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Children's opportunities and constraints in European parent care over time: a within-family approach

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ABSTRACT

The role of children's caregiving has received substantial attention in studies on care in old age. Previous research shows that children's care provision is strongly intertwined with both their individual and siblings' situation regarding employment and geographic parent-child distance. This study uses data from six waves of the Survey of Health, Ageing and Retirement in Europe (SHARE), taking a within-family approach, to examine how caregiving is (re-)distributed between siblings over time. The provision of continuous parent care is observed more frequent and volatile in European countries with a family-based care system. The results from family fixed-effects regression models demonstrate that children working less than siblings persist in caregiving more. Living closest to parents facilitates children to keep up care efforts, while changing to living closest enhances the start of parent care. This study suggests that geographic distance is vital in the long-term organization of parent care between siblings.

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DECLARATION OF INTEREST

The authors have no competing interests to declare that are relevant to the content of this article.

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1. INTRODUCTION

In a rapidly aging continent, European welfare states increasingly rely on unpaid caregiving to deal with care demands in old age (Broese van Groenou & De Boer, 2016). The role of filial caregiving has received substantial attention, given that adult children are often considered one of the primary informal care sources in contemporary Europe (Stafford & Kuh, 2018). The literature on intergenerational solidarity is replete with research on caregiver selection among adult children, answering the question of which children are most likely to start parent care (Henretta, Hill, Li, Soldo, & Wolf, 1997; Leopold, Raab, & Engelhardt, 2014; Pillemer & Suitor, 2006, 2013; Vergauwen & Mortelmans, 2021). At the same time, only limited research has examined whether children persist in caregiving over time (Szinovacz & Davey, 2007, 2013). In addition, recent studies re-draw attention to the fact that children's caregiving is not organized in isolation from the family context (Grigoryeva, 2017; Leopold et al., 2014; Lin & Wu, 2019; Szinovacz & Davey, 2013; Tolkacheva, Broese van Groenou, & van Tilburg, 2010, 2014; Vergauwen & Mortelmans, 2021). Siblings may function as alternatives to pass care on to, or, contrarily, a child's responsibility may increase when siblings are unavailable to provide care (Szinovacz & Davey, 2013). This article combines both the longitudinal and family perspectives on parent care. *It contributes to the existing literature by taking a within-family approach to examine caregiving succeeding the start of parent care, enabling us to assess how filial caregiving is (re-)distributed between siblings over time.* Given that care for parents is known to be intertwined with children's care opportunities and costs (Finch & Mason, 1993; Pillemer & Suitor, 2013; Silverstein, Conroy, Wang, Giarrusso, & Bengtson, 2002), the analysis focuses on the role of children's *employment situation* and *geographic parent-child distance* as key factors in distributing parent care between siblings.

Employment is considered as a competing demand for parent care. Working kin has less time for care tasks, and combining work with parent care increases adult children's burden

(Bonsang, 2007; Fredriksen-Goldsen & Scharlach, 2006; Martire & Stephens, 2003). An active labor market position reduces children's willingness to provide care, especially for workers with high earnings. Providing care introduces greater opportunity costs due to foregone income and jeopardized career prospects (Bolin, Lindgren, & Lundborg, 2008; Carmichael, Charles, & Hulme, 2010; Heger & Korfhage, 2020). The geographic distance between parents and their children is a well-documented barrier to intergenerational interaction, including care exchange. The costs of parent care accumulate with greater distances as longer commutes lead to higher travelling expenses and less time-efficiency, particularly for recurrent and demanding care. Literature consistently shows that shorter parent-child distances aid parent care (Artamonova, Gillespie, & Brandén, 2020; Brandt, Haberkern, & Szydlik, 2009; Hank, 2007; Leopold et al., 2014; Vergauwen & Mortelmans, 2020). Both employment and geographic distance are crucial from a family perspective on care for parents. In multiple-child families, children not only consider their own caregiving prospects, but also those of siblings are taken into account. Therefore, parent care may be distributed cost-effectively between siblings. This means that within the family circle, children encountering relatively few constraints regarding working schedules and travelling distances tend to take up care responsibilities more often (Leopold et al., 2014; Vergauwen & Mortelmans, 2021). In many families this applies in particular to women since intensive family care is strongly feminized, with daughters often avoiding parent care obstacles throughout the life course (e.g. opting out of a full-time professional career) (Ehrlich, 2018).

A longitudinal approach is vital to gain better insight into parent care. Previous research demonstrates the endogeneity of geographic distance and employment vis-à-vis care for parents. The transition to parent care leads some children to adaptations (Leopold et al., 2014; Stern, 1995), i.e. reducing parent-child distances or cutting back in hours of paid work to facilitate caregiving – especially in the case of intensive care provision (Moussa, 2019; Van

Houtven, Coe, & Skira, 2013; Vergauwen & Mortelmans, 2020). In the present study, children's proximity and employment at the start of parent care are considered as a given, whether or not affected by the preceding caregiving decision. The question arises if initial caregivers with favorable care opportunities are also likely to continue caregiving, while providers experiencing more constraints may relinquish parent care to siblings. Over time, some children may encounter unintentional changes or deliberately tailor their opportunity structure to make caregiving feasible. From a family perspective, it is expected that changes in a life domain (e.g. employment) interconnect with the care trajectory of a child and, in turn, spill over into the care responsibilities of their siblings. In the context of children's care opportunities and constraints, competing family demands have also frequently been studied. Although the findings are mixed, some research suggests that being married or a parent refrains children from taking care of their parents (Haberkern & Szydlik, 2010; Henz, 2006; Igel, Brandt, Haberkern, & Szydlik, 2009), but evidence lacks that changes in family life relate to the provision of parent care.

The empirical analysis uses data from the Survey of Health, Ageing and Retirement in Europe (SHARE) to shed light on between-sibling differences in parent care over time. By virtue of the country-comparative nature of SHARE, this study also explores the prevalence of continued parent care in different European countries. To our knowledge, there is scant research looking into long-term care for parents across countries. Existing evidence suggests considerable heterogeneity in how care for the oldest is organized throughout Europe. Family members tend to shoulder intensive care tasks in Southern Europe, while this responsibility is often left with professional care provisions in Northern Europe (Brandt, 2013; Brandt et al., 2009). This raises the question of whether children persevere in caregiving longer in countries with a family-based care system because of stronger family care norms and the limited availability of professional care provisions (Verbakel, 2018; Viazzo, 2010). In countries with

accessible formal care, there is a lower prevalence of demanding intergenerational care on the one hand, but high levels of occasional and lighter support tasks on the other (Suanet, Van Groenou, & Van Tilburg, 2012; Verbakel, 2018). Western and Central European countries are suggested to take an intermediate position, with moderate levels of child involvement (Brandt, 2013; Brandt et al., 2009).

2. RESEARCH HYPOTHESES

While the reasons for filial caregiving are explained from a variety of theoretical perspectives (i.e. altruism, exchange, etc.) (Broese van Groenou & De Boer, 2016), this study addresses children's constraints and opportunities, either impeding or promoting caregiving (Finch & Mason, 1993). Literature indicates that children facing less constraints than siblings in terms of employment and proximity are more likely to enter parent care (Leopold et al., 2014; Pillemer & Suitor, 2013; Vergauwen & Mortelmans, 2021). Paid work is less conducive to frequent parent care as employment and care compete for the available time of caregivers (Van Houtven et al., 2013). Further, intergenerational exchanges are most feasible at close geographic distances. Hence, children sometimes choose to live deliberately close to their parents long before parental needs emerge or parent-child distances diminish as a result of parents requiring support (Artamonova et al., 2020; Konrad, Künemund, Lommerud, & Robledo, 2002). The first hypothesis therefore reads: *Caregiving children are likely to continue parent care when they are, compared to their caregiving siblings, (H1a) less active in the labor market and/or (H1b) living closer to their parents.*

At the same time, children providing care at a high cost may find ways to overcome time constraints or reconcile competing demands. In this respect, Silverstein, Conroy, and Gans (2008) argue that strongly committed children tend to incur greater caregiving costs (e.g. long parent-child distances) due to strong filial norms. Less family-oriented children facing limited

caregiving opportunities are possibly more reluctant to take up parent care at any time. The absence of a sibling willing to provide parent care may also urge children to look after their parents, even in a situation of caregiving constraints. Children providing care despite high costs are hence assumed to be selective in terms of commitment or workarounds, leading to the second hypothesis: *Children reconciling the provision of parent care with relative (H2a) long working hours and/or (H2b) great parent-child distances are more likely to continue parent care than non-caregiving siblings with similar constraints to start caregiving.*

Although children with high caregiving costs are generally more likely to evade parent care, they may re-evaluate the price of care provision vis-à-vis their siblings during the family's care trajectory. Changing caregiving opportunities has the potential to transfer a child into a more appropriate position to take up care. This may be intentional to respond to unmet care needs or accidental when a change in employment or residence coincidentally lowers the caregiving threshold. Hence the third hypothesis: *Children not taking up parent care are, compared to their non-caregiving siblings with longer working hours and/or living farther from parents resp., more likely to start caregiving when (H3a) employment and/or (H3b) distances reduce over time.*

3. DATA AND METHODS

The analysis draws on the rich data infrastructure from SHARE, covering most European countries (Bergmann, Kneip, De Luca, & Scherpenzeel, 2019; Börsch-Supan et al., 2013). This panel survey follows respondents aged 50 and older biennially, together with their cohabiting partners, to collect detailed longitudinal information on health and well-being, socio-economic circumstances, and social and family networks. Data from SHARE waves 1, 2, 5, 6, 7 and 8[1,2]

[1] Interview waves 1 and 2 took place between 2004 and 2007, including a two-year period in between. Waves 5, 6, 7 and 8 were conducted in 2013, 2015, 2017 and 2019-2020 respectively; also with an in-between time period of two years.
[2] Wave 3 (SHARELIFE) is omitted as it only comprises retrospective information. Wave 4 is excluded because it shows important limitations to attribute child characteristics correctly.

are used to test the hypotheses (Börsch-Supan, 2022a, 2022b, 2022c, 2022d, 2022e, 2022f). The analysis taps into the questionnaire modules on children, social support and demographics.

Figure 1 provides a schematic representation of the sample selection. The sample results from a transposed dataset considering the respondents' children as the unit of observation. Children are included when observed in at least two consecutive waves[3,4], identified by gender and birth year to match between waves[5]. Information on children and the parental background is aggregated to the couple level to extend all data to both partners if necessary[6]. Subsequently, the dataset is transposed to 113225 unique child-parent dyads observed in at least two consecutive waves (cfr. stage 1 in Figure 1). This wide data format is expanded to a longitudinal period file of 267291 data lines for children with at least one observed sibling in the dataset (cfr. stage 2 in Figure 1). From the longitudinal data a time-varying indicator of caregiving for each child is computed (cfr. details in section 3.1). In function of the analytical approach, a sample of multiple-child families in which at least one child provides parent care in two consecutive waves is selected next. The first wave a parent reports to receive care from (a) child(ren) is considered as the baseline observation (t-1) (N = 4130, cfr. stage 3a in Figure 1), whereas the analytical sample is formed at the successive wave of receiving care (t) to assess the continuation of care (N = 4130, cfr. stage 3b in Figure 1). The analysis only considers the analytical sample (t). As a final step, one parent per family is randomly selected to avoid double representations of children[7]. This results in a final sample of 3380 children nested in 1166 parents (cfr. stage 4 in Figure 1). The selected parents live in 15 countries: Austria, Belgium,

[3] Waves 2 and 5 are not regarded as consecutive observations.
[4] Non-observation results either from non-participation of respondents (i.e. parents) in the follow-up wave or respondents not reporting a child anymore in the successive interview.
[5] Multiple births (children with identical birth years) of the same sex are omitted due to the risk of erroneous information matching.
[6] Note that some of the questionnaire modules (e.g. information on children and informal care provision) rely on the interview of one parent in a two-parent household.
[7] As for some families both parents are interviewed in the same wave, 750 children in 254 families appear twice in the dataset.

the Czech Republic, Denmark, Estonia, France, Germany, Greece, Israel, Italy, Poland, Slovenia, Spain, Sweden and Switzerland.

[Insert Figure 1 about here]

3.1 Dependent variables and modeling strategy

Whether a child takes care of a parent at time t is the binary outcome variable of the analysis. We distinguish between two situations to identify a child as a caregiver. Respondents indicate if a child living in or outside the household provided help during the 12 months preceding the interview. For children living inside the household (i), this concerns providing personal care (e.g. washing, dressing, etc.). For those living outside the household, (ii) we consider children providing daily or weekly personal care or household chores support (e.g. paperwork, home repairs, shopping, etc.) as caregivers. Less than half (1591 or about 47%) of the children provide care at wave t. 37.3% of all selected children provide continuous care (at t and t-1), while 9.8% start and 10.7% stop caregiving over time. 42.2% neither provide care at t nor at t-1. These longitudinal figures are similar to the study of Szinovacz and Davey (2013) using the US Health and Retirement Study (1992-2000).

The multivariate analysis examines parent care using fixed-effects binary logit regression models. The standard errors retrieved from the logit models are corrected for clustering in countries. The fixed-effects approach allows the analyst to exploit the variation between children within the family[8] (Henretta et al., 1997; Leopold et al., 2014; Pillemer & Suitor, 2006). The model holds the parent effect fixed to eliminate all time-constant (observed and unobserved) characteristics which are shared between children of the same parent. Each parent serves as a control for their own, while the analysis focuses on the variation between siblings in caregiving for a parent. This analytical strategy has two implications: (i) the modeling

[8] Although the analysis relies on the individual parent to nest children (as siblings), "within-family" is used as a reference to the general idea of the analytical approach.

requires multiple child observations (at least two) per parent, and (ii) estimates are obtained only for children of the same parent exhibiting variation in the outcome variable (i.e. at least one child provides parent care and one does not). The latter leads to the limitation that 191 parents (with 416 observed children) are omitted from the analytical sample because all children provide care at wave t. A crucial improvement on previous work is that the models address the intra-family caregiving process longitudinally. Therefore, children's caregiving at wave t-1 and the longitudinal variation in children's geographic proximity and employment situation are introduced as predictors of caregiving at wave t (cf. section 3.2). The results are presented by means of plotted predicted probabilities and average marginal effects (Mize, 2019).

The merit of the analytical strategy is twofold. The fixed-effects models look into the family unit in which children's caregiving is affected by siblings, (i) enabling the analyst to interpret the estimates as a child's opportunity to provide parent care compared to all other children in the family (Leopold et al., 2014). Moreover, the models compare directly between caregiving and non-caregiving siblings. (ii) The analysis draws on parents needing long-term assistance (a parent is required to receive care in two consecutive waves). Temporary parent care, in contrast, may often be related to short-lived health problems rather than children's caregiving opportunities. It should be noted that the fixed-effects approach also accommodates country differences in caregiving since parent-specific intercepts take between-parent variation across countries into account.

3.2 Independent variables and descriptives

A descriptive overview of the child characteristics in the analytical sample is presented in Panel A of Table 1. The table also provides some descriptive figures of the selected parents. Panels B and C show the distributions of the child characteristics by individual caregiver status at baseline, revealing which children are selected into parent care from the start.

Three longitudinal child features are of central interest. Firstly, *caregiver status at baseline* (t-1) indicates whether a child provides care at the start of the observation period. Secondly, two variables reflect time-changing *employment,* combining observations at t-1 and t. The first is an individual-centered measure, which implies a child's employment status. Three categories represent stability over time (i.e. similar at t-1 and t) in (i) full-time employment, (ii) part-time employment or (iii) no employment. Two categories capture changes between positions (i.e. different at t-1 and t), with children either (iv) decreasing or (v) increasing employment. The last category includes children for whom the (vi) employment status is unknown at one or both observation(s). The second variable is a sibling-centered measure, indicating a child's relative employment position in the family[9]. A child is continuously (i.e. similar at t-1 and t) (i) working less or (ii) not working less than at least one sibling, or changing (i.e. different at t-1 and t) to iii) working less or iv) not working less. A separate category (v) includes missing employment. Thirdly, individual- and sibling-centered variables of time-changing *parent-child distances* are considered. Three categories express time-constant individual distances: continued living (i) within 1km, (ii) within 25km or (iii) farther than 25km. A change results in either (iv) decreasing or (v) increasing distances. A last possibility is that (vi) the distance is unknown at one or both observation(s). The sibling-centered variable encompasses a child's relative distance[9]: either continuously (i) the closest living or (ii) not the closest living child in the family, or changing to iii) living closest or iv) not living closest. A separate category (v) includes missing distance. The regression models test interaction terms to examine whether employment and distance relate differently to parent care at t by caregiver status at t-1. The sibling-centered variables study all three hypotheses, while the individual-centered variables are used as a robustness check with regards to H2a-H2b. Individual

[9] The relative measure is computed from the individual measure by taking the individual characteristics of all siblings into account.

employment and distance are considered to reflect personal caregiving costs in the context of hypothesis 2 accurately, whereas the sibling-centered measures express the costs relative to siblings (irrespective of a child's personal situation). The multivariate models adjust for children's socio-demographics: age, gender, gender of siblings, partner status, educational level and number of children.

Most children in the analytical sample are full-time employed and not working less than a sibling at both observation points. Only a very small proportion is part-time employed, while one out of four is not employed. More than 8% decreases employment, while about 7% increases employment. Panels B and C show that children providing care at baseline are somewhat more often continuously part-time employed, without employment and more inclined to change employment status. Children's relative employment positions are more or less similar among caregivers and non-caregivers at baseline. In the analytical sample, most children live consistently closer than 25km from their parents (about 66%). One out of five children resides farther than 25km. Five per cent of the children experience changing distances, whereas a substantial share of distances is missing. In line with previous studies, caregivers live consistently closer to their parents than non-caregivers (80% compared to 53% closer than 25km). From a sibling perspective, children providing care at t-1 are much more likely to live continuously closest (64% compared to 27%). Further, we find that caregivers are younger, more frequently female, higher educated, and have less often a sister and fewer children on average. The descriptive figures at the parental level confirm the need for assistance in the sample. On average, parents are almost 80 years old, more than 73% live without a partner, the means of difficulties with instrumental activities of daily living (IADL) and activities of daily living (ADL) are respectively more than 3 and 1, about one parent out of three takes up a form of formal care (e.g. meals-on-wheels) and/or informal care in addition to the filial care they receive. Furthermore, the large majority of care receivers are mothers and less educated.

[Insert Table 1 about here]

4. RESULTS

Table 2 provides descriptive figures on both continued informal care receiving by parents and caregiving by children across European countries. On average, more than 3% of the parents receive informal care from children in two consecutive SHARE waves (cf. column A). This is most frequent in the Czech Republic (almost 7%), followed by Greece with 6.6%. For several Mediterranean countries (Spain, Israel and Italy), together with Austria, Belgium and Estonia, the prevalence ranges between 3 and 4%. More than 2% of the parents receive continued care in Poland, France and Germany. The smallest groups of long-term care receivers are observed in Denmark, Slovenia, Switzerland and Sweden, with percentages between 1 and 2. Table 2 also sheds light on the care configurations within families. Overall, a small 60% of all parents have an identical configuration of children providing care over time (cf. column B). The stability in caregiving configurations is generally higher in countries with a lower share of parents receiving long-term filial care. Column C shows that for almost 70% of the care-receiving parents, only one child is involved in caregiving at wave t. The figures suggest that parent care is more often shared between children in countries where continued caregiving is more established (except for Greece). At the child level, more than three out of four providing care at baseline persist in caregiving in most countries (cf. column D). On average, less than 20% of children not giving care at baseline step into a caregiving role later (cf. column E). This suggests that primary caregivers are selected early in the care trajectory. At the same time, the results indicate that in countries where continued care provision by children is more frequent, care configurations within families are less stable, and other children tend to step into caregiving later more often.

[Insert Table 2 about here]

In the multivariate analysis, two models are estimated, including 975 of the 1166 parents, for which the outcome varies. The omitted families, where all children provide care at wave t, differ from the remaining sample in several respects. They are smaller in size (82.7% versus 40.9% two-child groups), children are more often caregivers at baseline (76.0% versus 44.1%), live closer (78.4% versus 64.1% consistently within 25km), and parents experience greater difficulties with IADLs (3.2 versus 3.0) and ADLs (1.6 versus 1.3) on average.

The principal results of the multivariate regression analysis are presented in terms of predicted probabilities (Figures 2 and 3) and average marginal effects (AME) (Tables 3 and 4), as these are most appropriate to test all hypothesized differences. Given that the analysis focuses on non-linear interactions, regression coefficients are inadequate to determine the size and significance of the effects of interest (Mize, 2019). Appendix Table A1 presents the regression parameters for the full models. Appendix Table A2 shows the results for the individual measures of employment and parent-child distance[10].

Figure 2 exhibits the predicted probabilities of caregiving at time t for each combination of the time-changing relative employment position and previous caregiver status. The predicted probabilities result from the fixed-effects logit models regressing caregiving at t on employment and previous caregiving and their product terms (and controls) (cf. Model 1 in Table A1). The results suggest that caregiving at t-1 strongly predicts caregiving at t, with probabilities being substantially higher for previous caregivers (in red) than non-caregivers (in blue) across all employment categories. Figure 2 also shows that the differences in caregiving at t are limited between the relative employment positions. This is confirmed by Table 3, which presents the predicted probabilities and the AMEs of employment by caregiver status at t-1. Only the AMEs that are significant at the 5% level are reported. In support of H1a, caregivers at t-1 show a significantly higher probability of continuing when they consistently work less than at least one

[10] The full regression results are available upon request.

sibling ($C1_r$) in comparison with their counterparts not working less ($C2_r$) (AME = 0.119; $p < 0.001$). In addition, the difference between children continuously working less ($C1_r$) and changing from working less to not working less ($C4_r$) is significant (AME = 0.128; $p < 0.010$), with the continuation of caregiving being less likely for the latter. In the group of non-caregivers at t-1, children changing from not working less to working less ($NC3_r$) have the highest probability of providing care at t. However, differences (AMEs) with children in different employment situations are limited, lending no strong evidence for H3a.

In support of H2a, children not working less than a sibling ($C2_r$) are more likely to continue parent care compared to children not working less to start ($NC2_r$) (AME = 0.558; $p < 0.001$). This is confirmed for children in full-time employment ($C1_i$-$NC1_i$, cf. Table A2). In addition, it is tested whether the gap between non-caregivers and caregivers at t-1 is different for children continuously not working less ($C2_r$-$NC2_r$) as opposed to other relative positions. The results are presented in the last column of Table 3, with the contrast to children working less ($C1_r$-$NC1_r$) being significant at the 5% level. The gap is larger for the latter, with Figure 2 suggesting that children not working less exit caregiving more, but are comparable in starting parent care compared to those working less. All in all, differences between caregivers and non-caregivers at t-1 are substantial across all relative employment positions.

[Insert Figure 2 about here]

[Insert Table 3 about here]

Figure 3 depicts the predicted probabilities of caregiving at time t for each combination of the time-changing relative parent-child distances and previous caregiver status. Appendix Table A1 (Model 2) presents the regression parameters from which the predicted probabilities are computed. Across all longitudinal parent-child distance categories, caregivers at t-1 (in red) exhibit a higher caregiving probability at t compared to not giving care at t-1 (in blue). Children living continuously at the closest distance are most likely to persevere in caregiving. According

to Table 4, reporting the AMEs ($p < 0.050$) of parent-child distances by caregiver status at t-1, the difference between continuously living closest ($C6_r$) and not living closest ($C7_r$) is significant (AME = 0.189; $p < 0.001$), as well as the difference between continuously living closest ($C6_r$) and changed from living closest to not closest ($C9_r$) (AME = 0.565; $p < 0.001$). Also, children changing from living not closest to closest ($C8_r$) persist more often in caregiving than those not living closest anymore ($C9_r$) (AME = 0.409; $p < 0.050$). These results confirm H1b, that relatively closer parent-child distances enhance continued caregiving. Children living closest in the group of non-caregivers at t-1 also show higher probabilities of embarking on care provision. The results in Table 4 suggest that in line with H3b, children changing from living not closest to closest ($NC8_r$) are more likely to start parent care than both those continuously not living closest ($NC7_r$) (AME = 0.468; $p < 0.010$) and children changing to not living closest ($NC9_r$) (AME = 0.485; $p < 0.010$).

In line with H2b, the results show that children consistently not living closest ($C7_r$) have a significantly higher probability to continue parent care than those not living closest to start ($NC7_r$). The robustness check for children living farther than 25km yields a similar finding ($C9_i$-$NC9_i$, cf. Table A2). It is also examined whether the difference in caregiving at t between non-caregivers and caregivers at t-1 differs for remotely living children ($C7_r$-$NC7_r$) compared to children living at other relative distances. As reported by the last column of Table 4, there is a significant smaller gap for children not living closest anymore, indicating that the latter exit caregiving to a higher degree (cf. Figure 3). Although the differences between other relative distances are also smaller, contrasts are not significant.

[Insert Figure 3 about here]

[Insert Table 4 about here]

As a final note, the models in Table A1 suggest that women more often pursue parent care in a long-term informal care episode. Additional analysis (available upon request) shows

that the results of interest are independent of accounting for (sibling) gender, suggesting that the findings cannot be traced to gendered patterns of employment and parent-child distances.

5. DISCUSSION

This study aims to provide insight into the distribution of children's parent care between siblings over time, complementing existing research on the transition to caregiving (Leopold et al., 2014). The analysis adopts a longitudinal within-family approach to examine parent care only between children from the same family. This allows us to asses continued caregiving between siblings as alternative and complementary providers. Furthermore, the research pays attention to children starting parent care later along the family care trajectory. The strategy addresses both the interdependence of siblings with respect to parent care and the longitudinal dynamics of children's caregiving (Bengtson & Allen, 1993; Checkovich & Stern, 2002; Szinovacz & Davey, 2007, 2013). Across Europe, filial care configurations show fluctuations over the two-year follow-up. Consistent with Szinovacz and Davey (2013), more than 40% of parents experience a changed composition of children's caregiving. This confirms that a static view of parents' care networks is unwarranted. At the same time, the results suggest considerable stability in children's individual caregiving. More than 75% of children involved in caregiving from the start maintain their efforts. In countries where continued parent care is more frequent (e.g. the Czech Republic, Spain, Israel, Austria, etc.), we generally observe more shared caregiving between siblings and more variation in caregivers over time. The more dynamic character of caregiving is possibly part of a strategy to keep up with long-term parental care needs in family-based care regimes. For countries where family support is less intensive (e.g. Sweden, Denmark, Switzerland, etc.) (Brandt, 2013), we find that recurrent parent care is infrequent but more stable in the division between children. These countries might provide caregivers with better options to combine informal and formal care, allowing individual

children to persist in caregiving longer. More research is required to unpack this heterogeneity between countries.

The primary goal of this study is to better grasp the between-sibling division of care following the start of a parent's care episode, focusing on the cost-related factors of caregiving. The first is employment, identified as a competing demand for caregiving. The multivariate analysis demonstrates that children continuously working less than siblings have higher odds of being involved in uninterrupted caregiving. Children with a stronger attachment to paid work exit caregiving more frequently. This finding accords with research suggesting incompatibility between paid work and parent care (Carmichael et al., 2010; Van Houtven et al., 2013). Caregivers with fewer work responsibilities are in a more favorable position to look after their parents, and children may have even left their job to enter caregiving for a longer period. An alternative explanation is that caregivers experience difficulties finding work due to their care burden (Heger & Korfhage, 2020). Contrary to the expectations, the results do not provide support that continuing caregiving is related to changes in the between-sibling employment position. The same goes for commencing parent care, given that (a) sibling(s) provided care already. This differs from existing evidence, considering children's decreasing individual employment, on the start of parent care (Leopold et al., 2014). Also, children in an equivalent employment position than (a) sibling(s) are similar in the probability of starting and continuing parent care than children changing to working less than (a) sibling(s). Altogether, the current study finds limited proof that the relative employment position is key in distributing long-term care tasks between siblings. Notwithstanding that continued parent care is mostly shouldered by children being least constrained by paid work regimes (or caregiving hampers involvement in the labor market), longitudinal variation in relative employment between siblings appears less related. One possible explanation is that many workers juggle employment and care, limiting the impact of a changing work situation. In many families, the absence of a sibling

willing to provide care or a strong family orientation may lead children to combine work and parent care. Another reason could be that the analysis draws on crude employment information, lacking details concerning the flexibility of working schedules.

The proximity of caregiving children to parents at the onset of a family care episode corroborates the importance geographic distance. The data reveal that caregivers live closer to their parents than non-caregiving children. Across early caregivers, children residing closer than siblings manage to retain care provision more. This may echo previous findings that longer distances increase children's caregiving costs and that children living within reach may have better parent-child relationships (Gillespie & Van der Lippe, 2015). Residential moves leading to shorter distances also aid persistence in caregiving, corresponding to a previous inquiry by Vergauwen and Mortelmans (2020). Hence, transferring into a more cost-effective position, whether deliberately or not, increases the opportunity to prolong care provision. The transition to parent care is also facilitated by shorter parent-child distances for children not providing care from the beginning. In particular, children who live remotely may have relinquished care to siblings first, but tend to take up caregiving later when proximity increases. This indicates that the distribution of care between siblings is dynamic and depends upon the changing life circumstances of all members in the sibling network. More generally, this study adds to the evidence that geographic distance is the overriding cost-related factor in the organization of parent care between siblings (Leopold et al., 2014; Szinovacz & Davey, 2013). At the same time, the results suggests that, in line with earlier findings, many children are prepared to take up care irrespective of greater distances (Silverstein et al., 2008). Whereas children continuously not living closest to parents have the lowest probability to start parent care, their counterparts providing care from the start show a much higher probability to continue. The latter also persist in parent care to a higher degree than children changing to a longer distance.

Children's care from a relative long distance may hence pertain to families where all siblings live remotely or are unwilling to provide care.

The current analysis is subject to several limitations. Firstly, it is predicated on at least one child providing care in two consecutive waves. This implies that parents with unmet long-term care needs (i.e. no child provides care) and families where all children cease their care efforts remain blind spots. In addition, the analysis requires variation in parent care between children from the same family, targeting between-sibling differences in caregiving. Although this strategy allows us to gain insight into the intra-family distribution of caregiving, the fact that siblings often share parent care is neglected (e.g. families where all children provide parent care are omitted) (Tolkacheva, Broese van Groenou, & van Tilburg, 2014). Future research on long-term caregiving may therefore examine the complementarity of caregivers. Secondly, the dependent variable is insensitive to how parental care needs evolve as the measure is unrefined with respect to care intensity or types of care tasks. Thirdly, the analysis is restricted to a narrow window of longitudinal observation, limiting the detectable volatility in parent care. This also hinders the possibility of correcting for endogeneity by considering employment and geographic proximity before the onset of providing care. A substantial number of cases in longer care trajectories will only become observable when additional SHARE waves are released. A greater amount of available data would also enhance the feasibility of detailed country comparisons, shedding light on the role of the policy and cultural contexts in long-term parent care. For instance, the availability of formal care options, such as qualitative respite care, or flexible working hours for caregivers may facilitate the combination of work and caregiving over time. Or, for example, strong cultural norms in favor of intergenerational care may weaken adverse labor market outcomes of parent care as employers show more acceptance of work interruptions (Bolin et al., 2008). Finally, the SHARE data lack opportunities to test the role of well-documented normative and affective commitments in care provision over time. In this

respect, the current analysis suggests a promising avenue to further look into the gendered nature of long-term parent care.

This study shows the importance of approaching parent care from both a family and longitudinal perspective. Although most filial caregivers selected early in the parent care trajectory persist in caregiving, a substantial share of parents experience changes in the configuration of the care they receive from children. The family's constellation of parent-child distances is confirmed to be a steering mechanism in distributing care for parents. Children working less and/or encountering lower travel costs than their siblings are most prone to continue caregiving. These positions may also result from the initial decision to be involved in parent care. It is essential to assess further how the intra-family organization of intergenerational care evolves in the light of shrinking families, reducing the options to relinquish care, and progressing population aging.

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TABLES AND FIGURES

Table 1. Descriptive figures of the analytical sample

	(A) Analytical sample			(B) Not a caregiver at t-1 (% or x̄)			(C) Caregiver at t-1 (% or x̄)		
	%	M	Range	%	M	Range	%	M	Range
Child[a]									
Caregiver at t-1[c]	48.02		0-1						
= FT employed	55.92		0-1	58.28			53.36		
= PT employed	3.11		0-1	2.39			3.88		
= not employed	24.47		0-1	23.90			25.08		
Δ decreased employm.	8.64		0-1	7.80			9.55		
Δ increased employm.	7.04		0-1	6.37			7.76		
Employment is missing	0.83		0-1	1.25			0.37		
= working less	20.09		0-1	19.46			20.76		
= not working less	65.80		0-1	66.76			64.76		
Δ to working less	6.36		0-1	5.69			7.09		
Δ to not working less	6.92		0-1	6.83			7.02		
Rel. employment is missing	0.83		0-1	1.25			0.37		
= living at <1km	29.41		0-1	18.27			41.47		
= living at <25km	36.48		0-1	34.55			38.57		
= living at >=25km	20.68		0-1	31.47			9.00		
Δ decreased distance	2.54		0-1	2.90			2.16		
Δ increased distance	2.84		0-1	2.85			2.83		
Distance is missing	8.05		0-1	9.96			5.98		
= living closest	44.67		0-1	26.69			64.14		
= not living closest	42.60		0-1	58.17			25.75		
Δ to living closest	2.10		0-1	2.33			1.85		
Δ to not living closest	2.57		0-1	2.85			2.28		
Rel. distance is missing	8.05		0-1	9.96			5.98		
Age		51.89	18-77		52.13	18-77		51.62	18-75
Female[c]	52.81		0-1	43.26			63.15		
At least one sister[c]	75.38		0-1	83.72			66.36		
At least one brother[c]	70.65		0-1	71.49			69.75		
Partnered[c]	71.86		0-1	72.40			71.29		
Partner status is missing[c]	6.69		0-1	8.25			4.99		
Low education	26.60		0-1	28.46			24.58		
Middle education	46.33		0-1	43.26			49.66		
High education	19.85		0-1	19.18			20.58		
Education is missing	7.22		0-1	9.11			5.18		
Number of children		1.77	0-16		1.83	0-16		1.70	0-11
Parent[b]									
Age		79.44	49-99						
Female[c]	76.02		0-1						
Partnered[c]	26.59		0-1						
Low education	70.33		0-1						
Middle education	23.33		0-1						

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High education	5.92		0-1						
Education is missing	0.43		0-1						
Number of children		2.90	2-10						
Number iADL limitations		3.06	0-9						
Number ADL limitations		1.33	0-6						
Receiving formal care[c]	33.79		0-1						
Formal care is missing[c]	5.15		0-1						
Receiving informal care[c]	31.82		0-1						

[a] N = 3380
[b] N = 1166
[c] The mirroring category is omitted for dichotomous variables (+ missing category).
Source: SHARE Waves 1,2,5,6,7,8 - calculations by authors.

Table 2. Aggregate characteristics of selected countries in the sample

	A	B	C	D	E
Country	**% of parents receiv. care two consec. waves[a]**	**% of parents same care configura-tion between waves[b]**	**% of parents with single caregiver at t[b]**	**% of children providing cont'd care[b]**	**% of children starting care at t[b]**
The Czech Republic	6.97	51.83	60.73	75.35	30.00
Greece	6.62	77.60	77.60	86.08	12.42
Spain	3.75	44.14	56.76	72.46	28.57
Israel	3.56	42.86	64.29	66.28	18.97
Austria	3.54	53.95	64.47	78.10	21.24
Estonia	3.48	63.16	72.63	80.47	17.24
Italy	3.40	52.81	65.17	77.17	22.39
Belgium	3.38	56.90	66.38	79.52	14.50
Poland	2.67	53.85	73.08	71.43	18.75
Germany	2.55	64.56	77.22	75.89	10.94
France	2.24	61.43	77.14	75.28	14.08
Denmark	1.60	71.74	71.74	87.72	14.10
Slovenia	1.45	72.00	72.00	82.35	12.12
Switzerland	1.36	73.08	69.23	87.88	11.90
Sweden	1.14	62.86	82.86	78.57	14.81
Average	*3.23*	*58.58*	*68.35*	*77.63*	*18.84*

[a] Referring to the total sample of parents observed in two consecutive waves, N = 49965.
[b] Referring to the analytical sample of N = 3380 (1166 parents).
Source: SHARE Waves 1,2,5,6,7,8 - calculations by authors.

Table 3. Predicted probabilities of caregiving at t by previous caregiver status and time-changing relative employment, average marginal effects of relative employment and differences in the effect of previous caregiver status between not less working and other relative employment categories (Model 1)

		Non-care-giver at t-1 (NC)	**S.E.**	**Care-giver at t-1 (C)**	**S.E.**	**AME of employ-ment[a]**	**Con-trasts[b]**
1_r	= working less	0.127	0.028	0.816	0.027	$C2_r$, $C4_r$	0.131*
2_r	= not working less	0.139	0.019	0.697	0.017	$C1_r$	

3_r	Δ to working less	0.176	0.043	0.700	0.080		-0.033
4_r	Δ to not working less	0.154	0.039	0.688	0.030	$C1_r$	-0.024
5_r	Missing rel. employment	0.161	0.095	0.682	0.285	-	-

[a] Only significant ($p < 0.050$) average marginal effects of relative employment within the non-caregivers group (NC) and caregivers group (C) at t-1 are reported.
[b] The contrasts test whether the gap between non-caregiver and caregiver at t-1 differs between = not working less and the other relative employment categories, * $p < 0.050$.
N = 2964
Source: SHARE Waves 1,2,5,6,7,8 - calculations by authors.

Table 4. Predicted probabilities of caregiving at t by previous caregiver status and time-changing relative parent-child distance, average marginal effects of relative distance and differences in the effect of previous caregiver status between not living closest and other relative distance categories (Model 2)

		Non-care-giver at t-1 (NC)	**S.E.**	**Care-giver at t-1 (C)**	**S.E.**	**AME of employ-ment[a]**	**Con-trasts[b]**
6_r	= living closest	0.361	0.051	0.801	0.011	$NC7_r$, $NC9_r$ $C7_r$ $C9_r$	-0.097
7_r	= not living closest	0.075	0.009	0.613	0.031	$NC6_r$, $NC8_r$ $C6_r$, $C9_r$	
8_r	Δ to living closest	0.543	0.145	0.645	0.181	$NC7_r$, $NC9_r$ $C9_r$	-0.435
9_r	Δ to not living closest	0.058	0.045	0.236	0.134	$NC6_r$, $NC8_r$ $C6_r$, $C7_r$, $C8_r$	-0.359*
10_r	Missing rel. dist.	0.098	0.056	0.538	0.127	-	-

[a] Only significant ($p < 0.050$) average marginal effects of relative distance within the non-caregivers group (NC) and caregivers group (C) at t-1 are reported.
[b] The contrasts test whether the gap between non-caregiver and caregiver at t-1 differs between = not living closest and the other relative distance categories, * $p < 0.050$.
N = 2964
Source: SHARE Waves 1,2,5,6,7,8 - calculations by authors.

Figure 1. Sample selection flowchart

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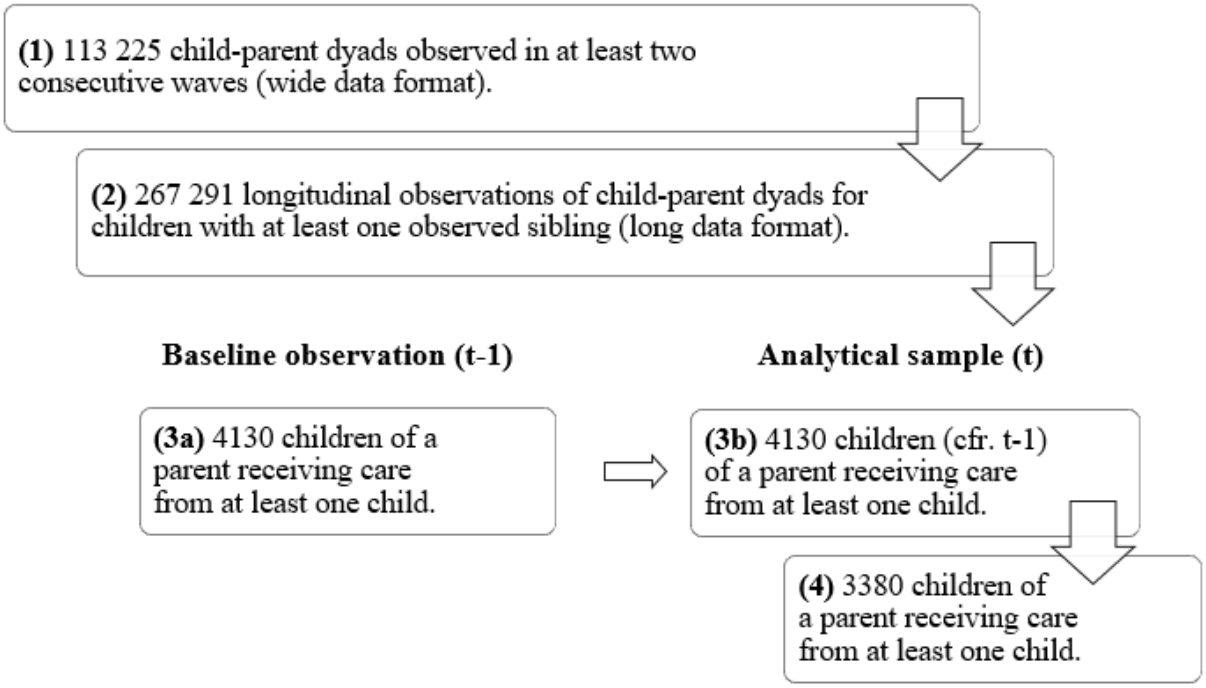
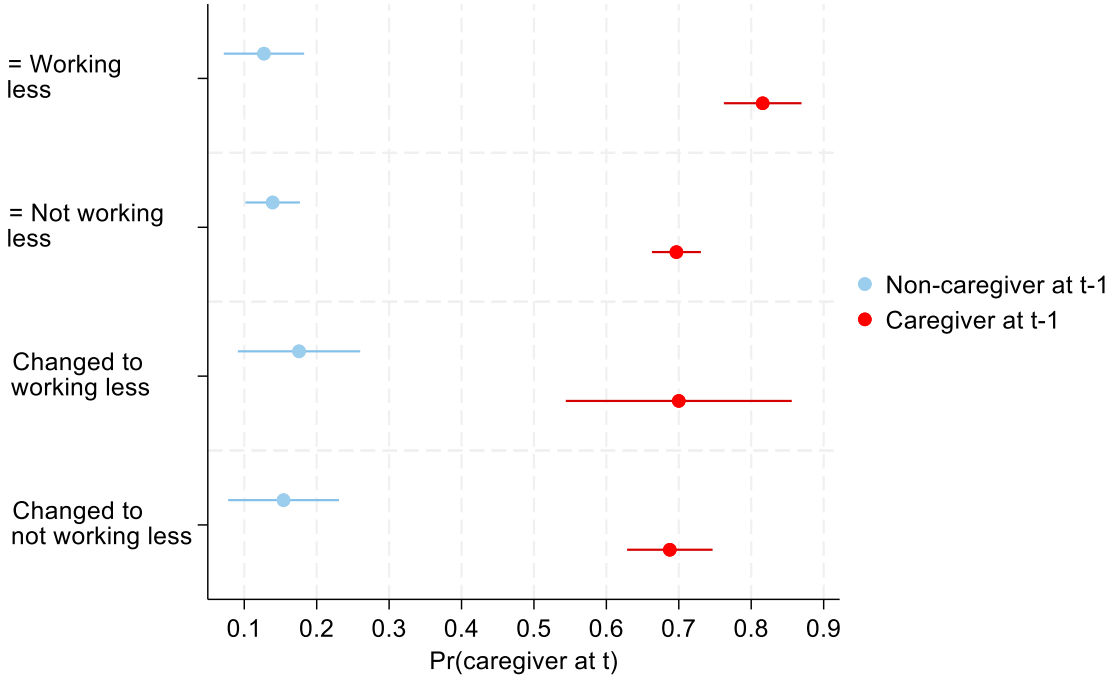


Figure 2. Predicted probabilities of caregiving at t by time-changing relative employment and previous caregiver status, with 95% confidence intervals



N = 2964
Source: SHARE Waves 1,2,5,6,7,8 - calculations by authors.

Figure 3. Predicted probabilities of caregiving at t by time-changing relative parent-child distance and previous caregiver status, with 95% confidence intervals

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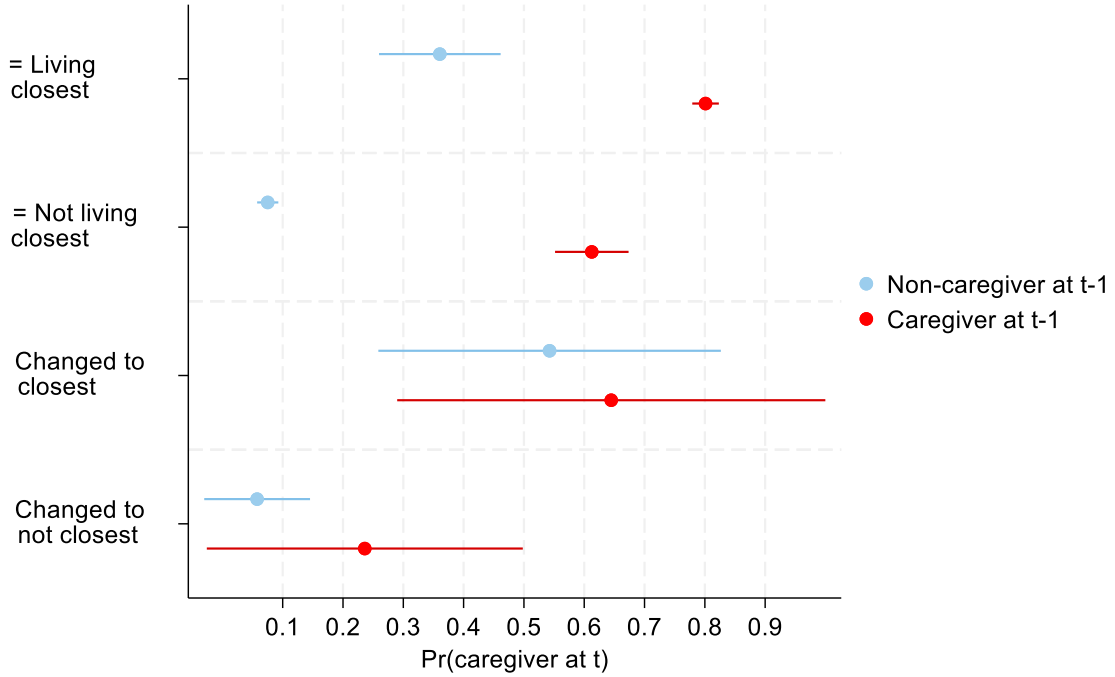

N = 2964
Source: SHARE Waves 1,2,5,6,7,8 - calculations by authors.

APPENDIX

Table A1. Parameters and significance levels of the fixed-effects logistic regression models for caregiving at t

	Model 1			**Model 2**	
	b	p		B	p
Caregiver at t-1	2.859	***	Caregiver at t-1	2.609	***
= not working less		*Ref.*	= living closest		*Ref.*
= working less	-0.133		= not living closest	-2.445	***
Δ to working less	0.355		Δ to living closest	0.968	
Δ to not working less	0.154		Δ to not living closest	-2.782	**
Miss. rel. employment	0.216		Missing rel. distance	-2.101	*
Interaction terms			*Interaction terms*		
x = working less	1.022		x = not living closest	1.228	**
x Δ to working less	-0.334		x Δ to living closest	-2.002	
x Δ to not work. less	0.213		x Δ to not living clo.	-0.598	
x Miss. rel. employm.	-0.313		x Missing rel. distance	0.473	
= living closest		*Ref.*	= not working less		*Ref.*
= not living closest	-1.803	***	= working less	0.336	
Δ to living closest	0.374		Δ to working less	0.165	
Δ to not living closest	-3.203	***	Δ to not working less	0.115	
Missing rel. distance	-1.907	*	Miss. rel. employment	0.456	
Aged <40	-0.415		Aged <40	-0.466	
Aged 40-49	0.071		Aged 40-49	0.076	
Aged 50-59		*Ref.*	Aged 50-59		*Ref.*
Aged 60+	0.221		Aged 60+	0.255	

Male		*Ref.*	Male		*Ref.*
Female	0.945	*	Female	0.927	*
Not at least one sister		*Ref.*	Not at least one sister		*Ref.*
At least one sister	-0.165		At least one sister	-0.182	
Not at least one brother		*Ref.*	Not at least one brother		*Ref.*
At least one brother	0.431		At least one brother	0.444	
Low education		*Ref.*	Low education		*Ref.*
Middle education	-0.010		Middle education	0.001	
High education	0.013		High education	0.026	
Missing education	1.026		Missing education	1.054	
Not partnered		*Ref.*	Not partnered		*Ref.*
Partnered	0.321		Partnered	0.345	
Missing partner status	1.359	*	Missing partner status	1.264	
Childless		*Ref.*	Childless		*Ref.*
1 child	0.286		1 child	0.248	
2 children	0.268		2 children	0.267	
3 children or more	-0.108		3 children or more	-0.114	
Missing num. children	-1.206		Missing num. children	-1.184	
Pseudo R²	0.444		*Pseudo R²*	0.447	

N = 2964; Ref.: reference category.
p < .05. **p < .01. ***p < .001.
Source: SHARE Waves 1,2,5,6,7,8 - calculations by authors.

Table A2. Predicted probabilities of caregiving at t by previous caregiver status and time-changing individual measures, average marginal effects of employment/distance and differences in the effect of previous caregiver status between full-time employment/living at >= 25km and other employment/distance categories

		Non-caregiver at t-1 (NC)	**S.E.**	**Caregiver at t-1 (C)**	**S.E.**	**AME of employment[a]**	**Contrasts[b]**
1_i	= full-time empl'd	0.133	0.021	0.697	0.019	$C3_i$	
2_i	= part-time empl'd	0.141	0.092	0.725	0.104		0.020
3_i	= not employed	0.136	0.022	0.791	0.039	$C1_i$	0.091
4_i	Δ decreased empl't	0.200	0.052	0.680	0.056		-0.084
5_i	Δ increased empl't	0.145	0.044	0.745	0.058		0.036
6_i	Missing empl't	0.178	0.133	0.658	0.255	-	-
7_i	= living at <1km	0.459	0.047	0.831	0.020	$NC8_i$, $NC9_i$, $NC11_i$ $C8_i$, $C9_i$, $C11_i$	-0.052
8_i	= living at <25km	0.181	0.030	0.680	0.039	$NC7_i$, $NC9_i$, $NC10_i$, $NC11_i$ $C7_i$, $C9_i$	0.075
9_i	= living at >=25km	0.039	0.007	0.463	0.068	$NC7_i$, $NC8_i$, $NC10_i$ $C7_i$, $C8_i$, $C10_i$	
10_i	Δ decreased dist.	0.386	0.089	0.809	0.065	$NC8_i$, $NC9_i$, $NC11_i$ $C9_i$, $C11_i$	-0.002
11_i	Δ increased dist.	0.049	0.042	0.474	0.118	$NC7_i$, $NC8_i$, $NC10_i$ $C7_i$, $C10_i$	0.001
12_i	Missing distance	0.110	0.057	0.544	0.120	-	-

[a] Only significant (p < 0.050) average marginal effects of employment within the non-caregivers group (NC) and caregivers group (C) at t-1 are reported.

[b] The contrasts test whether the gap between non-caregiver and caregiver at t-1 differs between = full-time employment/living at >= 25km and the other individual employment/distance categories, * p < 0.050.
N = 2964
Source: SHARE Waves 1,2,5,6,7,8 - calculations by authors.

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