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Grandparental care for pre-school children across Europe: the influence of grandparents' characteristics and policy frameworks

Key words: grandparents, childcare, Europe, SHARE

Introduction

The availability of grandparents for looking after their grandchildren has considerably lowered in the life span of recent three generations. We see two major reasons for that: higher employment rate of women (grandmothers) and spatial distance between the generations due to labour migration. At the same time an increasing employment rate of mothers of young children, higher levels of divorce and separation (Di Gessa et al., 2016) and a too short period of post-natal leave (particularly a well paid leave) in some countries had increased the need for non-parental childcare. All this would not be a big problem had the childcare facilities developed accordingly. The developments have been different in individual European regions and countries. Research has shown that in contemporary Europe, grandparents still play an important role in looking after their grandchildren (Di Gessa et al., 2015).

Most of recent research on grandparental childcare in Europe was conducted using the Survey of Health, Ageing and Retirement in Europe (SHARE) data (for instance, Bordone, Arpino and Aassve, 2016; Di Gessa et al., 2015; Lakomý and Kreidl, 2015; Petrová Kafková, M., 2015; Coall, Hilbrant and Hertwig, 2014; Leopold, 2014; Bordone, Arpino and Aassve, 2012; Jappens and Van Bavel, 2012; Ribe, Price, Di Gessa, Tinker and Glaser, 2012; Danielsbacka et al., 2011; Igel and Szydlik, 2011; Hank and Buber, 2009). We use these data, too. Our interest in this paper is in the recent situation regarding almost daily grandparental childcare, with the focus on grandparents looking after their grandchildren of a pre-school age.

Our main research question is: what is the influence of policy frameworks (parental leave provisions and availability of formal childcare) on the high frequency of looking after pre-school grandchildren by their grandparents across Europe. We also investigate how the employment of women (mothers with pre-school children and potential grandmothers) impacts the level of grandparental involvement in the care of pre-school grandchildren. Apart from that, we are interested in demographic and socio-economic characteristics of grandparents with grandchildren of a pre-school age that determine their lower or higher propensity to look after their pre-school grandchildren. And, finally, we also take into account

the characteristics of the grandchild's nuclear family that are expected to strongly influence the need for non-parental childcare.

This paper contributes new knowledge in several ways. Different from former similar analyses of the grandparents providing care for grandchildren (Bordone, Arpino and Aassve, 2016; Di Gessa et al., 2015; Petrová Kafková, 2015; Glaser et al., 2013; Bordone, Arpino and Aassve, 2012; Ribe, Price, Di Gessa, Tinker and Glaser, 2012; Hank and Buber, 2009), this paper focuses on the care for grandchildren of a pre-school age. We add the duration of well-paid post-natal leave and the employment rate of mothers aged 20-49 years with a child below 6 years of age to the factors that may influence (the need for) grandparental childcare. The country coverage is also wider and different, and the information refers to a more recent SHARE wave, than in most previous studies.

Grandparental childcare in Europe

While the research on various aspects of grandparental childcare has been rather intensive in the United States for a relatively long period, the one in Europe used to lag behind primarily due to the lack of appropriate data, particularly for comparative research. The introduction of the SHARE survey and the release of its first dataset with data of the first wave represented an important turning point. By now, most studies (Hank and Buber, 2009; Igel and Szydlik, 2011; Glaser et al., 2013; Coall, Hilbrant and Hertwig, 2014; Di Gessa et al., 2015) used the data of the first survey wave that was conducted in 11 European countries in 2004/2005. As to our knowledge, one study of grandparental childcare (Danielsbacka et al., 2011) used the second wave (2006/2007). Another study (Bordone, Arpino and Aassve, 2016; Bordone, Arpino and Aassve, 2012) used the first and the second wave data, while one used the data of the fourth wave conducted in 2010/2011 (Petrová Kafková, 2015). Lakomý and Kreidl (2015) used the first, second and fourth wave.

The comparative research profited from the Europe's great variety of traditions, cultures and prevailing attitudes, as well as policies that affect childcare, that all shape different practices in the area of grandparental childcare. Some research (Hank and Buber, 2009) investigated only the impact of individual demographic and socio-economic characteristics of grandparents, their children and/or grandchildren. More recent studies (Bordone, Arpino and Aassve, 2016; Igel and Szydlik, 2011; Bordone, Arpino and Aassve, 2012; Glaser et al., 2013; Di Gessa et al., 2015) looked simultaneously also at the impact of several contextual-structural and cultural factors, like the provision of parental leave and formal childcare, labour market participation of mothers and grandmothers, and cultural norms regarding care and family obligations.

Research (for instance, Igel and Szydlik, 2011; and Hank and Buber, 2009) has identified striking national differences in the frequency of grandparental care of children below 16 years of age. Surprisingly, the probability of providing any grandparental childcare is generally higher in Denmark, Sweden, the Netherlands, and France (around 60%) than in the Southern European countries (less than 50%). However,   those grandparents in Southern European countries provide childcare more regularly (i.e., almost weekly or more often).

Grandmothers are more likely to provide care, maternal grandmothers in particular. Grandparents (particularly grandfathers) are less likely to look after grandchildren if they live alone (Hank and Buber, 2009). Younger and healthier grandparents are more likely to look after their grandchildren (Glaser et al., 2013), particularly if they are not working (Hank and Buber, 2009; Igel and Szydlik, 2011). Grandparents providing occasional or regular childcare are generally financially better-off (Igel and Szydlik, 2011; Hank and Buber, 2009).

Parents' characteristics, family size and the ages of grandchildren are also associated with grandparental childcare. The probability of grandparental childcare is highest if grandchildren are aged four to six, but the most intensive care is provided to children under the age of three (Igel and Szydlik, 2011).

Previous studies that used the SHARE data did not focus on a narrow age group of grandchildren being cared for by their grandparents, resulting in the "looking after grandchildren" being quite a vague set of activities and responsibilities. There obviously is a great difference between looking after a preschool child or a child that is 15 years old. For instance, the age limit is 12 years in Igel and Szydlik (2011), and 15 years in most of the studies (Bordone, Arpino and Aassve, 2016; Di Gessa et al., 2015; Lakomý and Kreidl, 2015; Bordone, Arpino and Aassve, 2012; Hank and Buber, 2009). This makes the results hard to interpret. We may wonder what kind of care is provided by grandparents to their older teenage grandchildren. It surely is not childminding in the narrow sense (looking after a child that is not able to look after herself/himself). Could it be taking care of a sick or disabled child, or just making company to a child during the parents' absence or preparing meals for him/her?

As pointed out by Di Gessa et al. (2015: 2), "to understand grandparental childcare provision, we need to study not only parents' and grandparents' characteristics but also country-level contextual factors that may help to explain these variations". In Table 1 we present the contextual factors used in some of the studies to explain cross-national variation in grandparental childcare.

Table 1: Contextual-structural and cultural factors considered in some of the previous research **on grandparental childcare**

	Igel and Szydlik, 2011	Jappens and Van Bavel, 2012	Bordone, Arpino and Aassve, 2012	Glaser et al., 2013	Di Gessa et al., 2015	Bordone, Arpino and Aassve, 2016
Contextual-structural factors				% of women aged 50-64 in paid work	% of women aged 50-64 in paid work	
				% of mothers aged 25-49 not in paid work	% of mothers aged 25-49 not in paid work	
						Female part-time employment
						Share of part-time female employment on totoal female employment
	Total public expenditure on childcare and early education services as % of GDP		Service coverage (number of weeks per child available on the total number of children aged 0-2)	% of children aged 0-2 in formal childcare	% of children aged 0-2 in formal childcare	Child care services coverage rate (how many weeks a child could attend public child care if all children were enrolled
	Expenditure on family services (family benefits in cash, services and tax					

	measures) as % of GDP					
	Public expenditures on maternity and parental leave as % of GDP		Effective leave (weeks paid at the average wage level)			Effective leave (the number of weeks of both maternity and parental leave, weighted by the level of compensation during leave time)
			Legal obligation to support children			
Cultural factors						
Attitudes				% of individuals who strongly agree that the preschool children suffer with a working mother)	National attitudes toward maternal childcare for young children (% agreeing that preschool children suffer with working mother)	

Di Gessa et al. (2015) examined associations between intensive grandparental childcare (almost daily or almost every week for at least 15 hours a week) and contextual-structural and cultural factors. They found that these factors play an important role in explaining grandparental childcare variations in Europe. After having included individual demographic and socio-economic characteristics of grandparents, parents and grandchildren in the model simultaneously, around 14% of the total country-level variation remained unexplained. When country-level contextual-structural and cultural factor were included, the country-level variance was reduced to less than 2%. This revealed that a country's labour market structure and formal childcare provision, rather than compositional demographic and socio-economic differences capture most of the cross-county variation in intensive grandparental childcare (Di Gessa et al., 2015: 8).

Igel and Szydlik (2011) found out that public expenditures on family services (family benefits in cash, services and tax measures), childcare infrastructures and maternity and parental leave "have a significant positive effect on the occurrence of grandchild care and negatively affect the intensity of childcare provided" (p. 221). This means that in the countries with strong public support to families more grandparents engage in childcare, however sporadically, since first parents on leave care for their small children themselves and after that childcare infrastructure provided by the states is available to families. Where the public support to families is weak, fewer grandparents are engaged in childcare, however extensively. The same was concluded by Glaser et al. (2013). In Igel and Szydlik (2011) the expenditure on family and childcare infrastructures explained 6% of the total variation in the probability of grandparental childcare and 5% of the total variation in the intensity of that care. Higher levels of intensive grandparental childcare are associated with low labour force participation among younger and older women and low formal childcare provision.

Similarly, Bordone, Arpino and Aassve (2012) found out that the predicted probability of grandparental childcare on a daily basis is the highest in countries with low state support in terms of parental leave and formal childcare. Also, legal obligation to support children regardless of their age results in higher predicted probability of grandparental childcare.

The study by Jappens and Van Bavel (2012) showed that mothers with children under age 12 are more likely to use grandparents as the main source of childcare in those European regions that are characterised by more conservative attitudes towards gendered family roles.

Hypotheses

(1) The grandparents' almost daily engagement in looking after their pre-school grandchildren significantly decreases with the duration of well-paid post-natal leave and the availability of formal childcare. The well-paid leave is defined as the one with the wage compensation rate of at least two-thirds.

(2) Other things equal, the almost daily looking after grandchildren aged 0-2 years is significantly more frequent if the parental leave is not well paid than if it is well paid.

(3) The probability of almost daily childcare by grandparents is highest in the countries with a relatively short and/or not well paid parental leave, a low availability of formal pre-school childcare, high employment rates of women aged 25-40 years, and low employment rates of women aged 50-64 years.

Data

In our analysis we use the Survey of Health, Ageing and Retirement in Europe (SHARE) microdata and contextual macro indicators on the parental leave, early childhood education and care and female employment.

We are using the data of the fifth wave of the Survey of Health, Ageing and Retirement in Europe (SHARE), collected in the year 2013. Our sample includes grandparents whose youngest grandchild is of a pre-school age (0-5 years) in fourteen European countries: Austria, Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Switzerland, Belgium, Czech Republic, Luxembourg, Slovenia and Estonia.

Information on the practice and frequency of grandparental childcare is available from answers to two questions: 1) "During the last twelve months, have you regularly or occasionally looked after [your grandchild/your grandchildren] without the presence of the parents?", and 2) "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?« The characteristics of grandparents and their children will also be taken into account.

We included several contextual macro indicators that reflect policy and practice in the areas that are proven or supposed to be closely related to the need for grandparental childcare and were available for all selected countries (see Table 2). The first variable is child's age (in months) at the end of well-paid post-natal leave. It reflects the country-specific policy in the areas of family policy, labour relations and work-life balance. Former research has shown that the wage compensation rate influences the duration of post-natal leave taken, which – together with the availability of formal childcare – has a strong impact on the need for informal care of pre-school children, also the one provided by their grandparents. We use information on the parental leave provisions in 2011 as provided by the International Network on Leave Policies & Research (Moss, 2011).[1] A well paid leave is defined as the one paid to all parents at high flat rate (€1,000/month or more) or 66 per cent of earnings or more. We presume that grandparents are more likely to care for their grandchildren aged 0-2 years if the child's age at the end of the well paid leave is higher.

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[1] Alternatively, see:
http://www.leavenetwork.org/fileadmin/Leavenetwork/overviews_2014/final.Total_statutory_leave.pdf.

The variables that reflect the countries' policies regarding early childhood education and care are: participation rates of 0-2 year olds in childcare and pre-school services,[2] and participation rates of 3-5 year olds in pre-primary education or primary school in 2011. The source of data is the OECD Family Database.

Finally, the data on the employment of women in 2011 are included: 1) employment rates of mothers aged 20-49 years with the youngest child below the age of six years,[3] and 2) employment rates of women aged 50-64 years[4]. Women aged 50-64 years are likely to be grandmothers of pre-school children. They may choose to leave the labour market in order to care for their small grandchildren, particularly in the case of low availability and high cost of formal early childhood education and care. In that age they are expected to be fit enough to take over this responsibility if there is such need and if they wish so. The source of data is Eurostat.

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[2] Children in day-care centres and pre-school (public and private) and those who are cared for by licenced childminders.

[3] See: Employment rate of adults by sex, age groups, educational attainment level, number of children and age of youngest child (%) [lfst_hheredch].

[4] See: Employment rates by sex, age and citizenship (%) [lfsa_ergan].

Table 2: Selected contextual country variables

Country	Child's age (months) at end of well-paid* leave	Participation rates in childcare and pre-school services	Participation rates in pre-primary education or primary school	Employment rate of mothers (age 20-49; child < 6 y.)	Employment rate of women (age 50-64)
		0-2 year olds	3-5 year olds		
	2011	2011	2011	2011	2011
Austria	14	16.6	83.2	68.1	48.8
Belgium	3.3	51.9**	96.6	68.5	43.9
Czech Republic	5.1	6.2	78.1	39.7	50.6
Denmark	10.7	67.0	95.5	79.7	63.7
Estonia	18.2	24.0	88.8	52.8	65.2
France	3.0	51.3	99.2	65.2	51.4
Germany	13.9	25.4	94.2	60.6	62.4
Italy	3.7	28.1	95.3	53.0	38.0
Netherlands	2.3	59.6	95.3	75.3	55.4
Slovenia	11.2	44.5	87.3	81.9	40.6
Spain	3.7	40.9	99.1	57.7	43.8
Sweden	13.3	47.3	93.7	74.1	73.7
Switzerland	3.3	33.3	46.5	…	67.9

*Alternatively: 14 month well paid.

** The data is for 2012.

Sources: Moss, 2011 (for parental leave); OECD Family Database (for formal childcare); Eurostat (for employment).

Method

We used logistic regression models to check our hypotheses. In the model, our main dependent variable was the grandparents' almost daily engagement in looking after their pre-school grandchildren, constructed as previously described. Our independent variables (separated under two main categories: contextual/hypothesis-verifying variables; confounding variables) were:

Contextual variables:

DurWPLeave: Duration of well paid leave - child's age (months) at end of well paid leave;

AvailFormCare: A proxy for the availability of formal care - participation rates in childcare and pre-school and education services;

NotWP-WP: A difference between child's age (months) at end of leave and child's age (months) at end of well paid leave;

EmpRateMoth: Employment rate of mothers (age 20-49; child < 6 y.);

EmpRateWom: Employment rate of women (age 50-64);

<u>*Confounding variables:*</u>

Gender: A binary variable, 0-men, 1-women;

Age: A continuous variable, measuring the age of the respondents, limited to those of 50 and older;

EduYears: A continuous variable, measuring the years of education of respondents;

IncomeMid: A dummy variable, having the value of 1 if the respondent is in the middle tertile of the income distribution (calculated separately for individual countries), and 0 otherwise;

IncomeHigh: A dummy variable, having the value of 1 if the respondent is in the top tertile of the income distribution (calculated separately for individual countries), and 0 otherwise;

Employed: A dummy variable, having the value of 1 if the respondent is employed and 0 otherwise;

OtherNonRet: A dummy variable, having the value of 1 of the respondent is neither employed nor retired, and 0 otherwise;

HhSize: A continuous variables, measuring the size of the household where the respondent is living;

Settlement: A dummy variable, having the value of 1 if the respondent is living in urban, and 0 if s/he is living in rural environment;

Living with Part: A dummy variable, having the value of 1 if the respondent is living with a partner and 0 otherwise;

Ch Liv with Part: A dummy variable, having the value of 1 if the respondent's child (father/mother of his/her grandchildren) is living with a partner and 0 otherwise;

Nr Grandch: A continuous variable, measuring the number of respondent's grandchildren;

Child Empl: A dummy variable, having the value of 1 if the respondent's child (father/mother of his/her grandchildren) is employed, and 0 otherwise;

Child SelfEmp: A dummy variable, having the value of 1 if the respondent's child (father/mother of his/her grandchildren) is self-employed, and 0 otherwise;

Child ParentL: A dummy variable, having the value of 1 if the respondent's child (father/mother of his/her grandchildren) is on a parental leave, and 0 otherwise.

Welfare regimes: dummies for four main welfare regimes in the data are included - Social-democratic: Sweden, Denmark; Continental: Netherlands, Austria, Belgium, France, Germany, Switzerland, Luxembourg; Mediterranean: Italy, Spain; Eastern-European: Czech Republic, Estonia, Slovenia.

The main model we estimate is therefore the following:

$$\log\left(\frac{p_i}{1 - p_i}\right) = \beta_0 + \beta_1 x_{1,i} + \beta_2 x_{2,i} + \cdots + \beta_m x_{m,i} \qquad (1)$$

where p_i is the unobserved probability of positive outcome, β_k are the coefficients to estimate and $x_{k,i}$ are the independent variables.

Results

H1a: *The grandparents' almost daily engagement in looking after their pre-school grandchildren significantly decreases with the duration of well-paid post-natal leave.*

In the basic model, the hypothesis is confirmed: duration of well paid leave has a negative effect on the probability of grandparents' almost daily engagement in looking after their pre-school grandchildren. When we include in the model also child and partner variables, the hypothesis is moreover confirmed and even strengthened. Furthermore, the effect of grandparent's income has disappeared, while there is the effect of settlement: grandparents living in rural areas have a higher probability of almost daily engagement in looking after their pre-school grandchildren. Finally, those living with partners have a lower probability of almost daily engagement in looking after their pre-school grandchildren.

As for the confounding variables, grandmothers tend to have a higher probability of almost daily engagement in looking after their pre-school grandchildren than grandfathers. Grandparents with higher education and income and employed grandparents (tend to) have a lower probability of an almost daily engagement in looking after their pre-school grandchildren. The probability is higher for those living in larger households.

Table 1: Verification of the Hypothesis 1a, logit models

	Basic model			Model with child var		
	Coeff.		Z	Coeff.		Z
Gender	0.3335	***	6.06	0.3184	***	3.11
Age	-0.0058		-1.39	-0.0112		-1.42
EduYears	-0.0463	***	-7.12	-0.0523	***	-4.07
IncomeMid	-0.0281		-0.46	-0.0919		-0.78
IncomeHigh	-0.1264	*	-1.97	-0.1049		-0.87
Employed	-0.7630	***	-9.23	-0.8254	***	-5.46
OtherNonRet	0.0205		0.28	-0.0494		-0.36
HhSize	0.4386	***	16.98	0.4538	***	8.57
Settlement	-0.0457		-0.86	-0.3442	***	-3.42
Living with Part				-0.2749	**	-2.09
Ch Liv with Part				0.0560		0.40

	Basic model			Model with child var		
Nr Grandch				0.0041		1.34
Child Empl				-0.2063		-1.20
Child SelfEmp				-0.2073		-1.51
Child ParentL				0.1130		0.55
DurWPLeave	*-0.0214*	***	*-4.38*	*-0.0664*	***	*-6.42*
	0.0430			0.2020		
Constant	-1.8833	***	-5.43	-0.5060		-0.74
Nr. Obs.	12805			4022		
LR chi2	592.61		***	260.39		***
Log likelihood	-5282.32			-1565.94		
Pseudo R2	0.0531			0.0768		

Note: Statistical significance: *** - 1%; ** - 5%; * - 10%
Source: Own calculations.

H1b: *The grandparents' almost daily engagement in looking after their pre-school grandchildren significantly decreases with the availability of formal childcare.*

In the basic model, the hypothesis is confirmed: availability of formal childcare has a negative effect on the probability of grandparents' almost daily engagement in looking after their pre-school grandchildren. When we include in the model other child and partner variables, the hypothesis is strengthened. Also, grandparents living with a partner have a lower probability of almost daily engagement in looking after their pre-school grandchildren. The same is true for grandparents whose child (i.e., grandchild's parent) is either self-employed and/or on parental leave.

Finally, there are not many changes in the confounding variables. Grandmothers again tend to have a higher probability of almost daily engagement in looking after their pre-school grandchildren than grandfathers. Grandparents with higher education and income as well as employed grandparents (tend to) have a lower probability of grandparents' almost daily engagement in looking after their pre-school grandchildren. Grandparents living in larger households have a higher probability of almost daily engagement in looking after their pre-school grandchildren.

Table 2: Verification of the Hypothesis 1b, logit models

	Basic model			Model with child var		
	Coeff.		Z	Coeff.		Z
Gender	0.2671	***	4.81	0.2520	**	2.43
Age	-0.0027		-0.64	-0.0045		-0.56
EduYears	-0.0474	***	-7.21	-0.0587	***	-4.52
IncomeMid	0.0052		0.08	-0.0984		-0.83
IncomeHigh	-0.1166	*	-1.80	-0.0778		-0.64
Employed	-0.6851	***	-8.24	-0.6476	***	-4.21
OtherNonRet	0.1657	**	2.26	0.2046		1.47
HhSize	0.4097	***	15.78	0.4593	***	8.57
Settlement	0.0150		0.28	-0.1077		-1.07

	Coeff.		Z	Coeff.		Z
Living with Part				-0.2540	*	-1.91
Ch Liv with Part				0.1213		0.87
Nr Grandch				0.0051		1.47
Child Empl				-0.2571		-1.48
Child SelfEmp				-0.2288	*	-1.65
Child ParentL				-0.4218	**	-1.98
AvailFormCare	*-0.0199*	***	*-14.13*	*-0.0284*	***	*-10.50*
	0.3035			0.3896		
Constant	-1.4421	***	-4.16	-0.4932		-0.71
Nr. Obs.	12805			4022		
LR chi2	775.03		***	331.75		***
Log likelihood	-5191.11			-1530.27		
Pseudo R2	0.0695			0.0978		

Note: Statistical significance: *** - 1%; ** - 5%; * - 10%
Source: Own calculations.

H2: *Other things equal, the almost daily looking after grandchildren aged 0-2 years is significantly more frequent if the parental leave is not well paid than if it is well paid.*

In the basic model, the hypothesis is confirmed: the almost daily looking after grandchildren aged 0-2 years is significantly more frequent if the parental leave is not well paid than if it is well paid. When we include in the model also child and partner variables, the hypothesis is strengthened. Also, the grandparents with higher number of grandchildren have a lower probability of almost daily engagement in looking after their pre-school grandchildren, but the effect is very weak in statistical significance. Finally, the grandparents that have a child on parental leave have a lower probability of an almost daily engagement in looking after their pre-school grandchildren.

As for the confounding variables, we can observe a negative effect of grandparents' education and income, and a positive effect of their household size and their being neither employed nor retired.

Table 3: Verification of the Hypothesis 2, logit models

	Basic model			Model with child var		
	Coeff.		Z	Coeff.		Z
Gender	-0.2781		-0.60	-0.0913		-0.18
Age	0.0190		0.42	0.0126		0.27
EduYears	-0.0847		-1.55	-0.0999	*	-1.80
IncomeMid	-0.4750		-0.97	-0.4968		-0.99
IncomeHigh	-1.0740	*	-1.98	-1.1049	*	-1.92
Employed	-0.3576		-0.49	-0.6192		-0.82
OtherNonRet	1.4289	**	2.01	1.2961	*	1.80
HhSize	0.4954	**	2.57	0.6501	***	3.10
Settlement	0.0510		0.11	-0.3007		-0.61

	Coeff.		Z	Coeff.		Z
Living with Part				-0.5996		-0.93
Ch Liv with Part						
Nr Grandch				-0.1171	*	-1.64
Child Empl				0.2487		0.28
Child SelfEmp				0.1741		0.26
Child ParentL				-1.3135	*	-1.92
NotWP-WP	*0.0682*	***	*3.93*	*0.0804*	***	*4.28*
	0.3127			0.2991		
Constant	-3.7037		-1.00	-2.6586		-0.70
Nr. Obs.	307			307		
LR chi2	64.00		***	72.35		***
Log likelihood	-80.96			-76.79		
Pseudo R2	0.2833			0.3202		

Note: Statistical significance: *** - 1%; ** - 5%; * - 10%
Source: Own calculations.

H3a: *The probability of almost daily childcare by grandparents is highest in the countries with a high employment rate of mothers (age 20-49; child < 6 years).*

In the basic model, the hypothesis is rejected: the probability of almost daily childcare by grandparents is highest in the countries with a low employment rate of mothers. The hypothesis is rejected even when we include the child- and partner variables into the model. Only in the case when also the dummies for welfare regimes are included into the model the hypothesis cannot be neither confirmed nor rejected The probability of almost daily childcare by grandparents is higher in the Mediterranean countries (as compared to the Eastern European countries as a reference category) and lower in the social-democratic and continental countries.

As for the effects of the confounding variables, beside the already observed effects (of gender, education, income, employment status and household size) grandparents living in rural areas tend to have a higher probability of almost daily engagement in looking after their pre-school grandchildren.

Table 4: Verification of the Hypothesis 3a, logit models

	Basic model			Model with child var			Model with welf reg		
	Coeff.		Z	Coeff.		Z	Coeff.		Z
Gender	0.2555	***	4.56	0.2684	***	2.59	0.3409	***	3.16
Age	-0.0032		-0.77	-0.0082		-1.01	-0.0115		-1.37
EduYears	-0.0617	***	-8.95	-0.0572	***	-4.38	-0.0125		-0.90
IncomeMid	0.0041		0.07	-0.0885		-0.74	-0.1741		-1.41
IncomeHigh	-0.0894		-1.36	-0.1034		-0.85	-0.3515	***	-2.76
Employed	-0.6894	***	-8.19	-0.6908	***	-4.48	-0.6405	***	-4.02
OtherNonRet	0.0844		1.14	0.1009		0.73	-0.1375		-0.95
HhSize	0.4005	***	15.33	0.4433	***	8.25	0.3036	***	5.54
Settlement	-0.0938	*	-1.74	-0.2418	**	-2.41	-0.3157	***	-2.96

	Coeff.		Z	Coeff.		Z	Coeff.		Z
Liv with P				-0.2123		-1.58	-0.0208		-0.15
Ch Liv with P				0.1183		0.84	-0.1629		-1.11
Nr Grandch				0.0049		1.40	0.0187		1.06
Child Empl				-0.2378		-1.36	-0.0829		-0.46
Child SelfEmp				-0.2044		-1.47	-0.1253		-0.87
Child ParentL				-0.3657	*	-1.71	0.0016		0.01
EmpRateMoth	*-0.0288*	***	*-14.38*	*-0.0407*	***	*-10.9*	*0.0035*		*0.75*
SocDem							-0.7508	***	-5.40
Contin							-2.8237	***	-10.59
Mediterr							0.6054	***	4.10
	0.2991			0.4109					
Constant	-0.0130		-0.03	1.3308	*	1.84	-0.9254	0.22	-1.23
Nr. Obs.	12269			4001			4001		
LR chi2	788.45		***	338.85		***	571.71		***
Log likelihood	-5049.49			-1521.57			-1405.14		
Pseudo R2	0.0724			0.1002			0.1690		

Note: Statistical significance: *** - 1%; ** - 5%; * - 10%
Source: Own calculations.

H3b: *The probability of almost daily childcare by grandparents is highest in the countries with low employment rates of women aged 50-64 years.*

In the basic model, the hypothesis is confirmed: the probability of almost daily childcare by grandparents is highest in the countries with a low employment rates of women aged 50-64 years. The effect is strongly significant in all three analysed models. The hypothesis is again confirmed when we include the child- and partner variables into the model.

Also, when the confounding variables are included, the previously observed relationships in terms of gender, education, income, employment status, household size and settlement are confirmed.

Table 5: Verification of the Hypothesis 3b, logit models

	Basic model			Model with child var		
	Coeff.		Z	Coeff.		Z
Gender	0.3596	***	6.34	0.3431	***	3.22
Age	-0.0013		-0.30	-0.0036		-0.45
EduYears	-0.0296	***	-4.38	-0.0215	*	-1.63
IncomeMid	-0.0791		-1.26	-0.1978		-1.62
IncomeHigh	-0.2428	***	-3.67	-0.3338	***	-2.66
Employed	-0.5317	***	-6.27	-0.5722	***	-3.70
OtherNonRet	-0.1007		-1.36	-0.0606		-0.44
HhSize	0.3708	***	14.13	0.3164	***	5.84
Settlement	-0.0099		-0.18	-0.3264	***	-3.17
Living with Part				-0.0524		-0.39
Ch Liv with Part				-0.1317		-0.92

Nr Grandch				0.0060		0.69
Child Empl				-0.0212		-0.12
Child SelfEmp				-0.2124		-1.50
Child ParentL				0.2845		1.36
EmpRateWom	*-0.0673*	***	*-23.28*	*-0.0770*	***	*-14.95*
	0.6098			0.6494		
Constant	1.0747	***	2.90	2.3197	***	3.23
Nr. Obs.	12805			4022		
LR chi2	1206.44		***	482.18		***
Log likelihood	-4975.40			-1455.05		
Pseudo R2	0.1081			0.1421		

Note: Statistical significance: *** - 1%; ** - 5%; * - 10%
Source: Own calculations.

Conclusion

The intensity of grandparental childcare varies considerably across Europe. This is due to individual demographic and socio-economic characteristics of grandparents, their children and grandchildren (age and activity status, how close the grandparents live, etc.), but also to various country-specific factors (like the employment rate of mothers and grandmothers, provision of formal early childhood education and care , cultural factors (like prevailing attitudes towards working mothers).- The situation is very likely to change in the future due to a considerable increase in employment rates of both younger and older women. In recent decades, many European countries witnessed a change in the women's labour market behaviour, also stimulated by the European Union (EU) policies. Also, in order to keep the pension systems sustainable, retirement has been pushed to an ever higher age. All this means that grandmothers (and grandfathers) will be less available for looking after their pre-school grandchildren.

The EU has also stimulated the inclusion of pre-school children of all ages in formal early childhood education and care, which will further enable (full-time) employment of mothers. Otherwise available grandparents may be on general much less ready to provide childcare on a (full-time) daily basis than occasionally or for a couple of hours per day.

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