Title: **What Drives National Differences in Intensive Grandparental Childcare in Europe?**

Abstract

Grandparents play an important role in looking after grandchildren. The provision of intensive grandparental childcare varies considerably across Europe, even when socio-economic and demographic national distributions are accounted for. This paper investigates whether contextual-structural factors (such as formal childcare and labour market structures) influence the level of informal childcare support from older parents to their adult children, using data from the Survey of Health, Ageing and Retirement in Europe (*N*=19,670). Multilevel analyses suggest that grandparental childcare variations are driven by macro-level factors. Higher levels of intensive grandparental childcare were found in countries with generally low female labour market participation rates and low formal childcare provision, where mothers who are in paid work are more likely to rely on grandparental support on an almost daily basis. Encouraging older women to remain in the labour market might impact on mothers' employment, particularly in Southern European countries where there is little formal childcare.

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Running head: Intensive grandparent childcare in Europe

Across Europe increased life expectancy means that it is now quite common for children to grow up while their grandparents and even great grandparents are still living (Murphy, 2011; Post et al., 1997; Watkins et al., 1987). Ageing populations, and other socio-demographic changes such as more mothers in the labour market and higher levels of relationship breakdown, indicate that grandparents are likely to play an increasingly significant role in family life (Aassve et al., 2012a; Herlofson, & Hagestad, 2012a; King, 2003; Timonen et al., 2009; Wheelock, & Jones, 2002). Yet our knowledge and understanding of grandparenting, and how different policy environments, contextual, structural and cultural factors influence the role which grandparents play, is limited.

A substantial body of work, especially in the US, has investigated individual and family characteristics associated with grandparental childcare (Arpino et al., 2010; Baydar, & Brooks-Gunn, 1998; Dench, & Ogg, 2002; Fuller-Thomson, & Minkler, 2001; Hank, & Buber, 2009; Herlofson, & Hagestad, 2012b; King, 2003; Minkler, & Fuller-Thomson, 2005; Smith Koslowski, 2009; Vandell et al., 2003; Wheelock, & Jones, 2002; Zamarro, 2011). Most of these studies suggest that grandparental childcare is associated with socio-economic and demographic characteristics (for example, gender age, marital status, health education and employment) of both the provider and recipient of care. Nevertheless, childcare provision may be also mediated by the institutional and cultural settings where parents and grandparents live. To date, however, contextual-structural and cultural factors such as labour market, formal childcare provision and family cultures on informal childcare support have received less attention, particularly in European comparative studies (Albertini et al., 2007; Igel, & Szydlik, 2011; Jappens, & van Bavel, 2011).

Europe represents a unique setting for examining intergenerational childcare as it is well recognised that contextual-structural factors such as provision of services and generosity of child benefits; pension schemes; and labour, retirement and early-retirement policies; as well as cultural norms and values vary considerably (Arts, & Gelissen, 2002). Thus, our research aims to identify whether and how different country-specific structures and values influence grandparental childcare, while controlling for socio-economic and demographic differences between countries.

BACKGROUND

Research shows that grandparents play an active role in the lives of their grandchildren. In selected European countries, 58% of the grandmothers and 49% of the grandfathers provided some kind of care –in the absence of parents –for at least one of their grandchildren aged 15 or younger in the preceding year (Hank, & Buber, 2009). Nevertheless, there are striking differences across Europe in the frequency of grandparental childcare. On the one hand, the probability of providing any grandparental childcare, in general, is higher in France, Denmark, Sweden, and the Netherlands (around 60%) than in the southern European countries (less than 50%). On the other hand, when Mediterranean grandparents do provide childcare, they do so more regularly (that is almost weekly or more often) (Albertini et al., 2007; Hank, & Buber, 2009; Igel, & Szydlik, 2011; Ware et al., 2002). In Britain, 63% of grandparents with grandchildren under 16 provided some childcare and 17% provided at least 10 hours a week (Wellard, 2011). A report by Laughlin (2013) indicates that in the United States 24% of children under the age of 5 were cared for by grandparents in the previous month.

The literature investigating individual factors associated with grandparental childcare is particularly extensive in the US, although there is a growing literature on this topic in Europe. Both grandparents contribute to informal childcare, although grandmothers are more likely to

provide care, the mother's mother in particular (Fuller-Thomson, & Minkler, 2001; Gattai, & Musatti, 1999; Minkler, & Fuller-Thomson, 2005; Wheelock, & Jones, 2002). Previous research also suggests that younger, healthier grandparents are more likely to take care of their grandchildren (Baydar, & Brooks-Gunn, 1998; Glaser et al., 2013; King, 2003), particularly in the absence of conflicting commitments such as paid work (Fuller-Thomson, & Minkler, 2001; Fuller-Thomson et al., 1997; Hank, & Buber, 2009; Igel, & Szydlik, 2011). For instance, grandmothers aged 50 to 65 in paid work were found to be less likely to provide regular grandparental childcare (Hank, & Buber, 2009; Igel, & Szydlik, 2011; Zamarro, 2011). Also grandparents' marital status appears to affect grandchild care: grandparents (and grandfathers in particular) were less likely to look after their grandchildren if they lived alone, compared to those who lived with a partner (Fokkema et al., 2008; Ghysels, 2011; Hank, & Buber, 2009). Evidence on the association between material and personal resources and grandchild care is mixed and is likely to depend on the intensity of care provided (Vandell et al., 2003). For example, financially better-off grandparents were more likely to provide any, as well as regular, grandparental childcare (Albertini et al., 2007; Baydar, & Brooks-Gunn, 1998; Hank, & Buber, 2009; Igel, & Szydlik, 2011); nevertheless, grandparents who had 'primary care' responsibilities for grandchildren (many of whom were co-resident) were more likely to be among the most disadvantaged, with lower educational attainment, living on low incomes or below the poverty line (Fuller-Thomson, & Minkler, 2001; Minkler, & Fuller-Thomson, 2005).

The literature also suggests that parents' characteristics are associated with grandparent childcare; for example, younger parents (and mothers in particular), those in paid work, the separated or divorced, are all more likely to use grandparent childcare (Dench, & Ogg, 2002; Herlofson, & Hagestad, 2012b; Smith Koslowski, 2009; Vandell et al., 2003; Wheelock, & Jones, 2002; Zamarro, 2011). Mothers' labour force participation in particular has been the

focus of a number of studies on grandparental childcare. For instance, in Italy and France mothers were more likely to engage in paid work when grandparents were providing childcare (Arpino et al., 2010; Dimova, & Wolff, 2008, 2011), as such assistance enabled parents to more easily reconcile paid work with family responsibilities (Rutter, & Evans, 2011). Family size also seems to be related to grandparental childcare: having additional siblings, for instance, reduced the likelihood of receiving this type of support (Cooney, & Uhlenberg, 1992). This may be because the more children one has the greater the number of grandchildren, limiting grandparental support (Aassve et al., 2012a; Kaptijn et al., 2010). Finally, grandchild characteristics such as age are also found to be important. For example, grandparents were more likely to provide any grandparental childcare for children aged 4 to 6, whereas regular grandparental childcare was more likely for children under 3 years of age (Igel, & Szydlik, 2011).

Contextual-structural factors

While recognising that European countries differ in terms of policies and contextual-structural and cultural factors (that is, with respect to welfare state provision, structural constraints of labour markets and formal childcare provision, demographic and socio-economic behaviours and family norms) few studies have attempted to directly measure how these factors may influence the role grandparents play in family life (Albertini et al., 2007; Igel, & Szydlik, 2011; Jappens, & van Bavel, 2011). Albertini et al. (2007) suggested that state support (including welfare benefits, public housing, eldercare and childcare) is associated with informal support (including grandparental childcare), although no country-level indicator was formally tested in their paper. Only two studies to date have attempted to directly measure how welfare state provision and family norms are associated with grandparental involvement in family life. For example, Igel, and Szydlik (2011) using data from the Survey of Health and Retirement in Europe (SHARE) found that in those European

countries with weak public childcare facilities –defined in terms of national expenditure on family benefits and formal childcare –more grandparents provided regular grandchild care. In addition, Jappens, and van Bavel (2011) found that country-level attitudes with respect to gender roles and family obligations were associated with grandparental childcare: their findings showed that mothers with children under age 12 were more likely to use grandparents as the main source of childcare in those European regions with more conservative attitudes toward gendered family roles.

Research has also suggested that a country's welfare system is critical for understanding the extent and intensity of intergenerational support. In particular, the availability of formal childcare was found to be important for shaping differences across Europe in grandparental childcare. For example, parents were less likely to rely on grandparents in those countries with greater provision of formal childcare (Attias-Donfut et al., 2005; Gray, 2005; Hank, & Buber, 2009; Igel, & Szydlik, 2011; Lewis et al., 2008; Smith Koslowski, 2009).

Nevertheless, it is likely that the level and intensity of grandparental childcare is also shaped by other contextual-structural factors such as women's labour market participation. Glaser et al. (2013) suggest that the degree to which grandmothers look after grandchildren depends not only on the provision of formal childcare, and on cultural norms and ideas about care and family obligations, but also on the extent to which mothers and grandmothers participate in the labour market. In particular, Glaser et al. (2013) proposed that in those countries where both parents and grandparents are expected to work, formal childcare is generally well provided and appears to be the norm; thus, there is a lower level of grandparental childcare. In contrast, in countries where there is a high percentage of women who are not in paid employment, maternal care for pre-school children appears to be the preferred norm. In such countries, provision of formal childcare is limited as care is expected to be provided by family members, and mothers in particular rather than grandmothers. Such interplay of labour

structures, expectations, and formal childcare provision suggests that the use of grandparental child care does not merely depend on individual needs and capabilities, but is influenced also by contextual-structural and cultural indicators. For instance, a mother who works might be particularly reliant on grandparental childcare if she does so in a country where a high percentage of mothers with young children do not work, where family care is preferred and formal childcare is limited (Glaser et al., 2013).

This paper aims to investigate using multilevel models how much of the variability observed in the level of provision of grandparental childcare in Europe is accounted for by differences in the socio-economic and demographic national distributions, and by contextual-structural and cultural factors. Following Hagestad (2006) we consider a three-generation perspective, including the characteristics of grandparents, parents and grandchildren simultaneously, as they have all been found to be important for grandparental childcare. Our focus is on intensive grandparental childcare, as this is most likely to reveal whether contextual-structural and cultural factors influence grandparental childcare. In particular, we examine four country-level indicators: the percentage of children aged 0-2 enrolled in formal childcare, societal attitudes toward maternal care for young children, the percentage of women 50-64 not in paid work, and the percentage of mothers aged 25-49 not in paid work. We hypothesise that in countries with large percentages of mothers out of the paid labour market there might also be little institutional support, thus leaving those mothers who are in paid work to rely heavily on grandparental childcare.

METHOD

Study Population

We used data from the Survey of Health, Ageing and Retirement in Europe (SHARE), a biennial longitudinal survey designed to enable comparative analyses across 11 European countries, namely Sweden, Denmark, Germany, The Netherlands, France, Belgium, Austria,

Switzerland, Italy, Spain, and Greece. Our study is based on the first survey wave which took place in 2004/05; SHARE provides information on the socio-economic, health and demographic characteristics of individuals aged 50 and over. This cross-national data set also includes comprehensive information about the frequency and intensity of grandparental childcare, as well as characteristics of the respondents' largely adult children and ages of grandchildren. SHARE aimed to be representative of the relevant national populations aged 50 and over. It has an (unweighted) average household response rate of 62%, ranging from 39% in Belgium and Switzerland to 81% in France. Further details on the sampling frames and methodology, weighting strategies, and questionnaires are available elsewhere (Börsch-Supan, & Jürges, 2005; Taylor et al., 2007).

Wave 1 is based on 27,520 total respondents. We restricted our original sample to respondents with at least one grandchild (N= *16,564*, 60% of total initial respondents). SHARE respondents were asked to provide detailed information (such as gender, age, employment and marital status) for up to four living children. If respondents had more than four children, only information on those who lived closer and/or those who were older were collected. All of the children's characteristics were provided by the older respondent, i.e. the grandparent in this study. Our analysis was thus restricted to grandparents with adult children living in a separate, private household, and whose own youngest child (that is, the grandchild) was under16 years of age. Adult children identified by SHARE grandparents as 'parents' are here after referred to as parents. Switzerland was omitted from our analysis because country-specific indicators such as the average enrolment rate of children aged under 3 in formal childcare were not available for this country. Our unit of analysis was the grandparent-parent dyad. After deletion of observations with missing data, our final sample consisted of 19,670 parent observations drawn from information on the final sample of

12,375 grandparents (75% of the original eligible number of respondents), in 10 European countries.

Measures

Our outcome of interest was whether a parent has a child looked after by a grandparent intensively. Every grandparent was asked whether they had looked after each grandchild from up to 4 children without parents being present in the year prior the interview. Grandparents were asked how often they looked after the grandchildren of each of their children (i.e. '*almost daily*', '*almost every week'*, '*almost every month*' or '*less often'*), and how many hours they looked after them ('*on a typical day*', '*in a typical week*', '*in a typical month*', '*in the last twelve months*'). Our study focused on parents receiving 'intensive' grandparental childcare as reported by grandparents, here defined as having grandchildren looked after almost daily, or almost every week for at least 15 hours on average, i.e. approximately 3 hours a day for 5 days. Across the SHARE countries, 12% of grandparents reported intensive grandchildcare to parents whose youngest child was under age 16, providing on average almost 30 hours per week, i.e. "doing the equivalent of almost a full-time job in terms of the hours devoted to this activity" (Fuller-Thomson, & Minkler, 2001).

We also considered individual characteristics, such as age, gender, education, wealth, marital and employment status, and health, all of which have been shown in previous studies to be associated with the provision of intensive grandparental childcare (Aassve et al., 2012b; Dench, & Ogg, 2002; Fuller-Thomson, & Minkler, 2001; Hank, & Buber, 2009; Minkler, & Fuller-Thomson, 2005; Smith Koslowski, 2009; Wheelock, & Jones, 2002; Zamarro, 2011). Age was categorised into three groups (50-59, 60-69 and 70 or older). Educational qualifications were grouped into three categories: low, mid and high education using the International Standard Classification of Education (UNESCO - UIS, 2006), where low level of education is defined as being lower than secondary education, and high refers to university

education or higher. Wealth was measured using quintiles based on the sum of the net value of properties, non-housing financial wealth, and business assets (Lee et al., 2011) created by the RAND Corporation (www.mmicdata.rand.org/meta/). Marital status was measured using a dichotomised indicator of whether the respondent was married (either in a legal or cohabiting union) or not (that is, widowed, divorced/separated, never-married). As for employment, respondents were asked to describe their current situation using six mutually exclusive answers: 'retired', 'employed or self-employed', 'unemployed', 'permanently sick or disabled', 'homemaker' or 'other'. Answers were re-classified as in paid work, retired or in other condition (where retired was the reference category).

A wide range of health variables, including cognitive function, self-rated health, depressive symptomatology and functional limitation were considered. Cognitive ability was assessed by several questions relating to 'orientation in time', 'word recall, 'verbal fluency' and 'numeracy' skills, as described in detail in Mazzonna, and Peracchi (2012). Combining the scores of all these tests, cognitive ability was calculated using country-specific cognitive index quintiles. SHARE used the EURO-D 12 item scale to assess depression, a well validated and reliable measure (Prince et al., 1999). Respondents were asked whether they had experienced any depressive symptoms, such as restless sleep or being unhappy in the month prior to interview. Those who reported four or more items on the EURO-D scales were classified as being 'depressed' (Dewey, & Prince, 2005). Self-rated health was measured using responses to a generic question ("Would you say your health is ...") on a 5-point ordinal scale (*excellent*, *very good*, *good*, *fair*, or *poor*). The five SRH items were dichotomised into 'fair or poor' versus better health, as results using the dichotomised measure agree well with those based on treating the variable as continuous (Manderbacka et al., 1998). Finally, functional health was measured as having any long-term health problems, illness, disability or

infirmity which severely limited respondent's activities, a valid indicator of poor functioning and disability (Jagger et al., 2010).

The demographic and socio-economic characteristics of parents receiving grandparental childcare were also considered. Age was recoded into three categories (under 35, 35-39, 40 or older), with 'under 35' as the reference category because of the small number of observations in this group. Parents' marital status was measured using a dichotomised indicator of whether they were married or not. Employment status was categorised into a binary indicator distinguishing whether the parent was in paid employment or not. It was not possible to include categories such as 'having parental leave' or 'part-time employment', due to small numbers. Both total number of children, and the age of the youngest child were also considered. Finally, a variable indicating whether the parent had siblings whose youngest child was also younger than 16 was included.

To test the extent to which grandparental childcare in Europe was associated with contextual-structural and cultural factors –once controlling for socio-economic and demographic characteristics –we included four country-level variables in the model. In particular, the percentage of mothers aged 25-49 who were out of employment, as well as that of women aged 50-64 in paid-work, were considered to capture the intergenerational labour market structure. Both indicators were obtained from the 2008 European Union 'Labour Force Survey' (EU-LFS) Eurostat database which collects comparable information for Europe. The percentage of individuals in a country who believed that a pre-school child suffers with a working mother was used as an indicator of societal attitudes toward childcare among working mothers. This indicator was obtained from the 2008 European Values Study (EVS, 2011), a cross-cultural survey which collects data on values, attitudes, and norms on a wide variety of topics on a random sample of the adult population of various European countries. Finally, the percentage of children under the age of three who were enrolled in formal

childcare was used as a country-level indicator of the use of formal childcare. This indicator was obtained from the European Union Statistics on Income and Living Conditions (EU-SILC, 2008). This survey's definition of formal childcare includes arrangements such as childcare centres and registered childminders.

Statistical Analyses

Receipt of grandparental childcare as reported by grandparents was modelled using a multilevel logistic regression model. The dataset used is hierarchically structured with multiple parents receiving grandparental childcare as reported by grandparents in 10 different countries. This hierarchical data structure violates basic regression assumptions due to the non-independence between observations which may lead to biased estimates, standard errors, and therefore incorrect significance tests (Guo, & Zhao, 2000). Multilevel modelling permits one to control for the hierarchical structure of the data and adjust for the non-independence of observations (Goldstein et al., 2002). Moreover, unlike simple logistic models with only one random error capturing all the variance in the outcome that is unexplained by the model, multilevel models divide the residual into three levels, allowing us to capture variation between (1) different parents with the same grandparents, (2) grandparents, and (3) countries. The variance partition also permits us to investigate how much of the total variation in grandparental intensive childcare can be attributed to the country level. Thus, a 3-level random intercept model with a dichotomous dependent variable (y) is used in this paper. This is defined as follows

$$\pi_{ijk} = Logit\ \ P(Y_{ijk}) = \beta_0 + \beta_1 x_{ijk} + (u_{jk} + v_k)$$

where subscript i refers to each parent in receipt of grandparental childcare, j indexes grandparents and k stand for the countries. The parameters u_{jk} and v_k display the residuals, which are independent of each other; β_0 is the constant term whereas x_{ijk} represents covariates

which can be measured at each level. This model can also be decomposed and rewritten using level-specific equations with the related residuals as follows

$$\begin{cases} \beta_{jk} = \delta_k + u_{jk} & (1a) \\ \delta_k = \beta_0 + v_k & (1b) \end{cases}$$

Level 2 (Equation 1a) captures the error term for each grandparent u_{jk}, whereas Equation 1b describes the error term for each country (v_k). The variance of u_{jk} and v_k represent the grandparent and the between-country variance respectively. The latter (v_k) can be used as an estimate of the country-level effect, that is a measure of unexplained differences at the country level. As for the parent-level variance, in logistic multilevel model direct estimates are not provided and a threshold model was used to estimate it at 3.29 (Goldstein et al., 2002; Snijders, & Bosker, 1999). Using subject-specific multilevel models allows us to describe the receipt of grandparental childcare as conditional on both the parents' and grandparents' characteristics, as well as on the country context (Rabe-Hesketh, & Skrondal, 2012).

First, a so called 'empty variance-partitioning model' (intercept only) was estimated in order to examine how much of the total variation in intensive grandparental childcare could be attributed to grandparent and country levels. Second, parent and grandparent characteristics were considered in order to investigate their effects on grandparental intensive childcare and whether they reduced country-level variation. Finally, country-level variables –centred around the mean values –were included in the model to investigate whether this reduced the effects of individual-level variables, and country-level variation. Preliminary analyses were carried out separately for men and women but, given similarities in the patterns observed, results for both genders are presented here. Also, country-level indicators were initially tested one at a time; but once again given the similarity of results findings for all four variables considered simultaneously are presented here. Analyses were restricted to participants with complete data on all variables examined.

All analyses were performed using Stata, version 12 (Stata Corp, 2011). Maximum-likelihood estimates were derived using the generalised linear latent and mixed models (GLLAMM) adaptive quadrature procedure. Adaptive quadrature with 8 quadrature points was initially used. Consistent with Rabe-Hesketh and colleagues' (2004) recommendation, models were subsequently refitted using 16 quadrature points to assess consistency of estimates. No discrepant values were obtained. For all models, robust standard errors were used, which GLLAMM computes using a sandwich estimator (Rabe-Hesketh et al., 2004; Rabe-Hesketh et al., 2005).

RESULTS

Descriptive Statistics

Table 1 shows the percentage of parents receiving grandparental intensive childcare by country, as reported by grandparents. Clear differences across Europe in the receipt of grandparental intensive childcare can be observed. Overall, around 12% of parents received intensive grandparental childcare (as reported by grandparents), with figures ranging from less than 4% in Sweden and Denmark, to almost one quarter in Greece. Nevertheless, in all the countries considered grandparents who reported looking after their grandchildren intensively did so on average 30 hours per week (i.e. on average 6 hours per working day).

[Insert TABLE 1 here]

Table 2 presents the frequency distributions of the variables used in our analyses, separately for parents and grandparents. The overwhelming majority of parents were married and in paid work; around one third had no siblings with children aged 16 or under. Almost half had 2 children and around 28% had a youngest child aged 0-2. With respect to grandparents' characteristics, 77% were married and less than one in five were in paid work. Finally, around one third of grandparents reported their health as poor or fair, one quarter had 4 or

more depressive symptoms, and 14% reported severe limitations in the activities of daily living.

[Insert TABLE 2 here]

Table 3 presents an overview of the county-level variables. The percentage of children under the age of 3 in formal care varied considerably across the European countries under study, ranging from less than 30% in Italy, Greece and Germany to a high of 73% in Denmark (where the receipt of intensive grandparental childcare is the lowest). Considerable variation is also observed in the two labour market indicators considered. In Italy and Greece, where the percentage of intensive grandchild care is highest, only slightly over one third of women aged 50-64 were in paid work compared to 72% in Sweden. The direction of the association between the percentage of mothers aged 25-49 not in paid work and intensive grandparental childcare appears to be counter-intuitive at first. This is because in countries such Spain and Italy, where the level of grandparental childcare is high, more than 40% of mothers are not in paid work, compared to less than 20% in Denmark and Sweden. Finally, the percentage of people agreeing with the statement that pre-school children suffer with working mothers ranged between 8% in Denmark to 75% in Italy.

[Insert TABLE 3 here]

Multilevel Model

Table 4 shows the results of four multilevel models. Model 1 presents a simple model which includes only the basic demographic characteristics of gender and age; Model 2 adds the other available parent characteristics; Model 3 adds grandparent's characteristics, and finally Model 4 adds country-level variables. Results are presented considering each of the variables across the four equations.

Model 1 shows an increased probability of mothers, as compared to fathers, having a child looked after intensively by a grandparent. It is important to note that, as mentioned above, our information on intensive grandparental childcare is based on grandparents' reports. Parents were also significantly more likely to have a child looked after intensively by a grandparent if they were younger than 35. Model 2 adds further parents' characteristics. Thus, parents under the age of 40 and who were unmarried were more likely to have a child looked after by a grandparent intensively. As for family and household characteristics, our results suggest that parents who did not have a sibling who is also a parent of a young child were significantly more likely to have a child looked after intensively by a grandparent. The number of children a parent has does not seem to be associated with a greater likelihood of having a child looked after intensively by a grandparent; however, the age of the youngest child is significant. That is, parents whose youngest child was aged between 3 and 5 were significantly more likely to have their child looked after intensively by grandparents compared to those whose youngest child was younger than three. Parents whose youngest child was aged between 12 and 15 were significantly less likely to have a child receiving such care from their grandparents.

Model 3 adds grandparents' characteristics. Parents were more likely to have a child looked after intensively by grandmothers rather than grandfathers. Such support was also more likely among parents with children with a younger and married grandparent. Our findings also show that parents with children whose grandparents were less educated were significantly more likely to have a child looked after intensively by a grandparent. Nevertheless, grandparental wealth showed no significant association with parents having a child looked after intensively by a grandparent. As for employment status, parents with children with working grandparents were significantly less likely to have a child looked after intensively by a grandparent in comparison to those with retired grandparents. Finally, grandparent health was strongly associated with parents having a child looked after intensively by a grandparent: that is,

parents with children with a grandparent in the lowest cognitive quintile, or who reported a severe functional limitation, were significantly less likely to have a child looked after intensively by a grandparent.

Model 4 included aggregated country characteristics. Natural rates of enrolment in formal childcare showed a negative relationship with having a child looked after intensively by a grandparent: a parent was more likely to get grandparental help in a country with a high percentage of children aged 0-2 not in formal care. There were significant but reversed associations between intensive grandparental childcare and average employment rates for women aged 50-64, and mothers aged 25-49. Thus, the higher the percentage of women aged 50-64 in paid work, the lower the likelihood of parents having a child looked after intensively by a grandparent; whereas, in countries where the percentage of mothers aged 25-49 not in paid work was greater, the higher the probability that parents get support from grandparents in looking after their children intensively. Finally, there was virtually no association between the societal level of disapproval of mothers with pre-school children working and intensive grandparental childcare when all four country level variables were considered, suggesting that the cultural factors are already captured by the employment and childcare environment.

The model divides residual variance into three components; the variance estimates for the second and third levels are reported at the bottom of Table 4. This allows the calculation of between country variance as a percentage of total variance (Snijders, & Bosker, 1999). In Model 1, although individual and family differences were larger than differences across countries, country membership accounted for 14% of the total unexplained variance. Models 2 and 3, which included parent and grandparent characteristics respectively, show a substantial reduction in second-level variance, although no reduction in country-level variance is observed. This means that controlling for the characteristics of grandparents, parents and grandchildren simultaneously, the country-level variation in the receipt of

intensive grandparental childcare remains. Compositional differences between national populations are unlikely to explain the variation in the level of intensive grandparental childcare observed in Europe. Indeed, even if we control for the individual and family socio-economic and demographic differences between countries, 13.6% of the total variation remains unexplained and is due to country national characteristics. Including country-level contextual-structural and cultural characteristics, however, reduced the country-level variance in Model 4 to less than 2% of the total residual variance. Multilevel analyses suggest that grandparental childcare variations are mostly driven by macro-level factors.

[Insert TABLE 4 here]

DISCUSSION

Our analyses indicate that grandparents are playing a major role in providing intensive childcare support to parents. Nevertheless, the likelihood of this support differs considerably between different European countries. Our study aimed to investigate the extent to which such variation in intensive grandparental childcare may be explained by grandparent, parent, and grandchild different demographic and socio-economic characteristics, or by contextual-structural and cultural factors. Results suggest that although both parent and grandparent socio-demographic and economic characteristics were associated with intensive childcare and were consistent with existing literature, most of the differences observed in Europe can be explained by the interplay of contextual-structural and cultural factors.

In our study, we found that –in line with earlier studies –younger mothers in paid work, and the unmarried were more likely to receive grandparent intensive childcare (Dench, & Ogg, 2002; Herlofson, & Hagestad, 2012b; Smith Koslowski, 2009; Vandell et al., 2003; Wheelock, & Jones, 2002; Zamarro, 2011). Parents were also more likely to have a child looked after intensively by a grandparent if their youngest child was pre-school aged (in

particular between 3 and 5). Also, parents were more likely to have such assistance if they had no siblings with young children. This may be because having siblings with young children might make grandparents' availability scarce, as grandparents may already provide intensive childcare to siblings (Aassve et al., 2012a; Aassve et al., 2012b; Kaptijn et al., 2010). Our findings also suggest that grandparent characteristics are associated with the reporting of intensive childcare. For example, parents were more likely to have a child looked after intensively by younger, married, and in good health grandparents (i.e. not in the lowest cognitive quintile, and without severe functional limitations). Parents were also more likely to get such help from their child's grandmother rather than grandfather and from a grandparent not in paid work, in accordance with previous studies which have found negative associations between grandmothers' being in paid work and their provision of childcare (Fuller-Thomson, & Minkler, 2001; Fuller-Thomson et al., 1997; Hank, & Buber, 2009; Zamarro, 2011).

Individual and family characteristics alone, however, do not seem to explain variations observed across in Europe in grandparental childcare. Previous research has suggested that welfare state systems are important for understanding both the extent and intensity of grandparental childcare. Yet, few of these studies specified in detail the nature of these country-level influences (Albertini et al., 2007; Hank, & Buber, 2009), and most limited their focus to public investments in child-care infrastructures (Igel, & Szydlik, 2011) or to cultural attitudes around gender roles (Jappens, & van Bavel, 2011). In this paper, using multilevel analyses we explicitly accounted for the interplay of contextual-structural and cultural factors, and formally tested whether labour market structures, formal childcare provision and expectations are related with grandparent childcare provision, and can explain the variation observed in Europe. Findings suggest that such country-level factors are correlated with intensive childcare. Extensive public childcare seems to offset intensive grandparental childcare, in line with previous studies (Attias-Donfut et al., 2005; Gray, 2005; Hank, &

Buber, 2009; Igel, & Szydlik, 2011; Lewis et al., 2008; Smith Koslowski, 2009). Furthermore, in countries where employment of both mothers and older women is fostered, parents are less likely to rely on intensive childcare support provided by grandparents. Conversely, in countries where there is not extensive provision of formal childcare and female employment rates are structurally low, mothers tend to be full-time carers. If, however, a mother is in paid work in a country where mothers are expected not to work (but to look after children), she tends to rely on grand-maternal support on an almost daily basis. Accounting for such country national characteristics, we explain most of the variation in the level of intensive grandparental childcare provision observed across Europe. Our multivariate multilevel analyses also reinforce the hypothesis that contextual-structural factors are associated with the likelihood of grandparent childcare. Higher levels of parents in receipt of intensive grandparent childcare were found in countries where both mothers and grandmothers are expected not to be in paid work (i.e. where part-time opportunities and parental leave benefits for working mothers are restricted), and where formal childcare opportunities are limited.

Strengths, Limitations and implications

We investigated associations between intensive grandparental childcare, family characteristics and country-level factors using data collected from SHARE, a European comparative study. Contributions of the study include explicit examination of the influence of labour structures, formal childcare provision and cultural expectations regarding paid work among mothers with young children on intensive grandparental childcare using multilevel analyses and controlling for the socio-economic characteristics of both parents and grandparents.

Nevertheless, our analysis has some limitations. First, the measurements considered are based on self-reports; for example, the intensity and frequency of grandchild care. This may be

problematic as it could be sensitive to cultural differences of definitions (Cnaan et al., 1996; Jylhä et al., 1998). Additionally, information on intensive grandparental childcare and individual characteristics of parents are based on grandparents' reports; and the SHARE questionnaire provided no detailed information on the nature of parents' work. It is known that parents who work nights, weekend or non-standard hours require a higher involvement of intensive grandparental childcare, and that such childcare might not be related to specific policy factors (Vandell et al. 2003; Guzman 2004). Furthermore, the current research did not study the effect of multiple-role commitments by grandparents, as looking after grandchildren intensively may compete with other forms of support, such as caring for their spouses or their parents. Finally, while this study contributes to our knowledge of associations between structures, institutions, values, and family solidarity in the form of grandparent childcare, disentangling the links between welfare systems, norms, and individual behaviours is complex, as these are all complex relationships which are rooted and embedded in society and culture (van Oorschot et al., 2008).

Our study, nonetheless, suggests that parents –and particularly working mothers –tend to rely more on grandparental childcare support in those countries with limited provision of childcare and where mothers and grandmothers are not encouraged to participate in the labour market. Governments across Europe, however, are seeking to retain in the labour market the very women in their 50s and 60s who are more likely to provide intensive childcare (European Commission, 2010). This is likely to create a care gap for working parents, potentially impacting on mothers' employment, particularly in Southern European countries where there is often little formal childcare.

Table 1 Percentage (and absolute numbers) of parents with a child(ren) who are looked after intensively by a grandparent, as well as mean (and median) number of hours, by country

	%	N	Mean (median)
Denmark	**3.6**	49/1,316	**29.6** (20.0)
Sweden	**3.6**	100/2,748	**31.2** (15.5)
The Netherlands	**6.9**	164/2,379	**29.4** (20.0)
Germany	**11.5**	209/1,817	**24.7** (20.0)
France	**11.2**	245/2,193	**31.1** (24.0)
Austria	**12.3**	156/1,264	**28.3** (20.0)
Belgium	**16.3**	489/2,992	**29.4** (20.0)
Spain	**15.2**	282/1,854	**30.4** (25.0)
Italy	**20.3**	348/1,717	**26.6** (25.0)
Greece	**24.8**	333/1,341	**33.7** (30.0)
Tot SHARE	**12.1**	2,375/19,670	**29.3** (22.0)

Source: SHARE, 2004/5. Unweighted data.

Table 2 Characteristics of parent-grandparent dyads in our analysis:

Descriptive statistics (N=19,670)

	Variables	Percentages
Parent characteristics	Female	51.9
	Age: <35	35.1
	35-39	23.9
	40+	41.0
	Married	84.8
	Work status In paid work (full-time)	69.8
	In paid work (part-time)	11.8
	Homemaker	9.4
	Other	9.0
	Number of siblings with children < 16	
	None	34.9
	1	40.2
	2 or 3	24.9
	Total number of children	
	1	31.7
	2	46.9
	3 or more	21.3
	Age of the youngest child	
	0-2	27.8
	3-5	21.6
	6-11	32.4
	12-15	18.2
Grandparent characteristics	Female	56.0
	Age: 50-59	23.5
	60-69	43.3
	70+	33.2
	Married	76.9
	Level of Education	
	High	16.7
	Middle	25.2
	Low	58.1
	Work status In paid work	18.2
	Retired	56.9
	Other	24.9
	With depressive symptoms	25.3
	Self-Rated Health = poor or fair	31.5
	With Severe Limitations	13.6
	Number of Observations	
	Parents	19,670
	Grandparents	12,375

Source: SHARE, 2004/5. Unweighted data.

Table 3 Overview of cultural-contextual factors by country

Country	Agreeing that pre-school children suffer with working mother %	Children under the age of 3 in formal care %	Mothers aged 25-49 out of employment %	Women aged 50-64 in paid work %
Denmark	8.0	73.0	15.2	62.1
Sweden	19.5	49.0	17.0	72.0
The Netherlands	39.0	47.0	21.0	53.4
Germany	50.0	19.0	29.0	56.4
France	42.0	40.0	25.0	49.8
Austria	64.7	29.0	24.5	46.8
Belgium	38.4	35.0	24.7	38.9
Spain	48.0	39.0	37.0	39.6
Italy	75.0	27.0	44.0	34.8
Greece	72.5	25.0	40.4	35.9

Source: Eurostat Statistics on Income and Living Conditions, 2008; Eurostat Labour Force Survey, 2008; European Values Study, 2008.

Table 4. Multilevel models predicting parents with a child(ren) who are looked after intensively by a grandparent (N=19,670, 10 countries)

	Model 1	**Model 2**	**Model 3**	**Model 4**
	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)
Parent's characteristics				
Female	2.377 (0.188) ***	3.075 (0.268) ***	3.142 (0.281) ***	3.139 (0.280) ***
Age: 35-39 [a]	0.809 (0.076) **	1.007 (0.103)	0.951 (0.104)	0.954 (0.104)
40+ [a]	0.242 (0.025) ***	0.469 (0.057) ***	0.494 (0.067) ***	0.496 (0.068) ***
Not married		2.211 (0.250) ***	2.375 (0.276) ***	2.376 (0.274) ***
In paid work		2.078 (0.228) ***	2.054 (0.232) ***	2.060 (0.232) ***
Without siblings with children < 16		1.688 (0.161) ***	1.822 (0.181) ***	1.821 (0.180) ***
Number of children:				
2 [b]		1.095 (0.097)	1.072 (0.097)	1.083 (0.098)
3 or more [b]		0.746 (0.094) **	0.739 (0.095) **	0.745 (0.096) **
Age youngest child:				

3-5 [c]		1.347 (0.143) ***	1.372 (0.149) ***	1.375 (0.149) ***
6-11 [c]		0.830 (0.093) *	0.825 (0.094) *	0.830 (0.095)
12-15 [c]		0.243 (0.039) ***	0.241 (0.040) ***	0.242 (0.040) ***
Grandparent's characteristics				
Female			2.025 (0.171) ***	2.023 (0.171) ***
60-69 [d]			1.053 (0.129)	1.057 (0.129)
70+ [d]			0.638 (0.104) ***	0.645 (0.104) ***
Married			1.747 (0.214) ***	1.741 (0.213) ***
Level of Education: Middle [e]			0.749 (0.083) ***	0.755 (0.082) ***
High [e]			0.793 (0.107) *	0.813 (0.108)
Employment condition:				
In paid work [f]			0.542 (0.074) ***	0.556 (0.075) ***
Other [f]			0.818 (0.090) *	0.822 (0.088) *
In lowest wealth quintile			0.862 (0.113)	0.863 (0.114)
Health characteristics:				

Depressed [g]			0.968 (0.099)	0.962 (0.099)
SHR= poor or fair [h]			0.923 (0.092)	0.921 (0.092)
In lowest cognitive quintile			0.685 (0.091) ***	0.687 (0.091) ***
Severe GALI limitations [i]			0.785 (0.110) **	0.776 (0.101) **
Country level Characteristics				
Mothers 25-49 not in paid work				1.017 (0.005) **
Women 50-64 in paid work				0.940 (0.007) ***
Formal Childcare (0-2)				0.974 (0.008) ***
Child suffers with working mother				1.014 (0.013)
Constant	0.026 (0.010) ***	0.008 (0.004) ***	0.005 (0.002) ***	0.005 (0.001) ***
Grandparent level variance	6.143 (0.456)	6.094 (0.489)	5.743 (0.455)	5.748 (0.454)
Country level variance	1.539 (0.642)	1.489 (0.686)	1.428 (0.661)	0.157 (0.066)

Country level variance as % of total variance	14.0%	13.7%	13.6%	1.7%
Log likelihood	-6,150.77	-5,497.7	-5,402.87	-5,381.00

Note: SE = standard error; *, **, ***: significant at the 0.10, 0.05 and 0.0l levels, respectively

Sources: SHARE 2004/5; Eurostat Statistics on Income and Living Conditions, 2008; Eurostat Labour Force Survey, 2008; European Values Study, 2008. Reference categories: a) *<35*; b) *1*; c) *0-2*; d) *50-59*; e) *Low Education*; f) *Retired*; g) *Without depressive symptoms*; h) *Self-rated health = good, very good or excellent*; i) *Without limitations or with non-severe GALI limitation*. Own calculation

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