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Parental health, informal support and geographic mobility between parents and adult children

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ABSTRACT

Intergenerational solidarity is crucial to address the needs of ageing people. Numerous studies have identified geographic distance between parents and children as an important determinant of intergenerational support. This paper aims to examine to what extent parents' functional disabilities and children's support involvement relate to changing geographic parent-child proximity. We also take a comparative approach to study patterns of geographic mobility of parents and children across Europe. Multilevel multinomial logistic regression analysis is performed on data from the Survey of Health, Ageing and Retirement in Europe for 15 countries. The analysis shows that rapid declines in the functional abilities of parents often lead to intergenerational co-residence. In addition, we find that children start and continue to support most frequently when proceeding to co-residence, although similar results appear for moves leading to a parent-child distance closer than 5 kilometer. Moves bringing parents and children closer together are most prevalent in southern European countries. In contrast to our expectations, the analysis also suggests that parental health declines connect more with moves to co-residence in central and northern European countries compared to the southern region.

KEYWORDS

Ageing – Support – Mobility – Family – Distance – Intergenerational solidarity

1. INTRODUCTION

A good understanding of intergenerational solidarity is crucial to address care needs of the elderly in an ageing society. Not only does family support for older people decrease the direct public costs of ageing societies (Charles & Sevak, 2005; Kehusmaa, Autti-Rämö, Helenius, & Rissanen, 2013; Van Houtven & Norton, 2004), but it also adds to the well-being of dependent older adults as they prefer ageing in place (Frank, 2002; Wiles, Leibing, Guberman, Reeve, & Allen, 2012). Numerous studies have identified geographic distance between parents and their adult children as an important determinant of intergenerational support. A closer proximity facilitates contact between family members, increases the possibility to exchange certain types of support and postpones older people's moves to residential care institutions (Bonsang, 2007; De Jong Gierveld & Fokkema, 1998; Grundy & Shelton, 2001; Haberkern & Szydlik, 2010; Joseph & Hallman, 1998; Knijn & Liefbroer, 2006; Mulder & Van der Meer, 2009; Van der Pers, Kibele & Mulder, 2015). Parent-child proximity is generally established during children's early adult life (Kolk, 2017). Residential decisions at the time of leaving the parental house are often influenced by long-term intergenerational exchange strategies, considering parents' future support needs in particular (Konrad et al., 2002; Rainer & Siedler, 2009). However, studies also argue that parent-child proximity is likely to be adjusted when parents are at older ages (Litwak & Longino 1987; Silverstein 1995). It has recently been suggested that needs-related life circumstances (e.g. widowhood) lead to residential relocations bringing parents and their children geographically closer together (Pettersson & Malmberg, 2009; Smits, 2010). While it appears that later-life migration often increases intergenerational proximity, the literature does not address the exchange of instrumental support that goes together with proximity changes. The current study uses rich longitudinal micro-data from the Survey of Health, Ageing and Retirement in Europe (SHARE) for 15 countries to examine the roles of parents' functional disabilities and children's support[1] involvement with respect to geographical mobility between children and parents. The analysis predominantly draws on moves by children as the geographic mobility of the parents is limited in the sample.

We focus on the following research questions: i) Does parental health affect subsequent intergenerational proximity? ii) To what extent does changing parent-child proximity relate to the provision of informal support by adult children? We expect that parental needs directly impact the demand of informal support and, in turn, parental-child proximity, given the strong association between the exchange of support and geographic distance. A recent move closer, either on the part of the children or their parents, should facilitate frequent informal support in particular. As such, we test whether parental needs are antecedents for interfamily mobility. The analysis takes heed

[1] The remainder of this study uses 'support' as a general reference to two types of assistance: 'help' (reflecting aid with practical household matters, e.g. cooking or shopping) and 'care' (representing personal care, e.g. dressing, bathing or using the toilet).

of the eventual intergenerational distance when moving closer, with parents and children living in the same building or household as the highest proximity level. Intergenerational co-residence is considered as a notable case of needs-related proximity, since research shows that parents with functional disabilities are more likely to live together with their children (Isengard & Szydlik, 2012; Kalmijn & Saraceno, 2008).

Previous research provides ample evidence to assume substantial differences in geographic mobility and its association with support by adult children across Europe. However, this aspect has been neglected since most investigations only involve a single country (e.g. Pettersson & Malmberg, 2009, for Sweden; Smits, 2010, for the Netherlands). Family bonds have historically varied considerably across European regions, displaying a high prevalence of weak family systems in the north and strong family ties prevailing in southern Europe (Reher, 1998). In most countries, these family values are consistent with the available state-funded family services and how help and personal care for the elderly is organized (Haberkern & Szydlik, 2010; Motel-Klingebiel, Tesch-Roemer, & Von Kondratowitz, 2005; Verbakel 2018). This country variation is also reflected in other dimensions of intergenerational solidarity, such as geographic proximity and contact between parents and children (Bordone, 2009; Hank, 2007; Isengard & Szydlik, 2012). Using the SHARE data, we take a comparative approach to study patterns of geographic mobility within European families. SHARE allows for an elaborated look at upward intergenerational solidarity and to explore the variation between countries from different European regions.

2. THEORY AND HYPOTHESES

According to the classification of Bengtson and Roberts (1991) we focus on two dimensions of intergenerational solidarity: (upward) functional and structural solidarity. Upward functional solidarity refers to the degree of actual support parents receive from their children. Most studies distinguish between time and financial transfers as part of this solidarity type. Structural solidarity reflects the opportunities of family members to interact and exchange within the family, with the geographic proximity of parents to their children being in the spotlight of this study.

Divergent patterns of intergenerational support and geographic proximity in Europe

European countries expose a well-established pattern of functional solidarity within families. Leaving aside the support of parents to their grandchildren, adult children predominantly receive monetary transfers from their parents (Albertini, Kohli, & Vogel, 2007; Attias-Donfut, Ogg, & Wolff, 2005), whereas children more often provide personal assistance to their aged parents (i.e. time transfers) (Bonsang, 2007). At the same time, the societal organization of support for dependent people is subject to substantial heterogeneity across Europe. An important distinction is between the provision of less intensive help tasks (e.g. household chores) on the one hand and more demanding personal care (e.g. assisting with bathing and using the toilet) on the other (Brandt, Haberkern, & Szydlik, 2009; Motel-Klingebiel, Tesch-Roemer, & Von Kondratowitz,

2005). Cross-national studies using SHARE show a clear north-south gradient with a high prevalence of low-intensity help provided by children in northern Europe and intensive informal care regimes in southern European countries (Albertini, Kohli, & Vogel, 2007; Bonsang 2007; Brandt, 2013; Brandt, Haberkern, & Szydlik, 2009; Ogg & Renaut, 2006). Western and central European countries take an intermediate position, although Austria and Germany demonstrate characteristics of family-based care systems as well (Haberkern & Szydlik, 2010; Motel-Klingebiel, Tesch-Roemer, & Von Kondratowitz, 2005). Differences between north and south are attributed to varying welfare state regimes and cultural contexts. In northern Europe intensive care tasks are frequently transferred to professional providers (Brandt, 2013), allowing children to engage in other support tasks. As such, families and welfare states are complementary regarding the services they provide (Motel-Klingebiel, Tesch-Roemer, & Von Kondratowitz, 2005; Suanet, Van Groenou, & Van Tilburg, 2012). In southern Europe, by contrast, children regularly shoulder intensive care tasks as the available state-funded care arrangements are limited (Brandt, 2013; Verbakel, 2018). Furthermore, studies find that the generosity of state care services negatively correlates with legal and normative obligations towards care for family members (Verbakel, 2018). The moral climate in countries with a rudimentary care infrastructure emphasizes the responsibility of the family and obligations of reciprocity (Viazzo, 2010). So-called 'individualistic' northern European countries are more in favor of the state as a care provider (Haberkern & Szydlik, 2010). Hence, the welfare state provides care for the neediest, irrespective of any reciprocating support in families (Viazzo, 2010).

European diversity also holds for geographic proximity of older parents to their children, a key predictor of intergenerational support. Southern European families tend to reside closer together compared to their counterparts in northern and western Europe (Hank, 2007). An increasing amount of research exhibits relatively short intergenerational distances in eastern Europe as well (Iacovou & Skew, 2011), albeit with a high degree of variation among these countries. The literature again highlights the role of socio-cultural structures to explain these disparities, whereby tight family ties prevail in the east and south, while a model of loose family bonds is dominant in northwestern Europe (Bordone, 2009; Calzada & Brooks, 2013; Hank, 2007; Höllinger & Haller, 1990). A complex interplay of welfare state provisions, economic necessities and the housing market may also influence the European pattern of intergenerational proximity. Children in Mediterranean countries with restricted welfare provisions leave the parental house relatively late. Often parents keep adult children close by providing financial resources during and after their stay in the parental house (Manacorda & Moretti, 2006; Tomassini, Wolf, & Rosina 2003). In countries with extended welfare state provisions (e.g. in Scandinavia) residential autonomy and living at a longer distance is more feasible for children, even under difficult economic circumstances (Albertini & Kohli, 2013). In Austria and Germany the construction of two-family homes ("Mehrfamilienhäuser") is encouraged by public subsidies, increasing the rates of parents and adult children living under one roof (Hank, 2007). Besides a long-standing history of multiple-

generational co-residence (Kaser, 1996), economic deprivation and housing market crises in the post-communist period have also led to a higher incidence of parents and adult children living together in many eastern European countries (Ahmed & Emigh, 2005).

Changing geographic proximity and informal support

From a life course perspective, the geographic distance between parents and their adult children is the sum of residential decisions in both generations at different life stages (Lin & Rogerson, 1995). Distances between parents and their children are predominantly shaped when children embark on their adult life. In European countries a large majority of children have left the parental home between ages 25 and 30, with some countries where the median age even hovers at 20 or 21 (Andersson, Thomson, & Duntava, 2017). The most important triggers for moving out are educational careers, starting a co-residential partnership and finding a job (Feijten & Mulder, 2002; Michielin & Mulder, 2007). Notwithstanding that family ties remain important for intergenerational proximity during the life course, they regain particular influence at later ages (Pettersson & Malmberg, 2009; Van Diepen & Mulder, 2009). According to the life course migration model by Litwak and Longino (1987) moves closer to children represent an important share of older parents' geographic mobility. Older people's health and functional limitations may introduce the need for the close presence of a relative, as shown by research in the United States (De Jong et al., 1995; Longino et al., 1991; Rogerson, Burr, & Lin, 1997; Serow & Sly, 1991; Silverstein, 1995; Stern, 1995; Zhang, Engelman, & Agree, 2013). European studies, however, provide limited evidence for the link between interfamily mobility and parents' health. A study by Van Diepen and Mulder (2009) finds no effect of subjective health problems on the geographic distance between older parents and their children in the Netherlands. Also for the Netherlands, Smits (2010) and Smits, Van Gaalen and Mulder (2010) show that parents with a disability benefit are more likely than retired or employed parents to increase parent-child proximity. For Sweden, Pettersson and Malmberg (2009) demonstrate that very old aged (> 79) parents more frequently move for long distances to live close to a child. Those studies also suggest that other family characteristics, and especially the support needs of the adult children, are of equal or more importance in shaping intergenerational proximity at later ages (Michielin, et al., 2008; Smits et al., 2010).

The current literature has been confined to the underlying assumption that health status or age reflects the demand for informal support. As a result, previous studies do not distinguish between the intensity or frequency of support that parents receive. Bonsang (2007) reveals that greater geographic distances decrease the number of hours caregiving children devote to assist their parents. Although self-reliant parents may also receive some degree of intergenerational help (Walker & Pratt, 1991), a move closer is especially beneficial when support requires a very frequent personal presence of children, i.e. intensive caregiving. A shorter distance between a child and parents reduces travel costs and increases time-efficiency for the supporting side, particularly

for recurrent and demanding care (Silverstein, 1995). In addition, the data on which past studies have relied often do not allow to examine whether intergenerational proximity changes are mostly due to moves of parents or their children. Furthermore, few studies distinguish between moves that bring parents and children closer (e.g. as far as an half hour drive away) and moves bringing them very close (e.g. a 5 minute walk away). The literature indicates that various life course events can have a deliberate or coincidental effect on proximity (Michielin et al., 2008). In many cases increasing intergenerational proximity is an unintended result of a move. However, despite the fact that a relocation does not necessarily imply new interaction between family members, a move to a very short distance is likely to hold a wish, or at least an opportunity, for intergenerational exchange at some point (Pettersson & Malmberg, 2009).

A particular form of close intergenerational proximity is co-residence. This living arrangement is of remarkable importance in countries where living with family is regarded as a way to support relatives in need (Albertini, Kohli, & Vogel, 2007; Hank, 2007; Kalmijn & Saraceno, 2008). Co-residence is a conventional way to enable the exchange of resources and services between generations in southern European countries (Albertini & Kohli, 2013; Kalmijn & Saraceno, 2008), while intergenerational support is generally organized between separate households and from further distances in northern countries like Sweden, Denmark and the Netherlands (Albertini, Kohli, & Vogel, 2007; Dykstra & Fokkema, 2011). The finding that children in Italy and Spain are to a greater extent involved in intensive and time-consuming care for their parents corresponds with this, given that more hours of personal care are facilitated by a very close proximity such as living together (Bonsang, 2007; Brandt, Haberkern, & Szydlik, 2009).

Selectivity in intergenerational distance

The initial geographic distance between parents and adult children has an important impact on the probability and direction these actors may move (Michielin et al., 2008). For those living very close it is evident that moving even closer is improbable, while living at a great distance decreases the probability to move further away (Van Diepen & Mulder, 2009). In addition, we expect that initial intergenerational distances relate to the probability of moving towards family members for reasons of selectivity. Recent studies on intergenerational cohesiveness and geographic distance suggest that adolescent children having more involved relationships with their parents live closer to them in later life (Gillespie & Treas, 2017; Gillespie & Van der Lippe, 2015). Living within reach of family members facilitates to gain from strong intergenerational ties. Children living more distant from their parents may often have less qualitative parent-child relationships. In other words, these parents, their children or both are a more selective group of less family-oriented relatives. This might apply to countries characterized by strong family ties in particular. Studies reveal that close proximity is more important for intergenerational contact in Mediterranean countries, suggesting that living further away signals poor parent-child connections (Bordone, 2009; Hank, 2007). For distant-living family members this may involve a lower willingness to provide support

and to relocate because of their relatives' needs. At the same time, a great deal of family-oriented children choose to live nearby after leaving the parental home and are therefore very unlikely to move closer, weakening the positive relation between informal support and increasing intergenerational proximity.

Research hypotheses

From the available literature we derive four hypotheses to scrutinize the association between increasing parent-child proximity and filial support in Europe.

Prior studies suggest that functional declines on the part of parents make the presence and support of children more salient. As geographic proximity enhances intergenerational support (Brandt, Haberkern, & Szydlik, 2009), a move closer to relatives is a likely response to pronounced parental needs. The intensification of intergenerational support is expected to go hand in hand with increasing proximity, especially for moves leading to very close parent-child distances. This leads to the first two hypotheses:

1) Parents facing more functional disabilities show a higher risk to experience increasing intergenerational proximity.

2) Moves increasing parent-child proximity relate positively to the provision of frequent upward informal support, in particular moves towards intergenerational co-residence.

The European heterogeneity in multiple dimensions of intergenerational solidarity fuels the expectation that intergenerational mobility diverges across European countries. Given the common practice of multi-generational co-residence and the importance of close-living family in southern and eastern Europe (Hank, 2007; Iacovou & Skew, 2011), proximity-enhancing moves may prevail more in those regions. In addition, due to a lack of professional caregiving services and strong family obligations, dependent parents in southern European countries draw more on the caregiving of children. In Mediterranean countries informal care is more strongly anchored in co-residence between parents and children (Albertini, Kohli, & Vogel, 2007; Kalmijn & Saraceno, 2009), whereas family support is mostly less demanding and organized from distance in the northern parts of Europe (Brandt, Haberkern, & Szydlik, 2009). This results in the third and fourth hypothesis:

3) In southern European countries interfamily mobility among older parents is to a greater extent characterized by increasing proximity.

4) Increasing proximity between parents and children is more strongly related to parental health and upward intergenerational support in southern Europe, especially when moves lead to co-residence.

3. DATA & METHODS

The analysis uses data from the Survey of Health, Ageing and Retirement in Europe (SHARE) (Börsch-Supan et al., 2013). SHARE is a multidisciplinary and cross-national panel survey covering a large number of European countries. Longitudinal respondents aged 50 and older (together with their cohabiting partners) are inquired into health and well-being, socio-economic status and social and family networks. To address our research questions we draw on data from the sixth release of SHARE waves 1, 2, 5 and 6 (Börsch-Supan, 2017a, 2017b, 2017c, 2017d)[2] [3]. The analysis employs information from the children, social support and demographics modules.

Waves 1 and 5 are used as a baseline measurement point (time 1) for a sample of 53,444 households with children. Since some of the questionnaire modules (e.g. questions on children or informal support) are only used in the interview of one parent in a two-parent household, all necessary information is aggregated to the household level[4]. The baseline households are linked to their follow-up interviews (time 2) in the subsequent wave (2 and 6 resp.), even if parents experience a partnership dissolution (by separation or death) in between. This results in a dataset of 34,342 households with longitudinal information (i.e. a retention rate of 64.26%)[5]. The longitudinal approach allows to keep track of i) changes in parental health, ii) changes in filial support and iii) changes in parent-child proximities, all within a period of approximately 2 years.

To assess how parental and child characteristics relate to the proximity between children and their parents, the dataset is transposed in the next step. Children are matched between the subsequent waves (using gender and birth year of the child) and form the unit of analysis. Together with background information on the parents, individual characteristics are stored for each child[6]. 2,909 multiple births (identified by similar birth years) of the same sex are omitted as these are prone to erroneous matches between waves. Inconsistent reporting of children (i.e. reported in the baseline interview, but not or differently in the follow-up) between waves yields the largest data elimination. 8,711 baseline children (10.98%) are left unmatched. An additional 3,416 individual children are excluded due to restrictions in retrieving longitudinal information from wave 4. As a result, the dataset includes 67,698 longitudinally observed child-parents dyads (65,586 unique observations as 2,112 children appear in both linked waves 1-2 and 5-6).

[2] Data for waves 1 and 2 was collected between 2004 and 2007, including a two-year period between the consecutive waves. Waves 5 and 6 were conducted between 2013 and 2015, also with an in-between time period of 2 years.
[3] Wave 3 (SHARELIFE) is omitted as it predominantly comprises retrospective information. Wave 4 is excluded because it lacks necessary information on formal care use and shows important limitations to attribute child characteristics correctly.
[4] Allowing us to keep track of the household, even if the partner is the main respondent in the follow-up interview.
[5] In waves 5 and 6 unchanged child characteristics of longitudinal respondents are to be retrieved from previous waves (4 and 2). Due to questionnaire limitations in wave 4, the data validity for children of 4,490 households cannot be guaranteed. These households are not included in the longitudinal dataset of 34,342 households.
[6] Whereas the questionnaires of wave 1 and 2 only record complete information for a maximum of 4 children, waves 5 and 6 allow to register data for all children the respondent reports (a maximum of 13 in our subsample).

In the selected sample 18.50% of all observations have a missing value on at least one variable (12,523 cases[7]), resulting in 55,175 child observations with complete information. To diminish the risk of obtaining biased estimates and avoid a loss of statistical power, missing data are imputed using ICE in Stata (Royston, 2005). Ten datasets of 67,698 child observations are generated and the imputation is informed by the variables in the analysis. Estimates from all imputed datasets are pooled with the MI ESTIMATE prefix in Stata (Johnson & Young, 2011)[8].

The final preparatory step is to select all children of age 16 and older, taking out children that are generally too young to change intergenerational proximity (862 observations). Furthermore, the subsample excludes children from parents that are younger than 55 on average (5,355 cases). Our data suggest that from this age on, parents start to receive support from their children. Finally, the analysis only considers children living outside a one-kilometer radius of the parents at the time of the baseline interview (Smits, 2010), omitting about 20,276 children extra[9]. Children and parents are unlikely to increase proximity if they are already living this close. This culminates in imputed datasets between 45,185 and 45,242 observations. Panel A of Table 1 provides the results of a logistic regression analysis comparing children residing within 1 kilometer of each other at baseline and those who do not. Children living close are more frequently male, lower or middle educated, not in a partnership, not employed and not having children. Children with a higher number of siblings and exchanging financial gifts with their parents are likely to live further away. An important finding is that children providing frequent help (at least weekly) at one or both measurement points are predominantly living within one kilometer from their parents. Also, children starting to provide less frequent support are likely to live close already. This suggests that in most families support providers are living close to their parents for a longer period. Children with (a) supporting sibling(s) show a lower parent-child proximity. The results at the parental level indicate that married and widowed parents show higher odds of living close to a child, whereas higher levels of education, homeownership, receiving formal care and living in an urban area reduce intergenerational proximity. Parents living close to a child are also less likely to move between two interviews. According to the model, parents with more initial functional limitations are less likely to live close to their children. Additional analysis points out that this most likely results from young adults still living with healthy parents before leaving the parental house, while parents are most functionally limited when children live in the same building or within 1 kilometer. Furthermore, we observe that health changes between interviews are not related to initial proximity. Concerning country differences we find that Slovenia, Spain, Italy, Israel and the Czech Republic show higher intergenerational proximity. Children live the less closest in Denmark,

[7] We find a high number of missing values (8,589) on child characteristics. A large share of respondents fails to report specific information on their own or their partner's descendants.
[8] The substantive interpretations drawn from sensitivity analysis using a listwise deletion method are very similar.
[9] Because of differences in the imputed values, this number varies between the datasets.

Sweden, France, Switzerland and the Netherlands. Germany, Austria, Belgium, Estonia and Luxembourg are more in between.

TABLE 1 ABOUT HERE

Dependent variables and modelling strategy

To examine our hypotheses the analysis distinguishes between different changes of intergenerational proximity as a dependent variable. Irrespective of the final distance, one variant identifies three possibilities: i) no move (i.e. invariant proximity), ii) moves closer (i.e. increasing proximity) and iii) moves further away (i.e. decreasing proximity). Intergenerational proximity is considered to change if the recorded parent-child distance differs between waves. In SHARE, this distance is measured as a categorical variable indicating co-residence and kilometer intervals (ranges differ between categories: e.g. living 1-5 kilometers away, 5-25, 25-100, etc.). It should be noticed that parents and/or children changing residences without altering distance categories (according to the measurement in SHARE) are categorized as not moving[10]. Panel B of Table 1 presents the distribution of the dependent variable. For about 16% of the children, parent-child proximity increases during the observation period. A small 10.5% of the children experiences decreasing proximity and for almost 73% it remains the same. We conclude that moves closer are rather infrequent between two interviews. The second outcome variable refines the category of moving closer, as children and their parents ending up very close may be prone to exchange support. We distinguish between i) moves to within the same building (2.67%)[11], ii) moves to within 5 kilometer (7.48%) and iii) moves closer to farther than 5 kilometer (5.47%).

The analysis uses multilevel multinomial logistic regression to model the relations between the outcome and explanatory variables. First, the model estimates the parameters for moves closer and moves further away, with 'no move' as the reference category. Subsequently, the model examines contrasts between moving very close and other moves closer on the one hand and no move on the other (hypothesis 1 and 2). The second part of the analysis explores European heterogeneity in interfamily mobility patterns and tests interaction terms to verify whether the association between changing proximity and support diverges across Europe (hypothesis 3 and 4). To retain sufficient numbers of observations, European countries are combined in regions in this part of the analysis.

The multilevel approach nests children within families to take into account that some families show more mobility than others. As a result, the random-intercept variances reflect the between-family variances not accounted for by the covariates of the model. An additional level correcting for repeated observations (2,112 children in waves 2 and 6) is omitted as three-level models run

[10] A drawback of this method is that we potentially miss a substantial part of interfamily mobility at far-off distances (e.g. a move from 80 to 30 km), especially in large and sparsely populated countries.

[11] Although the SHARE survey distinguishes between living inside the same household and the same building, we take those categories together as the groups are too small to consider separately in our analysis.

into convergence problems. Sensitivity models, presented in appendix Table A4, select a random child per family to eliminate the family level in the multilevel structure. The models test the robustness of our results with the random children nested in country as a level 2 variable.

Independent variables

Panel B of Table 1 presents descriptive information on the independent variables. The variables are grouped at three levels: i) children, ii) parents and iii) country. At the country level, we control for the 15 countries parents and children are living in (Austria, Belgium, the Czech Republic, Denmark, Estonia, France, Germany, Israel, Italy, Luxembourg, the Netherlands, Slovenia, Spain, Sweden and Switzerland).

The central variables of interest are initial parental health, parental health change and frequency of child support. The mean number of limitations with instrumental activities (e.g. difficulties with eating, getting out of bed, shopping, etc.) of daily living (iADL) of the parent(s) is used as a measurement of *initial health*, reflecting the parental needs at time of the first interview. The variable ranges from 0 to 7, with 0 indicating no limitations and 7 expressing limitations with respect to all activities. *Health change* is the difference between the mean number of limitations with instrumental activities at the first and second interview. It represents changing needs among parents between the measurement points. The variable is categorized as follows: i) no iADL changes, ii) iADL limitations decrease, iii) iADL limitations increase by 1 and iv) iADL limitations increase by more than 1. *The frequency of child support for parents* is constructed in two steps. In SHARE, respondents first select children that provided support during the last twelve months and live outside the household. The analysis considers two forms of informal support as distinguished by the questionnaire: i) personal care (e.g. dressing, bathing, etc.) and ii) practical household help (e.g. home repairs, shopping, etc.). For each helping person, the respondent also reports the frequency of received support. The answering categories are recoded as 'at least weekly' and 'at most monthly'. Secondly, children living inside the household can only be selected as providers of personal care, without the option to specify the care frequency. We code frequency as 'at least weekly' for caregiving children in the household, assuming that this group is highly involved because of their day-to-day presence[12]. Given the variation in children's support provision between the two consecutive interviews, we construct this variable as a measure of support change. This allows to relate the start or continuation of frequent support to changes in intergenerational proximity. The models test following categories: i) not giving any support or at most monthly at both time points, ii) giving support at least weekly at both time points, iii) start to support at most monthly at time 2, iv) start to support at least weekly at time 2 and v) stop or

[12] The coding scheme does not apply to children living in the same building but outside the household (also categorized as co-residing, cfr. supra). In the selected sample a substantial part of the supporting and co-residing children assist their parents on (at most) monthly regularity. This avoids that support for parents among co-residing children entirely overlaps with the 'at least weekly' category.

diminish frequency of support at time 2. To retain sufficient numbers in different support categories, the models testing European differentials consider all frequent support at time 2 together (cfr. categories ii and iv).

At the child level, we further consider *age* (centered at the mean, both a linear and quadratic term) and *gender*. The economic situation is measured by *education* and *employment* since we lack information on the income of children. Education has been categorized in three levels: low, middle and high. Employment distinguishes between (self-)employed, unemployed, retired or disabled, looking after home or family and other. Children in a better economic position are expected to display a greater geographic mobility (Coulter, 2013), having more resources and geographically flexible forms of human capital at their disposal. Inactivity, in contrast, may also detach children from a living area and increase needs to receive family support (Isengard & Szydlik, 2012). The models also incorporate information on the family situation of children. *Marital status* takes into account whether children are married, live in a registered partnership, live single but married, live single and never married, are divorced or widowed. The *presence of children* comprises of three categories: no children, recent birth(s) and older children. We consider recent births as descendants born within a period of two years previous to the interview. Kin intensifies the ties to a location (e.g. children's local school), although a recent birth frequently increases parent-child proximity because of the need for childcare (Michielin et al., 2008). The *number of siblings* of a child, referring to the pool of potential support providers (Mulder & Van der Meer, 2009), is included as a continuous variable. The *baseline geographic distance* captures the distance between parents and children at the first interview, given that initial proximity may influence the direction of a move. To acknowledge that distances are differently experienced between countries, the categories are recoded to mid-category values and standardized per country. Financial solidarity is measured by dichotomies indicating whether or not *children received or gave gifts* from or to parents of at least €250.00 in the year before. Distant-living children are inclined to replace personal assistance by financial contributions (Bonsang 2007). Transfers going in the other direction may encourage moves closer to parents (Tomassini, Wolf, & Rosina 2003). In addition, the analysis controls for *the support that siblings provide for their parents*. This dummy variable indicates whether at least one brother or sister gives personal care or helps with household chores (analogous to the individual support of children, irrespective of the support frequency). The models take the support provided by siblings into account as this may reduce a child's responsibility to provide support.

At the parental level, *education* and *marital status* have a similar coding compared to children. Singlehood has a positive effect on moving towards adult children as the loss of a partner often leads to greater support needs (Michielin et al., 2008). *Income* is included as a standardized score of household income. The measure is standardized per country to correct for differences in income levels. Economic resources are instrumental in meeting the preconditions to change residences. The residential situation is measured by *housing tenure*. Compared to tenants, homeowners are more (both emotionally and financially) tied to their dwelling (Helderman, Van Ham, & Mulder,

2006). The models further control for the parental *area of living*: a rural area or small town versus a large town or urban area. *Parental move* expresses whether parents have changed residences between two interviews. *Formal care use* is included as a dichotomy indicating whether parents consumed professional care services (stays in a nursing home, help with personal care and domestic tasks and the use of meals-on-wheels) in the year preceding the interview. Professional services tend to release children from demanding care (Brandt, 2013), and hence reduce the need to move closer.

4. RESULTS

Table 2 presents the principal results of the multilevel multinomial logistic regression models, with not moving as the reference category. The models pool all European countries, allowing to relate both parental health and children's support to changing parent-child proximity. Appendix table A1 presents the complete results for Model 3 (including all independent variables). Appendix table A2 shows the results for the analysis using the original dataset (missings listwise deleted).

First, we discuss the results for the entire group of children experiencing moves closer and further away (first and last column), compared to children with an unchanged intergenerational proximity (i.e. no move). For reasons of conciseness, we limit our examination to the most essential outcomes. The first model assesses the role of parents' functional disabilities at baseline with respect to proximity changes in the subsequent years. The results point out that, compared with not moving, the effect of iADL limitations is weak for moves bringing children and parents closer together. The same goes for the association with moves further away. The second, third and fourth column of Table 2 distinguish between different types of increasing proximity. In consecutive order, the table presents the results for moves leading to co-residence, moves closer to less than 5 kilometer distance and moves closer to more than 5 kilometer distance. Compared with no moves, we find no strong effect of parental functional disabilities on co-residential moves and moves closer to outside a five-kilometer radius. Moves closer to within 5 kilometer, on the other hand, are significantly negatively related to a higher number of limitations. This means that children having parents with a weaker health are less likely to experience moves that bring their parents very close. Model 2 introduces changes in functional disabilities between two interviews. Considering all moves closer together, the results suggest that improving parental health (limitations decrease) enhances increasing proximity. This result particularly pertains to increasing proximity with a final intergenerational distance of less than 5 kilometer. For moves leading to co-residence, on the contrary, the model demonstrates a strong positive effect of limitations increasing with more than 1 score. In other words, strongly declining parental health goes often together with moves towards intergenerational co-residence. Moves leading to a greater parent-child distance are somewhat related to small declines in parental health. Additional analysis considering the moves of children only (not reported) shows very similar outcomes for the effects of the health measures. This implies that our results are not driven by either the moves of parents or those of

children in particular. Taken together, the analysis provides mixed evidence for hypothesis 1. We observe that stronger health declines relate to moves leading to co-residence only. Higher functional disabilities of parents, however, discourage moves bringing parents and children closer than 5 kilometer.

Model 3 includes the provision of support for parents by children. The regression parameters show that individual involvement in support is firmly related to moving closer. Children providing frequent support at both measurement points are more than two times more likely to have increased intergenerational proximity than children giving no or limited support, compared to no moves. Also children that started to provide support at most monthly are significantly more inclined to increase proximity. Those starting to provide support at least weekly are 2.5 times more likely. Stopping or diminishing to give support yields a positive effect as well. Besides, we observe that children tend to give significantly less (at most) monthly support when children and parents move away. Support for parents is most related to moves bringing parents and children together under one roof. The model reveals that children are almost 3 times[13] more likely to have proceeded to intergenerational co-residence, compared to invariant proximity, when continuously giving frequent support. The transition to co-residence is however most related to the start of frequent support provision, with involved children having a 4.4 times[13] higher risk to change to co-residence. Furthermore, the moves to co-residence positively relate to the start of support of at most once a month as well. Further, frequent support significantly associates with parents and children moving to within a five-kilometer radius. Both the continuation and start of frequent caregiving connect positively to this type of proximity change. Additional analysis shows that co-residence is nonetheless most appropriate to start to support parents at least weekly, as suggested by the model comparing moves to co-residence to a proximity change into a distance of 5 kilometer in appendix table A1 (last column). A different result appears for children and parents moving closer outside of a 5 kilometer distance. Those changes in proximity do not correspond with changes in support provision. In sum, our results correspond with the expectation that recurrent informal support is better workable in very close proximity of the parents, given the observed relation with geographic mobility. Particularly the transition to co-residence is suggested to be the move from where frequent support initiates (cfr. hypothesis 2). Extra models considering the moves of children only suggest very comparable results (not reported), albeit that the coefficients for support are slightly larger in Table 2 (including parental moves). We conclude that the relation between proximity-enhancing moves and support provision seems independent from who moves to whom, whereas we lack the data to examine differences thoroughly.

TABLE 2 ABOUT HERE

[13] As frequency of support is not recorded for children living in the parental household, we assumed that those giving personal care do this at least at a weekly basis (cfr. supra). The estimated regression coefficient results, at least partly, from this assumption.

European heterogeneity in interfamily mobility

To gain knowledge on the interfamily mobility patterns across Europe, Figure 1 exhibits the shares of moving closer categories among the proximity changes we distinguish (no move and moves away are excluded). It stands out that moving closer is most prevalent in Spain and Italy. As expected, the proportions of children proceeding to co-residence are with the highest of Europe in these countries. Moreover, interfamily mobility leading to an intergenerational proximity closer than 5 kilometer is substantially higher than elsewhere. Israel and Slovenia, two other countries of the Mediterranean region, show, together with Switzerland, more increases in proximity than most other European countries. In Slovenia moves to intergenerational co-residence are more common, whereas Israel and Switzerland witness a high proportion of moves bringing children and parents closer to a +5 km distance. The percentages of moves closer are higher than average in Austria and Germany as well. Close to the mean, we also find Sweden, the Czech Republic and the Netherlands. The Czech Republic displays a relatively high share of moves to co-residence. In Sweden children and parents are predominantly moving closer outside of 5 kilometer, while this is true for moves to less than 5 kilometer in the Netherlands. In the other countries the total percentages of moves closer are well under 15%. Within this group, the shares of moves to co-residence are relatively high in Luxembourg and Estonia. In France the proportion of moving closer outside the five-kilometer radius is largest, whereas moves closer to less than 5 kilometer are dominant in Denmark and Belgium. All in all, the results indicate a north-south gradient with more proximity increases in southern European countries. German-speaking countries are mostly in intermediate positions, while northern and western European countries show a more limited tendency of moving closer. This is in line with hypothesis 3.

FIGURE 1 ABOUT HERE

In the next step, the models estimate interaction terms between support provision and European region. With regard to the grouping of countries three dimensions are considered: i) proximity increases (Figure 1), ii) the coverage of care service for older people and iii) family norms. It is remarkable that countries' interfamily mobility patterns are more or less consistent with the availability of professional elderly care services and the normative climate. The Mediterranean region includes Spain, Italy, Slovenia, Israel and the Czech Republic. Apart from the Czech Republic, these countries show the highest prevalence of increasing intergenerational proximity, together with a low coverage of formal care provision in Spain, Italy and Slovenia (Saraceno & Keck 2010). In the Czech Republic children live relatively close to their parents (cfr. Table 1), while the level of state-services is limited and family obligations among the highest in Europe (Haberkern, Schmid, & Szydlik 2015). Israel has a mixed regime, with an elaborated service infrastructure (Motel-Klingebiel, Tesch-Roemer, & Von Kondratowitz, 2005), but also strong filial support norms (Lowenstein and Daatland 2006). The second group comprises of central European countries: Luxembourg, Germany, Austria and Switzerland. The tendency to move

closer is average among these countries. In addition, this group also takes an intermediate position with respect to available services for elderly care (Saraceno & Keck, 2010). The third group involves northwestern European countries: Denmark, Sweden, Estonia, the Netherlands, Belgium and France. In tandem with lower levels of increasing intergenerational proximity, comparatively high coverages of professional care and weaker filial support norms signal a de-familialisation of care in these countries (Haberkern & Szydlik, 2010). In Estonia the large availability of formal home-based care stands out, compared to other eastern European countries (Saraceno & Keck, 2010).

Table 3 reports the parameter estimates for the interaction terms between region on the one hand and both parental health and children's support on the other. Appendix table A3 shows the results for the analysis using the original dataset (missings listwise deleted). Model 4 assesses the regional variation in the effect of initial parental health. The regression coefficient for the baseline number of iADL limitations reflects the effect of functional disabilities in the northwestern region. The parameter estimates for the interaction terms with the Mediterranean and central European region express how the parental health effect differs from the northwestern region. The outcomes suggest limited regional variation, except for a stronger negative effect of initial parental health in the Mediterranean region on moves closer to more than 5 kilometer. Model 5 tests the interaction terms between region and changes in functional disabilities. The estimates suggest that declining parental health leads more often to intergenerational co-residence in the northwestern and central European regions. The difference between the northwestern and Mediterranean region is however only marginally significant ($p < 0.100$) for limitations increasing by more than 1. According to Model 6, frequent support is positively related to the co-residential move in the northwestern European countries. This effect attenuates somewhat for the Mediterranean region (interaction term is only marginally significant: $p < 0.100$) and more strongly for the central region. However, separate models per region (not reported) suggest that moves to co-residence go together with significantly more frequent support in all three regions. Frequent support also renders a positive regression coefficient for moves closer resulting in an intergenerational distance shorter than 5 kilometer in northwestern Europe. The results paint a similar picture for the Mediterranean and central European region. For other moves closer and moves further away we find no significant differences between regions. Overall, we observe rather limited regional differences. The results nevertheless provide some evidence for the fact that declining parental health leads to less moves to co-residence in the Mediterranean region. This suggests that hypothesis 4 can be rejected.

TABLE 3 ABOUT HERE

5. DISCUSSION

Western policies are increasingly encouraging home-based support for the elderly to decrease the use of expensive residential care (Davies & James, 2011). Informal support and family contact play a crucial role in this. Earlier research suggests that the proximity of children postpones moves

to residential care institutions (Van der Pers, Kibele & Mulder, 2015). A major contribution of this study is to scrutinize whether and how interfamily mobility plays its part in children's support provision. Given the importance of the proximity-support nexus, the mechanisms behind merit careful attention. Another strength is that we examine heterogeneity across Europe since the organization of help and personal care for the elderly varies considerably between European countries.

A prominent outcome of the analysis is that parental disabilities bring parents and their children not necessarily closer in terms of geographic distance. Proximity changes to a parent-child distance shorter than 5 kilometer occur more for vigorous parents, suggesting that this type of migration is often motivated by other family commitments. Re-locating to a close parent-child distance potentially facilitates support from younger parents towards their children in the first place, e.g. parents looking after their grandchildren. Meanwhile, parents in good health anticipate for later support needs by residing near their children. Moves leading to co-residence, by contrast, are related to rapid declines in the functional abilities of parents. Living in their daily presence helps children to assist their parents in case of immediate and demanding needs, corresponding to previous research on multi-generational households (Isengard & Szydlik, 2012; Kalmijn & Saraceno, 2008; Smits et al., 2010). In line with this, we find that the relation between the start of frequent support for parents and increasing proximity is most pronounced for the transition to co-residence. The partnership situation of a parent with health limitations is expected to play a vital role here (Isengard & Szydlik, 2012). At an older age, parents are often capable of living independently as long as a partner is available to bear most of the care burden. If a parent widows, functional disabilities might jeopardize one's self-reliance and intergenerational co-residence is encouraged. A substantial part of our results is hence thought to be driven by restricted parents without a partner, providing a promising avenue of further research. At the same time, the data show that the needs and challenges experienced by children (illustrated by the effects of singlehood, divorce, widowhood and unemployment) enhance co-residence as well (Smits et al., 2010). Hence, this living arrangement can still be considered as a crucial component of intergenerational solidarity exchanged in different directions. The literature could gain from future analysis regarding the complex interplay between upward and downward support on the one hand and interfamily mobility on the other.

Whereas a worse parental health renders negative effects on moves closer to intergenerational distances shorter than 5 kilometer, those moves also promote the start of occasional and frequent support provision for parents. This ambivalence suggests that support from this distance may primarily involve less demanding or intense tasks, e.g. household chores. In line with our expectations, the positive effects of starting to support are largest for co-residential moves. Furthermore, we find that the provision of frequent support that started earlier also tends to persist over time when proximity increases to close distances. Despite the fact that intergenerational distances may initially impede the exchange of support, this study hence demonstrates that moves

closer improve the opportunities to look after family. Moves with a more distant destination appear to occur for other reasons more often or facilitate support provision less. At the same time, the large majority of (potential) support providers are living close to their parents for a long period, as intergenerational proximity is mainly shaped at earlier life course stages (Kolk, 2017). Children and parents living within reach are also subject to selectivity, forming a group of family-oriented relatives (Gillespie & Van der Lippe, 2015). This indicates that only a limited share of all supporting children are those changing parent-child proximity. Given our limited observation window, the analysis only captures a small part of families' long-term care strategies.

To what extent does interfamily mobility diverge between European countries? As expected, the empirical results reveal that increasing intergenerational proximity is most prevalent in southern European countries. This confirms that children and parents are more inclined to move closer together in regions with stronger family ties. In central Europe, the incidence of increasing proximity is lower, whereas most northern and western European countries exhibit the lowest propensity of moving closer. This pattern of interfamily mobility more or less reflects the north-south gradient as demonstrated in studies on intergenerational proximity (Hank, 2007). Given that southern European children are more often concerned with intensive personal care for their parents (Brandt, 2013), we also predicted that moves bringing these children and their parents very close together are most related to parental disabilities and children's support provision. The results provide, however, no evidence for this hypothesis. Considering that informal support is less anchored in multi-generational households in northern countries (Albertini et al., 2007; Kalmijn & Saraceno, 2009), it particularly surprises that the associations with moves towards co-residence are not significantly different between European regions. Parental health declines even seem to connect more with moves to co-residence in central and northern European countries compared to the Mediterranean region. The co-residential moves that we observe in the south may usually take place for other reasons than urgent parental health declines, whereas the infrequent events of intergenerational co-residence in the north are more likely to be cases of emergency. This accords with a very strong association of frequent support and co-residential moves in the northern European region. A possible explanation points at the role of long-term support strategies in southern Europe, where children often live closer to their parents because of financial necessity (Manacorda & Moretti, 2006; Tomassini, Wolf, & Rosina 2003). Future support providers may frequently take the decision to live with or close to family before their support is strongly needed (Rainer & Siedler, 2009), the more because living far away often reflects weak family ties in this region (Bordone, 2009; Hank, 2007).

A key question in the literature is whether children move to their parents or vice versa. Earlier studies indicate that the person in need is the most likely to change residence (Michielin et al., 2008; Smits, 2010; Smits et al., 2010). However, using longitudinal survey data yields some serious limitations to examine this. It has been found that respondents with a poor health status exhibit a higher risk to drop out from SHARE (Schröder, 2008), leading to a disproportional loss

of parents prone to require informal support. Moreover, respondents who moved between waves are also difficult to trace, underestimating the geographic mobility of parents. Given the very infrequent incidence of relevant parental moves in our data[14], the results are mainly driven by moves of the children. Separate analysis for children can only tentatively suggest that our conclusions are not determined by the moves of one generation in particular, although that support provision of children seems to be higher when parents move to intergenerational co-residence or a close distance. Further research allowing to test the differences between the moves of children and parents is needed.

Some other data limitations are noteworthy as well. A prominent weakness is the crudity of the geographic distance variable used to conduct the dependent variables of the analysis. As the intervals for greater distance categories are imprecise (e.g. 25-100 km, 100-500 km, etc.), moves between far-off distances are not recorded systematically (e.g. a move from 80 to 30km). Hence, the analysis is missing a substantial share of proximity changes for children living far away, especially in large and sparsely populated countries. Secondly, besides that we miss some relevant information on children (e.g. mobility past, homeownership status, quality of parent-child relationship, etc.), respondents might be selective in reporting their children. Those children having weak bonds with their parents may be underreported, introducing bias. Finally, as indicated earlier, the dataset has a relatively small sample size as we are analyzing infrequent behavior. For the sake of statistical power, we had to pool data from 15 different countries in European regions. Future research should explore country variation further and pay attention to variation between types of informal support.

In spite of the limitations, the analysis shows that increasing functional needs among older parents enhance moves to intergenerational co-residence. Re-locations closer to parents strongly relate to better opportunities for children to support their parents. Although many children providing informal support for their parents have lived close together for a longer time, families may also rely on geographic mobility to organize intergenerational support. Hence, policies could prioritize neighborhood housing for members of the same family, facilitating parents and children to exchange informal support.

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[14] Only 2.5% of the selected sample experiences moves by parents that change the proximity between children and parents (i.e. either closer or further away).

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Table 1. Parameters and significance levels of the binomial logistic regression of parent-child proximity at baseline (panel A); descriptive statistics of (in)dependent variables for sample of analysis (initially living at distance >1 km) (panel B)

	PANEL A: Logistic regression model Parent-child prox. <1km *(>1km ref.)*		**PANEL B: Descriptive statistics**[a] % (M, SD)[b]
Child-level covariates			
Age	0.950	***	41.73, 9.65
Age²	1.002	***	
Female *(male ref.)*	0.832	***	50.53
Low education	*1.000*	*Ref.*	13.36
Middle education	0.909	**	44.91
High education	0.628	***	41.73
Married	*1.000*	*Ref.*	56.50
Registered partnership	0.800	***	7.50
Married, living single	1.361	**	1.21
Never married	1.787	***	25.47
Divorced	1.289	***	8.26
Widowed	1.119		1.06
(Self-)employed	*1.000*	*Ref.*	84.68
Unemployed	1.253	***	3.67
In education	1.376	***	2.92
Retired or disabled	1.111		4.43
Looking after home or family	0.951		3.38
Other	1.179		0.92
No children	*1.000*	*Ref.*	29.33
Recent birth	0.626	***	11.17
Older children	0.918	**	59.50
Number of siblings	0.884	***	1.79, 1.30
Baseline geographic distance (z-score)			0.20, 1.14
Received gift from parents *(none ref.)*	0.895	***	15.88
Gave gift to parents *(none ref.)*	1.159	*	2.61
At least one sibling provides support *(none ref.)*	0.772	***	10.84
Continued no support/at most monthly	*1.000*	*Ref.*	88.12
Continued support at least weekly	3.408	***	0.85
Start to support at most monthly	1.175	**	3.83
Start to support at least weekly	2.487	***	2.29
Stop or diminish frequency of support	1.559	***	4.91
Parent-level covariates[c]			
Married	*1.000*	*Ref.*	59.99
Registered partnership	0.559	***	1.29
Married, living single	0.704	***	1.62
Never married	0.544	***	1.84
Divorced	0.572	***	12.60
Widowed	1.153	***	22.67
Low education	*1.000*	*Ref.*	36.14
Middle education	0.830	***	43.86

High education	0.670	***	20.00
Household income (z-score)	1.001		-0.05, 0.99

Table 1 (continued).

Home ownership *(no ref.)*	0.950	*	70.28
Living in small town/rural area *(urban ref.)*	1.191	***	58.21
Parental move *(no ref.)*	0.920	*	9.15
Receiving formal care *(no ref.)*	0.884	**	11.99
Baseline number of iADL limitations	0.967	*	0.29, 0.88
No iADL changes	*1.000*	*Ref.*	71.53
iADL limitations decrease	1.035		10.39
iADL limitations increase by 1	0.983		11.13
iADL limitations increase by more than 1	1.020		6.95
Country			
Austria	*1.000*	*Ref.*	7.26
Germany	0.903	*	8.36
Sweden	0.397	***	12.13
Netherlands	0.692	***	3.50
Spain	1.879	***	4.78
Italy	1.977	***	4.74
France	0.492	***	9.99
Denmark	0.306	***	7.27
Switzerland	0.676	***	4.48
Belgium	0.888	*	11.50
Israel	1.317	***	3.83
Czech Republic	1.189	**	7.11
Luxembourg	0.781	**	1.84
Slovenia	2.553	***	3.45
Estonia	0.709	***	9.76
Dependent variables			
Moves closer			15.62
Moves closer to within same building			2.67
Moves closer to within 5 kilometer			7.48
Moves closer to outside 5 kilometer			5.47
Moves away			10.44
No move			73.94

Source: SHARE wave 1-2 and 5-6, calculations by authors; * p <0.05, ** p <0.01, *** p <0.001

[a] Subsample of children aged 16 or older with parents aged 55 or more (on average) and living further than 1 km from their parents. Variables (incl. missings) of the original dataset are presented.

[b] The mean and standard deviation are presented for continuous variables.

[c] Descriptive statistics (Panel B) are presented at the household level.

N panel A: 62,064; N panel B: depending on missing values for variable of consideration

Table 2. Parameters and significance levels of the multilevel multinomial logistic regression of the moves of parents and their children (initially living at distance >1 km)

	Closer (all) *(no move ref.)*		**Co-residence** *(no move ref.)*		**Very close** (<5km) *(no move ref.)*		**Closer** (>5km) *(no move ref.)*	**Further** *(no move ref.)*	
Model 1									
Baseline # iADL limit.	0.958		1.021		0.934	*	0.973	0.992	
Model 2									
Baseline # iADL limit.	0.935	**	0.993		0.911	**	0.956	0.975	
iADL limitation changes *(no ref.)*									
Limitations decrease	1.177	*	1.106		1.209	*	1.153	1.144	
Limit. increase by 1	1.011		0.877		1.028		1.056	1.142	*
Limit. increase by +1	1.046		1.534	**	0.941		0.946	1.012	
Model 3									
Baseline # iADL limit.	0.920	**	0.961		0.897	**	0.953	0.978	
iADL limitation changes *(no ref.)*									
Limitations decrease	1.173	*	1.089		1.208	*	1.151	1.147	
Limit. increase by 1	0.988		0.818		1.001		1.062	1.153	*
Limit. increase by +1	0.970		1.299		0.870		0.947	1.031	
Support for parents *(continued no support/at most monthly ref.)*									
Continued ≥weekly	2.489	***	2.993	***	2.375	***	1.615	0.972	
Start ≤monthly	1.217	*	1.607	**	1.264	*	0.926	0.770	*
Start ≥weekly	2.533	***	4.412	***	2.383	***	0.999	0.846	
Stop/diminish	1.280	**	1.640	***	1.171		1.121	0.936	

Source: SHARE wave 1-2 and 5-6, calculations by authors; * p <0.05, ** p <0.01, *** p <0.001

Adjusted for age (quadratic) child, education child, marital status child, employment child, presence of children child, number of siblings child, geographic distance at baseline, upward and downward financial transfers, support of siblings (Model 3), marital status parents, education parents, household income parents, home ownership parents, urbanization parents, parental moves, formal care use parents and country

N: 45,185-45,242

Table 3. Parameters and significance levels of the multilevel multinomial logistic regression of the moves of parents and their children (initially living at distance >1 km), for interaction terms between variables of interest and region

	Closer (all) *(no move ref.)*		**Co-residence** *(no move ref.)*		**Very close** (<5km) *(no move ref.)*		**Closer** (>5km) *(no move ref.)*		**Further** *(no move ref.)*	
Model 4										
Baseline # iADL limit.	1.028		1.057		0.982		1.072		0.989	
Interaction terms *(northwest ref.)*										
Mediter.*limitations	0.863	**	0.936		0.887		0.794	**	1.007	
Central*limitations	0.973		0.957		1.010		0.869		0.990	
Model 5										
iADL limitation changes *(no ref.)*										
Limitations decrease	1.228	*	1.134		1.216		1.261		1.118	
Limit. increase by 1	1.032		1.124		0.913		1.082		1.033	
Limit. increase by +1	1.103		1.891	***	0.991		0.923		0.941	
Interaction terms *(northwest ref.)*										
Mediter.*limit. decr.	0.902		0.926		0.959		0.795		1.020	
Mediter.*limit. inc. 1	0.883		0.576	*	1.179		0.864		1.287	
Mediter.*limit. inc. +1	0.920		0.605		0.978		1.146		1.205	
Central*limit. decr.	0.944		0.981		1.048		0.817		1.098	
Central*limit. inc. 1	1.108		0.831		1.322		1.063		1.136	
Central*limit. inc. +1	0.874		0.993		0.785		0.838		1.007	
Model 6										
Support for parents *(continued no support/at most monthly ref.)*										
Start ≤monthly	1.134		1.555		1.199		0.897		0.820	
Start/cont. ≥weekly	2.714	***	5.814	***	2.464	***	1.169		0.737	
Stop/diminish	1.303	*	1.603	*	1.209		1.226		0.895	
Interaction terms *(northwest ref.)*										
Mediter.*start≤month.	1.062		1.030		0.947		1.084		0.943	
Mediter.*≥weekly	0.917		0.621		0.955		0.787		1.532	
Mediter.*stop/dimin.	0.925		1.060		0.763		0.947		0.996	
Central*start≤month.	1.242		1.056		1.271		1.017		0.761	
Central*≥weekly	0.811		0.458	*	0.892		1.198		1.021	
Central*stop/dimin.	1.007		0.990		1.233		0.530		1.252	

Source: SHARE wave 1-2 and 5-6, calculations by authors; * p <0.05, ** p <0.01, *** p <0.001

Adjusted for age (quadratic) child, education child, marital status child, employment child, presence of children child, number of siblings child, geographic distance at baseline, upward and downward financial transfers, support of siblings (Model 6), marital status parents, education parents, household income parents, home ownership parents, urbanization parents, parental moves, formal care use parents and country

N: 45,185-45,242

Table A1. Parameters and significance levels of the multilevel multinomial logistic regression of the moves of parents and their children (initially living at distance >1 km, Model 3)

	Closer (all) *(no move ref.)*		**Co-residence** *(no move ref.)*		**Very close** (<5km) *(no move ref.)*		**Closer** (>5km) *(no move ref.)*		**Further away** *(no move ref.)*		**Co-residence** *(very close ref.)*	
Child-level covariates												
Age	0.979	***	0.964	***	0.984	***	0.987	**	0.986	**	0.978	***
Age²	1.001	*	1.001	***	1.000		1.000		1.000	*	1.001	**
Female *(male ref.)*	0.967		1.028		0.951		0.951		0.958		1.084	
Middle education *(low ref.)*	1.043		1.039		1.035		1.135		0.981		1.031	
High education	0.932		0.875		0.865		1.175		1.148	*	1.010	
Registered partnership *(married ref.)*	0.962		0.803		0.955		1.122		1.120		0.822	
Married, living single	1.316	*	1.926	*	1.249		1.099		1.349		1.655	
Never married	1.083		1.840	***	0.975		0.897		0.998		1.962	***
Divorced	1.110		2.031	***	0.970		0.963		1.223	**	2.192	***
Widowed	1.263		1.838	*	1.189		1.156		1.314		1.681	
Unemployed *(employed ref.)*	1.411	***	2.289	***	1.146		1.091		1.043		2.155	***
In education	0.814	*	0.926		0.533	***	1.012		1.193		1.582	*
Retired or disabled	0.984		1.031		1.034		0.949		1.035		0.963	
Looking after home or family	0.974		0.758		1.064		0.944		1.235	*	0.682	
Other	1.001		1.933	**	0.741		0.664		1.162		2.477	**
Recent birth *(no children ref.)*	0.987		0.711	**	1.159		0.969		0.929		0.607	***
Older children	0.995		0.738	***	1.082		1.037		0.784	***	0.675	***
Number of siblings	0.951	**	0.873	***	0.939	**	1.015		0.978		0.931	*
Baseline geographic distance (z-score)	1.124	***	0.916	**	0.559	***	1.730	***	0.217	***	1.600	***
Gift ≥€250 rcvd. from parents *(none ref.)*	1.106	*	1.054		1.129		1.083		0.996		0.969	
Gift ≥€250 given to parents *(none ref.)*	1.274	*	1.170		1.447	**	0.948		1.080		0.856	
At least one sibling supports *(none ref.)*	0.841	**	0.764	*	0.856		0.897		1.010		0.850	
Cnt. support ≥ wkly *(cnt. no/mnthly ref.)*	2.489	***	2.993	***	2.375	***	1.615		0.972		1.585	
Start to support at most monthly	1.217	*	1.607	**	1.264	*	0.926		0.770	*	1.353	
Start to support at least weekly	2.533	***	4.412	***	2.383	***	0.999		0.846		2.292	***
Stop or diminish frequency of support	1.280	**	1.640	***	1.171		1.121		0.936		1.512	*
Parent-level covariates												
Registered partnership *(married ref.)*	0.870		0.576		0.768		1.220		1.076		0.704	
Married, living single	0.637	**	0.579	*	0.591	*	0.712		1.019		0.912	
Never married	0.779		0.455	**	0.659	*	1.208		0.998		0.646	
Divorced	0.581	***	0.321	***	0.626	***	0.752	**	0.750	***	0.476	***

Table A1 (continued).

Widowed	0.703	***	0.492	***	0.819	**	0.718	***	0.784	***	0.566	***
Middle education *(low ref.)*	0.918		0.912		0.874	*	1.007		1.033		1.023	
High education	0.852	**	0.874		0.793	**	0.956		1.115		1.078	
Household income (z-score)	1.018		1.050		1.020		0.982		0.979		1.037	
Homeowner *(no ref.)*	0.891	**	0.989		0.868	*	0.891		1.023		1.096	
Small town/rural area *(urban ref.)*	0.836	***	0.927		0.676	***	1.092		0.933		1.282	**
Parental move *(no ref.)*	1.352	***	1.640	***	1.476	***	0.973		1.186	*	1.222	
Receiving formal care *(no ref.)*	0.975		0.782	*	0.970		1.071		1.038		0.783	
Baseline number of iADL limitations	0.920	**	0.961		0.897	**	0.953		0.978		1.063	
iADL limit. decrease *(no changes ref.)*	1.173	*	1.089		1.208	*	1.151		1.147		0.908	
iADL limitations increase by 1	0.988		0.818		1.001		1.062		1.153	*	0.800	
iADL limitations increase by +1	0.970		1.299		0.870		0.947		1.031		1.477	*
Country												
Germany *(Austria ref.)*	0.909		1.015		0.724	**	1.147		0.924		1.333	
Sweden	0.889		0.288	***	0.655	***	1.869	***	1.015		0.380	***
The Netherlands	0.784	*	0.362	***	0.886		0.783		1.064		0.383	**
Spain	1.564	***	1.601	**	1.842	***	1.005		1.650	***	0.994	
Italy	1.406	***	1.908	***	1.525	**	0.852		1.124		1.360	
France	0.751	**	0.750		0.428	***	1.398	*	0.791	*	1.526	*
Denmark	0.590	***	0.336	***	0.447	***	1.118		0.719	**	0.634	*
Switzerland	1.135		0.922		0.901		1.730	***	0.942		0.975	
Belgium	0.734	***	0.554	***	0.729	**	0.831		0.799	*	0.703	
Israel	1.364	**	1.297		1.024		2.067	***	2.474	***	1.227	
Czech Republic	0.774	**	1.049		0.695	**	0.748		0.901		1.424	
Luxembourg	0.592	***	0.843		0.434	***	0.674		0.775		1.784	
Slovenia	1.024		1.947	***	0.891		0.706		0.902		2.181	**
Estonia	0.755	**	1.075		0.467	***	1.110		0.866		2.076	***
Between-family variance	1.337	***	0.332		1.929	***	1.878	***	1.194	***	0.976	**

Source: SHARE wave 1-2 and 5-6, calculations by authors; * p <0.05, ** p <0.01, *** p <0.001; N: 45,185-45,242

Table A2. Parameters and significance levels of the multilevel multinomial logistic regression of the moves of parents and their children (initially living at distance >1 km), original dataset (missings listwise deleted)

	Closer (all) *(no move ref.)*		**Co-residence** *(no move ref.)*		**Very close** (<5km) *(no move ref.)*		**Closer** (>5km) *(no move ref.)*	**Further** *(no move ref.)*	
Model 1									
Baseline # iADL limit.	0.991		1.025		0.985		1.006	0.985	
Model 2									
Baseline # iADL limit.	0.957		0.992		0.948		0.973	0.960	
iADL limitation changes *(no ref.)*									
Limitations decrease	1.215	**	1.129		1.237	*	1.234	1.171	
Limit. increase by 1	1.047		0.908		1.055		1.106	1.166	*
Limit. increase by +1	1.088		1.527	**	1.009		1.016	0.950	
Model 3									
Baseline # iADL limit.	0.942	*	0.966		0.931	*	0.973	0.962	
iADL limitation changes *(no ref.)*									
Limitations decrease	1.223	**	1.128		1.246	*	1.223	1.182	*
Limit. increase by 1	1.033		0.861		1.040		1.115	1.180	*
Limit. increase by +1	1.033		1.372	*	0.950		1.018	0.978	
Support for parents *(continued no support/at most monthly ref.)*									
Continued ≥weekly	2.697	***	4.053	***	2.506	***	1.454	0.830	
Start ≤monthly	1.114		1.619	**	1.150		0.824	0.728	**
Start ≥weekly	2.380	***	4.920	***	2.174	***	0.935	0.726	*
Stop/diminish	1.285	**	1.673	**	1.200		1.078	0.895	

Source: SHARE wave 1-2 and 5-6, calculations by authors; * p <0.05, ** p <0.01, *** p <0.001

Adjusted for age (quadratic) child, education child, marital status child, employment child, presence of children child, number of siblings child, geographic distance at baseline, upward and downward financial transfers, support of siblings (Model 3), marital status parents, education parents, household income parents, home ownership parents, urbanization parents, parental moves, formal care use parents and country

N: 36,877 (4,882 missings)

Table A3. Parameters and significance levels of the multilevel multinomial logistic regression of the moves of parents and their children (initially living at distance >1 km), for interaction terms between variables of interest and region. Original dataset (missings listwise deleted).

	Closer (all) *(no move ref.)*		**Co-residence** *(no move ref.)*		**Very close** (<5km) *(no move ref.)*		**Closer** (>5km) *(no move ref.)*		**Further** *(no move ref.)*	
Model 4										
Baseline # iADL limit.	1.063		1.093		0.987		1.138	*	0.979	
Interaction terms *(northwest ref.)*										
Mediter.*limitations	0.877	**	0.918		0.967		0.739	**	0.976	
Central*limitations	0.914		0.802		1.018		0.845		1.063	
Model 5										
iADL limitation changes *(no ref.)*										
Limitations decrease	1.245	*	1.134		1.228		1.314		1.175	
Limit. increase by 1	1.011		1.104		0.910		1.064		1.048	
Limit. increase by +1	1.134		2.129	***	0.949		0.948		0.922	
Interaction terms *(northwest ref.)*										
Mediter.*limit. decr.	0.937		0.952		1.052		0.803		0.914	
Mediter.*limit. inc. 1	0.957		0.566	*	1.236		1.057		1.374	*
Mediter.*limit. inc. +1	0.998		0.421	**	1.300		1.366		1.045	
Central*limit. decr.	0.952		1.034		0.978		0.823		1.123	
Central*limit. inc. 1	1.251		1.009		1.429		1.092		1.100	
Central*limit. inc. +1	0.791		0.875		0.768		0.747		1.103	
Model 6										
Support for parents *(continued no support/at most monthly ref.)*										
Start ≤monthly	1.051		1.581		1.157		0.753		0.753	
Start/cont. ≥weekly	2.707	***	6.408	***	2.323	***	1.050		0.582	**
Stop/diminish	1.301	*	1.605	*	1.185		1.231		0.876	
Interaction terms *(northwest ref.)*										
Mediter.*start≤month.	1.086		1.131		0.801		1.333		0.937	
Mediter.*≥weekly	0.940		0.590		1.009		0.853		1.760	*
Mediter.*stop/dimin.	0.947		1.012		0.844		0.883		0.851	
Central*start≤month.	1.153		0.775		1.158		1.100		0.846	
Central*≥weekly	0.681		0.319	*	0.770		1.147		1.236	
Central*stop/dimin.	0.993		1.034		1.220		0.404		1.296	

Source: SHARE wave 1-2 and 5-6, calculations by authors; * p <0.05, ** p <0.01, *** p <0.001

Adjusted for age (quadratic) child, education child, marital status child, employment child, presence of children child, number of siblings child, geographic distance at baseline, upward and downward financial transfers, support of siblings (Model 3), marital status parents, education parents, household income parents, home ownership parents, urbanization parents, parental moves, formal care use parents and country

N: 36,877 (4,882 missings)

Table A4. Parameters and significance levels of the multilevel multinomial logistic regression of the moves of parents and their children (initially living at distance >1 km) (random child per family, random intercepts per country)

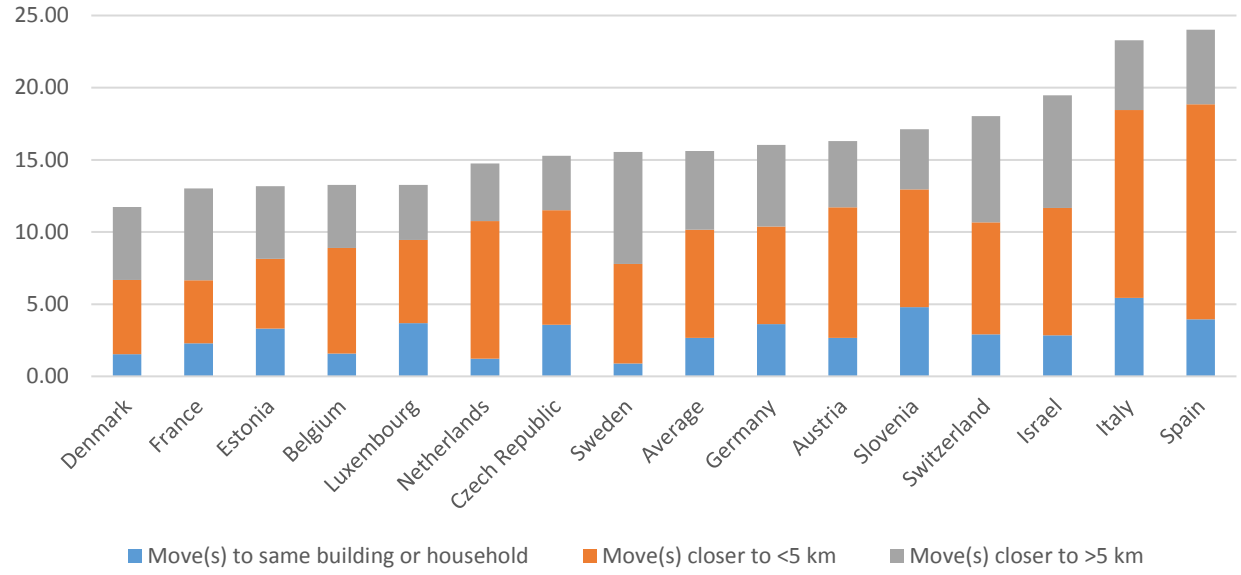
	Closer (all) *(no move ref.)*		**Co-residence** *(no move ref.)*		**Very close** (<5km) *(no move ref.)*		**Closer** (>5km) *(no move ref.)*		**Further** *(no move ref.)*	
Model 1										
Baseline # iADL limit.	0.983		1.086		0.927		1.018		1.001	
Model 2										
Baseline # iADL limit.	0.965		1.055		0.909	*	1.003		0.978	
iADL limitation changes *(no ref.)*										
Limitations decrease	1.131		1.109		1.155		1.097		1.144	
Limit. increase by 1	1.094		0.976		1.135		1.090		1.177	*
Limit. increase by +1	1.011		1.611	**	0.960		1.060		0.962	
Model 3										
Baseline # iADL limit.	0.954		1.034		0.898	*	0.995		0.984	
iADL limitation changes *(no ref.)*										
Limitations decrease	1.126		1.083		1.151		1.103		1.148	
Limit. increase by 1	1.075		0.916		1.110		1.096		1.185	
Limit. increase by +1	1.050		1.429		0.903		1.064		0.980	
Support for parents *(continued no support/at most monthly ref.)*										
Continued ≥weekly	1.995	***	1.849		2.220	***	1.469		1.050	
Start ≤monthly	1.085		1.276		1.245		0.710		0.801	
Start ≥weekly	1.910	***	3.458	***	1.892	***	0.855		0.722	
Stop/diminish	1.187		1.397		1.073		1.195		1.006	

Source: SHARE wave 1-2 and 5-6, calculations by authors; * p <0.05, ** p <0.01, *** p <0.001

Adjusted for age (quadratic) child, education child, marital status child, employment child, presence of children child, number of siblings child, geographic distance at baseline, upward and downward financial transfers, support of siblings (Model 3), marital status parents, education parents, household income parents, home ownership parents, urbanization parents, parental moves, formal care use parents and country

N: 20,175-20,242

Figure 1. Increasing proximity between parents and children as part of the interfamily mobility by country (original dataset, initially living at distance >1 km)



Source: SHARE wave 1-2 and 5-6, calculations by authors
N: 41,192 (4,359 missings)