

# **Grandparenting and cognitive functioning: Does it matter what grandparents and grandchildren do together? Evidence from England**

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## **Abstract**

Several studies have reported an average positive association between older people's involvement in grandparental childcare and their cognitive outcomes, recognising this activity within the active ageing framework, bearing an intellectually stimulating component. However, does it matter what do older people do with their grandchildren when they look after them? We aim to shed light on the mechanisms through which grandchild care affects grandparents' cognitive functioning, considering for the first time the activities that grandparents undertake with and for their grandchildren. To do so, unique data from waves 8-10 of the English Longitudinal Study of Ageing (ELSA) will be used in a longitudinal approach that considers covariates and cognition at baseline (wave 7). Regression models are so far run on the sample of grandmothers and grandfathers up to wave 9 (data from wave 10 will be shortly available) to explore the role of a variety of activities and their frequency on levels of three cognitive dimensions (fluency, immediate recall, and delayed recall). A positive effect of grandchild care is found on all outcomes. Such an effect is however driven by "highly-cognitive" activities. Results do not provide evidence for a role of frequency of grandchild care in shaping grandparents' cognitive functioning. The findings highlight the need to consider the activities done within care relationships and, among social- and policy-implications, they encourage intergenerational activities to age well.

**Keywords:** grandparental childcare; cognition; activities; ELSA; longitudinal

## **Introduction**

The engagement of grandparents within the family as providers of care to grandchildren has become a central piece to the puzzle of the many challenges in ageing societies. Within the active ageing framework, which promotes activity engagement to foster health and wellbeing over the life course through to older age, grandchild care provision has been recognised as a

social activity with an intellectually stimulating component (e.g., Ahn & Choi, 2019 in China; Arpino & Bordone, 2014 in Europe; Sneed & Schulz, 2019 in the USA; Zuo & Silverstein, 2018 in Korea). In England, similarly to continental Europe, this relates to more than half of the grandparents (Di Gessa et al., 2020; Hank & Buber, 2009).

This study aims to address an important lacuna in our understanding of the link between grandchild care and cognition, accounting for the activities that grandparents undertake with and for their grandchildren. To do so, we draw on theoretical insights from the *scaffolding theory of ageing and cognition* (Park & Reuter-Lorenz 2009; Reuter-Lorenz & Park, 2014), suggesting that individuals who are engaged in cognitively stimulating activities fare better cognitively than their less engaged counterparts because of both a direct neural enrichment that preserves brain structure and function and an indirect life course enrichment pathway. This holds especially for “purposeful engagement”, i.e., if that activity practices, involves, or reinforces those processes that overlap with the processing required to perform on cognitive tasks.

Arpino and Bordone (2014) found for the first time a positive effect of grandchild care on preserving cognitive abilities of grandparents in Europe. More recently, these results have been confirmed on Korean (Ahn & Choi, 2019) and USA data (Sneed & Schulz, 2019). Empirical findings have however provided evidence for compensatory processes in the face of structural decline, depending upon the nature of the enrichment variable. Accordingly, active engagement in activities with grandchildren is expected to benefit cognitive functions, depending on the type of activities in which grandparents engage.

In line with Zhang and colleagues (2019), we consider doing *leisure* activities (i.e., played with grandchild[ren] and/or took part in leisure activities with them) and *homework* (i.e., helped grandchild[ren] with their homework) with grandchildren as highly-cognitive activities. Activities like whether grandchild[ren] stayed overnight without parents; looking after grandchild[ren] when they are ill; preparing meals for the grandchild[ren]; taking the grandchild[ren] to, or collecting them from nursery, playgroup or school; just being around in case they needed anything are categorised as less-cognitive activities. We thus advance our first hypothesis (H1) that *grandparents will receive greater benefit to their cognitive health if they engage in highly-cognitive activities, such as helping their grandchildren with homework and engaging in leisure activities with them.*

In line with the *role enhancement theory* assumption that social roles come along with privileges and resources (Sieber, 1974), grandparents’ wellbeing might be increased by the recognition of care provision to grandchildren and caring for a grandchild can give the

grandparents an increased purpose for living (Silverstein & Giarrusso, 2013), stimulating engagement in (new) activities, and in turn benefit their cognitive health. However, it also proposes more benefits gain with more frequent engagement (Thoits, 1983). Although we entertain the possibility of a role strain resulting from heavy investments in high frequency grandchild care (e.g., coresiding/primary caregivers), our focus is on secondary caregiving. We thus formulate our second hypothesis (H2) that *the more frequent the engagement in grandchild care, the larger the benefits for grandparents' cognitive functioning.*

## **Materials and method**

### ***Data and sample selection***

Our analyses are based on waves 7-10 of the English Longitudinal Study of Ageing (ELSA), a multidisciplinary longitudinal survey, representative of the noninstitutionalized population age 50 and over in England (Stephens et al., 2013). We retained respondents interviewed in at least two waves. As in Arpino and Bordone (2014), we restricted our sample to women and men who had at least one child and one grandchild at wave 7. The final sample was composed of 1,863 women and 1,332 men in the preliminary analyses up to wave 8. Data from waves 9 and 10 will be added as soon as the latter will be released.

Cognitive functioning is measured using three cognitive tests: in the test of verbal fluency, respondents were asked to name as many animals as they could think of within one minute. By drawing on knowledge and representing products of processing carried out in the past, it captures crystallised abilities. In the tests of recall, which measured verbal memory (i.e., fluid abilities), the interviewer first read a list of 10 common words to the respondent and then asked the respondent to recall aloud as many words as possible from the list in any order (immediate recall). Up to one minute was allowed for recall. The test was repeated at the end of the cognitive function module without the words being read again (delayed recall). Although knowledge plays a critical role in all cognitive tests (Hertzog, 2008), the delayed recall measure mainly taps on recently stored information. Moreover, both recall measures involve learning new information (i.e., a list of objects).

The first independent variable of interest is whether the respondent has provided grandchild care to any of their grandchildren in the 12 months before the interview (yes or no). Second, we consider the type of activities carried out by grandparents with their grandchildren: *no care*; *only less-cognitive activities*; and *highly-cognitive activities*, which we distinguish between *leisure* (played with grandchild[ren] and/or took part in leisure activities with them) and *leisure and homework* (played with grandchild[ren] and/or took part in leisure activities

with them; or helped grandchild[ren] with their homework). Almost all grandparents helping grandchildren with homework in our sample do also leisure activities with them, while the opposite is not true. Third, we account for the frequency of involvement (*no care; occasional care; frequent care*) and fourth for both type and frequency of engagement: *no care; only less-cognitive activities; at least one activity between leisure and homework done occasionally; at least one activity between leisure and homework done frequently*.

The choice of control variables was motivated by evidence regarding the determinants of older adults' cognition and their provision of grandchild care, that is, potential confounding variables.

### ***Analytical strategy***

Grandparents who provide childcare could be different from other grandparents in observable and unobservable ways. In the presence of unobserved factors and/or reverse causality, an ordinary least squares (OLS) regression produces biased estimates. As ELSA asks about the activities done together by grandparents and grandchildren from wave 8, we exploit its panel dimension and, following other studies (Arpino & Gómez-León, 2020; Tosi & Grundy, 2019), we account for both unobserved factors and reverse causality by considering the controls and cognitive functioning at baseline (wave 7) while measuring the outcome at follow-up.

### **Preliminary results and discussion**

We found a general overall positive effect of grandchild care on all outcomes (H1). Such an effect is largest for verbal fluency. Such an effect of grandchild care provision is however more evident when highly-cognitive activities are done. Differently from what expected (H2), the frequency of caregiving does not result to be relevant in order to shape cognitive functioning. Indeed, where significant, both occasional and frequent care show similar associations with cognition. While the results point at a larger beneficial effect when highly-cognitive activities are done more frequently, none of the differences between frequent and occasional care were statistically significant.

We could add to the literature a long-awaited analysis accounting for the different activities that grandparents do with and for their grandchildren while looking after them. The lack of such information in large surveys so far had been often recognized as a limitation of studies on grandchild care. We however acknowledge that the results of this study may still be partly a signal of endogeneity. Indeed, despite controlling for past cognitive performance, those grandparents involved more frequently in grandchild care but doing only less-cognitive

activities might lack ability to engage in highly-cognitive activities, e.g., because of poor mental, cognitive and/or physical health. However, grandparents who only marginally engage in grandchild care (being this occasionally or by taking on less-cognitive activities), might do so as they (also) engage in other (non-grandparenting-related) activities that potentially contribute to their cognitive stimulation too. These activities could not be fully captured by our control variables. Future steps will include robustness checks and within-individual models once the longer panel (waves 7-10) will be available).

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**Table 1.** Descriptive statistics on all variables used in the multivariable analyses (percentages for categorical variables; mean (M) and standard deviations (sd) for numerical variables)

Variables	Men		Women	
<b>Outcomes</b>				
Verbal fluency (M; sd)	21.4	(6.4)	20.8	(6.6)
Immediate recall (M; sd)	6.0	(1.6)	6.3	(1.6)
Delayed recall (M; sd)	4.5	(2.0)	5.0	(2.1)
<b>Explanatory variables</b>				
<i>Provision of grandchild care (Yes vs No)</i>	57.6		62.3	
<i>Types of grandchild care activities<sup>a</sup></i>				
less-cognitive	7.4		8.3	
leisure	28.6		26.1	
leisure & homework	21.6		27.9	
<i>Frequency of grandchild care<sup>a</sup></i>				
occasionally	27.1		23.0	
frequently	30.5		39.3	
<i>Types and frequency of grandchild care activities<sup>b</sup></i>				
at least one between leisure & homework – occasionally	27.4		25.1	
at least one between leisure & homework – frequently	22.8		28.9	
<b>Controls</b>				
Age (M; sd)	67.8	(6.6)	67.3	(7.1)
<i>Education</i>				
low	17.4		24.8	
medium	61.9		63.1	
high	20.7		12.2	
In a partnership	66.7		54.6	
<i>Activity status</i>				
employed	30.6		25.6	
retired	66.2		65.9	
other	3.2		8.5	
Volunteering	25.8		26.8	
Caregiving	11.2		18.7	
ADL (M; sd)	0.18	(0.6)	0.19	(0.6)
IADL (M; sd)	0.17	(0.6)	0.21	(0.6)
Smoking	11.5		9.2	
No vigorous physical activities	62.0		72.1	
Verbal fluency at wave 7 (M; sd)	21.9	(6.5)	22.0	(6.1)
Immediate recall at wave 7 (M; sd)	6.4	(1.5)	6.2	(1.6)
Delayed recall at wave 7 (M; sd)	5.2	(1.8)	4.9	(1.9)
N	1,332		1,863	

Note: a) The category “no care” is not repeated to save space. b) The categories “no care” and “only less-cognitive” are not repeated to save space. Source: ELSA, waves 7-8.