attachment. This also matches findings from a qualitative study which shows that established German natives show reactions of threat when their neighborhood experiences changes in ethnic composition (Hanhörster 2000).

Furthermore, depending on how trajectories of embeddedness further develop for different cohorts of inhabitants and who moves away at which stage, my findings have important implications for neighborhood research on ethnic diversity and local cohesion. As most studies use cross-sectional data they have to rely on the composition of neighborhoods as it is at the moment the study is conducted. If inhabitants in diverse areas are slower to establish ties, but in the end are able to catch-up with inhabitants in less diverse areas if they would stay put, results from previous studies might to some extent be attributable to higher residential turnover in diverse areas. This issue is only solvable by tracking and correcting for selective out-mobility over time. To analyze trajectories of long term stayers in more detail, the methodology proposed here could prove useful because with longer length of residence the probability of out-mobility based on variables that affect the outcome might increase.

Apart from panel studies on the individual or household level, other promising ventures for future research are analyses of neighborhood networks. More than other methods, this would allow researchers to investigate the segregation of networks within neighborhoods and assess the relative impact of ethnic homophily. Some limitations of this study should be kept in mind. First, the SOEP respondents only rarely live in the most diverse neighborhoods, whereas other studies use more targeted sampling strategies and thus have more variance in ethnic diversity (Schaeffer 2014; Schönwälder et al. 2016). Thus, I might underestimate the diversity effect if it is not linear because those living in high diversity neighborhoods are missing in my analysis. Second, though my findings speak against “hunkering down” (Putnam 2007) in diverse areas over time, my measures of embeddedness do

not rule out that individual neighborhood networks are ethnically segregated. Third, interpretations of the causal effect of diversity require that all important confounding variables are included in the models. This assumption is made by almost any other study in the field and my methodology is no exception. However, by taking a longitudinal perspective, this study draws attention to the dynamic relation between variables by distinguishing between variables that matter for in-mobility and for out-mobility. Natural experiments could help to shed more light on whether the usual covariates that are used to adjust for possible confounding of the diversity-cohesion association are sufficient (Algan et al. 2016).

To conclude, this study lends some credibility to Putnam's (2007) long term claim that the negative effects of diversity give way to positive effects in the future. In a sample of households who recently moved into their dwelling, I find that contact with neighbors gets closer over time, also in more diverse areas. However, this does not apply for the overall perception of neighborhood relations in the neighborhood. Thus, certain cohorts of movers into diversity are able to increase embeddedness, but this does not lead to increased community-like perceptions of relations between neighbors. Taken together with findings from other studies, I thus propose that future research should take a closer look at how neighborhood networks change over long time periods, and which cohorts of residents might be most affected by changes in diversity.

IV.7 Study III Appendix

IV.7.1 Descriptive Sample Statistics

Table IV.A1: Variables in 2009 and in 2014.

Except for the outcomes, all other variables are measured in 2009 and are time-invariant, changes for those variables between years are due to right censoring between 2009 and 2014. HH=household.

	2009				2014			
	mea n	sd	min	max	mea n	sd	min	max
Neighb. share minorities, 2009	4.8	4.7	0	53.0	4.5	4.4	0	53.0
Outcome variables								
Closeness of contact with neighbors	-0.2	0.9	-2	2	0.05	0.9	-2	2
Perceived relations among neighbors:								
- Barely know each other	0.3	0.4	0	1	0.2	0.4	0	1
- Talk occasionally	0.6	0.5	0	1	0.6	0.5	0	1
- Relatively close-knit	0.2	0.4	0	1	0.2	0.4	0	1
Visit neighbors	0.4	0.5	0	1	0.6	0.5	0	1
Control variables								
Unemployment rate, 2009	8.5	6.2	0	41.6	8.1	6.1	0	41.6
log(No. of inhabitants), 2009	7.1	0.5	1.8	8.9	7.0	0.6	1.8	8.9
Building type, 2009:								
- Detached one or two family house	0.2	0.4	0	1	0.3	0.5	0	1
- One or two family terrace house	0.1	0.3	0	1	0.2	0.4	0	1
- Residential building 3-4 dwellings	0.1	0.4	0	1	0.1	0.3	0	1
- Residential building 5-8 dwellings	0.3	0.5	0	1	0.3	0.4	0	1
- Residential building 9 or more dwellings	0.2	0.4	0	1	0.2	0.4	0	1
Distance to next city center, 2009:								
- In center	0.1	0.4	0	1	0.1	0.3	0	1
- below 10km	0.3	0.5	0	1	0.3	0.5	0	1
- 10 to 25km	0.3	0.4	0	1	0.2	0.4	0	1
- 25 to 40km	0.1	0.3	0	1	0.2	0.4	0	1
- 40 to 60km	0.08	0.3	0	1	0.08	0.3	0	1
- 60km or more	0.1	0.3	0	1	0.1	0.3	0	1
Type of neighborhood, 2009:								
- Mere residential area, old buildings	0.4	0.5	0	1	0.5	0.5	0	1

- Mere residential area, new buildings	0.3	0.4	0	1	0.3	0.5	0	1
- Mixed area	0.3	0.4	0	1	0.2	0.4	0	1
- Business/industrial area	0.01	0.1	0	1	0.01	0.1	0	1
log(household income), 2009	10.1	0.8	0	13.2	10.3	0.6	7.5	12.6
Homeownership, 2009	0.2	0.4	0	1	0.3	0.5	0	1
Child of age 0 to 2, 2009	0.09	0.3	0	1	0.09	0.3	0	1
Child of pre-school age, 2009	0.1	0.3	0	1	0.1	0.3	0	1
Child of school age, 2009	0.2	0.4	0	1	0.3	0.4	0	1
Family relations in HH, 2009:								
- No partner	0.5	0.5	0	1	0.4	0.5	0	1
- Partner in HH	0.2	0.4	0	1	0.2	0.4	0	1
- Spouse in HH	0.3	0.5	0	1	0.4	0.5	0	1
Concerns about immigration in HH, 2009	1.8	0.7	1	3	1.8	0.7	1	3
Concerns about hostility towards foreigners in HH, 2009	2.0	0.6	1	3	2.0	0.6	1	3
Mean household age, 2009	39.6	13.8	19	91	43.7	13.7	19.5	85
At least one HH member not working, 2009	0.08	0.3	0	1	0.10	0.3	0	1
At least one HH member in training, 2009	0.1	0.3	0	1	0.07	0.3	0	1
At least one HH member unemployed, 2009	0.1	0.3	0	1	0.1	0.3	0	1
At least one HH member working, 2009	0.6	0.5	0	1	0.7	0.5	0	1
German state, 2009:								
- Baden-Wuerttemberg	0.1	0.3	0	1	0.1	0.3	0	1
- Bavaria	0.1	0.3	0	1	0.1	0.3	0	1
- Berlin	0.05	0.2	0	1	0.06	0.2	0	1
- Brandenbrug	0.04	0.2	0	1	0.05	0.2	0	1
- Bremen	0.00	0.09	0	1	0.01	0.10	0	1
9								
- Hamburg	0.02	0.2	0	1	0.03	0.2	0	1
- Hessen	0.07	0.3	0	1	0.06	0.2	0	1
- Mecklenburg-Vorpommern	0.03	0.2	0	1	0.02	0.1	0	1
- Lower Saxony	0.08	0.3	0	1	0.07	0.3	0	1
- North Rhine-Westphalia	0.2	0.4	0	1	0.2	0.4	0	1
- Rhineland-Palatinate	0.04	0.2	0	1	0.05	0.2	0	1
- Saarland	0.00	0.09	0	1	0.01	0.1	0	1
8								
- Saxony	0.08	0.3	0	1	0.10	0.3	0	1
- Saxony-Anhalt	0.04	0.2	0	1	0.04	0.2	0	1
- Schleswig-Holstein	0.04	0.2	0	1	0.02	0.1	0	1
- Thuringia	0.04	0.2	0	1	0.04	0.2	0	1
Observations	2351				800			

IV.7.2 Addressing Selective Out-mobility

Logic of inverse probability of censoring weighting

Robins and colleagues provide a statistical method to estimate counterfactual distributions for observational studies called Inverse Probability of Treatment Weighting (IPTW) (Hernán et al. 2002; Robins et al. 2000). IPTW involves weighting observations with the inverse of their probability to receive treatment, thus creating a weighted population in which confounding covariates do not affect treatment assignment. This method is of particular interest when estimating the effects of time-varying treatments, because it can adjust for factors that are both (a) mediators on the path between prior treatment and future outcome and (b) confounders of treatment at a later time point and the outcome. In such situations standard regression models would yield biased causal estimates of treatment histories.

The logic of IPTW can also be used to adjust for selection bias due to selective panel attrition by treating drop-out as a treatment and weight with the inverse probability of drop-out at each time point. These weights used to adjust for drop-out are called “Inverse Probability of Censoring Weights” (Robins et al. 2000: 557).

Here, I want to briefly lay out how I proceed in my application. Specifically, I do not use weighting to adjust for confounding of the treatment or drop-out in general, but to adjust for selective out-mobility. As I censored individuals after moving out of a neighborhood the logic is very similar to the censoring weights with the slight difference that I adjust for a specific type of censoring.

The weights to be estimated take the following form:

$$IPOW_{it} = \frac{\prod_{t=2009}^T (1 - pr(move_{it} | move_{it-1}=0, V_{i2009}))}{\prod_{t=2009}^T (1 - pr(move_{it} | move_{it-1}=0, minor_{i2009}, X_{it}, V_{i2009}))}$$

Where i indexes households and t the year of measurement with $2009 \leq t < 2014$. T is the individual household year of out-mobility (afterwards the observation are censored). V_{i2009} is a vector of time invariant variables measured in 2009 to stabilize the weight by inclusion in the numerator (the confounding influences of V are modelled in the outcome regression, for more details on stabilizing IPT weights, see Robins et al., 2000). \mathbf{X}_{it} is the core aspect, a vector of variables measured during 2009 and 2013 which are expected to be both affected by prior ethnic diversity, affect the outcome, and drive out-mobility. \mathbf{X}_{it} also includes an interaction between the share minorities in 2009 and the neighborhood contact variable in 2009 to take into account baseline differences in neighborhood contact while avoiding the inclusion of a lagged dependent variable in the outcome regression. Since the probabilities in the numerator and denominator are unknown, I estimate them with pooled logistic regression models (Robins et al. 2000) of moving until the next measurement occasion as shown in table A3. Descriptive statistics of the time-varying variables between 2009 and 2013 are given in table A2. To arrive at weights which correspond to the probability of being censored at the current point in time (Robins et al. 2000) I forward the weights by one time point for each household and give a weight of 1 to each household in 2009.

Through weighting with the IPOW, the out-mobility histories over the years 2009 to 2014 in the sub-sample in 2014 are independent of the variables \mathbf{X}_{it} used to calculate the weights in the final regression of embeddedness on diversity.

This procedure has several advantages for the research question at hand. First, it adjusts for selection bias if the moves between the two survey waves are affected by variables that likewise affect the outcome. This allows me to answer my research question about embeddedness in 2014 if the household would have stayed in the same neighborhood. Second, while doing so it avoids over-control bias due to conditioning on intermediate variables that are themselves affected by diversity in 2009 and affect future embeddedness. This is because those time-varying variables

do not enter the outcome regression as predictors. Third, it allows me to make greater use of the information on household panels from 2009 to 2013 to plausibly model out-mobility, because the models used to calculate the weights use yearly information on households.

Table IV.A2: Mean values of time-varying variables between 2009 and 2013.

The drop in observations over the years is both due to panel attrition and censoring due to moving.

	2009	2010	2011	2012	2013
Newborn child (age 0 to 1)	0.060	0.052	0.043	0.042	0.039
At least one HH member changed jobs	0.22	0.18	0.18	0.16	0.17
Concerns about immigration in HH	1.79	1.81	1.86	1.75	1.81
Concerns about hostility towards	1.97	1.97	1.94	1.97	1.97
Concerns about own economic situation in	2.04	1.99	1.91	1.90	1.83
Moves until next measurement	0.11	0.10	0.087	0.095	0.068
Observations	2351	1784	1326	1081	914

Table IV.A3: Pooled logistic regression to predict out-mobility until next measurement for the years between 2009 to 2013.

Shown are odds ratios. Predicted probabilities from these models go into the construction of the inverse-probability of out-mobility weights. The model that predicts probabilities for the numerator of the weights (2) does only include time-invariant characteristics that are themselves not affected by prior diversity. Probabilities from model (2) serve only to stabilize the weight, and the outcome regression adjusts for these time-constant factors.

	(1) Denominator model		(2) Numerator model	
Moves until next measurement				
Neighb. share minorities, 2009	1.023	(0.024)		
Closeness of contact with neighbors, 2009	0.807**	(0.057)		
Neighb. share minorities, 2009 X Closeness of contact with neighbors, 2009	1.007	(0.010)		
Newborn	1.576*	(0.350)		
Newborn X Neighb. share minorities, 2009	1.026	(0.027)		
At least one HH member changed jobs=1	1.445***	(0.140)		
Neighb. share minorities, 2009 X Concerns about immigration in HH	0.990	(0.011)		
Concerns about immigration in HH	0.883	(0.076)		
Concerns about hostility towards foreigners in HH	1.015	(0.071)		
Concerns about own economic situation in HH	1.068	(0.073)		
Survey year=2010	0.952	(0.103)	0.930	(0.100)
Survey year=2011	0.861	(0.105)	0.826	(0.100)
Survey year=2012	0.991	(0.124)	0.950	(0.118)
Survey year=2013	0.706*	(0.106)	0.665**	(0.099)
Unemployment rate, 2009	0.992	(0.009)	0.998	(0.008)
Owens home (ref. rents home)	0.134***	(0.024)	0.126***	(0.022)
Bavaria	1.130	(0.189)	1.098	(0.181)
Berlin	0.926	(0.210)	0.944	(0.207)
Brandenbrug	0.940	(0.254)	0.862	(0.220)
Bremen	0.559	(0.273)	0.547	(0.269)
Hamburg	0.830	(0.227)	0.877	(0.240)
Hessen	1.481*	(0.285)	1.467*	(0.276)
Mecklenburg-Vorpommern	1.482	(0.418)	1.383	(0.366)
Lower Saxony	1.090	(0.215)	1.027	(0.197)
North Rhine-Westphalia	1.150	(0.187)	1.104	(0.175)
Rhineland-Palatinate	1.046	(0.245)	0.975	(0.225)
Saarland	1.003	(0.506)	0.956	(0.493)
Saxony	0.784	(0.174)	0.716	(0.148)
Saxony-Anhalt	1.030	(0.270)	0.995	(0.247)
Schleswig-Holstein	1.632*	(0.402)	1.522+	(0.367)
Thuringia	0.638	(0.186)	0.590+	(0.163)
No. household-years	7173		7173	

Data: SOEP 2009 to 2013. Household clustered standard errors in parantheses.

IV.7.3 Why No Fixed-Effects Regression?

Another common way of analyzing panel data are panel fixed-effects models. These are not appropriate in the context of this study for two reasons.

First, I am interested in differences in levels of embeddedness between more diverse and less diverse areas over time, where diversity is treated as time-constant. A fixed-effects model would restrict the difference in embeddedness in diverse and non-diverse areas in 2009 to be equal (the main effect of minority share is not estimated). Thus, I would not be able to compare initial levels of embeddedness between diverse and homogeneous neighborhoods. These are however crucial for an assessment of trajectories of embeddedness, as it can be assumed that in diverse settings embeddedness is lower shortly after arrival.

Second, acknowledging the first point, one could use another analytical sample and analyze the effects of changes in neighborhood diversity on embeddedness between the years 2009 and 2014, treating diversity as time-varying. However, within variation from changes in minority share between 2009 and 2014 is subject to severe measurement bias. This is because there is a change in neighborhood boundaries in 2010 when microm introduced new spatial units. These units replaced the Marktzellen which I used as neighborhoods in this study. Changes in the share of ethnic minorities are relatively small between years within the same neighborhoods. This makes artificial changes in minority share like the ones caused by the change to new spatial units very influential.

All this goes without saying that a big drawback of the current methodology is that it does not account for unobserved panel heterogeneity, and that more research is certainly necessary.

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Declarations and Contributions to Single Studies

Contributions to single papers and authorship

Study I “Mass Media and Concerns about Immigration in Germany in the 21st Century: Individual-Level Evidence over 15 Years” is co-authored with PhD student *Christian S. Czymara* and published in *European Sociological Review*, Volume 34, Issue 4, 1 August 2018, Pages 381–401, DOI: <https://doi.org/10.1093/esr/jcy019>

Contributions to study I can be differentiated as follows, although both authors agree that they practically helped to develop all parts of the paper and contributed equally:

Theoretical framework and literature review: Christian S. Czymara

GSOEP data collection, data merging and preparation: Stephan Dochow

NEXIS data collection and preparation: Christian Czymara

Model building and data analysis: Stephan Dochow

Discussion of results: Christian Czymara and Stephan Dochow

Revisions of all parts of the paper: Christian Czymara and Stephan Dochow

(for signed declaration, see attachment)

Study II and **Study III** are authored by myself and at the stage of a working paper prepared for soon submission.

Declaration

I herewith declare that this thesis was composed by myself and that I have used only the means and sources listed. I certify that this thesis was written without the use of any unauthorized aids. I only used those sources and aids that are referenced. All exerts, citations and ideas are indicated. I permit the review of this thesis via qualified software for the examination in case of accusations of plagiarism. No part of this thesis has been accepted or is currently being submitted for any other degree or qualification at this university or elsewhere.

Bremen, 21 September 2018

Stephan Dochow