

# **Spatial Dispersion of Social Networks: The Realized Ability to Bridge Geographical Distances**

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## **Abstract**

As a result of social, economic, and civic transformations, individuals face the problem of large spatial distances between themselves and their relatives and friends, which have to be overcome to preserve social connections and to access material and immaterial resources embedded in these relationships. Against this background, this paper analyzes the general capability of receiving social support over larger distances within social networks, divided according to the different types of social support as introduced by House (1981). Applying ordinal logit estimations, we find that individuals with higher levels of education are more likely to receive social support over large geographical distances in all support dimensions. Education influences the ability to bridge spatial distances for natives and migrants alike. Migrants benefit most from obtaining a university degree: the odds for receiving support over larger special distances are significantly higher as compared to the group of migrants holding the lowest level of general education.

**Keywords:** Returns to Education, Social support, Social networks, Migrants, Logit-regression, Interaction effects

**JEL-Classification:** I26, C30, Z13

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# 1. Introduction

Education is one of the main pillars when it comes to evolving, progressing or reaching the next higher step, for an individual and for a society as a whole. Education enables people to increase their incomes, improve their living standards, and climb the social ladder.

For most of the history and development of education research in social sciences, the focus has been first and foremost on monetary benefits, as they are easier to observe and categorize. More recently, an increasing number of scientists from a variety of disciplinary backgrounds are researching non-monetary benefits such as health and well-being, social support, and networks or civic participation. Policy analysis and policy design in education is receiving increasing attention. This paper considers aspects of non-monetary benefits of education within the disciplines of social sciences, educational research, and economics to establish a basis for policy design. This follows up on policy related works such as McMahon's (2004) estimation of how much support the government has to provide in order to ensure a working education market.

We focus on establishing the dependence of ability to receive social support over larger spatial distances on level of education. Consequently, we address the questions: Does the realized likelihood to receive social support over larger spatial distances depend on the level of education? And following: Does education have a different effect on migrants and their ability to bridge geographical distances in social support reception?

Empirically, this paper relies on the German socio-economic panel (G-SOEP), a survey which is conducted among 12,000 households in Germany yearly since 1984. In the 2011 iteration of this dataset, participants were asked a set of questions regarding their social networks and a measure of the distance between the interviewee and his/her closest relatives in ordinal categories.<sup>3</sup> We perform ordered logit estimations to see if education and social networks explain the distance categories of the questionnaire. We use the estimates to find whether there is a difference between migrants and natives in the ability to receive social support over larger spatial distances. Another feature of the

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<sup>3</sup> Ranging from living in the same household, in the same house, in the neighborhood, in the same town, but more than 15 minutes away by foot, in another town, but within a one hour drive, farther away (but in Germany) to abroad (TNS Infratest Sozialforschung, 2011, p. 30).

underlying dataset is the distinction between different dimensions of social support, which we use to explore the existence of a varying effect of space depending on the support dimension.

In the past decades, migration increased notably, which fosters growing interest in the influence of migration on the link between education and potential benefits. This is especially relevant in the case of the most recent migration waves from Western Africa and the Middle East (Held, 1999; Herz, 2015; King et al., 2010). Several scholars argue, that the link between education and potential benefits is reversed for migrants. They lack the social integration (Avenarius, 2012) and might have attained their education in a foreign country, which does not have a similar impact as if they had acquired it in the country of residence (Walton et al., 2009) or are not as proficient in speaking the local language (Sentell and Braun, 2012). In spite of living far from each other, migrants are able to receive and provide support to their families, as it is not geographic closeness that determines the emotional distance between the family members (Mason, 2004). However, upholding these long-distance ties decreases with time spent in the host country, as elaborated by Carrasco et al. (2008).

This paper evaluates the direction of the gradient: whether it is reversed when it comes to migrants or whether there is no difference of the link of education and non-monetary benefits between natives and people with a migrant background.

There have been several attempts to operationalize non-monetary benefits, and the approaches used are often induced by the studies' underlying dataset. This approach is widespread and produces measurable results. However, it also leads to an increasing diversification of literature and therefore makes research outcomes less comparable. We give an overview of the existing literature and approaches used, to be able to find similarities and differences to choose the best possible approach to answer the research question.

The remainder of this paper is organized as follows: Section 2 provides an overview of the existing literature and theoretical background, followed by a description of the methodology (Section 3), including the data (3.1.), dependent and independent variables (3.2 and 3.3), and description of the sample (3.4). In Section 4, we outline the results of the empirical analysis. The paper concludes with a discussion in Section 5.

## 2. Background literature

Social capital as a concept has been developed to comprise the aspect of social interaction that is not covered by any other notion of capital, as aptly described by Lin “information, influence, social credentials, and reinforcement may explain why social capital works in instrumental and expressive actions not accounted for by forms of personal capital such as economic or human capital” (2001, p. 20).

Due to the difficult attribution of social capital, as it exists between actors and cannot be assigned to a single actor (Coleman, 1988), we first need to clarify which operationalization we are using. The main differences between these notions are the focus on features of social organization vs. embedded resources within social networks, and the influence of the actor (Sato, 2013). Whereas some scholars argue that social capital is more related to the norms and regulations that enable a functioning society (Bourdieu, 1986; Burt, 1992; Coleman, 1988; Putnam, 1993; Woolcock, 1998) others attribute the term to the resources, which lie within human interactions and can be accessed by the actors individually (Bourdieu, 1986; Lin, 2001). As we are studying the extent to which education influences the realized ability to receive social support over large spatial distances, we are interested in the structure of access to social capital. Therefore, we are using a more instrumental approach. Pierre Bourdieu, the main proponent of this interpretation of social capital, describes it as the “entirety of all potential and actual resources which come about by possessing a network of more or less institutionalized relationships, based on mutual acquaintance or recognition” (Bourdieu, 2012).

Social capital, according to the definition used here, refers to the resources embedded in the interpersonal networks. Our research develops a closer understanding about the link of education towards the bridging capabilities of actors in social networks. First and foremost, we are drawing upon the literature on education and the exchange of social support, followed by a brief description of the link of education and network structure and an excursus on education and mobility, since it constitutes another influencing effect before turning to the issue of migration.

Herz (2015) finds a positive gradient between network size and education, which he then argues also opens up more possibilities in terms of exchanging support. Also Mirowsky and Ross (2003) find that higher levels of education lead to an increased quality of social

networks. Larger amounts of material and immaterial resources, social support, amongst others, are exchanged between the members of these networks.

The access to increased levels of social support has a multitude of beneficial effects. Individuals who can rely on the provision of social support within their networks are less likely to be physically as well as psychologically ill (Berkman, 1995; House et al., 1988; House, 1987; McMahon, 2004), have higher life-satisfaction (Ross and Wu, 1995) and have access to more elevated social positions (Behtoui, 2007). Using social capital usually reinforces the ties between the actors, rather than wearing them down, which is another non-capital like feature (Light and Gold, 2001). However, the creation of social capital also comes at a cost, since there are mutual obligations involved in its exchange. Depending on the structure of the network, the actors can be subjected to a tight set of rules and regulations, inhibiting their free development (Woolcock, 1998), asking for the sharing of economic resources, and allowing other actors to “free ride” (Gold, 2005; Portes and Sensenbrenner, 1993).

Even though it is important how many “nodes” a social network consists of, the structure of these networks determines the extent of social support an actor can access, according to the instrumentalist conception of social capital (Nauck, 2011). A multitude of scientists researches on the influence of education on the structural components of networks, and so far different results emerged. The seminal work of Granovetter (1973) investigates the strength of ties, where he differentiates between strong ties, which usually appear amongst kin and weak ties, which relate to the interpersonal ties to friends, co-workers and the like. McPherson et al. (2001) research the influence of the “likeness” of individuals on their networks. They call their observation “the homophily principle” because they notice that people with similar background tend to connect faster and develop stronger relationships based on their similarity in numerous aspects.

People with a higher level of education are more likely to exhibit less densely-knit networks (Avenarius, 2012; Fischer and Beresford, 2015; Kennedy, 2004), weaker ties within their networks (Herz, 2015) as well as more transitive relationships with their network members (Viry, 2012). More years of schooling influences the behavior of the network as such: crime rates within the whole peer group network for example are

reduced through higher education<sup>4</sup> (McMahon, 2004) and people will engage in healthier behavior (Berkman, 1995, p. 249).

Social capital has to be maintained in order to keep its validity. To be able to still access the resources embedded in social networks which are geographically distant, the actor has to frequently stay in touch with the support provider, else the social capital decays (Nauck, 2011).

Through globalization and technological progress in transportation and communication, also known as network capital, demand for mobility within modern societies is increasing steadily (Larsen et al., 2006). People who had difficulties to stay in touch with each other are now able to communicate over large distances, and travelling has become easier, cheaper, more convenient, and faster.

Although technological advancements facilitate maintaining social relationships over distances, there are also various negative factors which accompany mobility. Increased mobility leads to increased pressure on social relationships in terms of upholding these ties over larger distances. Furthermore, Putnam criticizes mobility as it encourages the subversion of civic engagement due to people being less willing to create community-based social capital when they expect to move again (2000, pp. 204–205). Also Magdol (2000) reports increased stress levels and deterioration of social ties after residential moves. Hence, mobility also places a burden on geographically less-rooted people.

On the labor market, being able to cope with frequent changes of location and subsequently connecting to a variety of different social circles, through which social capital is generated, is linked to holding a higher social position and therefore higher economic capital and education (Viry, 2012). In his empirical study, Viry also finds that “mobility experiences are linked to individuals’ skills and resources, which means in turn that people who experience early residential mobility are able to preserve close social ties over larger distances by using network capital more frequently and efficiently (2012, p. 68).

Structural differences in social networks can be attributed to a higher mobility during education (e.g. study abroad) and the prospect of an increased labor mobility holding a higher degree (Findlay et al., 2012).

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<sup>4</sup> Although this is only valid for lower crimes, the probability of committing white collar crimes increases with education.

Educated individuals are furthermore able to connect different social circles, which increases their individual economic outcome and can reduce inequality between social classes, which constitutes a benefit for society (Granovetter, 1973; Lin, 2000).

We evaluate whether there is a difference in the effect of education on the reception of support over larger spatial distances within social networks between migrants and the native population. Thereby we are following the lead of Collmer (2002) and Pelizäus-Hoffmeister (2001) in determining the impact of relocation on the migrant population. Their works support the idea that migrants have an increased ability in bridging larger geographic distances. The authors reason that individuals who are frequently relocating are more driven to keep their original network ties as opposed to tie new ones. Furthermore, maintaining these relationships is vital to the transmission of knowledge within the communities (Herz, 2015; Snel et al., 2006; Zelinsky and Lee, 1998). However, the attainment of education could have a different effect on migrant population, as with regards to their networking behavior: by sending remittances and therefore increasing the dependence, the relationship between the members of a migrant family are consequently closer and more sustained (McKenzie and Rapoport, 2011). Migrants who obtained education in the host country are therefore much more likely to advance in social status than the ones without a formal proof of their knowledge (Nauck, 2011). The social status can also provide hints as with regards to the link of education on the ability to maintain social relationships: as migrants generally belong to lower social classes, especially directly after migrating, education is the key to a societal advancement (Zelinsky and Lee, 1998). Through education, migrants can gain access to local social capital quicker (source). Economically better situated migrants can also draw from their higher levels of social capital mostly in form of weak ties, which enable them to assimilate faster and make use of the host countries' social capital (source). Therefore it is important to control for the family background in order to determine the interdependencies between education and migrant background.

### **3. Methods**

#### **3.1. Data**

The dataset used for this analysis has been collected by the German Institute of Economic Research (Deutsches Institut für Wirtschaftsforschung, DIW) since 1984 and

encompasses around 12,000 households, which are questioned every year. Although some questions were included every year since the introduction of the SOEP, some were asked less frequently<sup>5</sup>, and in the course of more than 30 years some questions were outsourced to sub-questionnaires, which are only posed to certain subgroups within the sample population. The questions this study is concerned with are mainly located in the fourth quarter of the questionnaire. Due to a change of question design<sup>6</sup>, there is only one survey year which can be used for the herein conducted analysis, which is 2011. The same set of questions was asked in the latest wave (2016). However, due to timing issues regarding the main work on this paper it was not possible to include the latest data. Consequently, applying a panel approach using both survey years will be a part of later investigations within this topical area. The main variable, which is called *the maximal minimal distance* in this paper and describes the maximal distance an ego's family member lives away from the interviewee, has one caveat: It is only available for kinships. Unfortunately, question no.127, which queries the distance, asking "For each<sup>7</sup>, indicate how many such relatives you have, whether they live in your household, and if not, how far away they reside" is not reporting kith relationships (TNS Infratest Sozialforschung, 2011, p. 30). Hence, the empirical part the following Section focuses solely on family ties, mostly networks characterized by strong ties and high density, in line with Wellman (1989).

Educational effects, especially external effects, are oftentimes only made visible through a multi-period study, which is not possible with the data at hand. As a consequence, we draw stationary implications, which are not able to depict the dynamics tied to the influence of previous generations, or with respect to replacement investments in education (McMahon, 2004).

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<sup>5</sup> Some questions are only asked every two, three or five years (DIW Berlin / SOEP, 2012).

<sup>6</sup> Question 115 in 2006 and question 125 in 2011 read the same "The following list is composed of people who could be important for you in some way. How do you feel about the following?" with the sub-questions a-e "a) With whom do you talk about personal thoughts and feelings, or about things you wouldn't tell just anyone? b) (Only for persons under 65 years of age) Who supports your advancement in your career or educational training and fosters your progress? c) Now a hypothetical question: If you were to need long-term care (for example, in the case of a bad accident), who would you ask for help? d) With whom do you occasionally have arguments or conflicts that weigh upon you? e) Who can you tell the truth even when it is unpleasant?" The problem regarding comparison is that in 2006 the interviewees could only assign three people for each support category, in 2011 they got given five alters to name (TNS Infratest Sozialforschung, 2011, p. 28).

<sup>7</sup> Meaning for each relationship status, e.g. mother.



Another issue stemming from the dataset used is concerned with the actual data collection. Even if the questionnaires have been presented in person by an employee of the DIW and not only conducted as pen and paper or computer assisted personal interviews (CAPI)<sup>8</sup>, they still contain self-reported data, which is hard to observe or check upon. Self-reporting can bias the results particularly for the group of migrants, since their knowledge of the languages the questionnaire is written in<sup>9</sup> might not be as advanced to fully understand the meaning of all questions.<sup>10</sup> Other difficulties migrants face are: cultural beliefs that influence them to report something else because it is not socially acceptable according to their background, the fear of getting penalized for a “wrong” answer, and information and knowledge differences, since migrants might not fully understand the concept underlying the questions because of lack of information and education (this is also true for natives with a lower level of education, as they might not fully capture the task given either) (Constant, 2017). These obstacles bias the data collection and hence every evaluation based upon them. The DIW is concerned with keeping the bias as small as possible by, for example, rearranging questions, not posing difficult or nested questions, sending the same interviewer to the same households as in previous periods to increase trust, and providing an English version of the questionnaire to narrow down language barriers (DIW Berlin / SOEP, 2012).

### **3.2. Dependent variables**

In order to compile the dependent variables, we intertwined the following two questions of the SOEP, which are both resource generators (van der Gaag and Snijders, 2005):

- 1) Q125 (2011) The following list is composed of people who could be important for you in some way. How do you feel about the following? (Please name up to five people from the list per question).
  - a. With whom do you talk about personal thoughts and feelings, or about things you wouldn't tell just anyone?

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<sup>8</sup> Since there is an interviewer on-site, whom the respondents can query, they might be able to fill in more rather than if they are left to complete the questionnaires themselves. The involvement of an interviewer, however, increases the likelihood of an interviewer bias, especially for name generator questions (Marsden, 2003). The SOEP is posed according to a mixed-methods approach, with the computer assisted methods becoming more and more integrated (DIW Berlin / SOEP, 2012).

<sup>9</sup> The SOEP is available in two languages so far, which are German and English.

<sup>10</sup> Question 135 and the follow up questions inquire about the language background and the ability to speak, read and write in German (TNS Infratest Sozialforschung, 2011, p. 32).

- b. (Only for persons under 65 years of age) Who supports your advancement in your career or educational training and fosters your progress?
- c. Now a hypothetical question: If you were to need long-term care (for example, in a case of a bad accident), who would you ask for help?
- d. With whom do you occasionally have arguments or conflicts that weigh upon you?
- e. Who can you tell the truth even when its unpleasant?

2) Q127 (2011) And now about your close and extended family. Which of the following family members do you have? For each, indicate how many such relatives you have, whether they live in your household, and if not, how far away they reside. (If you have more than one relative in a category, please give only the location of the nearest-residing relative.)<sup>11</sup>

The amalgamation of these two questions yields a measure of how far, in ordinal categories, a support providing relative resides.

A very important feature of social networks is the social support therein. *Social support* can be defined as “information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations” (Cobb, 1976, p. 300). Consequently, social support can determine the quality of a social network, complementing social regulation and control, which would be an adverse characteristic (House, 1987). According to an early theorist in SNA, James S. House, social support can be described in more detail according to four main dimensions. The first dimension is called *emotional support* and stands for the care, empathy, love and trust within a social interaction and is mostly provided by family members and close friends. *Informational support* as the second dimension refers to the exchange of information, advice, and suggestions, and is more common among looser ties. Tangible aid and the provision of services (also monetary transactions) is summarized under the dimension called *instrumental support* and given by family members, friends but also more distant

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<sup>11</sup> Interviewees are able to report distances on the following family members: (Marital) partner, former (marital) partner, mother, father, step mother or foster mother, step father or foster father, daughter(s), son(s), sister(s) (including half-sisters), brother(s) (including half-brothers), grandmother(s), grandfather(s), grandchild(ren), aunt(s)/niece(s), uncle(s)/nephew(s), other relatives with whom you have close contact (TNS Infratest Sozialforschung, 2011, p. 30)

relationships. The final dimension, *appraisal support*, stands for the exchange of information that is useful for self-evaluation. Since it is sensitive to talk about matters related to the ego and its self-perception, appraisal support is only exchanged between people who are connected by strong network ties. This paper builds on the theoretical framework of House (1981) and compares the link of education in bridging geographic distance within these four different support dimensions.

The dataset at hand provides the maximum number of five individuals who can be named by the interviewee as primary givers of emotional (Q125 sub-question a), informational (Q125b), instrumental (Q125c) and appraisal support (Q125e). Sub-question d refers to conflict and is therefore not a dimension of social support but of social regulation and control, which is not a focus of this paper. Since we adapted the questions of the SOEP to Houses' (1981) methodology, the questions do not capture every aspect of each support dimension. For example we use a hypothetical question about the provision of long term care for instrumental support, which does not fully encompass every aspect of instrumental support, which also encompasses other tangible aides such as the provision of money. Similarly for informational support which, in the questionnaire underlying our dataset, is only queried referring to career-related information. We are drawing conclusions nevertheless, having these limitations in mind.

The respondents can report their five most important providers of each support dimension by indicating their relationship<sup>12</sup>. It is also possible to mark the answer “with no one”, in case of a lack of any support providing person within this dimension. Since the instructions accompanying Q125 exempt respondents from providing strictly five support givers, the observation numbers differ according to the position – the first support provider being reported most frequently. There are also differences regarding the relationship status as shown in Tables 3-7, which will be examined in detail in Section 3.4. After gathering the information relating to the relationship status in a first step (whether the support is provided by a family member or a friend, co-worker, superior or other non-kin link) this information is matched to the location indicator of the second question in a next step.

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<sup>12</sup> Possible support providers who can be named are: (marital) partner, former (marital) partner, step mother or foster mother, step father or foster father, mother-in-law, father-in-law, daughter, son, sister, brother, grandmother, grandfather, grandchild, aunt/niece, uncle/nephew, other female relative, other male relative, work colleagues, superiors at work, people from school/training/education, neighbors, people from clubs or recreational activities, paid assistants/outpatient care providers/social workers, other(s)

In the SOEP, the distance between family networks is reported in an ordinal scale, ranging from “in the same household” to “abroad”. This constitutes an issue regarding the econometric framework used. The items are listed according to the perception of vicinity, whereby, according to Fennell (1997), living *close by* can be translated into a distance of about a five minute walk: the amount of time it is possible to carry a hot meal without having it cool down naturally. Consequently, the first three answer possibilities are considered *close by* (in the same household, in the same house and in the neighborhood) whereas the other four categories are categorized to be *farther away* (in the same town, but more than 15 minutes away by foot, in another town, but within an hour drive, farther away (but in Germany) and abroad). Because of the instructions preceding the question, respondents are only reporting the distance to the closest family member, moreover omitting any family members possessing the same relationship status (for example multiple brothers, who are located within different distances of the respondent). Using these questions requires some compromising, as it cannot be detected which e.g. brother is referred to in Q125 and whether that is the same brother of whom the location is known.

Matching the rank within each support dimension with the location of the closest relative holding the same relationship status yields a measure for the minimum distance bridged by the person concerned. This procedure outputs a maximum of five different location numbers per support dimension, regarding to the number of support persons mentioned by the respondent (or in case of no support person mentioned, the bivariate response yes/no).

For the econometric model, ordered logit estimation, we only need one variable per individual and since our focus is on revealing the ability to bridge larger geographic distances, we construct two dependent variables, representing two possible modelling concepts.

The first dependent variable, *maximum minimum distance*, is the furthest distance that is bridged by each individual within every support dimension separately, taking into consideration that the distances underlying are minimum distances. We obtain it by taking the row maximum over each interviewee and use it in the main model.

Because the maximum minimum approach might overlook the fact that the most important support-giving person is located the closest, and hence only spotlights less important connections (e.g. in the case where person number 5 is the one residing abroad, this person would determine the value of the dependent variable), we compose a *weighted maximum distance* variable. The weights are chosen so as to assign the biggest emphasis to the support person mentioned last, as it might be most difficult to uphold a less important personal tie over a larger distance and ergo the bridging ability would be more distinct. The results are used as a robustness check for the main dependent variable and are available upon request.

### **3.3. Independent variables**

The independent variables are introduced in different blocks, to control for several influencing factors and check for robustness. The first covariates introduced relate to people's socio-demographical characteristics: a dummy variable for sex, which is one for *female* and zero for male, the *age* measured in years, the *household income*, which has been logarithmized to rescale, a dummy for *migrant* background. In the SOEP the household income is reported yearly. By controlling for household income, we account for a possible endogeneity of schooling, where previously accumulated knowledge benefits the current generation, and additionally the increased probability to receive education of better quality with a higher income. Moreover, including income in the regression will help to absorb other indirect market outcomes, for example, the effect of higher income on health and consequently education (McMahon, 2004).

Migrant background in the dataset is coded ordinal, with one being no migration background, two representing a direct background, three an indirect migrant background (at least one parent being born holding a non-German nationality) and four standing for no further specified migrant background. The last category makes reference to people in the survey who did, in the course of the questionnaire, mention having a foreign origin of some sort, but did not specify whether this link stemmed from a personal migration experience or their family background and could not be traced back including previously mentioned nationalities, parental information, or country of origin (Scheller, 2011). Because the observation numbers when splitting the categories like coded would become too small to be able to draw inference, we aggregate all individuals who have some kind

of migrant background forming a dummy variable. If the dummy variable takes on the value 1, the individual has migrant background, 0 otherwise.

We furthermore control for the *existence of a support provider at long distance*, since the effects can only show up if there actually exists a relative living in another town in Germany or further. A similar rationale led to controlling for *network composition*, to account for the limits of the dataset used which only reports family ties. We construct the dummy as such as aggregating the network composition over all four support dimensions, so it represents the total network composition. It takes on a value of 1 if the individuals' social network consists of 50% or more family members and 0 otherwise.

To measure the influence of education on the ability to bridge larger spatial distances, we include two additional indicators regarding schooling. Education correlates with the socio-economic status, but its characteristics are usually static, as it is reported with either years of schooling (cardinal) or final certificate (ordinal). The first covariate representing an educational characteristic is of ordinal nature and matches the highest general education obtained. In Germany, students can obtain one of the following school leaving certificates: *lowest general education* (Hauptschulabschluss), *intermediate general education* (Realschulabschluss), *technical college* (Fachabitur), *highest general education* (Abitur). Furthermore, there are people included who have obtained *another school leaving degree*, for example a foreign degree and individuals that did not complete any school leaving certificate, labeled *dropout*. After mandatory years of schooling, students can enroll into university, which they mostly do after graduating the highest general education. Different pathways are also possible, for example, via the lowest general education and an apprenticeship. Since the numbers of graduates of the highest general education is not equal the number of people who finished with a university degree, we also include a dummy variable for *university* education, which is one for individuals who obtained a degree from any university or technical college, and zero otherwise.

This paper has a special focus on migration as a potential diverging factor of how education is linked to selected structural characteristics of social networks, therefore *interaction indicators* are introduced. Each school leaving certificate, including university education, is interacted with the dummy for migrant background, to determine

whether there are different non-monetary mechanisms as compared to the ones that pertain to natives.

The ability to bridge larger distances might be inhibited by living together with the most important support provider, the partner. To account for a potential interference of the effect of education on bridging, we control for marital status using a dummy which takes on the value of one when the individual is *married and living together* with the partner. Marital status can also be used as a proxy for social inclusion which is another characteristic of the network structure (Elo and Preston, 1996; House, 1987).

As the *family size* increases, the possibility for long-distance relations increases too, we therefore control for family size.

Being *employed* could have different impacts on the bridging-ability: first, it could increase the ability, as people are forced to tie different relationships with their surroundings and in case of business travel also with the international community of workers. The second and divergent effect can be attributed to the time spent at the office, which cannot be used to maintain current social contacts outside of the occupational field and will consequently dampen the potentially positive effect of education on long-distance bridging. Additionally, the opportunity costs of free time increase with an increase of education. Controlling for employment eliminates the potential indirect effect on maintenance of social relationship via change of time perception.

People who are sending money to their relatives abroad might have a higher probability of receiving support of any kind in return, and hence a potential link could exist as consequence of this dependence. The dummy variable *remittances* is absorbing any financial dependence, being 1 for individuals who transferred money to any of their relatives.<sup>13</sup>

*Residential mobility* explains also why people would engage in longer distance relationships, and is controlled for by introducing a variable which accounts for the longest distance between the interviewees and one of their parents (following Viry, 2012).

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<sup>13</sup> In the SOEP the question referring to remittances is divided into the categories “parents / parents-in-law, children (also son-in-law/daughter-in-law), spouse or divorced spouse, other relatives and unrelated persons”, whereas the last category is not included in this paper as only family members are observed (TNS Infratest Sozialforschung, 2011, p. 34).

And finally, there might be a difference in the bridging ability if the individual lives in a rural setting or an *urban* area, assuming that people have more dispersed social networks when they live in cities, as also mentioned in Larsen et al. (2006). In response to this influence channel, we control for urban surroundings with a dummy which is one for areas with higher population density according to the categorization done by the federal institute for research on building, urban affairs and spatial development (BBSR) (Lutter, 2001).



Variable	N	Mean	Std. Dev.	Min	Max
sex	8087	0.44	0.50	0.00	1.00
age	8087	39.21	10.49	18.00	65.00
ln household income	8087	10.57	0.60	4.14	12.90
migrant	8087	0.20	0.40	0.00	1.00
Existence of support providing person at a distance	8087	0.57	0.49	0.00	1.00
network composition	8087	0.98	0.14	0.00	1.00
lowest general education	8087	0.18	0.39	0.00	1.00
intermediate general education	8087	0.34	0.48	0.00	1.00
technical college	8087	0.07	0.26	0.00	1.00
highest general education	8087	0.32	0.47	0.00	1.00
other school leaving certificate	8087	0.07	0.25	0.00	1.00
dropout	8087	0.01	0.12	0.00	1.00
university degree	8087	0.28	0.45	0.00	1.00
married and living together	8087	0.69	0.46	0.00	1.00
family size	8087	3.53	1.34	1.00	12.00
employed	8087	0.78	0.41	0.00	1.00
remittances	8087	0.10	0.30	0.00	1.00
residential mobility	7169	3.54	1.56	0.00	6.00
urban	8084	0.65	0.48	0.00	1.00

**Table 1: Summary statistics for the independent variables**

### 3.4. Sample description

The analysis is based on a cross-sectional dataset containing the sampling wave of 2011 and consists of 8,087 individuals, of which 1646 (20.35%) have a migrant background. Of the respondents who answered the question regarding their school leaving certificate sometime between entering the SOEP and 2010, 18.20% obtained the lowest general education, 34.48% hold a certificate from the intermediate general education, 7.25% left technical college, and 32.15% completed the highest general education in Germany. 6.35% did either obtain their certificate in another country or have a different certificate than the ones already mentioned whereas 1.40% of the respondents left school without any certificate. The 260 individuals who were still attending school in 2010 are excluded from the further analysis, since it is not possible to attribute a school leaving certificate

and therefore we cannot draw any inference upon their educational background. Furthermore excluded are people below the age of 18 as well as above the age of 65, since they did not answer the question about informational support. From the total sample of over 44,000 people, we dropped all individuals with incomplete profiles, as they would have been excluded from the analysis anyways using ordinal logistic regressions. Since the exclusion depended mostly on the completion of the questions used to construct the dependent variables, and the individuals have been assigned to these questions randomly, we do not expect to having inserted a bias through dropping these incomplete observations.

As this paper contrasts different dimensions of social support, we want to point out notable differences already when looking at the descriptive statistics. As presented in Table 2, emotional support is most importantly provided by the partner. Almost 84% of the respondents stated they would talk about their feelings first of all with their partner. Another 9.4% of the interviewees would trust their mother regarding emotional matters, which leaves the remaining 6.6% to be distributed among the other 24 relationship categories. The closest female relatives are second most important source of love, care, and trust: more than 55% of the respondent answered they confided in their mother, daughter or sister with personal affairs. Non-family ties increase in importance as the third to fifth most important emotional support-giver, as a larger fraction of the interviewees answers with “other people”. Concerning the male relatives, the father is most important, followed by the son and the brother.

Relationship status	[1]		[2]		[3]		[4]		[5]	
	N	%	N	%	N	%	N	%	N	%
(Marital) partner	<b>6,761</b>	<b>83.72</b>	196	2.98	99	2.04	46	1.59	23	1.49
Former (marital) partner	49	0.61	31	0.47	6	0.12	7	0.24	2	0.13
Mother	<b>759</b>	<b>9.40</b>	<b>2,506</b>	<b>38.12</b>	384	7.93	154	5.32	39	2.53
Father	56	0.69	585	8.90	<b>971</b>	<b>20.04</b>	149	5.14	71	4.61
Step or foster mother	4	0.05	9	0.14	22	0.45	10	0.35	4	0.26
Step or foster father	0	0.00	21	0.32	25	0.52	5	0.17	6	0.39
Mother-in-law	3	0.04	105	1.60	109	2.25	91	3.14	37	2.40
Father-in-law	0	0.00	22	0.33	47	0.97	27	0.93	47	3.05
Daughter	75	0.93	<b>625</b>	<b>9.51</b>	312	6.44	128	4.42	26	1.69
Son	36	0.45	294	4.47	365	7.53	158	5.45	74	4.81
Sister	151	1.87	<b>572</b>	<b>8.70</b>	<b>626</b>	<b>12.92</b>	<b>378</b>	<b>13.05</b>	110	7.15
Brother	37	0.46	252	3.83	335	6.91	<b>301</b>	<b>10.39</b>	112	7.28
Grandmother	8	0.10	36	0.55	44	0.91	42	1.45	29	1.88
Grandfather	0	0.00	1	0.02	8	0.17	11	0.38	6	0.39
Grandchild	0	0.00	1	0.02	4	0.08	9	0.31	1	0.06
Aunt, Niece	1	0.01	39	0.59	65	1.34	45	1.55	32	2.08
Uncle, Nephew	2	0.02	12	0.18	16	0.33	19	0.66	14	0.91
Other female relatives	9	0.11	73	1.11	96	1.98	81	2.80	42	2.73
Other male relatives	4	0.05	26	0.40	19	0.39	30	1.04	27	1.75
Colleagues at work	17	0.21	179	2.72	215	4.44	243	8.39	137	8.90
Superiors	1	0.01	2	0.03	10	0.21	12	0.41	14	0.91
People from education	18	0.22	173	2.63	213	4.40	194	6.70	128	8.32
Neighbors	6	0.07	82	1.25	99	2.04	113	3.90	71	4.61
People from clubs	12	0.15	136	2.07	155	3.20	120	4.14	135	8.77
Paid support personnel	3	0.04	5	0.08	8	0.17	7	0.24	5	0.32
Other people	64	0.79	591	8.99	<b>592</b>	<b>12.22</b>	<b>517</b>	<b>17.85</b>	<b>347</b>	<b>22.55</b>
Total	8,076	100.00	6,574	100.00	4,845	100.00	2,897	100.00	1,539	100.00

Notes: [1] Important person 1 is providing emotional support, [2] important person 2 is providing emotional support, [3] important person 3 is providing emotional support, [4] important person 4 is providing emotional support, [5] important person 5 is providing emotional support

**Table 2: Who is providing emotional support? Source: Author, based on data from SOEP v32**

The (marital) partner is also the biggest supporter in job-wise questions and helps with career advancement; more than 79% of the respondents name their spouse their most important provider of informational support (see Table 8 in the Appendix). Another

important pillar for the career are the parents, who are mentioned most frequently as the second important giver of informational support. Roughly 29% also consider their father to be important person number 3, while people at work such as superiors and colleagues are becoming more important in the latter mentions of informational support persons. Since this question has only been asked people below 65 years of age, older generations are left out in the following regression analysis.

Long-term care as in the event of an accident is provided mostly by the partner again as shown in Table 3 (can be found in Table 9 the Appendix): approximately 81% of the respondents would rely on their significant other for instrumental support. The mother is the next important caretaker, together with the daughter. Fathers and sons would hypothetically provide instrumental support as third most important person, while the siblings are mentioned most under person number 4. As a last resort, most interviewed people name other people, their brother or paid medical assistants as their help in terms of hands-on support.

Similarly to the previous three support dimensions, (marital) partner and mother are most influential when it comes to telling unpleasant truths, they help the egos with their self-assessment most (Table 10 in the Appendix). Because this topic is similarly sensible, female relatives appear most as second important appraisal support provider. Father and son along with the sister can be referred to next, being important appraisal support giver 3. Brothers and sisters as well as other people are most frequent support giver number 4. Mostly other people and colleagues at work are least important but still matter when providing appraisal support.

Most respondents not having any person to turn to lack informational support: 6,571 people answered with “no one” in this dimension (see Table 3). Emotional support in contrast is most prevalent; 657 people do not have anyone to discuss feelings and private matters.

	No emotional support	No informational support	No instrumental support	No appraisal support
N	657	6,571	1,014	1,542

**Table 3: No support in each of the support dimensions. Source: Author, based on data from SOEP v32**

To ascertain comparability between the different support types, individuals who did not answer one or more questions regarding the variables used were excluded from the sample population. This approach could result in a further bias, by excluding individuals

systematically, in addition to the discrimination of the over 65-year old individuals and currently enrolled students<sup>14</sup>.

#### **4. Results**

As the first step to approach the question whether education can be linked to the obtainment of social support, a simple model is estimated using ordered logit estimation. This basic model only estimates the influence of certain socio-economic characteristics, like the migrant background, the gender, age, and controls for logarithmized household income. Furthermore, we check for the existence of a support provider at a distance and network composition, using a dummy variable which is 1 if more than 50% of the individual's network consists of family members. The dependent variable used in this and the following models is the maximum minimum distance that is bridged by every individual.

A migrant background is, as derived from the model output, related with a stronger ability to maintain emotional support ties over increased special distances. However, migrants fare less optimal when it comes to informational support: the odds of staying in contact over a large distance with someone that promotes their career and education are 21.1% smaller as compared to natives.

According to the estimations, women are disadvantaged maintaining long-distance ties in all four support dimensions compared to man: The odds ratios are significant and smaller than one with respect to the dummy for gender. At a first glance, this finding is inconsistent with previous works from e.g. McPherson et al. (2006) who also find that women are able to connect easier and remain closer integrated within their support network. As shown in Section 3.4., women are more often the most important support provider. Since women are also the main giver of childcare (Wellman, 1985), responsible of maintaining kinship ties (Mulder and van der Meer, 2009) and hence often migrate with their families (Pedraza, 1991), their geographical social network structure differs in diameter as compared to their male counterparts (Menjívar, 2000). Age has a slightly negative link regarding the bridging ability, but only considering

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<sup>14</sup> This bias however has been checked for by estimating all models using all observations applicable to the model specifications. The results suggest no systematic bias and therefore, for the sake of maintaining comparability between the different support types, the models are being estimated using only the individuals who provided answers to all four support type questions.

informational and instrumental support. We interpret this finding the following way: with an increasing age of the respondent, the probability of maintaining a LDR slightly decreases with respect to career-support and in the event of the need for long term care. With regard to the human life-cycle and the change of direction of the flow of instrumental/informational support, this result is plausible. The logarithm of household income for all support dimensions is associated with a lower probability of receiving support from a distance, and is robust against the inclusion of further controls. People with a higher income have differently structured social networks, they have access to a more diverse network consisting of friends, colleagues and other non-kin ties (Lin, 1999; Magdol, 2000). Furthermore, since the magnitude of the odds is smallest in informational support, family members at a distance do not matter as much when asking for information on job related issues, especially as income increases. Not surprisingly is the existence of a potential support provider at a distance as well as the network composition, whether the social network as such is mostly comprised of family members or not, strongly positively related with the reception of social support through LDRs.<sup>15</sup>

Whether the bridging of large spatial distances represents another non-monetary benefit of education has been estimated using model 2 (which can be found in Table 4-Table 7). All odd ratios have to be interpreted taking the holders of the lowest general education degree as a baseline.<sup>16</sup> Consequently, the odds of receiving support over a larger distance are larger within all support dimensions for people who obtained an intermediate general education certificate, being most distinctive for appraisal support (the odds for bridging large distances in relationships that can be used for self-evaluation are 1.435 times higher for people with an intermediate general education diploma than for their counterparts only holding a certificate from the lowest general education). Receiving a degree of the highest general education is even more beneficial, as the odds are around 1.5 times as high within every support dimension to get supported by a distant relative. As all the aforementioned links are significant to at least the 5% level, they show a positive gradient between education and the behavior of people within their social networks. Continuing schooling until university graduation is again positively associated with bridging abilities. Since university enrollment in Germany follows the completion

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<sup>15</sup> To check for robustness, we additionally estimated all models using a variable for absolute network composition. Again, there were no major differences, so we conclude that our results are not biased using this particular dataset.

<sup>16</sup> See Buis (2010) for a detailed explanation on how to read tables in odds ratios and make inferences.

of the mandatory schooling, the prerequisite diploma is usually the “Abitur” which is obtained over completion of the highest general education, these odd ratios have to be interpreted additively. Consequently, the bridging ability for a person with a university degree is around three times higher as compared to holders of the lowest general education diploma. However, university education does not play an important role in bridging LDRs in informational support, completing the highest general education is already enough to be able to obtain support through LDRs when it comes to career related questions. This is in line with literature, as for example Granovetter finds that weak ties are more important when getting a job than strong kin-ties (2010). Model 2 also introduces an interaction variable, to detect whether there are differences of the influences of education for migrants in comparison to natives. From Table 4-Table 7 it becomes apparent, that migrants benefit from obtaining a university degree: The odds of being able receive support within LDRs are 1.901, 2.084, and 2.304 times higher for migrants in the dimensions of emotional, instrumental, and appraisal support respectively.<sup>17</sup> As already observed in the native population, continuing education until graduating from university is not associated with an increased probability of receiving informational support from distant family relationships. Pertaining to the discussion of model 1, all previously found links remain significant and approximately of similar magnitude.

The next adjustment of the model contours the family composition and geographical structure. Married individuals, who live together with their spouse, are less likely to receive support over larger distances: the significant odds ratios in all four support dimensions are lower as compared to the baseline of non-married individuals. This arises from the high importance of the marital partner as primary support provider in all dimensions, which renders the upholding of LDRs less relevant if the partner lives in the same place. A larger family does not necessarily mean support provision over larger distances, as shown by the smaller odds ratios for family size. As distance is part of the dependent variable, we explain this finding building upon the previous results from Mulder and van der Meer (2009): the support provision does not increase with family size. Another explanation is the clustering: Families, usually part of the lower income group, where the members need the mutual social support, tend to live in the proximity

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<sup>17</sup> To determine the odds ratios of the interaction-term, the odds ratios of the interaction have to be multiplied with the education variable.

of each other (Snel et al., 2006). The connections found in earlier models remain significant and are robust regarding the integration of the family-composition parameters. Being employed (which comprises all kinds of employment, from full-time over part-time to voluntary work and military service) has no significant effect on receiving support over larger distances in any of the support dimensions.

Financially supporting a family member does significantly increase the possibility of obtaining emotional and appraisal support over larger distances. Since those two support dimensions are also the ones commonest provided by family members, this result is intelligible and allows conclusions to be drawn about reciprocity. If I am funding some of my family members in terms of remittances, I can also expect to receive social support as a *quid pro quo* (Snel et al., 2006).

In the last step, we integrate two measures of residential background. Viry (2012) finds that early residential mobility leads individuals to keep more dispersed networks. We therefore include a measure for residential mobility, which is essentially the longest distance to either one of the ego's parents. The results of model 5 show a similar picture as Viry (2012) draws, except for informational support, where the possibility to receive support over a longer distance is slightly lower as compared to individuals who live closer to their parents. Residential mobility in consequence also leads to an increased likelihood of receiving support over larger spatial distances.

The other independent variable sketches the density of settlement, as some scholars argue that people residing in urban areas are more likely to feature loosely bonded social network ties, which can also influence the ability to bridge (Avenarius, 2012; Mulder and van der Meer, 2009). Inferred from Tables 4-7, the type of settlement does not explain the likelihood for being able to bridge LDRs, since none of the coefficients are significant. This can be due to the repeatedly mentioned inability to report kith relationships, because family ties are usually strong and do therefore not depend quite as much on the type of settlement structure the individual resides in. In a final step we estimated all models using an Ordinary Least Squares model specification instead of the ordinal logit setting reported in Tables 4-7. Even though the coefficients cannot be interpreted in a meaningful way, the implications hold. These results can be accessed upon request.



	[1]	[2]	[3]	[4]	[5]
<i>Maximum distance, emotional support</i>					
Migrant	<b>1.288***</b> [0.000]	1.203 [0.138]	1.257* [0.066]	1.247* [0.076]	1.295* [0.051]
Female	<b>0.620***</b> [0.000]	<b>0.621***</b> [0.000]	<b>0.621***</b> [0.000]	<b>0.616***</b> [0.000]	<b>0.621***</b> [0.000]
Age	0.999 [0.511]	0.997 [0.222]	0.997 [0.185]	0.996* [0.061]	0.997 [0.346]
Ln household income	<b>0.848***</b> [0.000]	<b>0.771***</b> [0.000]	<b>0.888***</b> [0.004]	<b>0.874***</b> [0.001]	<b>0.904**</b> [0.024]
Existence of support provider at long distance	<b>25.28***</b> [0.000]	<b>24.64***</b> [0.000]	<b>23.87***</b> [0.000]	<b>23.82***</b> [0.000]	<b>20.91***</b> [0.000]
Network composition	<b>1.590***</b> [0.008]	<b>1.746***</b> [0.002]	<b>1.837***</b> [0.001]	<b>1.842***</b> [0.001]	<b>1.949***</b> [0.000]
Intermediate general education		<b>1.233***</b> [0.002]	<b>1.197***</b> [0.009]	1.192** [0.011]	1.157** [0.050]
Technical college		1.090 [0.419]	1.065 [0.558]	1.059 [0.592]	1.029 [0.802]
Highest general education		<b>1.553***</b> [0.000]	<b>1.480***</b> [0.000]	<b>1.483***</b> [0.000]	<b>1.437***</b> [0.000]
Other school leaving degree		1.192 [0.465]	1.149 [0.563]	1.131 [0.608]	1.071 [0.790]
Dropout		1.490* [0.094]	1.480 [0.101]	1.476 [0.104]	1.391 [0.179]
University		<b>1.301***</b> [0.000]	<b>1.277***</b> [0.000]	<b>1.266***</b> [0.001]	<b>1.205***</b> [0.009]
Intermediate general education*Migrant		0.844 [0.296]	0.853 [0.328]	0.855 [0.334]	0.827 [0.265]
Technical college*Migrant		0.880 [0.613]	0.870 [0.584]	0.887 [0.636]	0.852 [0.543]
Highest general education*Migrant		0.684** [0.043]	0.682** [0.043]	0.683** [0.043]	0.683* [0.053]
Other school leaving degree*Migrant		<b>2.219***</b> [0.005]	<b>2.452***</b> [0.002]	<b>2.457***</b> [0.002]	<b>2.341***</b> [0.006]
Dropout*Migrant		0.482* [0.081]	0.507 [0.106]	0.507 [0.106]	0.504 [0.119]
University*Migrant		1.461** [0.012]	1.418** [0.021]	1.413** [0.023]	1.438** [0.023]
Married, living together			<b>0.869***</b> [0.010]	0.873** [0.012]	<b>0.837***</b> [0.002]
Family size			<b>0.883***</b> [0.000]	<b>0.889***</b> [0.000]	<b>0.887***</b> [0.000]

Employed			1.012	1.011	0.977
			[0.822]	[0.846]	[0.689]
Remittances			<b>1.290***</b>	<b>1.271***</b>	
			[0.001]	[0.003]	
Residential mobility				<b>1.096***</b>	
				[0.000]	
Urban				1.064	
				[0.197]	
N	8087	8087	8087	8087	7166
pseudo R2	0.173	0.180	0.183	0.183	0.179

**Table 4: Ordinal logit estimation for bridging spatial distances in emotional support reporting odds ratios.**  
**Source: Author, based on data from SOEP v32**

	[1]	[2]	[3]	[4]	[5]
<i>Maximum distance, informational support</i>					
Migrant	<b>0.789***</b>	0.844	0.951	0.950	0.995
	[0.000]	[0.231]	[0.724]	[0.718]	[0.974]
Female	<b>0.627***</b>	<b>0.650***</b>	<b>0.665***</b>	<b>0.662***</b>	<b>0.649***</b>
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Age	<b>0.965***</b>	<b>0.967***</b>	<b>0.976***</b>	<b>0.975***</b>	<b>0.979***</b>
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Ln household income	<b>0.513***</b>	<b>0.456***</b>	<b>0.630***</b>	<b>0.625***</b>	<b>0.594***</b>
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Existence of support provider at long distance	<b>3.784***</b>	<b>3.558***</b>	<b>3.396***</b>	<b>3.390***</b>	<b>3.515***</b>
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Network composition	1.021	1.215	1.442**	1.443**	1.384*
	[0.909]	[0.289]	[0.048]	[0.048]	[0.093]
Intermediate general education		<b>1.239***</b>	1.204**	1.202**	1.214**
		[0.006]	[0.019]	[0.019]	[0.021]
Technical college		<b>1.396***</b>	<b>1.364***</b>	<b>1.362***</b>	1.318**
		[0.004]	[0.008]	[0.009]	[0.025]
Highest general education		<b>1.801***</b>	<b>1.645***</b>	<b>1.649***</b>	<b>1.684***</b>
		[0.000]	[0.000]	[0.000]	[0.000]
Other school leaving degree		1.128	1.056	1.050	1.233
		[0.648]	[0.836]	[0.853]	[0.444]
Dropout		1.047	0.949	0.948	0.912
		[0.863]	[0.846]	[0.842]	[0.736]
University		1.100	1.103	1.100	1.089
		[0.204]	[0.194]	[0.208]	[0.279]
Intermediate general education*Migrant		1.290	1.336	1.335	1.217
		[0.157]	[0.111]	[0.113]	[0.299]
Technical college*Migrant		1.665*	1.565*	1.575*	1.616*

	[0.053]	[0.094]	[0.090]	[0.081]	
Highest general education*Migrant	1.058	1.013	1.009	0.907	
	[0.781]	[0.952]	[0.966]	[0.648]	
Other school leaving degree*Migrant	0.652	0.835	0.832	0.682	
	[0.178]	[0.572]	[0.564]	[0.250]	
Dropout*Migrant	0.455*	0.585	0.583	0.607	
	[0.083]	[0.242]	[0.238]	[0.295]	
University*Migrant	1.042	0.988	0.988	1.058	
	[0.805]	[0.942]	[0.940]	[0.744]	
Married, living together		<b>0.460***</b>	<b>0.460***</b>	<b>0.497***</b>	
		[0.000]	[0.000]	[0.000]	
Family size		<b>0.858***</b>	<b>0.860***</b>	<b>0.866***</b>	
		[0.000]	[0.000]	[0.000]	
Employed		0.921	0.921	0.928	
		[0.169]	[0.167]	[0.231]	
Remittances			1.135	1.169*	
			[0.136]	[0.089]	
Residential mobility				<b>0.942***</b>	
				[0.001]	
Urban				1.059	
				[0.280]	
N	8087	8087	8087	8087	7166
pseudo R2	0.077	0.084	0.100	0.100	0.094

**Table 5: Ordinal logit estimation for bridging spatial distances in informational support reporting odds ratios.**  
**Source: Author, based on data from SOEP v32**

	[1]	[2]	[3]	[4]	[5]
<i>Maximum distance, instrumental support</i>					
Migrant	0.963	1.081	1.141	1.137	1.121
	[0.489]	[0.531]	[0.289]	[0.300]	[0.390]
Female	<b>0.649***</b>	<b>0.661***</b>	<b>0.658***</b>	<b>0.655***</b>	<b>0.664***</b>
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Age	<b>0.986***</b>	<b>0.986***</b>	<b>0.985***</b>	<b>0.984***</b>	<b>0.985***</b>
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Ln household income	<b>0.775***</b>	<b>0.690***</b>	<b>0.835***</b>	<b>0.827***</b>	<b>0.830***</b>
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Existence of support provider at long distance	<b>10.65***</b>	<b>10.16***</b>	<b>9.747***</b>	<b>9.724***</b>	<b>9.047***</b>
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Network composition	1.421**	<b>1.621***</b>	<b>1.729***</b>	<b>1.730***</b>	<b>1.700***</b>
	[0.042]	[0.006]	[0.002]	[0.002]	[0.004]
Intermediate general education		<b>1.234***</b>	1.188**	1.186**	1.188**
		[0.002]	[0.013]	[0.013]	[0.020]

Technical college	1.128	1.096	1.093	1.068	
	[0.254]	[0.387]	[0.401]	[0.558]	
Highest general education	<b>1.489***</b>	<b>1.393***</b>	<b>1.394***</b>	<b>1.368***</b>	
	[0.000]	[0.000]	[0.000]	[0.000]	
Other school leaving degree	1.116	1.088	1.080	1.124	
	[0.648]	[0.725]	[0.748]	[0.642]	
Dropout	0.847	0.844	0.841	0.788	
	[0.518]	[0.510]	[0.502]	[0.365]	
University	<b>1.307***</b>	<b>1.266***</b>	<b>1.262***</b>	<b>1.233***</b>	
	[0.000]	[0.001]	[0.001]	[0.004]	
Intermediate general education*Migrant	0.806	0.814	0.813	0.870	
	[0.184]	[0.205]	[0.202]	[0.415]	
Technical college*Migrant	0.922	0.899	0.908	0.888	
	[0.748]	[0.673]	[0.702]	[0.650]	
Highest general education*Migrant	0.717*	0.719*	0.720*	0.738	
	[0.078]	[0.080]	[0.081]	[0.124]	
Other school leaving degree*Migrant	0.966	1.076	1.077	1.006	
	[0.905]	[0.799]	[0.798]	[0.984]	
Dropout*Migrant	0.457*	0.497	0.497	0.456*	
	[0.066]	[0.103]	[0.102]	[0.082]	
University*Migrant	<b>1.594***</b>	<b>1.544***</b>	<b>1.536***</b>	<b>1.552***</b>	
	[0.003]	[0.005]	[0.006]	[0.007]	
Married, living together		<b>0.840***</b>	<b>0.842***</b>	<b>0.834***</b>	
		[0.001]	[0.001]	[0.002]	
Family size		<b>0.845***</b>	<b>0.849***</b>	<b>0.856***</b>	
		[0.000]	[0.000]	[0.000]	
Employed		1.024	1.024	1.012	
		[0.662]	[0.672]	[0.839]	
Remittances			1.158*	1.061	
			[0.053]	[0.478]	
Residential mobility				1.045**	
				[0.012]	
Urban				1.037	
				[0.443]	
N	8087	8087	8087	8087	7166
pseudo R2	0.117	0.122	0.127	0.127	0.122

**Table 6: Ordinal logit estimation for bridging spatial distances in instrumental support reporting odds ratios.**  
**Source: Author, based on data from SOEP v32**

	[1]	[2]	[3]	[4]	[5]
<i>Maximum distance, appraisal support</i>					
Migrant	0.978	1.198	1.278*	1.267*	1.287*

	[0.687]	[0.151]	[0.052]	[0.061]	[0.062]
Female	<b>0.685***</b>	<b>0.707***</b>	<b>0.713***</b>	<b>0.702***</b>	<b>0.698***</b>
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Age	0.995**	0.996**	0.994**	<b>0.992***</b>	0.995*
	[0.021]	[0.038]	[0.011]	[0.000]	[0.094]
Ln household income	<b>0.851***</b>	<b>0.744***</b>	0.917**	<b>0.891***</b>	0.902**
	[0.000]	[0.000]	[0.038]	[0.006]	[0.023]
Existence of support provider at long distance	<b>11.91***</b>	<b>11.36***</b>	<b>10.90***</b>	<b>10.86***</b>	<b>9.818***</b>
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Network composition	1.534**	<b>1.815***</b>	<b>1.953***</b>	<b>1.952***</b>	<b>1.859***</b>
	[0.014]	[0.001]	[0.000]	[0.000]	[0.001]
<hr/>					
Intermediate general education		<b>1.435***</b>	<b>1.379***</b>	<b>1.373***</b>	<b>1.372***</b>
		[0.000]	[0.000]	[0.000]	[0.000]
Technical college		<b>1.567***</b>	<b>1.518***</b>	<b>1.509***</b>	<b>1.393***</b>
		[0.000]	[0.000]	[0.000]	[0.003]
Highest general education		<b>1.724***</b>	<b>1.610***</b>	<b>1.620***</b>	<b>1.572***</b>
		[0.000]	[0.000]	[0.000]	[0.000]
Other school leaving degree		1.345	1.281	1.250	1.301
		[0.233]	[0.318]	[0.370]	[0.314]
Dropout		1.196	1.207	1.196	1.115
		[0.477]	[0.459]	[0.481]	[0.674]
University		<b>1.301***</b>	<b>1.270***</b>	<b>1.252***</b>	<b>1.212***</b>
		[0.000]	[0.000]	[0.001]	[0.007]
<hr/>					
Intermediate general education*Migrant		0.818	0.821	0.820	0.794
		[0.219]	[0.228]	[0.225]	[0.180]
Technical college*Migrant		0.682	0.674	0.687	0.657
		[0.130]	[0.120]	[0.140]	[0.114]
Highest general education*Migrant		0.644**	0.641**	0.640**	0.645**
		[0.020]	[0.020]	[0.019]	[0.029]
Other school leaving degree*Migrant		0.682	0.767	0.772	0.707
		[0.295]	[0.371]	[0.383]	[0.270]
Dropout*Migrant		0.448*	0.329**	0.326**	0.317**
		[0.058]	[0.011]	[0.011]	[0.012]
University*Migrant		<b>1.771***</b>	<b>1.723***</b>	<b>1.711***</b>	<b>1.707***</b>
		[0.000]	[0.000]	[0.001]	[0.001]
<hr/>					
Married, living together			<b>0.860***</b>	<b>0.867***</b>	<b>0.858***</b>
			[0.005]	[0.008]	[0.009]
Family size			<b>0.827***</b>	<b>0.837***</b>	<b>0.835***</b>
			[0.000]	[0.000]	[0.000]
Employed			0.969	0.967	0.933
			[0.574]	[0.543]	[0.236]
<hr/>					
Remittances				<b>1.531***</b>	<b>1.438***</b>
				[0.000]	[0.000]
<hr/>					

Residential mobility					<b>1.066***</b>
					[0.000]
Urban					1.044
					[0.373]
N	8087	8087	8087	8087	7166
pseudo R2	0.121	0.128	0.134	0.135	0.130

**Table 7: Ordinal logit estimation for bridging spatial distances in appraisal support reporting odds ratios. Source: Author, based on data from SOEP v32**

## 5. Discussion and conclusion

Bridging long distance relationships is becoming more important as the world is getting less locally and more globally oriented. Education plays a major role in mitigating various aspects of not only the ability to overcome large distances, but also other channels through which social interaction influences different economic, societal, and political mechanisms. Some of these functions have been outlined in the literature review, which then has laid the fundament for the empirical analysis of the bridging ability of German individuals within their social networks. We focus in particular on migration as a biasing factor, to determine whether there are differences of the link of education in managing LDRs between natives and migrants.

According to the results, higher levels of education facilitate the exchange of support within all dimensions over large spatial distances, whereby the benefits are most apparent for individuals who obtained the highest level of general education, and even higher for those who continued academia until graduation from university. This confirms previously conducted studies, which find that higher educated individuals have more supportive and egalitarian networks and are also better at providing emotional, informational, and instrumental support (House et al., 1988; Magdol, 2000).

The migrants in our sample are not more likely to receive any type of support than the native population, as the interaction terms of education levels and migrant background show. The only significant and robust interaction effect is the one between obtaining a university degree and migrant background. Migrants do not lose or benefit in excess of locals through obtaining higher levels of general education. Only tertiary education is positively associated with migrant background. The odds for maintaining a LDR are significantly higher for migrants with a university degree. This finding refutes the literature on potential education losses, at least regarding the spatial composition of social networks. According to certain scholars, there are negative effects of education

for migrants, as they do not fit into their social networks anymore after completing higher levels of education (McKenzie and Rapoport, 2011). Since we did not find any odds indicating a lower probability of receiving social support over larger distances, we conclude that there are no education losses for migrants. However, there is the possibility of a selection bias, for individuals who specifically migrated to Germany in order to obtain university education.

Dividing social support in different dimensions leads to a clearer picture about who is actually providing the support under consideration. There are, however, not many differences between the support dimensions with respect to the reception of social support over larger distances. Emotional and appraisal support are first and foremost provided by family members, the female relatives being more important than the male kin. An increase in educational level leads to increased likelihood of support reception in all dimensions.

Age decreases the likelihood of receiving support at a distance, so does the logarithmized income, a female gender and the family size, which is in accordance with recent literature on social relationships (McPherson et al., 2006; McPherson et al., 2001; Mulder and van der Meer, 2009; Viry, 2012). The results are also robust to the inclusion of further variables and the change of model specification, which increases their validity.

With regards to future research, this paper also demonstrates caveats that can be overcome in forthcoming projects. Improvements can be made concerning the data as SOEP only reports kin-ties, which are, according to Granovetter (1973), mostly strong ties. Weak ties, however, are crucial for job searches and the like, where acquaintanceship is enough to provide the desired information. Furthermore, maintaining loose ties does not require as much time and resources, which is also beneficial in bridging long distance. Applying a similar approach to a dataset which also includes questions about kith therefore increases the validity of the statements previously made.

Due to data limitations and restrictions of model framework it has neither been possible to make comments concerning the causal relationship between the variables nor to exclude potential influence of another covariate which has not been taken into consideration, such as innate talent, which is correlated with education. Therefore,

applying a different methodology as, for example, an instrument variable approach or fixed effects estimation, in view of similar research questions could approve or contradict the results of this paper and lead to more grounded results.

It is possible to follow-up with research exceeding the mere observation of differences in bridging behavior and delving more into the actual benefit for individuals resulting from increased ability to receive support within long distance relationships. This can be undertaken including wave 2016 of the SOEP, which is already available, to construct a panel dataset. Inserting dynamics into the framework can furthermore foster a deeper understanding of mechanisms at work and whether they are changing in the course of five years. A distinction between first and consecutive generation migrants as done by Ryan and D'Angelo (2017) can follow, to add further insight into intergenerational differences against the background of the pressing focus on integration policy development.



## Appendix

Relationship status	[1]		[2]		[3]		[4]		[5]	
	N	%	N	%	N	%	N	%	N	%
(Marital) partner	<b>6,444</b>	<b>79.74</b>	246	5.59	164	6.64	40	3.49	19	3.23
Former (marital) partner	25	0.31	12	0.27	7	0.28	2	0.17	3	0.51
Mother	<b>956</b>	<b>11.83</b>	<b>1,290</b>	<b>29.31</b>	137	5.55	42	3.66	8	1.36
Father	169	2.09	<b>766</b>	<b>17.41</b>	<b>716</b>	<b>29.00</b>	56	4.88	27	4.58
Step or foster mother	4	0.05	12	0.27	10	0.41	8	0.70	0	0.00
Step or foster father	5	0.06	23	0.52	24	0.97	6	0.52	9	1.53
Mother-in-law	7	0.09	116	2.64	68	2.75	82	7.15	8	1.36
Father-in-law	2	0.02	29	0.66	60	2.43	27	2.35	57	9.68
Daughter	69	0.85	240	5.45	62	2.51	25	2.18	5	0.85
Son	32	0.40	123	2.79	104	4.21	31	2.70	14	2.38
Sister	61	0.75	151	3.43	151	6.12	84	7.32	24	4.07
Brother	30	0.37	71	1.61	81	3.28	87	7.59	26	4.41
Grandmother	7	0.09	21	0.48	59	2.39	43	3.75	9	1.53
Grandfather	0	0.00	4	0.09	7	0.28	31	2.70	16	2.72
Grandchild	1	0.01	0	0.00	1	0.04	2	0.17	0	0
Aunt, Niece	3	0.04	13	0.30	22	0.89	10	0.87	11	1.87
Uncle, Nephew	0	0.00	7	0.16	10	0.41	9	0.78	7	1.19
Other female relatives	3	0.04	17	0.39	16	0.65	18	1.57	13	2.21
Other male relatives	4	0.05	9	0.20	12	0.49	10	0.87	7	1.19
Colleagues at work	107	1.32	562	12.77	215	8.71	<b>146</b>	<b>12.73</b>	<b>60</b>	<b>10.19</b>
Superiors	84	1.04	332	7.54	<b>240</b>	<b>9.72</b>	91	7.93	58	9.85
People from education	26	0.32	76	1.73	102	4.13	110	9.59	52	8.83
Neighbors	1	0.01	35	0.80	23	0.93	26	2.27	5	0.85
People from clubs	7	0.09	31	0.70	32	1.30	35	3.05	37	6.28
Paid support personnel	3	0.04	15	0.34	6	0.24	7	0.61	3	0.51
Other people	31	0.38	200	4.54	140	5.67	<b>119</b>	<b>10.37</b>	<b>111</b>	<b>18.85</b>
Total	8,081	100.00	4,401	100.00	2,469	100.00	1,147	100.00	589	100.00

Notes: [1] Important person 1 is providing informational support, [2] important person 2 is providing informational support, [3] important person 3 is providing informational support, [4] important person 4 is providing informational support, [5] important person 5 is providing informational support

**Table 8: Who is providing informational support? Source: Author, based on data from SOEP v32**

Relationship status	[1]		[2]		[3]		[4]		[5]	
	N	%	N	%	N	%	N	%	N	%
(Marital) partner	<b>6,562</b>	<b>81.19</b>	173	2.91	123	3.20	27	1.35	23	2.45
Former (marital) partner	24	0.30	26	0.44	9	0.23	1	0.05	2	0.21
Mother	<b>1,058</b>	<b>13.09</b>	<b>2,280</b>	<b>38.40</b>	186	4.83	60	3.00	14	1.49
Father	59	0.73	759	12.78	<b>1,226</b>	<b>31.86</b>	76	3.80	29	3.09
Step or foster mother	6	0.07	15	0.25	18	0.47	7	0.35	0	0.00
Step or foster father	0	0.00	24	0.40	21	0.55	6	0.30	3	0.32
Mother-in-law	10	0.12	157	2.64	143	3.72	198	9.90	30	3.19
Father-in-law	1	0.01	14	0.24	66	1.72	54	2.70	<b>113</b>	<b>12.03</b>
Daughter	82	1.01	<b>706</b>	<b>11.89</b>	172	4.47	85	4.25	23	2.45
Son	40	0.49	311	5.24	<b>388</b>	<b>10.08</b>	97	4.85	42	4.47
Sister	118	1.46	443	7.46	<b>452</b>	<b>11.75</b>	<b>361</b>	<b>18.06</b>	57	6.07
Brother	35	0.43	203	3.42	253	6.57	<b>284</b>	<b>14.21</b>	<b>114</b>	<b>12.14</b>
Grandmother	6	0.07	11	0.19	46	1.20	35	1.75	20	2.13
Grandfather	0	0.00	1	0.02	6	0.16	16	0.80	17	1.81
Grandchild	0	0.00	1	0.02	1	0.03	2	0.10	1	0.11
Aunt, Niece	5	0.06	20	0.34	40	1.04	36	1.80	28	2.98
Uncle, Nephew	1	0.01	1	0.02	15	0.39	12	0.60	21	2.24
Other female relatives	4	0.05	50	0.84	61	1.59	56	2.80	27	2.88
Other male relatives	3	0.04	11	0.19	22	0.57	24	1.20	12	1.28
Colleagues at work	0	0.00	17	0.29	22	0.57	25	1.25	20	2.13
Superiors	0	0.00	0	0.00	5	0.13	4	0.20	0	0.00
People from education	1	0.01	23	0.39	33	0.86	38	1.90	37	3.94
Neighbors	3	0.04	32	0.54	37	0.96	55	2.75	39	4.15
People from clubs	3	0.04	30	0.51	31	0.81	37	1.85	30	3.19
Paid support personnel	47	0.58	474	7.98	274	7.12	<b>227</b>	<b>11.36</b>	104	11.08
Other people	14	0.17	155	2.61	198	5.15	176	8.80	<b>133</b>	<b>14.16</b>
Total	8,082	100.00	5,937	100.00	3,848	100.00	1,999	100.00	939	100.00

Notes: [1] Important person 1 is providing instrumental support, [2] important person 2 is providing instrumental support, [3] important person 3 is providing instrumental support, [4] important person 4 is providing instrumental support, [5] important person 5 is providing instrumental support

**Table 9: Who is providing instrumental support? Source: Author, based on data from SOEP v32**

Relationship status	[1]		[2]		[3]		[4]		[5]	
	N	%	N	%	N	%	N	%	N	%
(Marital) partner	<b>6,399</b>	<b>79.18</b>	284	4.84	124	3.06	35	1.46	19	1.51
Former (marital) partner	34	0.42	41	0.70	13	0.32	5	0.21	3	0.24
Mother	<b>858</b>	<b>10.62</b>	<b>2,068</b>	<b>35.22</b>	308	7.59	109	4.54	31	2.46
Father	116	1.44	601	10.24	<b>1,020</b>	<b>25.14</b>	134	5.59	46	3.65
Step or foster mother	2	0.02	14	0.24	14	0.35	10	0.42	2	0.16
Step or foster father	4	0.05	18	0.31	29	0.71	9	0.38	7	0.56
Mother-in-law	13	0.16	97	1.65	94	2.32	92	3.83	36	2.86
Father-in-law	2	0.02	17	0.29	44	1.08	28	1.17	55	4.37
Daughter	128	1.58	<b>715</b>	<b>12.18</b>	238	5.87	121	5.04	26	2.07
Son	52	0.64	323	5.50	<b>414</b>	<b>10.20</b>	178	7.42	72	5.72
Sister	176	2.18	446	7.60	<b>446</b>	<b>10.99</b>	<b>323</b>	<b>13.46</b>	69	5.48
Brother	54	0.67	190	3.24	268	6.61	<b>254</b>	<b>10.59</b>	114	9.05
Grandmother	8	0.10	21	0.36	29	0.71	37	1.54	12	0.95
Grandfather	1	0.01	4	0.07	2	0.05	8	0.33	13	1.03
Grandchild	1	0.01	0	0.00	2	0.05	2	0.08	2	0.16
Aunt, Niece	8	0.10	16	0.27	36	0.89	27	1.13	14	1.11
Uncle, Nephew	2	0.02	2	0.03	7	0.17	7	0.29	9	0.71
Other female relatives	17	0.21	36	0.61	39	0.96	36	1.50	22	1.75
Other male relatives	5	0.06	15	0.26	23	0.57	18	0.75	11	0.87
Colleagues at work	23	0.28	222	3.78	212	5.23	258	10.75	<b>127</b>	<b>10.09</b>
Superiors	12	0.15	67	1.14	111	2.74	76	3.17	83	6.59
People from education	46	0.57	119	2.03	114	2.81	113	4.71	96	7.63
Neighbors	7	0.09	62	1.06	41	1.01	57	2.38	40	3.18
People from clubs	24	0.30	91	1.55	76	1.87	94	3.92	76	6.04
Paid support personnel	1	0.01	5	0.09	7	0.17	2	0.08	6	0.48
Other people	89	1.10	398	6.78	346	8.53	<b>366</b>	<b>15.26</b>	<b>268</b>	<b>21.29</b>
Total	8,082	100.00	5,872	100.00	4,057	100.00	2,399	100.00	1,259	100.00

Notes: [1] Important person 1 is providing appraisal support, [2] important person 2 is providing appraisal support, [3] important person 3 is providing appraisal support, [4] important person 4 is providing appraisal support, [5] important person 5 is providing appraisal support

**Table 10: Who is providing appraisal support? Source: Author, based on data from SOEP v32**

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