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Antti O. Tanskanen

Mirkka Danielsbacka

David A. Coall

Edith Cowan University, d.coall@ecu.edu.au

Markus Jokela

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Transition to Grandparenthood and Subjective Well-Being in Older Europeans: A Within-Person Investigation Using Longitudinal Data

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Antti O. Tanskanen^{1,2,3} , Mirikka Danielsbacka^{2,3}, David A. Coall^{4,5}, and Markus Jokela¹

Abstract

The transition to grandparenthood, that is the birth of the first grandchild, is often assumed to increase the subjective well-being of older adults; however, prior studies are scarce and have provided mixed results. Investigation of the associations between grandparenthood and subjective well-being, measured by self-rated life satisfaction, quality of life scores, and depressive symptoms, used the longitudinal Survey of Health, Ageing and Retirement in Europe from 13 countries, including follow-up waves between 2006 and 2015 ($n = 64,940$ person-observations from 38,456 unique persons of whom 18,207 had two or more measurement times). Both between-person and within-person (or fixed-effect) regression models were executed, where between-person associations represent results across individuals, that is, between grandparents and non-grandparents; within-person associations represent an individual's variation over time, that is, they consider whether the transition to grandparenthood increases or decreases subjective well-being. According to the between-person models, both grandmothers and grandfathers reported higher rate of life satisfaction and quality of life than non-grandparents. Moreover, grandmothers reported fewer depressive symptoms than women without grandchildren. The within-person models indicated that entry into grandmotherhood was associated with both improved quality of life scores and improved life satisfaction. These findings are discussed with reference to inclusive fitness theory, parental investment theory, and the grandmother hypothesis.

Keywords

Fixed-effect regression, grandmother hypothesis, inclusive fitness theory, parental investment theory, Survey of Health, Ageing and Retirement in Europe, subjective well-being, transition to grandparenthood

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Grandparents share approximately 25% of genes with their grandchildren, meaning that the birth of a grandchild tends to improve the inclusive fitness of the individuals experiencing the event (Hamilton, 1964). Indeed, becoming a grandparent can be defined as one of the most important and life-affirming experiences for older adults, which is also likely to influence older adults' emotional well-being (Thiele & Whelan, 2008). According to evolutionary theory, positive emotions may be indicated as responses to events increasing one's fitness (Grinde, 2012). It is argued that the transition to grandparenthood can improve older adults' sense of necessity and provide them with feelings of continuity and even immortality (Kivnick, 1982a, 1982b). Hence, entry into grandparenthood can be assumed to improve the subjective well-being of older adults,

although this question has received surprisingly scarce attention among scholars. Moreover, current evidence is mostly limited to whether grandparenthood (i.e., being a grandparent) is associated with subjective well-being among older adults.

¹ University of Helsinki, Finland

² University of Turku, Finland

³ Population Research Institute, Helsinki, Finland

⁴ Edith Cowan University, Joondalup, Western Australia, Australia

⁵ University of Western Australia, Perth, Western Australia, Australia

Corresponding Author:

Antti O. Tanskanen, University of Turku, Turku 20014, Finland.

Email: antti.tanskanen@utu.fi



Little is known about how the *transition to grandparenthood* influences subjective well-being.

Entry into grandparenthood may not be equally associated with subjective well-being among women and men. Compared to most other animals, human females cease reproducing early in relation to their long life span (Hawkes et al., 1998). The long postreproductive life span of human females is an evolutionary puzzle because on face value it is not consistent with the perspective that organisms try to maximize their inclusive fitness by reproducing until death (Williams, 1957). Attempts to explain this puzzle such as the grandmother hypothesis have been proposed. The grandmother hypothesis states that the long postmenopausal life span of human females might have evolved to enable postreproductive older women to contribute to the fertility of their adult children and the survival of their grandchildren (Hawkes, 2003). In practice, the birth of a grandchild may contribute to the inclusive fitness of postreproductive older women, whereas older men can potentially have children until they die (Coall & Hertwig, 2010, 2011; Euler, 2011). At the proximate level, this may in turn translate into sex differences with the arrival of a grandchild having a greater impact on grandmothers' than grandfathers' well-being.

In addition to the grandmother hypothesis, other theories predict that differences in family orientations exist between the sexes. Parental investment theory acknowledges that because of pregnancy and lactation, a single offspring requires a greater obligatory investment from women than men (Trivers, 1972), which can also explain why women tend to have greater feelings of empathy toward their descendants (Rotkirch & Janhunen, 2010). Moreover, because of paternity uncertainty women can be sure that the children to whom they give birth are genetically related to them, while men can never be as sure that the children are actually theirs. This may provide a potential explanation for why older women have greater evolved tendency to familism than older men (e.g., Smith, 1991; Tanskanen & Danielsbacka, 2019). Thus, the birth of a grandchild may be a more favorable event for older women than for older men.

Corresponding to the predictions derived from the above-mentioned theories, a set of studies has found that grandmothers tend to be more satisfied with being a grandparent than grandfathers (e.g., Neugarten & Weinstein, 1964; Thiele & Whelan, 2008; Thomas, 1986). For instance, Somary and Stricker (1998) asked 152 American "grandparents-to-be" about their expectations and experiences of being a grandparent and followed up with 103 of these grandparents after the grandchild was born. They determined that grandmothers expected and experienced more satisfaction from being a grandparent than grandfathers. However, these studies were based on small-scale, nonrepresentative samples.

Three studies have investigated whether grandparents report higher subjective well-being than nongrandparents, using large-scale and representative data. When analyzing data from the UK of individuals aged 40 years and older, Powdthavee (2011) found that being a grandparent was associated with increased life satisfaction. Similarly, using data from 20 European countries, Arpino, Bordone, and Balbo (2018) identified

an association between grandparenthood and improved subjective well-being, although this association was relatively weak. In contrast, using data of older Finns, Danielsbacka and Tanskanen (2016) detected that grandparenthood was not correlated with self-rated happiness after controlling for several potentially confounding factors. None of these three aforementioned studies reported striking differences between women and men.

To the best of our knowledge, only one study has specifically examined whether *transition to grandparenthood* is associated with subjective well-being among older adults. Using three waves of the Survey of Health, Ageing and Retirement in Europe (SHARE) including data from 15 countries, Sheppard and Monden (2019) conducted within-person (or fixed-effect) regression models and compared an individual's current well-being as a grandmother or grandfather with her or his earlier well-being, measured before the grandchild was born. They found that entry into grandmotherhood was associated with decreased depressive symptoms. However, they found no support for the prediction that entry into grandparenthood is associated with changes in self-rated life satisfaction. As a within-person analysis, Sheppard and Monden's pioneering work has several obvious strengths that improve our understanding of the potential causal relationship between grandparenthood and well-being. The current study replicates Sheppard and Monden's study and, by examining additional SHARE wave and outcome measure, extends the field of research further. One general limitation of within-person models concerns the small number of participants, even in large data sets, who could experience changes regarding the outcome and main independent variables of interest (Curran & Bauer, 2011). We reduce this risk to sample size by preserving as many observations as possible across the four waves of SHARE.

In addition to self-rated life satisfaction and depressive symptoms, we measured subjective well-being via quality of life scores. In the SHARE, quality of life in older age is measured with the questionnaire that includes 12 questions related to four dimensions of subjective well-being, namely control, autonomy, self-realization, and pleasure (CASP-12) (Higgs, Hyde, Wiggins, & Blane, 2003; Hyde, Wiggins, Higgs, & Blane, 2003). Compared to self-rated life satisfaction, in particular, the CASP-12 has two important benefits (Wiggins, Netuveli, Hyde, Higgs, & Blane, 2008). First, it has been shown that self-rated life satisfaction tends to be quite stable within individuals over time in the way that it may either increase or decrease in short term but then returns to its "normal" level (Lykken & Tellegen, 1996). Consequently, self-rated life satisfaction may not efficiently capture changes in subjective well-being over time; however, CASP-12 may be more stable in capturing these changes (Higgs et al., 2003). Second, self-rated life satisfaction tends to insufficiently account for age-related aspects of well-being; however, the CASP-12 questionnaire is specifically designed to measure subjective well-being among older adults (Hyde et al., 2003).

In addition to within-person regressions, we ran between-person models that compare self-rated life satisfaction, quality of life scores, and depressive symptoms among grandparents

and non-grandparents. Here, we present the between-person results to allow comparison of our findings with those of previous studies that have analyzed differences between the two groups: grandparents and non-grandparents (e.g., Arpino et al., 2018; Danielsbacka & Tanskanen, 2016; Powdthavee, 2011). This also establishes whether the between-person association exists in this sample before the within-person analysis is conducted. That said, however, the main methodological contribution of this article is to investigate within-person associations, which consider whether the birth of a first grandchild increases or decreases subjective well-being among older Europeans.

Data and Methods

Data

The present study uses data drawn from the SHARE. The target population of SHARE comprised people aged 50 years or older who speak the official language of their country and who did not live abroad or in an institution during the fieldwork period. Computer-assisted personal interviews constituted the SHARE data collection. The SHARE project aimed to collect longitudinal data on the aging process of older Europeans. Here, we used the second (2006 and 2007), fourth (2011 and 2012), fifth (2013), and sixth (2015) waves of data from 13 European countries, namely Austria, Germany, Sweden, the Netherlands, Spain, Italy, France, Denmark, Switzerland, Belgium, the Czech Republic, Slovenia, and Estonia. In SHARE, the third wave was a retrospective life history data collection wave (SHARELIFE) with different questionnaires and was thus excluded from the current study sample. The first wave survey was not included because life satisfaction and quality of life questions were asked only in Waves 2, 4, 5, and 6. Austria, Germany, Sweden, Spain, Italy, France, Denmark, Switzerland, Belgium, and Czech Republic participated in all four rounds analyzed in the present investigation and the Netherlands, Estonia, and Slovenia participated in three rounds.

The analyses included all person-observations from participants with available data concerning all variables studied and in both the baseline study wave, when the main independent variable and covariates were measured, and outcome study wave (subsequent wave), when the dependent variables were measured. Respondents who were 90 year old or older were excluded from the sample (33% were 50–59 year old, 34% were 60–69 year old, 24% were 70–79 year old, and 9% were 80–89 year old). Our final sample included 64,940 person-observations from 38,456 unique persons across the four waves of SHARE between 2006 and 2015 (women: $n = 38,172$ person-observations from 22,153 unique persons; men: $n = 26,768$ person-observations from 16,303 unique persons). In the sample, in total, 21% of respondents participated in two waves, 46% in three waves, and 33% in four waves. For the analysis, this resulted in within-person models with 44,691 person-observations from 18,207 unique individuals (women: $n = 27,131$ person-observations from 11,112 unique persons; men: $n = 17,560$ person-observations from 7,095 unique persons).

Subjective Well-Being Measures

Our dependent variables measured self-rated life satisfaction, quality of life scores, and depressive symptoms. Regarding life satisfaction, the respondents were asked to report on a scale from 0 to 10 (0 = *completely dissatisfied*, 10 = *completely satisfied*) how satisfied they were with their life (mean = 7.7, $SD = 1.76$). Older adults' quality of life was measured by the CASP-12 Scale (Higgs et al., 2003; Hyde et al., 2003). The CASP-12 Scale included four subscales, each of which was measured by three questions. These questions concerned control ("my age prevents me from doing the things I would like to do," "I feel that what happens to me is out of my control," and "I feel left out of things"), autonomy ("I can do the things that I want to do," "family responsibilities prevent from doing what I want to do," and "shortage of money stops me from doing the things I want to do"), pleasure ("I look forward to each day," "I feel that my life has meaning," and "on balance I look back on my life with a sense of happiness"), and self-realization ("I feel full of energy these days," "I feel that life is full of opportunities," and "I feel that the future looks good for me"). The respondents were asked to answer these 12 questions on a 4-point scale (1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *often*). The 4 CASP-12 items are not hierarchically organized; rather, they are considered to have similar importance (Wiggins et al., 2008). We reverse-coded some variables for the analyses, so that in every case, the higher the number, the better the quality of life. The total quality of life score was calculated by summing all 12 items (Cronbach's $\alpha = .81$); the scale of the summed variable ranged between 12 and 48 (mean = 37.7, $SD = 6.20$). Finally, depressive symptoms were measured in the SHARE using the EURO-D 12-item scale (Prince et al., 1999). All participants were asked to report via a battery of 12 questions whether they had experienced depressive symptoms (e.g., sadness, sleep problems, loss of appetite, and loss of interest) in the last month prior to the interview. The response categories were either yes or no or whether or not the respondent had experienced any of these feelings. Approximately 78% of all respondents reported having depressive symptoms.

Grandparental Status

The main independent variable measured whether the participating older adults had children only or both children and grandchildren (0 = *children only*, 1 = *children and grandchildren*). The respondents who had no children were excluded because they could not experience entry into grandparenthood between study waves. Approximately 1% of the participants reported a transition from group "children and grandchildren" to group "children only" either due to death of a grandchild or response error; they were subsequently excluded from the study sample.

Methodological Approach

The data were analyzed using random-intercept multilevel regression and, in the case of depressive symptoms, multilevel

Poisson regression analyses where the repeated measures (i.e., person-observations) were nested within participants. We ran both between-person and within-person (or fixed-effect) regressions. The main methodological contribution is to study within-person associations, but we also show the between-person findings because previous studies on the topic have concentrated more on well-being differences between the grandparent and nongrandparent groups than subsequent changes in well-being within-individuals who experience entry into grandparenthood (e.g., Arpino et al., 2018; Danielsbacka & Tanskanen, 2016; Powdthavee, 2011). The between-person models compared older adults with grandchildren to those without grandchildren, and these models provide mean well-being scores for participants.

The main purpose of this article is to study whether *transition to grandparenthood* is associated with the subjective well-being of older adults. We used within-person models that show an individual's variation over time, that is, these models allow studying whether entry into grandparenthood is associated with subsequent changes in well-being (Curran & Bauer, 2011; Morgan, 2013). In the within-person models, the outcome variables (i.e., the well-being indicators) were always measured one wave after the baseline (i.e., when the main independent variable [grandparental status] and covariates were measured). In the within-person models, the participants served as their own controls, and these models eliminated time-invariant factors (Allison, 2009; Brüderl & Ludwig, 2015) such as ethnicity, many genetic factors, and other selection effects. The fixed-effect procedure used here provides a test for causality in associations between entry into grandparenthood and the subjective well-being of an older adult.

Although the within-person regression models have several strengths, they are not without limitations (Danielsbacka, Tanskanen, Coall, & Jokela, 2019; Jokela, Airaksinen, Kivimäki, & Hakulinen, 2018). One potential limitation of these models concerns the small number of participants who could experience changes regarding outcome and main independent variables, meaning that the sample size may decrease. In addition, and related to the low number of observations, within-person models may suffer from high confidence intervals. Finally, within-person models do not account for time-variant unobserved characteristics. Despite these limitations, the within-person design provides a sophisticated way to study how the transition into grandparenthood affects subjective well-being.

In the analyses, we controlled for several potential confounding factors that were assessed at baseline, that is, in all cases, the study wave before the outcome measure or exposure. Covariates included respondents' age at interview, self-rated health (ranging from 1 = *very poor* to 5 = *very good*), working status, marital status, and physical limitations (measured by limitations in daily activities, ranging from 0 to 23, where the higher number indicates the higher amount of limitations; see Table 1). In total and between-person models also, time-invariant education and country were included as covariates. In addition, we controlled for the time period between the baseline and the outcome measure interview (mean = 22.7 months,

$SD = 12.54$). We report the findings from total, between-person, and within-person regression models side by side.

In the Results section, we first provide descriptive results related to the transition into grandparenthood and the intraclass correlations for self-rated life satisfaction, quality of life scores, and depressive symptoms. Next, associations between grandparenthood and life satisfaction, the quality of life scores, and depressive symptoms are examined, with separate models performed for women and men. Moreover, to explore differences between women and men, we added the interaction term of grandparental status and sex. Finally, to achieve more robust results, we also ran several sensitivity analyses. The findings of these sensitivity tests are reported at the end of the Results section.

Results

First, we provide descriptive results of the respondents who had within-person data and are consequently included in the fixed-effect models. According to transition probabilities, 22% of the participants experienced an entry into grandparenthood between interviews, with the numbers being 23% for women and 21% for men. These numbers ranged from 15% in Austria to 31% in Estonia (Appendix Table A1). Next, we reported on our examination of stability and change in the subjective well-being ratings measured by intraclass correlations, that is, the correlation of person-observations within a person over time. The intraclass correlations for self-rated life satisfaction, quality of life scores, and depressive symptoms were .67, .74, and .67, respectively, indicating a relatively high stability of subjective well-being over time.

Grandparenthood and Life Satisfaction

Next, we investigated the associations between grandparenthood and self-rated life satisfaction. Men and women were modeled separately; Table 2 shows, and Figure 1 illustrates, the results of the total, between-person, and within-person multilevel regression models. The total model revealed associations between being a grandmother or grandfather and increased life satisfaction. These associations also existed in the between-person models, revealing differences between grandparents and non-grandparents. The within-person regressions investigated whether an individual's transition to grandparenthood is associated with subsequent changes in well-being. Entry into grandmotherhood was associated with increased life satisfaction but entry into grandfatherhood was not. Inclusion of an interaction term in the model explored the interaction between grandparental status and sex. A significant interaction effect occurred in the within-person model, indicating that becoming a grandmother increases life satisfaction more than becoming a grandfather ($\beta = .17, p = .020$).

Grandparenthood and Quality of Life

Subsequent investigations concerned associations between grandparental status and quality of life scores; Table 3

Table 1. Descriptive Statistics of the 64,940 Person-Observations From 38,456 Persons Over Waves 2, 4, 5, and 6 in the Survey of Health, Ageing and Retirement in Europe.

	Women					Men				
	Total No.	No. of Persons	%	Mean (SD)	Within-Person SD	Total No.	No. of Persons	%	Mean (SD)	Within-Person SD
Age at interview	38,172	22,153		65.4 (9.59)	1.93	26,768	16,303		65.2 (9.25)	1.93
Partnership status										
Have a spouse/partner	21,125	13,223	55.3			21,041	13,131	78.6		
No spouse/partner	17,047	9,447	44.7			5,727	3,426	21.4		
Years of education	38,172	22,153		10.6 (4.17)		26,768	16,303		11.5 (4.51)	
Employment status										
Working	9,633	6,532	25.2			8,488	5,870	31.7		
Not working	28,539	16,947	74.8			18,280	11,512	68.3		
Self-rated health	38,172	22,153		2.9 (1.07)	0.42	26,768	16,303		3.1 (1.06)	0.42
ADL limitations	38,172	22,153		2.2 (3.30)	1.26	26,768	16,303		1.26 (2.55)	0.98
Country										
Austria	2,785	1,641	7.3			1,875	1,164	7.0		
Germany	2,489	1,722	6.5			2,059	1,435	7.7		
Sweden	2,787	1,598	7.3			2,337	1,409	8.7		
Netherlands	1,867	1,087	4.9			1,397	856	5.2		
Spain	3,170	1,909	8.3			2,047	1,376	7.7		
Italy	3,009	1,628	7.9			2,172	1,229	8.1		
France	3,584	1,958	9.4			2,518	1,455	9.4		
Denmark	2,652	1,463	7.0			2,039	1,155	7.6		
Switzerland	2,127	1,091	5.6			1,883	1,011	7.0		
Belgium	4,043	2,169	10.6			3,426	1,861	12.8		
Czech Republic	3,980	2,363	10.4			2,013	1,341	7.5		
Slovenia	1,698	1,074	4.5			1,201	773	4.5		
Estonia	3,981	2,450	10.4			1,801	1,238	6.7		

Note. Total no. = number of total person-observations; no. of persons = number of unique person; SD = overall standard deviation; within-person SD = within-person standard deviation; ADL limitations = limitations in daily activities.

Table 2. Associations Between Grandparenthood and Life Satisfaction.

	Total				Between				Within			
	Coefficient	SE	95% CI		Coefficient	SE	95% CI		Coefficient	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Grandparenthood status												
Women												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	.12***	.02	.07	.16	.13***	.03	.08	.19	.11*	.05	.004	.21
Men												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	.07**	.02	.02	.11	.11***	.03	.06	.17	-.03	.05	-.13	.08

Note. CI = confidence interval; ref = reference.

* $p < .05$. ** $p < .01$. *** $p < .001$.

and Figure 2 present the results. Among both women and men, being a grandparent was associated with increased quality of life scores in the between-person models. The within-person models revealed that entry into grandmotherhood was associated with an increased quality of life but that entry into grandfatherhood was not. The within-person coefficients were relatively similar among women and men; thus,

the finding related to entry into grandfatherhood is assumedly based on the loss of statistical power. Indeed, when we included an interaction term between entry into grandparenthood and sex, no significant interaction effect occurred in the within-person model ($\beta = .06$, $p = .789$). This suggests that transition to grandparenthood was similarly associated with the quality of life scores among women and men.

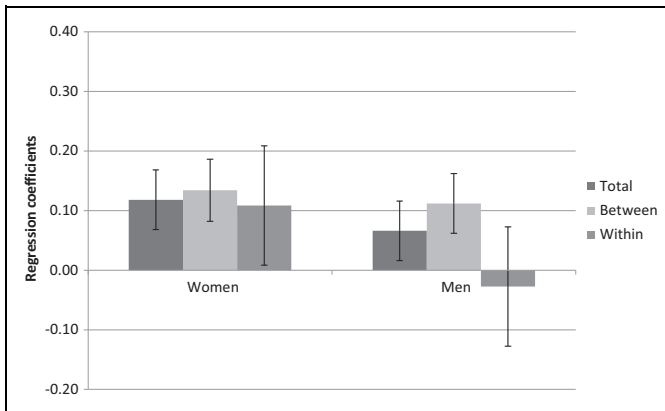


Figure 1. Grandparenthood status and life satisfaction by sex (regression coefficients and 95% confidence intervals; see Table 2 for statistical details).

Grandparenthood and Depressive Symptoms

Next, we analyzed the associations between grandparenthood and depressive symptoms. The results are presented in Table 4 and illustrated in Figure 3. It was detected that among women, grandparenthood was associated with decreased depressive symptoms in the between-person models. A similar association was not detected among men. The within-person models revealed that transition to grandmotherhood or grandfatherhood was not associated with decreased or increased depressive symptoms. When an interaction term between entry into grandparenthood and sex was included, no significant interaction effect occurred in the within-person model ($\beta = -.08$, $p = .199$).

Sensitivity Analyses

The sensitivity tests first involved between-person associations (i.e., associations between grandparents and non-grandparents) regarding the measurement of the outcomes and main independent factor (and covariates) in simultaneous waves (i.e., the independent and dependent measures were taken from the same

wave; women: $n = 33,455$ person-observations from 20,631 unique persons; men: $n = 22,606$ person-observations from 14,741 unique persons; see Appendix Tables B1–D1). It was found that both grandmothers and grandfathers reported higher self-rated life satisfaction and quality of life scores than non-grandparents. Moreover, grandmothers reported fewer depressive symptoms compared to women without grandchildren. Thus, these sensitivity analyses concerning between-person models provided similar results to the main models.

Next, we investigated whether the results differ in within-person models when subjective well-being was measured in the same wave with the main independent factors and covariates (women: $n = 22,866$ person-observations from 10,262 unique persons; men: $n = 14,064$ person-observations from 6,305 unique persons; see Appendix Tables B1–D1). In line with the main findings, in the within-person model, we found that entry into grandmotherhood was associated with increased quality of life scores. In contrast to the main results, the within-person model showed that entry into grandmotherhood was not associated with increased life satisfaction. In accordance with the main findings, in within-person models, birth of a grandchild was not associated with decreased or increased depressive symptoms among neither women nor men.

Then, in the within-person models, we ran sensitivity analyses without controlling for the time span between baseline and outcome wave interview (Appendix Table E1). In the full data set, the time interval between baseline and outcome wave interview varied between 8 and 68 months; when the time interval between interviews is several years, capturing the potential well-being changes related to the birth of a grandchild can be more challenging. However, we found that the results were similar whether the time span was controlled for or not. Hence, the sensitivity analyses concerning within-person models provided here similar results to the main analyses.

Finally, we looked more closely at the four dimensions of quality of life and analyzed them separately (Appendix Table F1). These dimensions are control, autonomy, pleasure, and

Table 3. Associations Between Grandparenthood and Quality of Life.

	Total				Between				Within			
	Coefficient	SE	95% CI		Coefficient	SE	95% CI		Coefficient	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Grandparenthood status												
Women												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	.27***	.08	.12	.42	.29***	.09	.12	.46	.32*	.15	.02	.62
Men												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	.39***	.08	.23	.55	.51***	.09	.33	.69	.26	.17	-.07	.58

Note. CI = confidence interval; ref = reference.

* $p < .05$. ** $p < .01$. *** $p < .001$.

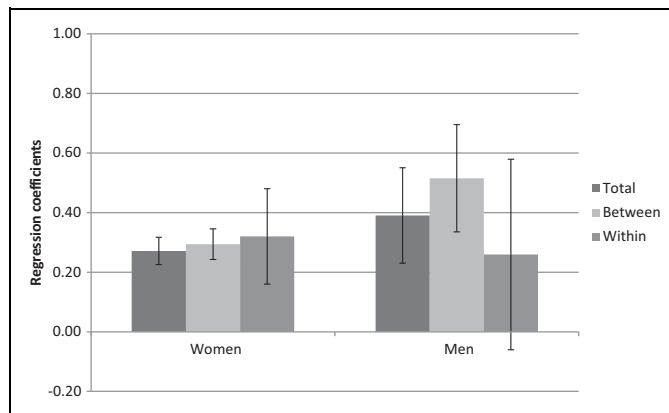


Figure 2. Grandparenthood status and quality of life by sex (regression coefficients and 95% confidence intervals; see Table 3 for statistical details).

self-realization. It was detected that entry into grandmotherhood and grandfatherhood were both significantly associated with increased self-realization scores in the within-person models. Similar associations were not found in the case of other quality of life dimensions.

Discussion

In the present study, we investigated whether grandparental status is associated with subjective well-being among older Europeans. We tested both between-person and within-person associations within the SHARE data. The between-person models indicated the results across participants, that is, between grandparents and nongrandparents; we found that the group of grandparents reported a higher quality of life and life satisfaction than the group of nongrandparents. Thus, these between-person results correspond with prior studies, which have detected that grandparents have better subjective well-being than nongrandparents (e.g., Arpino et al., 2018; Powdthavee, 2011; but see Danielsbacka & Tanskanen, 2016). Moreover, we found no striking sex differences in the between-person models.

Our main findings concern the longitudinal within-person analyses indicating each participant's variation over time. When the outcome variables were measured one wave after the baseline, entry into grandmotherhood was associated with both increased life satisfaction and quality of life scores. In the case of quality of life, this finding remained also in the sensitivity analysis measuring the main independent and outcome variable in simultaneous waves. However, in the case of life satisfaction, the association between entry into grandmotherhood and increased life satisfaction disappeared. This is consistent with the study of Sheppard and Monden (2019) who used three waves of SHARE data and measured independent and outcome variables in simultaneous waves. Moreover, Sheppard and Monden found that transition to grandmotherhood was associated with decreased depressive symptoms, but we were unable to find a similar association. The difference between the present investigation and the study by Sheppard and Monden can be based on the fact that the present study used four SHARE waves.

Based on our sensitivity analyses, the findings related to quality of life scores were driven by the Self-Realization subscale. Three items of self-realization measure how often older adults feel full of energy, how often they consider their life is full of opportunities, and how often they think the future looks good for them.

There may be several reasons for the differences found between the results concerning quality of life scores and self-rated life satisfaction, in particular. It could be that the self-rated life satisfaction may not sufficiently take into account age-related aspects of well-being, while the quality of life scale (measured by the CASP-12 Questionnaire) was initially designed to account for the well-being among older adults (Higgs et al., 2003). In addition, self-rated life satisfaction may be more labile, increasing immediately after the grandchild arrives and then dropping to its previous level. Thus, the self-rated life satisfaction indicator may not efficiently capture the changes in subjective well-being because it tends to be stable within individuals over time in the way that it may either

Table 4. Associations Between Grandparenthood and Depressive Symptoms.

	Total				Between				Within			
	Coefficient	SE	95% CI		Coefficient	SE	95% CI		Coefficient	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Grandparenthood status												
Women												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	-.02	.01	-.04	.001	-.03*	.01	-.06	-.01	-.04	.03	-.09	.01
Men												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	-.03	.02	-.06	.01	-.01	.02	-.05	.03	-.06	.04	-.13	.01

Note. CI = confidence interval; ref = reference.

* $p < .05$. ** $p < .01$. *** $p < .001$.

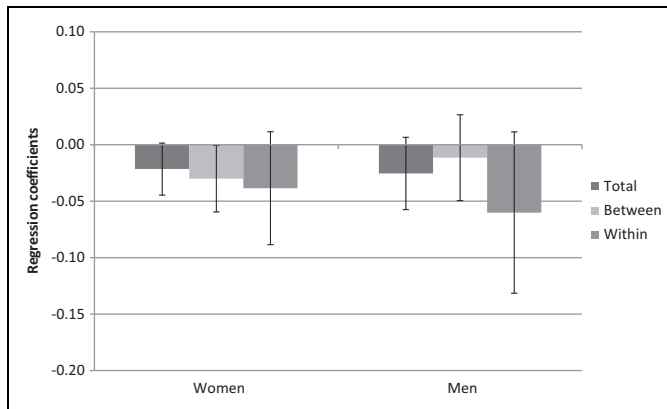


Figure 3. Grandparenthood status and depressive symptoms by sex (regression coefficients and 95% confidence intervals; see Table 4 for statistical details).

increase or decrease in the short term but then return in its “normal” level (Lykken & Tellegen, 1996).

A prior study of *parenthood* indicated that some aspects of subjective well-being may demonstrate short-term responses to having the first child. Using longitudinal data from the UK and Germany, Myrskylä and Margolis (2014) found that the birth of a child was associated with a short-term increase in the self-rated happiness of parents but not in long-term happiness. With that said, however, a large majority of research has indicated that there is no association between *parenthood* and subjective well-being or that the association is even negative (Hansen, 2012; Kohler & Mencarini, 2016). One reason for this “parenthood paradox” (Baumeister, 1991) could be related to the fact that raising a child is a hard task often causing worries about child welfare and the financial situation of the family (Stanca, 2012). Moreover, most new parents face the challenges of sleep deprivation and increased fatigue (Fleming, Ruble, Flett, & Van Wagner, 1990) as well as increased time pressures (Secombe, 1991). Finally, having a new baby is also likely to reduce the time and resources partners have available to invest in one another, which may lead to reduced communication and marital satisfaction (e.g., Glenn & McLanahan, 1982; Gorchoff, John, & Helson, 2008; Van Laningham, Johnson, & Amato, 2001). It is easy to see that the joy of becoming a new parent may be outweighed by the challenges it brings. However, having a grandchild may be more likely to improve the subjective well-being of grandparents experiencing fewer of the challenging experiences that parents often have when a child arrives because the costs of having grandchildren tend to be substantially lower than the costs of having children. This may also explain the findings of the present study.

In the interaction model, it was detected that transition to grandmotherhood increased life satisfaction more than transition to grandfatherhood. This finding provides some support for the grandmother hypothesis as well as parental

investment theory predicting that entry into grandmotherhood could be more life-affirming experience than entry into grandfatherhood. Regarding quality of life scores and depressive symptoms, however, in the interaction models, we found no significant difference between the sexes, indicating that transition to grandparenthood was similarly associated with quality of life scores among women and men. Although some evidence was found indicating that entry into grandmotherhood increases subjective well-being more than entry into grandfatherhood, this evidence was far from comprehensive.

The present study has several strengths. The most significant methodological strength may concern using repeated-measures data to examine the relationship between grandparental status and subjective well-being. This examination allowed separating between-person and within-person associations, that is, being a grandparent and becoming a grandparent. We used population-based and cross-national data; consequently, our results tend to be more generalizable than those of single-country studies and studies using small-scale, nonrepresentative samples. Finally, with SHARE data, we could also control for several time-variant factors in the analyses, making the results more robust.

Limitations of the present study include the SHARE data lacking information on variables at the grandchild level; thus, we do not know whether characteristics of a newborn grandchild influence subjective well-being, for example, whether the birth of a granddaughter improves subjective well-being more than the birth of a grandson, or vice versa. Moreover, we do not know the exact date of the birth of the grandchild and were therefore not able to calculate how many days were between the birth of a grandchild and the study interview. Finally, it is important to note that panel attrition might influence the results. Selective panel attrition is possible in the SHARE data because older adults with initial higher level subjective well-being could be more likely to participate in the follow-up surveys than their worse-off counterparts (Börsch-Supan et al., 2013).

This study has measured subjective well-being using self-rated life satisfaction, quality of life scores, and depressive symptoms. In addition, entry into grandparenthood may have other outcomes for older adults, for instance, it may improve intellectual and physical well-being. Another potential way to study grandparenthood and subjective well-being is to investigate whether losing contact with a grandchild is associated with decreased well-being (Silverstein & Ruiz, 2006). Moreover, the death of a grandchild is possibly associated with both short-term and long-term decreases in grandparents’ well-being because the loss of offspring is one of the worst tragedies imaginable (Youngblut, Brooten, Blais, Kilgore, & Yoo, 2015). Data limitations prevented us from studying these questions here; future studies that focus on grandchild-level characteristics and the loss of grandchildren will continue to advance this research.

Appendix A

Table A1. Respondents Who Experienced Transition to Grandparenthood.

	Women		Men		All	
	Number of Persons	%	Number of Persons	%	Number of Persons	%
Austria	44	14.3	41	16.7	85	15.3
Germany	49	21.0	40	19.4	89	20.3
Sweden	60	26.8	68	27.8	128	27.3
Netherlands	58	25.2	53	24.3	111	24.8
Spain	79	22.4	37	17.4	116	20.5
Italy	90	20.4	62	18.8	152	19.7
France	105	26.5	100	28.3	205	27.4
Denmark	71	28.1	70	25.6	141	26.8
Switzerland	67	15.9	56	15.0	123	15.5
Belgium	94	21.0	85	19.3	179	20.2
Czech Republic	65	28.1	39	27.9	104	28.0
Slovenia	18	15.8	27	22.3	45	19.2
Estonia	97	35.4	22	21.0	119	31.4
All	897	22.9	700	21.4	1,597	22.1

Appendix B

Table B1. Associations Between Grandparenthood and Life Satisfaction.

	Total				Between				Within			
	Coefficient	SE	95% CI		Coefficient	SE	95% CI		Coefficient	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Grandparenthood status												
Women												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	.12***	.03	.07	.17	.15***	.03	.10	.20	.02	.06	-.10	.14
Men												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	.06*	.03	.01	.12	.07*	.03	.01	.13	.08	.07	-.05	.21

Note. Grandparental status and life satisfaction are measured in simultaneous waves. CI = confidence interval; ref = reference.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix C

Table C1. Associations Between Grandparenthood and Quality of Life.

	Total				Between				Within			
	Coefficient	SE	95% CI		Coefficient	SE	95% CI		Coefficient	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Grandparenthood status												
Women												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	.42***	.08	.26	.57	.47***	.09	.30	.64	.40*	.18	.05	.76
Men												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	.34***	.09	.17	.51	.44***	.09	.25	.62	.12	.20	-.27	.52

Note. Grandparental status and quality of life are measured in simultaneous waves. CI = confidence interval; ref = reference.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix D

Table D1. Associations Between Grandparenthood and Depressive Symptoms.

	Total				Between				Within			
	Coefficient	SE	95% CI		Coefficient	SE	95% CI		Coefficient	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Grandparenthood status												
Women												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	-.03**	.01	-.05	-.01	-.04**	.01	-.07	-.01	-.05	.03	-.10	.004
Men												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	.002	.02	-.03	.03	.01	.02	-.03	.05	-.01	.04	-.09	.06

Note. Grandparental status and depressive symptoms are measured in simultaneous waves. CI = confidence interval; ref = reference.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix E

Table E1. Associations Between Grandparenthood and Subjective Well-Being (Within-Person Models).

	Life Satisfaction				Quality of Life				Depressive Symptoms			
	Coefficient	SE	95% CI		Coefficient	SE	95% CI		Coefficient	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Women												
Grandparenthood status												
Women												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	.11*	.05	.003	.21	.32	.15	.02	.62	-.04	.03	-.09	.01
Men												
Children but no grandchildren			Ref				Ref				Ref	
Both children and grandchildren	-.03	.05	-.13	.08	.26	.17	-.07	.58	-.06	.04	-.13	.01

Note. The time span between baseline and outcome wave interview is not controlled for. CI = confidence interval; ref = reference.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix F

Table F1. Associations Between Grandparenthood and Four Dimensions of Quality of Life (Within-Person Models).

	Control				Autonomy				Pleasure				Self-realization			
	Coefficient	SE	95% CI		Coefficient	SE	95% CI		Coefficient	SE	95% CI		Coefficient	SE	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper			Lower	Upper
Grandparenthood status																
Women																
Children but no grandchildren			Ref				Ref				Ref				Ref	
Both children and grandchildren	.04	.02	-.01	.08	.01	.02	-.03	.04	.01	.02	-.02	.05	.05*	.02	.01	.09
Men																
Children but no grandchildren			Ref				Ref				Ref				Ref	
Both children and grandchildren	.02	.02	-.03	.07	-.01	.02	-.05	.03	.03	.02	-.01	.06	.06**	.02	.01	.10

Note. CI = confidence interval; ref = reference.

* $p < .05$. ** $p < .01$. *** $p < .001$.

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ORCID iD

Antti O. Tanskanen  <https://orcid.org/0000-0001-9861-3865>

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