

Full-time vs. part-time employment: Does it influence frequency of grandparental childcare?

Abstract

The impact of grandparents' employment on grandparental childcare has been examined repeatedly, but the findings have so far been inconsistent. We contend that these inconsistencies may have resulted from variations in model specification and crude measurement of employment status. Furthermore, we assert that earlier research overlooked gender differences in the ability to combine paid employment and caregiving as well as variations between maternal and paternal grandparents. We also question the causal interpretation of earlier findings that were based on cross-sectional data. We revisit the issue of the impact of the intensity of employment and analyze SHARE data from 19 countries. We find a significant positive association between part-time employment (as compared to full-time employment) and the frequency of grandparental childcare in a cross-sectional sample, but only among paternal grandmothers. Capitalizing on the panel component of SHARE, we use a within-person estimator to show that this association is unlikely to reflect a causal effect of the intensity of labor market attachment on the frequency of the care of grandchildren, but more probably results from omitted variable bias. We argue that grandparents most likely to provide (intensive) childcare are also most likely to adjust their employment in anticipation of caregiving. The paper documents the usefulness of role strain theory among grandparents and highlights that part-time jobs may reduce role conflict and may thus make grandparenting a more easily manageable experience.

Keywords: Grandparents · Childcare · Part-time employment · Intergenerational Solidarity

Word count: 4,993

Introduction: Employment and intergenerational childcare in older age

Intergenerational transfers are gaining importance as a consequence of two population developments. First, growing longevity results in more years of shared lives between grandparents and grandchildren (Bengtson 2001). Second, increasingly fragile intragenerational bonds – mirrored, for instance, in rising divorce rates – emphasize the significance of intergenerational relations, as people more often turn to other generations within the family for help. Grandparent involvement with (grand)children is an important form of intergenerational transfer. It facilitates – among other things – parental participation in the labor force (Gray 2005; Hank and Buber 2009; Lee and Bauer 2010; Yong 2008) and also seems to increase parents' odds of having an (additional) offspring (Aasve et al. 2012).

We argue that the growing policy emphasis on increasing employment among older people (Walker and Maltby 2012) can bring about – as an unintended consequence – tensions between employment and grandparental childcare (Geurts et al. 2014; Meyer 2012). Combining caregiving and employment roles – and thus being in a situation of role conflict (Goode 1960) – may even increase stress levels and worsen mental health (e.g. Glynn et al. 2009; Oprea and Kalmijn 2012; Payne and Doyal 2010). We suggest, however, that not all forms of employment may have the same impact on childcare provision. Most importantly, we argue, part-time employment should not represent a significant barrier to intergenerational caregiving. We examine this claim empirically to see if the continued involvement of older individuals in economic activity can be compatible with intensive and frequent provision of grandparental childcare.

Employment and grandparental childcare

There is significant potential for conflict between the roles of paid worker and caregiver, since both of these roles require a great deal of time and energy (Luo et al. 2012). This article focuses exclusively on grandparental childcare, although grandparents may also provide other types of both inter- and intragenerational help. While the role conflict argument is substantively and theoretically appealing, empirical evidence concerning the tension between grandparental employment and the provision of grandparental childcare is somewhat ambiguous. For instance, most researchers report that the net association between employment and grandparental childcare is negative (Aasve et al. 2012; Hank and Buber 2009; Lee and Bauer 2010; Luo et al. 2012). Silverstein and Marengo (2001), however, found no significant effect of employment on grandparental childcare.

Earlier research relied on somewhat oversimplified measures of employment status and typically distinguished only two categories of labor force attachment: for instance, employed/not employed (Baydar and Brooks-Gunn 1998; Guzman 2004; Igel and Szydlik 2011; Wang and Marcotte 2007) or working/not working (Aasve et al. 2012; Hank and Buber 2009; Lee and Bauer 2010; Uhlenberg and Hammill 1998). The most detailed measurement involved three categories: working full-time, working part-time, and not working (Luo et al. 2012; Silverstein and Marengo 2001). Danielsbacka and Tanskanen (2012) elaborated the comparisons of employment status in a British sample and found that grandparents working part-time generally provide care more often than grandparents working full-time, at a level similar to that of grandparents who do not work at all. We believe that an even more refined measure would illuminate in more detail how levels of labor market attachment associate with the provision and intensity of grandparental care. Toward that end, we maintain the distinction between full-time and part-time employment, since the latter offers both the

possibility of gainful employment and availability for caregiving. Moreover, we propose to differentiate various categories of non-working individuals. For instance, being out of the labor force may allow grandparents to provide care with high intensity, while being unemployed does not necessarily allow grandparents the time and energy to babysit their grandchildren.

Variations in grandparental childcare by gender and kinship

Grandmothers generally provide childcare more often than grandfathers. Point estimates of the frequency of care vary somewhat between studies, but the gender gap is found consistently. For instance, Guzman (2004) reports that 52 % of U.S. grandmothers and 38 % of U.S. grandfathers provide some childcare, whereas Hank and Buber (2009), analyzing data from 10 European countries, report that 58 % and 49 % of grandmothers and grandfathers care for grandchildren, respectively. Furthermore, grandfathers tend to provide childcare less often without their spouse (Uhlenberg and Hammill 1998) and are less often engaged in intensive care (Hank and Buber 2009).

The effects of employment may vary significantly between women and men, but the exact nature of the gender difference is ambivalent. On the one hand, it is argued that women are more capable of combining paid work with childcare. Craig and Mullan (2011: 835) maintain that mothers are able to maintain higher levels of “childcare time by cutting back on their own leisure, personal care, and sleep”, while fathers are less able/willing to manage multiple roles. This gender difference seems to be deeply rooted in the history of economic structures, gender-specific roles, and attitudes toward the gendered division of labor, all of which have led contemporary women to combine various roles, such as employee and caregiver, more often (see e.g. Haller and Hoellinger 1994). Hence, they are likely to have – by the time they become grandmothers – the skills necessary to perform and effectively

manage their multiple social roles. On the other hand, another stream of literature suggests that employment may be more strongly related to grandparental childcare among grandmothers than among grandfathers since grandmothers tend to provide more intensive care and thus there is higher potential for role conflict (see e.g. Van Bavel and De Winter 2013). Empirical evidence seems to favor the former argument. While Hank and Buber (2009) showed that employed grandparents were less likely to provide regular childcare than non-employed grandparents, the prohibitive effect of employment was stronger among grandfathers than among grandmothers.

The effect of employment status on grandparental childcare may also vary by kinship link, and we may get an incomplete – or outright biased – picture if these variations are not modeled properly. Some authors argue that the role conflict may be greater among maternal grandparents, because they usually provide care more often due to the matrilineal effect (Danielsbacka and Tanskanen 2012). Because it is more challenging to combine employment with the more intensive childcare provided by maternal grandparents (typically grandmothers), the effect of employment (and thus the salience of the role conflict) may be strongest among maternal grandparents and maternal grandmothers in particular. On the other hand, we may argue that the negative effect of employment on grandparental childcare would be reduced among maternal grandparents, since strong normative pressures to provide care for their daughter's children would make them sacrifice their own leisure and sleep in order to play the grandparental role according to expectations.

Is the association between intensity of employment and care spurious?

One major limitation of existing research is the cross-sectional nature of the data. As a consequence, causality between employment and care is difficult to establish. Both grandparental childcare and employment may be jointly determined by a third variable, such

as the level of family cohesion or normative solidarity (Igel and Szydlik 2011), i.e. a commitment to meet familial obligations (Bengtson and Roberts 1991). For instance, Van Bavel and De Winter (2013) show that some women retire in anticipation of becoming grandmothers. Similar considerations shed doubt on the causal interpretations of findings from cross-sectional data.

This paper investigates the association between the intensity of labor market attachment and the frequency of grandparental childcare. We argue that part-time employment (in contrast to full-time employment) is associated with a higher frequency of care. We also suggest that the size of this association varies by grandparental gender and kinship link, being probably stronger among grandfathers and among paternal grandparents. Finally, we utilize a within-person estimator applied to panel data to examine if we can attribute a causal interpretation to the association found in a cross-sectional sample.

Data, variables, methods, and the modeling strategy

Data

We use data from the Survey of Health, Ageing and Retirement in Europe (SHARE). This is a cross-nationally coordinated data collection based on repeated interviews with probability samples of the 50+ population in each participating country. Overall, 19 (mostly European) countries have participated in at least one wave of SHARE so far. We use the database in two complementary analyses: one uses cross-sectional data taken from the first data collection in each of the 19 countries and the other relies on the longitudinal dimension of SHARE thus limiting the number of available countries to 13. A list of countries with selected survey characteristics is presented in Table 1.

<Table 1 about here>

Our analysis focuses on dyads consisting of “family respondents” and all their children (and, by extension, the children of those children). The “family respondent” is defined as the member of the household who answered questions about children, grandchildren, and grandparental care. Some of the variables measured in the survey are characteristics of the respondents (such as sex, age, education level, employment status, health, marital status, number of children, and number of grandchildren), other variables refer to the children (their employment and marital status and the age of the youngest child of child in the set, all of which are reported by the family respondents), and yet other variables describe the relationships between the respondents and their children (e.g. geographical distance). The respondents were asked about all their children. Further, they were asked if they provided care (and if so, how often) for the children of each individual child (when the child has multiple children – that is, grandchildren of the respondent – levels of care for each individual child were not differentiated).

The analysis is based on a sub-sample of all “family respondents”. We chose all “family respondents” aged 50+ who had at least one grandchild under the age of 16 at the time of the interview; while different papers use a different cutoff age, the current practice is to use age 16 (see Hank and Buber 2009). Childless children of the chosen respondents were excluded from the sample. After deleting cases with missing responses, we obtained a cross-sectional sample of 16,636 grandparents (level-2 observations in the parlance of multi-level analysis) and 25,903 children (level-1 observations).

The panel sample consists of 6,910 repeatedly-interviewed grandparents and 10,058 children with a total of 22,576 repeated measurements of caregiving (and of other variables). The panel sample consists of all respondents – including refreshers from later waves – that participated in at least two waves of data collection, i.e. the panel sample may contain respondents that were not part of the cross-sectional sample. Identical grandparent selection criteria were applied for each wave (e.g. the same cutoff age was applied to the youngest grandchild in order for the grandparent to be included in a given wave). Most variables are time-varying in nature – including the provision and frequency of childcare – and were updated at each interview. These repeated measurements are nested within children and constitute a third level of clustering present in the data.

<Table 2 about here>

Table 2 presents the descriptive statistics of our cross-sectional sample. On average, there are 2.71 children per grandparent; the minimum is (by definition of our sample) 1 and the maximum is 7. We see that 52 % of respondents in our sample never provide care for grandchildren, with 45 % of maternal grandmothers, 53 % of maternal grandfathers, 56 % of paternal grandmothers, and 63 % of paternal grandfathers never providing care. Slightly over 13 % of maternal grandmothers provide care almost daily, while only 9 % of maternal grandfathers, 8 % of paternal grandmothers, and 6 % of paternal grandfathers do so (Table 2). Note that the kinship link is derived from the sex of the child, and thus a respondent (grandparent) that has children of both sexes may appear twice in Table 2 – once as a paternal

grandparent (when reporting on care provided to the children of a son), and once as a maternal grandparent (when reporting on care provided to the children of a daughter).

The data structure of the cross-sectional sample suggests that some of the standard assumptions of regression analysis – such as independent observations – are not upheld here: several children of the same respondent (grandparent) are unlikely to be independent. Hence, the analysis must take these interdependencies into account; we do so by the use of hierarchical linear models (HLM) with two levels. Country may be viewed as another level of clustering present in the data, which would suggest that a three-level model should be used. However, we decided to incorporate country as a set of fixed effects (binary indicators) into the cross-sectional analysis, since we had only a relatively small number of countries and the assumption of the random selection of countries was not supported by the study design. We have checked for consistency of results across individual countries. The fixed-effect model described below also controls for country characteristics.

We use random-intercept ordinal logistic regression models to analyze the cross-sectional sample; the effect of employment status is shown for the overall sample as well as for four sub-samples defined by the sex and kinship link of the grandparent, thus differentiating maternal and paternal grandmothers and grandfathers. We also use a within-person estimator (fixed-effect model) to account for the potential bias stemming from unobserved grandparent-level covariates. The fixed-effect model is estimated on the panel data.

Dependent variable

The intensity of grandparental childcare – our dependent variable – was measured using two questions: “From which of your children [is/are] [the grandchild/the grandchildren] you have looked after?” and – if respondents indicated that they had provided care – “On average, how

often did you look after the child(ren) of [{child name}] in the last twelve months? Was it... 1. Almost daily, 2. Almost every week, 3. Almost every month, 4. Less often”. This latter question was asked only of respondents who had looked after their grandchild(ren) without the presence of the parents during the last twelve months. By combining responses to both questions, we obtained an ordinal variable with five response options (almost daily/almost every week/almost every month/less often/never; the order of the response categories was reversed before analysis).

Main explanatory variable

Our key explanatory variable – labor-market involvement – consisted of four categories instead of the most common two (working vs. not working). We divide the category “not working” into two parts: “out of the labor force” and “unemployed”, because these two groups face different barriers to caregiving. In particular, unemployed individuals are likely to be preoccupied with their job search, and hence to be much less likely to be available for caregiving. We also divide “working” grandparents into two categories: “working full-time” and “working part-time”. The distinction between “full-time” and “part-time” is based on the reported number of hours worked per week: any respondent working less than 35 hours per week is classified as working part-time (this is the most common definition across countries and industries; see Information Sheet No. WT-4, 2004).

Table 2 shows that most of the SHARE respondents in our cross-sectional sample, a total of 74 %, were out of the labor force (the percentage varies between 71 and 78 % depending on the grandparent’s gender and kinship link). Around 4 % were unemployed at the time of the interview, 16 % were employed full-time, and 6 % worked as part-time employees.

Control variables

We utilize the following continuous control variables in our models: age and age squared (of the grandparent), number of children, and number of grandchildren (also measured at the level of grandparents). All continuous variables were centered on their means to render the intercepts more readily interpretable. We also control for the following categorical variables: grandparent's marital status (married, divorced, widowed, never married; we also worked with an alternative measure of union status that distinguished cohabitators to test the sensitivity of the results, but the substantive findings were unaffected and are not reported here), grandparent's subjective health status (very good, good, bad), and grandparent's education measured on the ISCED scale differentiating the three substantively most meaningful categories (categories 0-1, 2-4, and 5-6 on the original scale; for a detailed justification of this particular categorization of education see the International Standard Classification of Occupations 2012). Geographical distance between the grandparent's residence and child's residence (in the same house or household, up to 5 km, between 5 and 100 km, more than 100 km) is specified for each child (level-1 observation). We also tracked level-1 characteristics: the marital status of the child (married, never married, divorced/widowed; these last two categories were merged because there were too few widowed children), labor force participation of the child (full-time job, part-time job, unemployed; the measurement of a child's employment status in the survey was not as detailed as for grandparents), and, finally, the age of the youngest grandchild in the set (0-3, 4-8, 9-15; the age of the youngest child is typically categorized in the literature in order to capture its potentially non-linear effect; see e.g. Silverstein and Marengo 2001; Hank and Buber 2009; Igel and Szydlik 2011).

Results

Modeling the frequency of grandparental childcare in a cross-sectional sample

Model 1 in Table 3 shows that part-time employment is associated with a higher frequency of grandparental childcare than full-time employment, net of the other variables in the model. The ordered log-odds of being in a higher category of care frequency increase by 0.247 when working part-time rather than full-time ($p=0.002$). Thus, part-time labor force participation seems to open up the opportunity for grandparents to combine economic roles with grandparental childcare. Indeed, there seems to be little difference in the frequency of grandparental childcare between part-time employed and out-of-the-labor-force grandparents. Consistent with our expectations, unemployed grandparents provide grandparental childcare almost as frequently as full-time employed grandparents. Apparently, unemployment is as demanding as full-time employment and does not allow grandparents to spend more time with their grandchildren.

<Table 3 about here>

Other effects in Model 1 (see Table 3) are not surprising and reflect what is known from the literature. We see that, everything else being equal, the frequency of care seems to increase with the age of the grandparent, but this effect is non-linear and the trend is reversed at higher ages. The frequency of caregiving, quite understandably, decreases with the increasing age of grandchildren. Grandmothers provide care more frequently than grandfathers. The frequency of care seems to increase with the grandparent's educational level. Both the number of children and the number of grandchildren seem to reduce the

frequency of care for the children of each individual child. Married grandparents provide care more frequently than divorced, widowed, or never-married grandparents. When the child is female, grandparents provide care more frequently than when the child is male.

We also estimate a separate model for each of the four sub-populations defined by grandparent's gender and kinship link to the grandchild (differentiating maternal and paternal grandparents). We present these models in Table 3 (Models 2-5). Correlates of the intensity of grandparental childcare clearly differ across these four groups. First, we see that part-time employment (in comparison to full-time employment) is rather strongly associated with a higher frequency of grandparental childcare among paternal grandmothers, but not among maternal grandmothers, the two respective coefficients being 0.395 and 0.046 (see Table 3; the respective p-values are 0.006 and 0.714). Among both paternal and maternal grandfathers, on the other hand, part-time employment seems to increase the frequency of care, but neither of these two coefficients is statistically significantly different from 0 at the 0.1 level (the p-values being 0.177 and 0.144, among paternal and maternal grandfathers, respectively). Other effects in Table 3 are fairly consistent across subpopulations with the exception of the effect of marital status of the grandparent and of the child. Marital status seems to correlate with grandparental childcare much more strongly among grandfathers than among grandmothers. The marital status of the child also shows some association with grandparental childcare: maternal grandparents of divorced, widowed, or never-married children consistently report a higher frequency of care than the maternal grandparents of married children (the effect of a child's marital status may reflect various levels of the institutionalization of marriage and other partnership situations, see e.g. Cherlin 1978; Nock 1995).

Fixed-effect model

We capitalize on the panel component of SHARE to address the possibility of a spurious association between employment and care. Repeated interviews with the same respondents enable the use of within-subject estimator techniques, such as fixed-effect regressions. These methods control for the additive effects of all measured and unmeasured characteristics of the subjects from whom the repeated measurements were taken (see e.g. Allison 1999: 188). Since normative intergenerational solidarity is likely to be highly stable in grandparents, these statistical techniques control for its effect on grandparental childcare provision, even though no direct measure of grandparental commitment is present in the data set. Fixed-effect methods have several drawbacks, such as reduced sample size and lower efficiency of estimates (Allison 1999), which prevent them from becoming default techniques for analyzing panel data. Hence, we offer them as an important complement to the analyses presented above to check if the associations observed in the cross-sectional sample support a causal interpretation.

<Table about 4 here>

The estimated parameters of the fixed-effect regression of the frequency of care are presented in Table 4 and we clearly see that these estimates differ from those based on the random-intercept models. Most importantly, the fixed-effect specification suggests that part-time employment does not increase the frequency of grandparental childcare (the respective coefficient is 0.004; see Table 4). The difference between full-time employment and part-time employment is not significant in any of four sub-samples defined by the sex and kinship

link of the grandparent and the results are substantially the same, hence we do not present results for these sub-samples. Once all grandparental characteristics are accounted for, the intensity of labor force attachment no longer affects the frequency of grandparental childcare. Hence, it appears that the choice between full-time and part-time work is influenced by unmeasured characteristics of the family (such as family cohesion and normative solidarity) that also impact the frequency of grandparental childcare. Thus, the association observed in the cross-sectional sample was not confirmed.

Whereas being out of the labor force seems to increase the frequency of grandparental childcare both in the random-intercept and the fixed-effect model, unemployment effects differ across these two model specifications. The random-intercept model indicated no effect of unemployment, but the fixed-effect model suggests that unemployment increases the frequency of care (see Table 4): grandparents seem to spend more time taking care for their grandchildren after they become unemployed and this change may be causally attributed to job loss.

Some other parameters of the fixed-effect regression model differ from those of the random-intercept models presented in Table 3. For instance, the fixed-effect model suggests a positive effect of the number of grandchildren on frequency of care, thus indicating that when a new grandchild is born (to any child), grandparents tend to increase the frequency of their childcare of any of their grandchild set. The fixed-effect model fails to identify any effect of grandparent's health and marital status on caregiving.

Conclusion and discussion

This study investigated the effect of grandparent's employment on the provision of grandparental childcare and on its dynamics over time using data from the Survey of Health,

Ageing and Retirement in Europe. While this topic is quite frequently researched, previous analyses have led to inconsistent results. We argue that these inconsistencies may have resulted from model misspecification (e.g. interactions with gender and kinship links were omitted from previous models) and from inadequate measurement of grandparental employment status. Furthermore, while many authors tended to interpret associations observed in cross-sectional data as causal, we asserted that these associations may be spurious. Thus, we also employed within-person estimators applied to panel data to see if the observed employment status effects may be interpreted causally.

First, we find that *the strength of labor market attachment relates to the intensity of grandparental childcare strongly* and consistently with the theory of role conflict (Goode 1960), at least in the cross-sectional sample. Part-time employed grandparents report significantly higher frequencies of childcare than grandparents with full-time jobs. Indeed their reported levels of grandparental childcare are almost identical to those reported by out-of-the-labor force grandparents. It appears that part-time jobs open up the possibility for grandparents to provide intensive childcare without entirely leaving the labor market and thus they may represent an answer to some of the dilemmas that active aging policies imply. Interestingly, unemployed grandparents report the same levels of childcare as full-time employed grandparents, which is also consistent with the role conflict theory as job searching may be very time consuming and may thus prevent grandparents from more frequent interaction with grandchildren. Overall, as a theoretical contribution, this paper indicates that the role conflict (or role strain, see Goode 1960) perspective may be utilized to describe the situation of working grandparents.

Second, we showed that the *role conflict* (between employment and grandparenthood) *varies by grandparent's gender and kinship link*. Grandparental childcare provided by

grandfathers is only weakly (and insignificantly) limited by employment status, be it full-time or part-time. Among paternal grandmothers, full-time employment represents a significant barrier to frequent caregiving, but part-time employment raises the frequency of caregiving by a large margin to a level comparable with that of non-employed grandmothers.

Grandparental childcare among maternal grandmothers, on the other hand, is limited to the same degree by both part-time and full-time employment. The gendered nature of the employment effects has two implications:

1. If a labor-market policy is established to promote part-time employment in order to reduce the tension between work and grandparental caregiving, it should focus on occupations and industries with a higher share of female workers and/or with a high potential to employ women part-time. Only then would it reduce the work-care conflicts (and related reduced well-being, see e.g. Glynn et al. 2009; Payne and Doyal 2010; Oprea and Kalmijn 2012) resulting from prolonged careers, at least for some grandmothers.

2. Maternal grandmothers seem to provide care regardless of the intensity of their labor market attachment. This is likely to indicate that they are under the strongest normative pressure to play the role of the (maternal) grandmother and to limit their own leisure in order to comply with the requirements of their role. Indeed, maternal grandmothers provide childcare most frequently.

Cross-sectional data do not provide conclusive evidence that labor-market involvement has a *causal* effect on intergenerational caregiving. It is quite plausible that some grandparents adjust their labor market status in anticipation of caregiving. For instance, a family-oriented senior may reduce her working hours or even retire to be a more flexible caregiver (Van Bavel and De Winter 2013). In this case, her greater involvement in the care of her grandchildren would not be the result of her more flexible work schedule, but rather of

her family orientation. We used the panel component of SHARE (in selected countries) and a within-person fixed-effect model to reduce the risk of model misspecification due to unmeasured variables such as family cohesion and/or the commitment to family values and norms of intensive intergenerational bonds.

A comparison of the fixed-effect and random-effect models sheds doubt on the causal interpretation of most (but not all) of the employment status effects. Most importantly, part-time employment did not result in more intensive childcare in comparison to full-time employment. The fixed-effect model suggests that important control variables were omitted from the random-effect models, thus highlighting the importance of value profiles and family cohesion, which may jointly influence both employment and caregiving patterns among grandparents.

We nevertheless maintain that active aging policies should be concerned with part-time employment opportunities. Clearly, the availability of more part-time job opportunities in the economy and smoother transitions from full-time to part-time jobs would not *make* grandparents care for their grandchildren more often. These structural conditions may, however, make grandparental childcare – if grandparents decide to provide it to their grandchildren – a less stressful and more easily manageable experience (see e.g. Morrow-Howell et al. 2005; but see also Hansen and Slagsvold 2014). This may apply most strongly in societies in which intense grandparenting is expected as a result of strong familialistic norms and yet in which only limited numbers of part-time jobs exist.

We want highlight two possible limitations of our investigation. First, data collection of the cross-sectional sample spans over 7 years in individual countries. It is not easy to refute – both theoretically and empirically – possible impact of period effects on our findings. Most importantly, some data were collected before the onset of the Great recession, while

other countries joined SHARE during the crisis. It is conceivable that the macro-economic downturn might have changed people's responses to caregiving needs in the family. For instance, part-time jobs may be less easily available upon employer's request and thus changing employment intensity in anticipation of caregiving may not be feasible. Moreover, grandmothers may be less willing to reduce their working hours since their wage may be perceived as a more valuable contribution to the household budget vis-à-vis increased employment insecurity. Furthermore, the impact of the Great recession may vary across countries depending, for instance, on unemployment levels, GDP growth, and welfare system. Therefore, an empirical assessment of these potential period effects with SHARE data would face various problems related to the number of degrees of freedom available for the analysis. In fact, it might require an altogether different research design or a much larger sample of countries. These difficulties notwithstanding, we included a dummy for Great recession into our models reported in Table 3 as a basic check for period effects and found that the estimated parameters of the intensity of employment change very little.

Second, cross-sectional analysis uses a different (and also larger) sample of countries and individuals. Different samples do not, however, explain the difference between the random-coefficient and fixed-effect models. We conducted several sensitivity analyses, which confirmed that the difference between the cross-sectional and panel analyses is maintained even if we estimate all random-intercept models on the sample of the 13 countries, for which also the panel data are available. Thus, we are confident that our results indeed reflect behavioral patterns rather than differences in sample definitions.

Acknowledgment

This paper uses data from SHARE wave 4 release 1.1.1, as of March 28th 2013 and SHARE wave 1 and 2 release 2.5.0, as of May 11th 2011. The SHARE data collection has been primarily funded by the European Commission through the 5th Framework Programme (project QLK6-CT-2001-00360 in the thematic programme Quality of Life), through the 6th Framework Programme (projects SHARE-I3, RII-CT-2006-062193, COMPARE, CIT5-CT-2005-028857, and SHARELIFE, CIT4-CT-2006-028812) and through the 7th Framework Programme (SHARE-PREP, N° 211909, SHARE-LEAP, N° 227822 and SHARE M4, N° 261982). Additional funding from the U.S. National Institute on Aging (U01 AG09740-13S2, P01 AG005842, P01 AG08291, P30 AG12815, R21 AG025169, Y1-AG-4553-01, IAG BSR06-11 and OGHA 04-064) and the German Ministry of Education and Research as well as from various national sources is gratefully acknowledged (see www.share-project.org for a full list of funding institutions).

This research received financial support from the Czech Science Foundation (grant num. 13-34958S).

References

- Aasve A, Meroni E, Pronzato Ch (2012) Grandparenting and childbearing in the extended family. *Eur J Popul* 28(4): 499-518
- Allison PD (1999) Logistic regression using SAS: theory and application. SAS Institute, Cary
- Baydar N, Brooks-Gunn J (1998) Profiles of grandmothers who help care for their grandchildren in the United States. *Fam Relat* 47(4): 385-393
- Bengtson VL (2001) Beyond the nuclear family: the increasing importance of multigenerational bonds. *J Marriage Fam* 63(1): 1-16
- Bengtson VL, Roberts REL (1991) Intergenerational solidarity in aging families: an example of formal theory construction. *J Marriage Fam* 53(4): 856-870
- Cherlin A (1978) remarriage as an incomplete institution. *Am J Soc* 84(3): 634-650
- Craig L, Mullan K (2011) How mothers and fathers share childcare: a cross-national time-use comparison. *Am Sociol Rev* 76(6): 834-861
- Danielsbacka M, Tanskanen AO (2012) Adolescent grandchildren's perception of grandparents' involvement in UK: an interpretation from life course and evolutionary theory perspective. *Eur J Ageing* 9(4): 329-341
- Geurts T, Van Tilburg T, Poortman AR, Dykstra PA (2014) Child care by grandparents: changes between 1992 and 2006. *Ageing Soc*. doi: 10.1017/S0144686X14000270
- Glynn K, Maclean H, Forte T, Cohen M (2009) The association between role overload and women's health. *J Women's Health* 18(2): 217-223
- Goode WJ (1960) A theory of role strain. *Am Sociol Rev* 25(4): 483-496
- Gray A (2005) The changing availability of grandparents as carers and its implications for childcare policy in the UK. *J Soc Policy* 34(4): 557-577
- Guzman L (2004) Grandma and grandpa taking care of the kids: patterns of involvement. *Child Trend Res Brief* 2004: 1-9
- Haller M, Hoellinger F (1994) Female employment and the change of gender roles: the conflictual relationship between participation and attitudes in international comparison. *Int Soc* 9(1): 87-112
- Hank K, Buber I (2009) Grandparents caring for their grandchildren: findings from the 2004 Survey of Health, Ageing, and Retirement in Europe. *J Fam Issues* 30(1): 53-73
- Hansen T, Slagsvold, B (2014) Feeling the squeeze? The effects of combining work and informal caregiving on psychological well-being. *Eur J Ageing*. doi: 10.1007/s10433-014-0315-y
- Igel C, Szydlik M (2011) Grandchild care and welfare state arrangements in Europe. *J Eur Soc Policy* 21(3): 210-224
- Information Sheet No. WT-4 (2004) International Labour Office, Geneva.
http://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---travail/documents/publication/wcms_170717.pdf. Accessed 7 November 2013
- International Standard Classification of Occupations (2012) International Labor Office, Geneva

- Lee J, Bauer JW (2010) Profiles of grandmothers providing child care to their grandchildren in South Korea. *J Com Fam Stud* 41(3): 455-475
- Luo Y, LaPierre TA, Hughes ME, Waite LJ (2012) Grandparents providing care to grandchildren: a population-based study of continuity and change. *J Fam Issues* 33(9): 1143-1167
- Meyer MH (2012) Grandmothers juggling work and grandchildren in the United States. In Timonen V, Arber S (eds) *Contemporary grandparenting: changing family relationships in global context*. Policy Press, Bristol, pp 71-90
- Morrow-Howell N, Tang F, Kim J, Lee M, Sherraden M (2005) Maximizing the productive engagement of older adults. In Wykle ML, Whitehouse PJ, Morris, DL (eds) *Successful aging through the life span: intergenerational issues in health*. Springer Publishing Company, New York, pp 19-54
- Nock SL (1995) A comparison of marriages and cohabiting relationships. *J Fam Issues* 16(1): 53-76
- Oprea SJ, Kalmijn M (2012) Exploring causal effects of combining work and intergenerational support on depressive symptoms among middle-aged women. *Ageing Soc* 32(1): 130-146
- Payne S, Doyal L (2010) Older women, work, and health. *Occup Med* 60(3): 172-177
- Silverstein M, Marenco A (2001) How Americans enact the grandparent role across the family life course. *J Fam Issues* 22(4): 493-522
- Uhlenberg P, Hammill BG (1998) Frequency of grandparent contact with grandchild sets: six factors that make a difference. *Gerontol* 38(3): 276-285
- Van Bavel J, De Winter T (2013) Becoming grandparent and early retirement in Europe. *Eur Sociol Rev* 29(6): 1295-1308
- Wang Y, Marcotte DE (2007) Golden years? The labor market effects of caring for grandchildren. *J Marriage Fam* 69(5): 1283-1296
- Yong F (2008) Population aging, structural factors, and types of grandparenting: new form of the division of labor? *Conference Papers – American Sociological Association*: 1-20

Table 1: Sizes of the cross-sectional and panel samples by country. Respondents aged 50+ with at least one grandchild under age 16.

	Cross-sectional sample			Panel sample		
	Sample size	% response rate	Year of the data collection	Sample size	Number of waves	Last data collection
Austria	620	58.1	2004	350	3	2011
Germany	823	63.4	2004	441	3	2011/12
Sweden	1,152	50.2	2004	828	3	2011/12
Netherlands	937	61.3	2004	665	3	2011
Spain	788	53.3	2004	415	3	2011
Italy	771	55.1	2004	614	3	2011
France	956	73.6	2004/05	743	3	2011
Denmark	579	63.2	2004	620	3	2011
Greece	649	61.4	2004/05	410	2	2006/07
Switzerland	250	37.6	2004	278	3	2011
Belgium	1,224	39.2	2004/05	859	3	2011
Israel	945	60.1	2005/06		1	
Czech Republic	869		2006/07	304	2	2010/11
Poland	971		2006/07	383	2	2011/12
Ireland	359		2007		1	
Hungary	914		2011		1	
Portugal	658		2011		1	
Slovenia	1,025		2011		1	
Estonia	2,146		2010/11		1	
Total	16,636	61.8		6,910		

Source: SHARE, wave 1, 2 and 4 (the first data collection in each country), own calculations. Sample sizes refer to the number of grandparents (level-2 observations in the cross-sectional sample, or level-3 observations in the panel sample). Refreshing samples were used for the panel analysis as long as new respondents had been interviewed repeatedly; because of the refreshers, the panel sample may be larger than the cross-sectional sample in some countries.

Note: the data documentation gives only response rates for wave 1.

Table 2: Descriptive statistics of the cross-sectional sample used in analysis.

	Maternal grandmother	Maternal grandfather	Paternal grandmother	Paternal grandfather	All grandparents
Grandparent looks after child of child (column percentages)					
Almost daily	13.1	9.4	7.9	5.6	9.7
Almost every week	17.5	14.3	14.0	11.2	15.2
Almost every month	11.4	9.9	9.5	8.8	10.2
Less often	13.2	13.5	12.8	11.9	12.8
Never	44.8	52.9	55.8	62.5	52.1
Grandparent's labor force participation (column percentages)					
Full-time employee	14.2	20.7	11.1	17.5	16.0
Part-time employee	8.1	4.6	7.2	4.2	6.4
Unemployed	3.8	4.2	3.3	3.4	3.8
Out of the labor force	73.9	70.5	78.4	74.9	73.8
Grandparent's age (mean)	63.7	65.2	65.1	66.6	65.0
Age of the youngest grandchild (column percentages)					
0-3	33.1	37.1	36.2	39.2	33.9
4-8	32.0	33.2	30.8	33.2	32.4
9-15	34.9	29.7	33.0	27.6	33.7
Education (ISCED) of grandparent (column percentages)					
ISCED 0,1	31.3	25.9	32.7	28.3	29.1
ISCED 2-4	54.7	54.4	53.9	52.7	54.8
ISCED 5,6	14.0	19.7	13.4	19.0	16.1
Number of children (mean)	2.80	2.85	2.81	2.88	2.71
Number of grandchildren (mean)	4.39	4.19	4.62	4.40	4.05
Marital status of grandparent (column percentages)					
Married	61.2	85.2	58.5	84.9	70.0
Never married	1.8	1.0	1.5	1.0	1.5
Divorced	10.8	6.3	9.5	5.9	8.8
Widowed	26.2	7.5	30.5	8.2	19.7
Grandparent's health (column percentages)					
Very good health	21.9	24.4	20.7	23.6	22.5
Good health	35.3	36.4	34.2	35.3	35.2
Poor health	42.8	39.2	45.1	41.1	42.3
Geographical distance of child (column percentages)					
in the same house or household	9.7	8.2	10.5	8.4	9.3
up to 5 km	35.5	34.6	34.9	35.1	35.0
between 5 and 100 km	38.7	40.0	37.4	39.6	38.9
more than 100 km	16.1	17.2	17.2	16.9	16.8

Table 2 continued

	Maternal grandmother	Maternal grandfather	Paternal grandmother	Paternal grandfather	All grandparents
Marital status of child (column percentages)					
Married	82.0	82.5	84.3	86.0	83.6
Never married	10.0	10.2	8.6	8.0	9.2
Divorced or widowed	8.0	7.3	7.1	6.0	7.2
Labor force participation of child (column percentages)					
Full-time job	55.7	56.6	91.9	93.0	73.6
Part-time job	14.4	14.1	1.7	1.6	8.2
Not working	29.9	29.3	6.4	5.4	18.2
# of cases – first level (children)	7,606	5,838	7,121	5,338	25,903
# of cases – second level (grandparents)	6,045	4,598	5,760	4,237	16,636

Source: SHARE, wave 1, 2 and 4 (the first data collection in each country), own calculations. Geographical distance of child, marital status of child, labor force participation of child and age of the youngest grandchild are level-1 variables, all other are level-2 variables.

Table 3: Estimated parameters of random-effects ordered logistic models predicting the frequency of care for grandchildren. Respondents with at least one grandchild under 16 in selected countries, 2004-2011.

	All grandparents (Model 1)	Maternal grandmothers (Model 2)	Maternal grandfathers (Model 3)	Paternal grandmothers (Model 4)	Paternal grandfathers (Model 5)
Grandparent's labor force participation					
Full-time (reference category)					
Part-time	0.247**	0.046	0.279	0.395**	0.312
Unemployed	0.090	0.189	0.122	-0.170	0.177
Out of the labor force	0.278***	0.333**	0.187	0.253*	0.209
Grandparent's age	0.385***	0.414***	0.418***	0.430***	0.424***
Grandparent's age squared	-0.003***	-0.004***	-0.003***	-0.004***	-0.003***
Age of the youngest grandchild					
0-3 (reference category)					
4-8	-0.087*	-0.164*	-0.053	-0.208**	0.134
9-15	-1.137***	-1.318***	-1.126***	-1.180***	-0.855***
Sex of grandparent					
Male (reference category)					
Female	0.567***	omitted	omitted	omitted	omitted
Grandparent's education					
ISCED 0,1 (reference category)					
ISCED 2-4	0.236***	0.056	0.314**	0.341***	0.176
ISCED 5,6	0.435***	0.267*	0.482***	0.406**	0.496***
Number of children	-0.242***	-0.195***	-0.287***	-0.245***	-0.283***
Number of grandchildren	-0.059***	-0.077***	-0.046*	-0.057***	-0.042*
Marital status of grandparent					
Married (reference category)					
Never married	-0.670***	-0.481*	-1.630***	-0.354	-0.792
Divorced	-0.652***	-0.195*	-1.498***	-0.426***	-1.598***
Widowed	-0.420***	-0.078	-0.880***	-0.212**	-1.356***
Grandparent's health					
Very good health (reference category)					
Good health	-0.056	0.047	-0.014	-0.130	-0.056
Poor health	-0.356***	-0.358***	-0.322**	-0.416***	-0.400**
Sex of child					
Male (reference category)					
Female	0.717***	omitted	omitted	omitted	omitted
Geographical distance of child					
In the same house or household (reference category)					
Up to 5 km	-1.224***	-1.403***	-1.131***	-1.098***	-1.222***
Between 5 and 100 km	-2.129***	-2.341***	-2.062***	-2.013***	-2.043***
More than 100 km	-3.282***	-3.481***	-3.180***	-3.077***	-3.416***

Table 3 continued

	All grandparents (Model 1)	Maternal grandmothers (Model 2)	Maternal grandfathers (Model 3)	Paternal grandmothers (Model 4)	Paternal grandfathers (Model 5)
Marital status of child					
Married (reference category)					
Never married	0.055	0.247*	0.302*	-0.133	-0.412*
Divorced or widowed	0.055	0.311**	0.289*	-0.418**	-0.082
Labor force participation of child					
Full-time job (reference category)					
Part-time job	0.056	0.094	0.138	-0.448+	-0.169
Not working	-0.365***	-0.506***	-0.295**	-0.440**	0.091
Country dummies (a total of 18 contrasts) not shown, results available upon request					
Cut point 1	-1.099***	-2.620***	-1.815***	-1.530***	-0.717*
Cut point 2	-0.211	-1.722***	-0.883**	-0.658**	0.219
Cut point 3	0.578***	-0.909***	-0.067	0.094	1.077**
Cut point 4	2.188***	0.698**	1.559***	1.741***	2.803***

Source: SHARE, wave 1, 2 and 4 (the first data collection in each country), own calculations. Number of level-1 observations (children) = 25,903, number of level-2 observations (grandparents) = 16,636.

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4: Estimated parameters of a fixed-effect regression of the frequency of grandparental care.

	Fixed-effect regression (Model 6)
Intercept	2.520***
Wave number	
First wave (reference category)	
Second wave	-0.140
Third wave	-0.411
Grandparent's labor force participation	
Full-time (reference category)	
Part-time	0.004
Unemployed	0.236*
Out of the labor force	0.211**
Grandparent's age	0.140*
Grandparent's age²	-0.001***
Age of the youngest grandchild	
0-3 (reference category)	
4-8	0.153***
9-15	-0.058
Number of children	-0.015
Number of grandchildren	0.064***
Marital status of grandparent	
Married (reference category)	
Never married	1.287
Divorced	-0.198
Widowed	-0.179
Grandparent's health	
Very good health (reference category)	
Good health	-0.047
Poor health	-0.044
Geographical distance of child	
In the same house or household (reference category)	
Up to 5 km	-0.119
Between 5 and 100 km	-0.387*
More than 100 km	-0.565**
Marital status of child	
Married (reference category)	
Never married	-0.087
Divorced or widowed	0.016
Labor force participation of child	
Full-time job (reference category)	
Part-time job	0.051
Not working	-0.032
Number of observations (measures in time)	22,576
Number of observations (children)	10,058
Number of observations (grandparents)	6,910

Source: SHARE, wave 1, 2 and 4, own calculations.

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.