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Editorial

Dear Readers,
This Special Issue is dedicated to the multifaceted topic of "families, health, and well-being". Oliver Arránz Becker, Małgorzata Mikucka and Christof Wolf have been invited by the editors of the *Zeitschrift für Familienforschung*│*Journal of Family Research* to serve as guest editors of this Special Issue.

For further information on the state of the art of mostly recent research in the field of families, health and well-being as well as on the papers written for this Special Issue, please consult the *Introduction to the Special Issue* that follows this editorial.

Starting in the beginning of January 2020, we will publish under the name of "Journal of Family Research" *online only* on our new platform hosted by the University of Bamberg Press under a CC-BY-SA license. This means, among other things, that no charges are made to authors or readers, neither for processing or publishing an article nor for downloading it. For visiting the new platform, please consult https://www.ifb.bayern.de/zeitschrift/familienforschung/index.php in due course and click to www.journal-of-family-research.eu.

While all research papers will be published in English only, for the convenience of our German-speaking readers we will continue to publish German versions of the titles, abstracts and key words of the papers on the journal's platform.

We hope that you enjoy reading this Special Issue and look forward to your submissions for review to our new platform!

Henriette Engelhardt-Wölfler
Editor-in-chief

Kurt P. Bierschock
Managing editor

Oliver Arránz Becker, Małgorzata Mikucka & Christof Wolf

Introduction to the Special Issue "Families, health, and well-being"

A century of scientific research on the family-health nexus notwithstanding, the last decade has witnessed a renewed interest in elucidating the complex interplay of family, well-being and health. Several recent overview articles on the topic have appeared over the last decade, reflecting an attempt to sum up the main results from 'first-generation' research (Arránz Becker et al. 2017; Carr/Springer 2010; Carr et al. 2014; Hank/Steinbach 2018; Rapp/Klein 2015; Dolan et al. 2008; Hansen 2012) and to point to persistent gaps in the literature and directions for future research. We take this as an indication that we are witnessing the emergence of a 'second-generation' era of research that more closely follows the well-known tenets of life course theory (Mayer 2009), according to which individuals actively take age-graded, path-dependent life course decisions based on their available material and intangible resources within specific sociohistorical contexts. Consequently, recent studies are beginning to take a longitudinal perspective in a more rigorous manner (Arránz Becker et al. 2017) and are addressing issues of causality and social context effects more carefully than before (Hank/Steinbach 2018).

Ever since the seminal work from the 19th century (Farr 1859), the family-health nexus has almost continuously received scholarly attention, which underlines the pervasiveness of the topic. The closely intertwined connections between families and well-being can be traced back to fundamental functions of the family. Family is one of the main socialisation agents, shaping health perceptions and health behaviours, as well as happiness-inducing habits of its members. Adults' own family formation behaviour and related transitions (e.g., marriage) have been shown to determine a plethora of health and well-being outcomes and, ultimately, mortality (Carr et al. 2014; Zimmermann/Easterlin 2006). On the other hand, health and well-being themselves may have important implications for partnering and family development processes, because they signal fecundity and the ability to provide the necessary resources for maintaining a family (Stutzer/Frey 2006). In sum, although family status is traditionally considered as a horizontal dimension of social diversity, family transitions can also be seen as catalysts of inequalities in health and well-being (Arránz Becker et al. 2017). For instance, if individuals with poorer health (or those who are less happy) exhibit lower marriage rates and higher divorce rates, then

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healthier (and happier) individuals will eventually be overrepresented among the married and, given the prevalent norm of marital childbearing, among parents.

Another reason why there is a constant demand for research on the complex relationship between family, well-being, and health is that institutions like marriage and family are subject to continuous structural and functional change. The implications of such demographic changes for health and well-being are not yet fully understood. For instance, family scholars in the second half of 20th century have been concerned with steadily rising divorce rates in many Western countries (Sobotka/Toulemon 2008) that, in the case of the U.S., came to a plateau after 1980 (Raley/Bumpass 2003). Involved in these divorces was an increasing number of children, raising questions about the consequences for post-divorce family members, parents and children alike (Amato/Sobolewski 2001; Schoen et al. 2002). At the same time, marriage patterns (e.g., educational homogamy) have changed because of the massive educational expansion during that period, altering marginal distributions of educational attainment, especially among women (Kalmijn 1998; Mikucka 2016). Because marital benefits for health and well-being depend on the pooled resources that partners bring into the marriage, among them human capital in the form of education, it seems worthwhile to study their implications for health and well-being of married persons.

As another critical demographic shift during the mentioned period, longevity has markedly increased worldwide (Vaupel 1998). In terms of family structure, this implies a longer period of intergenerational contacts between grandparents and grandchildren and also more emphasis on how the grandparenthood role is enacted individually. On the other hand, shrinking family sizes and increasing childlessness lead to broken generative chains and to "beanpole families" (Bengtson/Harootyan 1994) with fewer members which, in turn, may contribute to adverse well-being and health in later life, for instance, in the form of isolation and loneliness.

All of the sketched shifts have occurred to different degrees in vastly diverse socio-historical contexts. Consequently, more cross-national comparative research is required that considers different historical roots, functions and individual orientations towards the family, along with differences in health habits and perceptions, healthcare systems, and well-being cultures. The temporal contextual dimension calls for analyses of social change over time, taking into account increasing family complexity, shifts in interaction within increasingly diverse families and their impact on well-being and health.

Looking back at the first generation research on the interplay between family, well-being and health, several shortcomings become evident. The bulk of the older research is cross-sectional and national, and there are few longitudinal analyses spanning longer periods of observation (Arránz Becker et al. 2017). Meanwhile, however, there are several long-term, large-scale international panel studies available including health and well-being indicators that can be used for more refined 'second-generation' research aiming for stronger causal inference and for temporal and spacial contextualisation of previous findings. Hence, the present Special Issue aims to add to the literature by providing an in-depth scrutiny of the impact of family structures and intergenerational contacts on well-being and health, taking advantage of large, national and international panel datasets (e.g., SHARE and GSOEP). Some of the research compiled in this Special Issue focuses on causal inference and on the study of causal mechanisms, some aims at contextualising

findings across time and across societies. In the following subsection, we briefly present the content of the Special Issue.

Contributions in this Special Issue

The first contribution in the volume, by *Johannes Stauder, Ingmar Rapp*, and *Thomas Klein* looks closely at health shifts among cohabiting couples in Germany, and investigates the role played by individual's and partner's education for physical and mental health. The health advantage of partnered individuals is well documented in the literature, but the heterogeneity of this effect has less often been studied. Stauder and colleagues carefully consider the types of health-relevant resources which people of various educational levels bring into a partnership and discuss the complex interplay between educational levels of both partners, and these resources' effects on health. Their fixed-effects regression analysis of data from the German Socio-Economic Panel (2002 to 2016) focuses on intra-individual change, aiming to estimate causal effects. Their results show that, not surprisingly, a highly educated partner is more beneficial for mental and physical health than a partner with low education, suggesting that health-relevant knowledge, economic resources or social status brought by a highly educated partner have a direct protective effect on physical and mental health. However, the weak protective effect of partner's higher education for men's mental health suggests that roles in a partnership remain strongly gendered. In contrast, the protective effect of a partnership on health does not invariably depend on educational homogamy, although in principle homogamy might reduce conflict and increase satisfaction with the partnership. However, health benefits of educational homogamy seem to be limited to higher educated respondents, suggesting that the ability to find a highly educated partner is of greater importance for them. The intriguing and complex gender differences found, such as stronger effects for mental health among women and stronger effect for physical health among men, are a potential avenue for future research.

The second paper, written by *Katharina Loter, Oliver Arránz Becker, Małgorzata Mikucka*, and *Christof Wolf*, also deals with the topic of partnership and studies the mental health dynamics around marital dissolution. The authors test whether parenthood and age of children moderate the effect of dissolution on mental health. This paper thus looks into heterogeneity (by parenthood status) of an effect that has been long and well established in the literature. Loter and colleagues recognize that a dissolution may be more difficult for parents than for childless people and may be especially hard for parents of small children. On the other hand, adult children may provide support to their divorcing parents and reduce the negative impact of dissolution. Like the first contribution, this analysis uses data from the German Socio-Economic Panel (2002-2016), this time, however, focusing on a sample of women and men who are at risk of their first marital dissolution. The distributed fixed-effects model considers intra-individual mental health trajectories around marital dissolution. The most clear-cut result is the strong negative effect of dissolution for mental health of mothers of infants and toddlers; this group not only experiences a negative anticipation but also a sustained downward slope of mental health after a

dissolution. This pattern is qualitatively different from that of other groups, for whom mental health reacts to dissolution mostly in the short run. For some groups (i.e. fathers of pre-school and primary school children) mental health remains unchanged during the dissolution. The evidence on mental health dynamics around marital dissolution presented in the paper raises the awareness of mental distress faced by both childless and parents, in particular by lone mothers of young children. But the findings also suggest that for most people divorce does not have any long-lasting mental health effects.

The next contribution, written by *Aïda Solé-Auró* and *Clara Cortina* is the first among the papers in this volume that take a European, comparative perspective and focus on the elderly population. The authors explore the role of family ties for life satisfaction in order to better understand whether the presence of a co-residing partner and/or the presence of children living in proximity interact with other components of elderly people's social life, such as the size of the social network, to determine life satisfaction. The data come from the sixth wave of the Survey of Health, Ageing and Retirement in Europe and represent the population of people between the ages of 50 to 85 years in thirteen European countries. The findings show that having no partner, both divorced and widowed, has the strongest and most negative effect on life satisfaction in all countries and for both men and women. On the other hand, having no children seems to have no effect on life satisfaction for those who had ever been married, once their current partnership status is considered. Exploring further the role of social relationships and contacts, the paper confirms that people with a larger network of confidants tend to be more satisfied with their lives than those who have a smaller network, and that this relationship remains consistent across countries. The findings of this paper reduce concerns about the long-term implications of increasing childlessness among younger cohorts, as it does not appear that the childless are at a greater risk of social isolation.

The fourth paper, authored by *Thijs van den Broek, Marco Tosi,* and *Emily Grundy*, continues the theme of an ageing population but focuses more narrowly on the effects of parenthood and grandparenthood: The authors study whether having more children and grandchildren protects against later-life loneliness among elderly individuals in Eastern and Western Europe. The analysis is based on data from the Generations and Gender Survey for twelve – i.e., five Western and seven Eastern European – countries. Given the relatively strong reliance of older people on the family in Eastern Europe, the authors expect that the protective effects of offspring on loneliness is stronger in Eastern-European countries than in Western-European countries. The results show that people having more children are less lonely than those having fewer children, in part because having more children increases the chance of having grandchildren. The relationship between parenthood and loneliness holds in Eastern and Western Europe alike, although the protective effect of having four or more children is larger in the East than in the West. On the other hand, the effect of grand-parenthood differs more across regions. Specifically, grandparenthood status partly explains differences in the loneliness risks of childless women, mothers with one child, and those with two or more children; but among men the mediating role of grandparenthood is significant in Eastern Europe but only marginally significant in Western countries. Overall, the findings indicate that having close family members, including more children and at least one grandchild, does protect elderly people against later-life loneliness.

The last contribution in this Special Issue, written by *Valeria Bordone* and *Bruno Arpino*, stays in the realm of grandparenthood research and studies the relationship between grand-parenthood, grandchild care, and depression among elderly people in eighteen European countries. This is the first study to explicitly consider various grandparenthood transitions (having the first grandchild, having an additional grandchild, increasing involvement in care for a grandchild) and estimate their association with intensity of depressive symptoms. The analysis estimates intra-individual change with fixed effects and uses longitudinal data of the Survey of Health, Ageing and Retirement in Europe. The results show that, in general, women face a decline in depressive symptoms when becoming grandmothers for the first time. However, neither an increase in the number of grandchildren nor increasing involvement in grandchild care are associated with changes in depressive symptoms. An additional, in-depth analysis by country shows that, as postulated by the structural ambivalence theory, the importance of grandparenthood for people's mental functioning varies greatly across countries, as it depends on (grand)childcare organisation in a country. Nonetheless, the pattern of cross-country differences in Europe is not clear, and depression consequences of grandparenthood may vary considerably also between countries characterised by similar grandparenthood roles. Overall, the study suggests that grandparenthood and related activities have no adverse effects on grandparents' depression and the only statistically significant effects imply a reduction in depressive symptoms. These results are important in the light of a growing number of older people involved in grandchild care activities, and they reinforce the idea of considering grandchild care as an activity that may help older people to remain physically and cognitively engaged without being detrimental for their mental wellbeing.

Collectively, this Special Issue looks at the role of family relationships for well-being and health, offering a selection of current research from social sciences. We hope that the reader may find it enjoyable and useful.

References

Amato, P. R. & Sobolewski, J. M. (2001). The effects of divorce and marital discord on adult children's psychological well-being. *American Sociological Review*, pp. 900-921. doi:10.2307/3088878.

Arránz Becker, O., Loter, K. & Becker,(2017). Familie und Gesundheit: Ein methodenkritischer Blick auf die aktuelle Forschung. In: Kriwy, P. & Jungbauer-Gans, M. (Hrsg.), *Handbuch Gesundheitssoziologie*. Wiesbaden: Springer VS, ppx.1-27. doi:10.1007/978-3-658-06477-8_45-1.

Bengtson, V. L. & Harootyan, R. A. (Eds.) (1994). *Intergenerational linkages. Hidden connections in American society*. New York: Springer.

Carr, D. & Springer, K. W. (2010). Advances in families and health research in the 21st century. *Journal of Marriage and Family*, *72*, *3*, pp. 743-761. doi: 10.1111/j.1741-3737.2010.00728.x.

Carr, D., Springer, K. W. & Williams, K. (2014). Health and families. In: Treas, J., Scott, J. & Richards, M. (Eds.), *The Wiley Blackwell companion to the sociology of families*. Hoboken, NJ: John Wiley & Sons, pp. 255-276. doi:10.1002/9781118374085.ch13.

Dolan, P., Peasgood, T. & White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology*, *29*, *1*, pp. 94-122. doi:10.1016/j.joep.2007.09.001.

Farr, W. (1859). Influence of marriage on the mortality of the French people. In: Hastings, G. W. (Eds.), *Transactions of the National Association for the Promotion of Social Science*. London: Savill & Edwards, pp. 504-513.

Hank, K. & Steinbach, A. (2018). Families and health: A review. In: Doblhammer, G. & Gumá, J. (Eds.), *A demographic perspective on gender, family and health in Europe*Cham: SpringerOpen, pp. 23-39. doi:10.1007/978-3-319-72356-3_3.

Hansen, T. (2012). Parenthood and happiness: A review of folk theories versus empirical evidence. *Social Indicators Research*, *108*, *1*, pp. 29-64. doi:10.1007/s11205-011-9865-y.

Kalmijn, M. (1998). Intermarriage and homogamy: Causes, patterns, trends. *Annual Review of Sociology*, *24*, *1*, pp. 395-421. doi:10.1146/annurev.soc.24.1.395

Mayer, K. U. (2009). New directions in life course research. *Annual Review of Sociology*, *35*, pp. 413-433. doi:10.1146/annurev.soc.34.040507.134619.

Mikucka, M. (2016). The life satisfaction advantage of being married and gender specialization. *Journal of Marriage and Family*, *78*, *3*, pp. 759-779. doi:10.1111/jomf.12290.

Raley, R. K. & Bumpass, L. (2003). The topography of the divorce plateau: Levels and trends in union stability in the United States after 1980. *Demographic Research*, *8*, pp. 245-260. doi:10.4054/DemRes.2003.8.8.

Rapp, I. & Klein, T. (2015). Familie und Gesundheit. In: Hill, P. B. & Kopp, J. (Eds.), *Handbuch Familiensoziologie*. Wiesbaden: Springer Fachmedien Wiesbaden, pp. 775-790. doi:10.1007/978-3-658-02276-1_25.

Schoen, R., Astone, N. M., Kim, Y. J., Rothert, K. & Standish, N. J. (2002). Women's employment, marital happiness, and divorce. *Social Forces*, *81*, *2*, pp. 643-662. doi:10.1353/sof.2003.0019.

Sobotka, T. & Toulemon, L. (2008). Overview Chapter 4: Changing family and partnership behaviour: Common trends and persistent diversity across Europe. *Demographic Research*, *19*, *6*, pp. 85-138. doi:10.4054/DemRes.2008.19.6.

Stutzer, A. & Frey, B. S. (2006). Does marriage make people happy, or do happy people get married? *The Journal of Socio-Economics*, *35*, *2*, pp. 326-347. doi:10.1016/j.socec.2005.11.043.

Vaupel, J. W. (1998). Demographic analysis of aging and longevity. *The American Economic Review*, *88*, *2*, pp. 242-247.

Zimmermann, A. C. & Easterlin, R. A. (2006). Happily ever after? Cohabitation, marriage, divorce, and happiness in Germany. *Population and Development Review*, *32*, *3*, 511-528. doi:10.1111/j.1728-4457.2006.00135.x.

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Couple relationships and health: The role of the individual's and the partner's education

Abstract
A positive correlation between couple relationships and health is well established. However, recent studies indicate that the beneficial effects of couple relationships on health vary substantially according to the characteristics of the relationship and of the partners involved. The present paper examines to what extent partnership effects on physical and mental health differ based on the individual's education, the partner's education and educational homogamy between partners. Our database is the German Socio-Economic Panel for the period of 2002 to 2016. Based on fixed effects analysis, our results show that a highly educated partner is more beneficial for mental and physical health than a partner with low education. In contrast, the effects of partnerships on health do not depend on whether the partners have same or different educational levels. The results also indicate that partnership effects on health depend on mate choice and on the potential to find a highly educated partner. Education-specific partnership effects on mental health are more prevalent for women, and effects on physical health are more prevalent for men.

Key words: mental health, physical health, couple relationship, partnership, cohabitation, marriage, education, partner's education, homogamy, educational homogamy

Introduction

Previous research has shown a strong and robust positive correlation between health and education (Ross & Mirowsky 2013). A higher educational level is associated with better economic circumstances (Cutler/Lleras-Muney 2006), more social-psychological resources (Ross/Wu 1995), and healthier lifestyles (Rapp/Klein 2017) and therefore improves individuals' health. It is also well known that being in a couple relationship is, on average, positively associated with mental and physical health (Arránz Becker/Loter/Becker 2017; Hank/Steinbach 2018; Rapp/Klein 2015). Both issues – health differences by education and by partnership status – are often examined separately. However, there are good reasons to assume that these two issues are mutually dependent on each other. For example, one explanation for why being in a partnership improves health is that the partner facilitates economic security and well-being (Bünnings/Kleibrink/Weßling 2017; Waite/Gallagher 2002), although this effect obviously depends on the partner's additional

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economic resources. For this reason, the present study examines the question of how partnership effects on mental and physical health vary based on the individual's education, the partner's education and educational homogamy between partners.

Relatively few studies have examined whether the effects of being in a partnership on health differ based on individual characteristics. However, the major exception is gender differences because some but not all studies suggest that men have greater health benefits from a partnership than women (Kiecolt-Glaser/Newton 2001; Wood/Goesling/Avellar 2007). Previous research has also considered some characteristics of the spouse, with a focus mostly on obvious disadvantages, such as health impairment or unemployment. A large number of studies have consistently found that having an ill partner is negatively associated with individuals' mental and physical health (Bourassa/Memel/Woolverton/ Sbarra 2015; Hagedoorn/Sanderman/Bolks/Tuinstra/Coyne 2008; Polenick/Martire/ Hemphill/Stephens 2015; Westman/Keinan/Roziner/Benyamini 2008). In addition, there is some evidence that the spouse's job insecurity negatively affects the individual's health, particularly for women (Bubonya/Cobb-Clark/Wooden 2017; Bünnings et al. 2017; Mendolia 2014). Additionally, several studies have examined the effects of the partner's education on the individual's overall health status and mortality. Their results showed that the partner's level of education is positively associated with the individual's overall health, even after controlling for the individual's education (Brown/Hummer/Hayward 2014; Huijts/ Monden/Kraaykamp 2010; Li/Fu/Zhao/Luo/Kawachi 2013; Monden/van Lenthe/De Graaf/Kraaykamp 2003), and that it is also negatively associated with the individual's mortality (Egeland/Tverdal/Meyer/Selmer 2002; Jaffe/Eisenbach/Neumark/Manor 2006; Skalická/Kunst 2008).

The present study adds to this literature in two ways. First, we focus on mental and physical health separately. Couple relationships and partners' education may affect health through various pathways, some of which may be more important for physical health, whereas others may be more important for mental health. Therefore, a distinction between mental and physical health may help to better understand why the effects of couple relationships on health may vary by the individual's and partner's education and by educational homogamy. Second, it is difficult to determine whether the association between partnership status and health represents causation or health selection (Kalmijn 2017). The main reason for this difficulty is that people are not randomly allocated to various relationship statuses. People's selection of partners depends on various factors that may also affect health. In contrast to previous studies on the association between the couple relationship, the education of partners and health, we analyse longitudinal data with fixed effects (FE) regression models. Hence, we control for time-constant heterogeneity between people who did and did not start a couple relationship while being observed in the survey.

Background and hypotheses

Controversial mechanisms have been proposed to explain why having a partner is positively associated with mental and physical health. On the one hand, healthier people may be more likely to start a relationship because they are more attractive as partners and may have better meeting opportunities (Guner/Kulikova/Llull 2016; Rapp 2018; Rapp/Gruhler

2018). On the other hand, having a partner may improve health for various reasons. Partners take care of each other and provide emotional and instrumental support, which buffers stress (Cohen/Wills 1985) and partly replaces professional health care (Brockmann/Klein 2004). In addition, partners monitor one another's health-related behaviour (Horwitz/White/Howell-White 1996; Klein/Rapp/Schneider 2013; Umberson 1992), a partner provides a sense of identity (Berkman/Glass/Brissette/Seeman 2000; Durkheim 1897; Gove/Style/Hughes 1990), and living with a partner improves economic security and economic well-being by scale economies (Bünnings et al. 2017; Waite/Gallagher 2002).

Most explanations suggest that partner effects on health function similar to higher education effects: Both provide additional material and non-material resources that may help individuals to improve or maintain their mental and physical health. However, two conflicting theories have been suggested to explain why different resources and their effects on health do not simply add up but interfere with one another. On the one hand, *resource multiplication theory* (Ross/Mirowsky 2006) suggests that advantaged groups, such as those with higher educational levels, gain more from additional resources than disadvantaged groups, for example, because they receive higher returns to their human capital. On the other hand, *resource substitution theory* (Ross/Mirowsky 2010) assumes that different kinds of resources can substitute each other. In this view, people with lower educational levels are expected to benefit more than people with higher educational levels from additional resources that a partner may provide.

With respect to the economic gains through partnership, it is straightforward to assume that the benefit from a partner's additional income declines with increasing individual income. In economics, this assumption is called the law of diminishing marginal utility (Gossen 1983 [1854]). Similarly, one might expect that the worse the health behaviour of a person is, the more he or she may benefit from a partner who monitors his or her health behaviour. Therefore, resource substitution seems more plausible than resource multiplication. In addition, it has been shown that stressors are more prevalent among people with lower educational levels (Baum/Garofalo/Yali 1999). For this reason, those with lower educational levels should benefit more than those with higher educational levels from stress buffering by the partner. Finally, there may be ceiling effects for the highest educated: They are already healthier than those with low education and already engage in healthy behaviours (Byrnes/Miller/Schafer 1999; Laaksonen et al. 2007). Hence, people with the highest educational levels might benefit less from a couple relationship than those with lower educational levels. Some of these mechanisms, particularly those related to health behaviour, may be more relevant for physical health, whereas others, such as buffering of stress by the partner, may be more important for mental health. Nonetheless, overall, the mechanisms may affect both physical health and mental health in a similar way. Therefore, with respect to the individual's own education, based on the substitution model, we hypothesize the following:

H1: People with low education receive greater health benefits from a couple relationship than people with high education.

However, due to assortative mating, partners tend to have same educational levels (Blossfeld/Timm 2003). Therefore, those with lower educational levels may actually ben-

efit less from the partner's resources than those with higher educational levels. In this context, a partner's education should affect an individual's health in a similar way as his or her own education by improving economic circumstances, psychosocial factors, and health behaviour (Monden et al. 2003). In addition, a partner with low education provides not only fewer resources than a highly educated partner but also additional stressors, such as the partner job insecurity, which has been shown to negatively affect individuals' mental and overall health (Baranowska-Rataj/Strandh 2017; Bubonya et al. 2017; Bünnings et al. 2017; Mendolia 2014). Therefore, with respect to the partner's education, we suppose the following:

H2a: A partner with low education is less beneficial for health than a partner with high education,

and because of assortative mating, it follows that

H2b: People with low education receive fewer health benefits from a couple relationship than people with high education,

which contradicts H1.

The arguments given so far suggest that the effects of couple relationships on health depend on both individuals' and partners' levels of education. However, the health effects of the partnership may also depend on whether the two partners have same or different educational levels. It has been shown that educational homogamy is, on average, associated with high relationship quality (Eeckhaut/Stanfors/van de Putte 2013), which itself is positively related to health (Hawkins/Booth 2005; Umberson/Williams/Powers/Liu/Needham 2006). For these reasons, we hypothesize the following:

H3: A partner with the same education to that of the individual is more beneficial for health than a partner with different education.

Finally, we take into consideration that all arguments given so far may differ between mental and physical health and may also differ between men and women. On the one hand, mental and physical health may be affected by a couple relationship to different extents due to the different mechanisms underlying partnership effects on health. Whereas emotional support, stress buffering, and a sense of identity given by the partner should be more closely related to mental health, economic gains from the couple relationship should affect mental and physical health as well (Kahn/Wise/Kennedy/Kawachi 2000). On the other hand, the various mechanisms by which the couple relationship and the partner's education affect mental and physical health may function differently for men and women. Therefore, we analyse mental and physical health as well as women and men separately.

Data and methods

Data and sample

To analyse our hypotheses on how partnership effects on health depend on individuals' and partners' education and on the educational homogamy or heterogamy of partners, we conduct a panel analysis of the German Socio-Economic Panel (GSOEP) from 2002 to 2016. The GSOEP (Schupp et al. 2016) (doi:10.5684/soep.v32.1) is a representative longitudinal study of private households in Germany with annual observations. Every year, up to 11,000 households and up to 30,000 persons are interviewed (Wagner/Frick/Schupp 2007).

Table 1. Restriction of the sample

	observed persons			biennial observations of persons during the panel		
	total	with a transition into couple relationship		total	in couple relationship	
	N	N	in %	N	N	in %
1: panel 2002-2016, restricted to observations of persons without a partner at their first observation in the panel	12 899	3 405	26.4	40 127	8 050	20.0
2: additonally restricted to only one episode of couple relationship per person[1]	12 899	3 083	23.9	35 345	6 185	17.5
3: additionally restricted to persons with more than one observation during the panel	8 253	3 083	37.4	30 699	6 185	20.2
4: additionally restricted to observations without item-nonresponse (excluding item-nonresponse on partner's education)	6 951	2 542	36.6	23 999	5 207	21.7
5: additionally restricted to observations with information on partner's education (only couples who cohabited at least at one observation)	6 495	527	8.1	20 709	1 917	9.3

[1] In some cases, the relationship with the first partner during the panel – as measured with retrospective questions at the time of the interview – was too short to be measured at two consecutive time points. We cut observations even after such "short-time" couple relationships. Therefore, the number of persons with a transition into couple relationship (visible at the observed time points of the panel) is reduced in row 2.

Source: German Socioeconomic Panel, waves 2002, 2004, 2006, 2008, 2010, 2012, 2014 and 2016, author calculation.

The mental and physical health variables used are available for every second year since 2002. Therefore, we construct an eight-wave panel (2002, 2004, 2006, 2008, 2010, 2012, 2014, and 2016) of GSOEP participants who did not live with a partner at the time of their first observations in the panel (see Table 1, row 1). We include all observations of these individuals until 2016 or until an individual who had started a new relationship had separated from his or her new partner. This approach results in the sample being restricted to only one partnership per person (row 2). In addition, we drop participants with only one remaining observation in the panel (row 3), and we drop some biennial observations of participants due to item non-response on individual characteristics (row 4). After this step, we have 23 999 observations from 6 951 individuals, among whom 2 542 started a new intimate relationship during the panel study. To estimate the effects of partner education, we must re-

strict the sample to couples who shared a household during at least one time point because partner education data is available only for partners who lived together. This step considerably reduces the sample (row 5) to 20 709 observations from 6 495 couples, among whom 527 started a new intimate relationship during the observation window. Note that by restricting the sample in this way, we cannot include those couples who did not start living together during the observation window – either because the observations are right-censored or because the couple separated before moving in together. Hence, our analysis is restricted to those with relatively stable couple relationships.

Outcome variables

Since 2002, the GSOEP has provided the Mental Health Component Summary Scale (MCS) as an indicator for mental health and the Physical Health Component Summary Scale (PCS) as an indicator for physical health every second year. The indicators are based on the scores of twelve questions of the SF12v2, a short version of the internationally approved and reliable SF36v2 Index (Ware/Dewey/Kosinski 2001). The SF12v2 items reflect both mental and physical aspects of quality of life, such as bodily pain, physical and emotional restrictions to social role accomplishments, and vitality. The weights of the items on the mental and physical health scales are calculated by the GSOEP group using exploratory factor analysis (varimax rotation), and the indices are transformed into norm-based scores with a mean of 50 and a standard deviation of 10 in the year 2004 (see Andersen/Mühlbacher/Nübling/Schupp/Wagner 2007 for more details). In the restricted sample described above, the mental health scale has a mean of 49.8 and ranges between 0.6 (min) to 77.3 (max), whereas the physical health scale has a mean of 49.2 with a range from 10.7 (min) to 76.4 (max).

Key predictor variables

Relationship status is measured with three successive questions. First, respondents were asked about their marital status. Second, all unmarried respondents were additionally asked whether they were in a permanent relationship (in German, "feste Partnerschaft"). Third, individuals who were in permanent relationships were asked whether they shared a household with their partners. For the following analysis, we construct a variable that is zero for all points of observation in the panel where the respondent was not currently in a couple relationship and that is set to one if the respondent was in a non-cohabiting relationship, was sharing the same household with an unmarried partner, or was married (and not separated). Information about the start and end of periods of being single is taken from the given biographic dataset "biocouplem". The duration of the current couple relationship is measured in years (but calculated on a monthly basis).

We use a generated variable provided by GSOEP to measure the educational attainment of the original respondent and of his/her partner. Respondents with a lower secondary degree ("Hauptschulabschluss"), who dropped out or who never attended school for any reason are assigned a low educational level. Those who reported having an intermediate degree ("Realschulabschluss") constitute the intermediate level. Those

who had either a technical school degree ("Fachabitur") or an upper secondary degree ("Abitur") are assigned a high educational level. Respondents who were still in school, had "other" school degrees or had item-nonresponse were deleted from the sample. We do not divide the educational levels any further because the cultural (dis)similarities that might help to explain differences in mental and physical health advantages of a new partner by homogamy vs. heterogamy are sufficiently represented by the current categorization and because we cannot split our sample of only 527 new couple relationships into more subgroups without losing substantial statistical power.[1] To include the observations after establishing a new couple relationship, but before partners have moved in together, we impute the first valid information about partner's education (available after moving into the same household) to these earlier observations. Similarly, we impute missing information on partner education from the latest valid information in the GSOEP.

Method and modelling strategy

This study uses FE models to estimate the impact of a new couple relationship on physical and mental health. In an FE model, the intra-individual mean is subtracted from every measurement of all variables; hence, it focuses exclusively on the covariation of variables over time *within* individuals. Thus, we control for any time-constant confounders, such as personality or prior relationship status, even if they are unknown (Allison 2009; Brüderl/ Ludwig 2015).

In our models, the FE estimators for establishing a new couple relationship give the average treatment effect on the treated (ATET), which means that these estimators are estimated using the data only from those respondents who established a new couple relationship (the treated). As noted above, interpretation should take in account that our subsample of the treated is restricted to the couple relationships that transitioned to cohabitation.

Changes in mental or physical health might be due not only to finding a partner but also to ageing and period effects. Therefore, the following FE model controls for age and period.[2] For the same reason, we control for changes in parenthood status and changes in educational attainment. To estimate the effects of these time-varying covariates, the model uses the information of both those with and those without a new partner during the panel.

Consequently, the estimator for a new couple relationship provides information about the intra-individual health changes experienced by individuals who have started a couple relationship (compared with the situation before having a partner) *net the effect of ageing, net the period effects* and net all other covariates. Since the educational attainment of both

1 The constellation with least biennial observations (N=160) was men with a partner of low educational level.

2 In particular physical health is known to deteriorate over the life-course. By specifying period effects, we control for potential effects of the various societal crises in the 21st century in particular on individuals' mental health (for instance the German economic crisis in the early 2000s, the financial crisis in the later 2000s and the refugee crisis of 2015). To avoid perfect collinearity of period and age measures, we grouped each two points of observation (2002/2004, 2006/2008, 2010/12, 2014/ 16). Empirical results show that mental health deteriorated in calendar time, in particular for women (Table 2). For physical health, we did not find significant period effects (Table 3).

partners may have different effects on men's and women's health, we conduct separate models for male and female respondents.[3]

Findings

Couple relationships, education of both partners, and mental health

Table 2 shows the effect of starting a couple relationship on mental health while controlling for age, period and other covariates. Note that we employ FE models. Hence, the estimator for a new couple relationship provides information about the intra-individual health *change* experienced by individuals who started a new couple relationship (compared with the situation before starting the relationship), net all observed and unobserved differences between individuals that are time-constant.[4] For men (Model 1a), mental health is 1.27 scale points better after having found a new partner than during the time without a partner. For women (Model 1b), the effect is slightly larger (+1.41). Therefore, we find a positive effect of starting a partnership on mental health for both women and men.

In Models 2a and b, we test our contradicting hypotheses that partnership effects on mental health depend on an individual's education (H1 and H2b). Due to introducing interaction effects, the main effect of a new partner now shows the increase in mental health when individuals with high educational level find new partners. For men (Model 2a), this effect is very low (+0.24). The interaction effects show that men with intermediate educational levels benefit more from new partners (+1.98) than men with high educational levels; however, this effect is significant only at the 10% level. Men with low educational levels do not benefit significantly more or less from having new partners than men with high educational levels.[5] For women, Model 2b shows that only those with high educational levels benefit significantly from new partners (+2.35), but differences between women with high educational levels and those with low and intermediate educational levels are not significant. Hence, hypothesis H1 that people with low education receive greater health benefits from a couple relationship than people with high education finds no support. However, the contrasting hypothesis H2b that people with low education receive *fewer* health benefits from a couple relationship is supported for women's mental health.

3 Please note that the (overall) R^2 displayed in Tables 2 and 3 refers to all explained intra- and inter-individual variance of the dependent health scores. Since inter-individual variance is large, the share of health variance that is explained as being inter-individual is large. As a measure of the share of intra-individual variance being explained, please refer to the within R^2 displayed in the tables.

4 This may lead to counter-intuitive effects. For example, we controlled for intra-individual educational mobility and found that men are mentally better off with an intermediate instead of an upper school degree. As we dropped all individuals who were still enrolled in school, the intra-individual change from an intermediate to an upper school degree is a very rare event, and the effect is based on a very selective group.

5 As shown by an additional test (not in Table 2), the difference in the benefits of finding a new partner between men with lower and intermediate degrees is not significant.

In Models 3a and b in Table 2, we test our hypothesis H2a that having a partner with low educational attainment is less beneficial for mental health than having a partner with higher educational attainment. Again, we use interaction effects to determine the difference between educational levels. Hence, now the main effect of a new partner gives the increase in mental health for a new partner with a high educational level, whereas the interaction effects represent the differences in mental health gains between new partners with intermediate and high educational levels and the differences between new partners with low and high educational levels. For men, we do not find significantly different effects for partners of various educational levels. For women, only a new partner with a high educational level improves mental health (+3.36). For women who have partners with low education, there is no effect at all (3.36-3.60= -0.24), and for partners with intermediate degrees, there is only a small positive effect (3.36-2.63=0.73). Hence, only for women do we find support for our hypothesis H2a that having a partner with lower educational attainment is less beneficial for mental health than having a partner with higher educational attainment.

In Models 4a and b, we analyse the effect of starting a homogamous or heterogamous partnership (Hypothesis H3). The main effect now represents the mental health benefit from finding a new partner who has different educational attainment than the focal individual (heterogamy), and the interaction effect gives the difference between finding a new partner with the same educational attainment (homogamy) vs. finding a partner with different educational attainment (heterogamy). The models show that homogamy does not result in a significantly larger increase in mental health, either for men (Model 4a) or for women (Model 4b).

In addition, we explore whether the health effect of homogamy depends on the joint educational level of both partners. In Models 5a and b, we split the new partner effect into one effect for finding a new partner with different educational attainment (heterogamy) and one effect for finding a new partner with the same educational attainment (homogamy). We then add interaction effects of the partner's joint educational level with the effect of finding a new homogamous partner. The main effect of a new partner with the same educational level now represents homogamy of a highly educated couple. For men, homogamy does not boost the mental health effect of finding a new partner, irrespective of the educational level. For women, a homogamous partner boosts mental health only when both partners are highly educated, i.e., when homogamy means finding a highly educated partner. Hence, we conclude that it is mainly the additional resources of a highly educated partner that improve women's mental health (hypothesis 2), particularly for women who have high educational levels themselves.

Table 2: Effects of Finding a New Partner, Education of Respondent and Partner and Other Covariates on Mental Health (MCS, Fixed effects Models)

	Model 1				Model 2				Model 3				Model 4				Model 5			
	(a) men		(b) women		(a) men		(b) women		(a) men		(b) women		(a) men		(b) women		(a) men		(b) women	
	b	se	b	se	b	se	b	se	b	se	b	se	b	se	b	se	b	se	b	se
new partner	1.27*	*0.51*	1.41*	*0.59*	0.24	*0.78*	2.35*	*0.93*	1.43+	*0.75*	3.36***	*0.94*	2.00**	*0.72*	0.25	*0.92*				
*new partner * own education (reference: high eductional level)*																				
new partner * intermediate educational level					1.98+	*1.05*	-1.55	*1.26*												
new partner * low educational level					1.19	*1.18*	-1.42	*1.53*												
*new partner * partner's education (reference: new partner with high educational level)*																				
new partner * with intermediate educational level									0.14	*1.01*	-2.63+	*1.35*								
new partner * with low educational level									-1.18	*1.31*	-3.60**	*1.38*								
*new partner * homogamy vs heterogamy*																				
new partner * with same educational level as ego													-1.29	*0.92*	1.88	*1.15*				
new partner with other educational level than ego																	2.00**	*0.72*	0.27	
new partner with same educational level as ego																	0.22	*0.93*	3.91***	
intermediate educational level * new partner with same educational level																	1.73	*1.38*	-2.95+	
low educational level * new partner with same educational level																	*-0.64*	*1.69*	-3.22+	*1.81*
intermediate educational level[1)]	2.57**	*0.94*	-1.32	*1.40*	2.50**	*0.94*	-1.07	*1.41*	2.57**	*0.94*	-1.04	*1.41*	2.57**	*0.94*	-1.31	*1.40*	2.56**	*0.94*	-0.99	*1.41*
low educational level[1)]	1.36	*1.93*	0.64	*2.27*	1.30	*1.93*	0.81	*2.27*	1.34	*1.93*	0.84	*2.27*	1.32	*1.93*	0.68	*2.27*	1.32	*1.93*	0.89	*2.27*
age -18	0.12	*0.08*	0.16*	*0.08*	0.12	*0.08*	0.16*	*0.08*	0.12	*0.08*	0.16*	*0.08*	0.12	*0.08*	0.16*	*0.08*	0.12	*0.08*	0.16*	*0.08*
lives with a child <16 in the household	-0.30	*0.50*	0.18	*0.47*	-0.27	*0.50*	0.15	*0.47*	-0.29	*0.50*	0.13	*0.47*	-0.31	*0.50*	0.17	*0.47*	-0.29	*0.50*	0.11	*0.47*
period 2006-2008	-0.52	*0.40*	-0.69+	*0.37*	-0.51	*0.40*	-0.69+	*0.37*	-0.52	*0.40*	-0.68+	*0.37*	-0.52	*0.40*	-0.68+	*0.37*	-0.53	*0.40*	-0.68+	*0.37*
period 2010-2012	-1.23+	*0.71*	-1.86**	*0.65*	-1.21+	*0.71*	-1.86**	*0.65*	-1.24+	*0.71*	-1.87**	*0.65*	-1.23+	*0.71*	-1.85**	*0.65*	-1.23+	*0.71*	-1.87**	*0.65*
period 2010-2016 (reference: 2002-2004)	-1.28	*1.01*	-1.78+	*0.91*	-1.26	*1.01*	-1.78+	*0.91*	-1.29	*1.01*	-1.80*	*0.91*	-1.27	*1.01*	-1.78+	*0.91*	-1.27	*1.01*	-1.79*	*0.91*
N	8616		12093		8616		12093		8616		12093		8616		12093		8616		12093	
overall R^2	0.64		0.65		0.64		0.65		0.64		0.65		0.64		0.65		0.64		0.65	
within R^2	0.001		0.001		0.001		0.001		0.001		0.001		0.001		0.001		0.001		0.001	

+ p<=0.1, * p<=0.05, ** p<=0.01, *** p<=0.001. 1) reference: high educational level.

Source: German Socioeconomic Panel, waves 2002, 2004, 2006, 2008, 2010, 2012, 2014 and 2016, author calculation.

Couple Relationships, Education of Both Partners, and Physical Health

Table 3 presents the corresponding results for physical health. As Model 1a (for men) and 1b (for women) reveal, a new partner has, on average, no significant effect on physical health. However, Models 2a and 2b show that men with high educational levels gain in physical health after finding new partners (+1.32), whereas men with intermediate educational levels (1.32-2.26=-0.80) and men with low educational levels (1.32-3.53=-2.21) experience deteriorations in health. For women, partnership effects on health do not significantly vary with their education. Hence, we do not find support for hypothesis H1 that individuals with low education receive greater health benefits from a couple relationship than individuals with high education; instead, we find support for the contradicting hypothesis in men (H2b) that those with low education receive fewer health benefits from couple relationships because they mostly find partners with low education. Models 3a and b examine the effect of the partner's education on the individual's health. For men, the results show that only having a partner with a high educational level boosts physical health (+1.13), whereas having a partner with intermediate education (1.13-2.26=-1.13) or low education (1.13-3.10=-1.97) even deteriorates health compared with the situation before having a partner. For women, health effects of having a partner do not consistently vary with the partner's education. Hence, hypothesis H2a is supported in particular for men: A partner with low education is less beneficial for physical health than a partner with high education.

Models 4a and b reveal that educational homogamy does not significantly boost physical health for men and deteriorate physical health for women, which is in contrast to hypothesis H3, stating that same educational levels of partners in a couple is more beneficial than different educational levels.

Finally, in Models 5a and b, we again explore whether the impact of homogamy on physical health depends on the joint educational level of the partners. Homogamy is beneficial for physical health only for highly educated men, when homogamy is equivalent with finding a highly educated partner (Model 5a). For women, this effect is more or less zero (0.20, nonsignificant). Homogamy between partners with intermediate and low educational levels is even detrimental to physical health for both sexes.

Table 3: Effects of Finding a New Partner, Education of Respondent and Partner and Other Covariates on Mental Health (PCS, Fixed effects Models)

	Model 1				Model 2				Model 3				Model 4				Model 5			
	(a) men		(b) women		(a) men		(b) women		(a) men		(b) women		(a) men		(b) women		(a) men		(b) women	
	b	se	b	se	b	se	b	se	b	se	b	se	b	se	b	se	b	se	b	se
new partner	-0.35	*0.38*	-0.46	*0.46*	1.32*	*0.58*	0.40	*0.73*	1.13*	*0.56*	0.71	*0.73*	-0.71	*0.54*	0.87	*0.72*				
*new partner * own education (reference: high eductional level)*																				
new partner * intermediate educational level					-2.12**	0.79	*-1.21*	*0.98*												
new partner * low educational level					-3.53***	0.88	*-1.70*	*1.20*												
*new partner * partner's education (reference: new partner with high educational level)*																				
new partner * with intermediate educational level									-2.26**	*0.75*	-2.46*	*1.05*								
new partner * with low educational level									-3.10**	*0.98*	-1.21	*1.08*								
*new partner * homogamy vs heterogamy*																				
new partner * with same educational level as ego													0.64	*0.69*	-2.17*	*0.89*				
new partner with other educational level than ego																	-0.70	*0.54*	0.88	*0.72*
new partner with same educational level as ego																	1.51*	*0.70*	0.20	*0.88*
intermediate educational level * new partner with same educational level																	-2.42*	*1.03*	-3.14*	*1.30*
low educational level * new partner with same educational level																	-3.81**	*1.26*	-1.81	*1.41*
intermediate educational level[1)]	-1.80*	*0.70*	-1.91+	*1.09*	-1.72*	*0.70*	-1.69	*1.10*	-1.83**	*0.70*	-1.79	*1.10*	-1.80*	*0.70*	-1.92+	*1.09*	-1.81*	*0.70*	-1.63	*1.10*
low educational level[1)]	-4.69**	*1.45*	0.44	*1.76*	-4.56**	*1.45*	0.60	*1.77*	-4.68**	*1.45*	0.49	*1.77*	-4.68**	*1.45*	0.40	*1.76*	-4.68**	*1.45*	0.56	*1.77*
age -18	-0.40**	*0.06*	-0.46**	*0.06*	-0.40***	*0.06*	-0.46***	*0.06*	-0.40***	*0.06*	-0.46***	*0.06*	-0.40***	*0.06*	-0.46**	*0.06*	-0.40**	*0.06*	-0.46***	*0.06*
lives with a child <16 in the household	0.78*	*0.38*	0.09	*0.36*	0.78*	*0.38*	0.06	*0.36*	0.76*	*0.38*	0.06	*0.36*	0.79*	*0.38*	0.11	*0.36*	0.76*	*0.38*	0.07	*0.36*
period 2006-2008	0.01	*0.30*	-0.20	*0.28*	0.01	*0.30*	-0.19	*0.28*	0.01	*0.30*	-0.19	*0.28*	0.01	*0.30*	-0.20	*0.28*	0.01	*0.30*	-0.20	*0.28*
period 2010-2012	-0.10	*0.53*	0.06	*0.51*	-0.12	*0.53*	0.05	*0.51*	-0.12	*0.53*	0.05	*0.51*	-0.10	*0.53*	0.05	*0.51*	-0.12	*0.53*	0.04	*0.50*
period 2014-2016 (reference: 2002-2004)	0.58	*0.75*	0.25	*0.71*	0.54	*0.75*	0.25	*0.71*	0.55	*0.75*	0.24	*0.71*	0.58	*0.75*	0.25	*0.71*	0.55	*0.75*	0.24	*0.71*
N	8616		12093		8616		12093		8616		12093		8616		12093		8616		12093	
Overall R^2	0.79		0.80		0.79		0.80		0.79		0.80		0.79		0.80		0.79		0.80	
Within R^2	0.013		0.015		0.014		0.015		0.013		0.015		0.013		0.015		0.013		0.015	

+ p<=0.1, * p<=0.05, ** p<=0.01, *** p<=0.001. 1) reference: high educational level.

Source: German Socioeconomic Panel, waves 2002, 2004, 2006, 2008, 2010, 2012, 2014 and 2016, author calculation.

Discussion

The general idea of this paper is that the mental and physical health benefits of a couple relationship might depend on one's own education, on one's partner's education, and on educational homogamy or heterogamy between partners. Based on FE models and the GSOEP, our results showed that starting a couple relationship is, *on average*, associated with increasing mental health for both men and women. In contrast, starting a relationship is, *on average*, not accompanied by significant changes in physical health.

Regarding one's own education, whether those with high or low educational levels should benefit more from couple relationships is theoretically ambiguous. On the one hand, we have argued that those with low education may have greater gains from a couple relationship than those with high education because the partner's additional resources may substitute for the individual's poor economic and social-psychological resources. On the other hand, due to assortative mating, those with low education usually have partners with low education. Therefore, those with lower educational levels receive fewer additional resources through a partnership and may have fewer health gains from being in a relationship than those with higher educational levels. Our results provide some support for the second argument. Highly educated men reported having better physical health after starting a couple relationship than they had when they were single, whereas men with intermediate educational levels and particularly those with low educational levels reported worse physical health after starting relationships. However, for women's physical health and for women's and men's mental health, the effects of partnerships did not vary significantly with the individual's education.

Regarding partner education, we expected that having a partner with high education is more beneficial for mental and physical health than having a partner with low education because a highly educated partner gives access to more and better resources, such as health-relevant knowledge, economic resources or social status, and because previous studies have found that a partner's level of education is positively associated with one's own overall health status (Brown et al. 2014; Huijts et al. 2010; Li et al. 2013; Monden et al. 2003). We found support for this hypothesis for women's and men's physical health and for women's mental health but not for men's mental health. These gender differences for mental health may be driven by the traditional gender role model, in which a partner with high socio-economic resources is less important for men than for women.

The results further shed some light on the relevance of the various mechanisms on how a partner with high socio-economic resources affects mental and physical health. We found that a new partner with a high educational attainment improves mental health only in women. Hence, mechanisms linked mainly to mental health outcomes like emotional support and a sense of identity given by a partner with high socio-economic resources seem to be more important for women. In contrast, the finding that a new partner with a high educational attainment significantly boosts physical health mainly in men – and the absence of such effects for men's mental health – points at the importance of monitoring of health-related behaviours by a highly educated partner for men's physical health (Horwitz/White/Howell-White 1996; Klein/Rapp/Schneider 2013; Umberson 1992). One possible explanation may be that highly educated men engage more in health-related behaviours when they have a highly educated partner, whereas highly educated women do so even when they are single.

We further expected that educational homogamy would be more beneficial for health than educational heterogamy because homogamy may increase relationship quality. However, the results for both women and men and for both physical and mental health did not support this assumption. The results for women's and men's physical health and for women's mental health indicate that homogamy is advantageous only for those with high educational levels, i.e., when homogamy means having a highly educated partner. Therefore, partner education, but not homogamy or heterogamy, seems to be decisive for the health effects of couple relationships. Even the moderating effects of an individual's education on the association of health and couple relationships can be explained via assortative mating and, hence, again, their partner's education.

The interpretation of our findings is restricted due to some limitations. Although we applied FE analysis to remove time-constant heterogeneity, we cannot completely rule out time variant heterogeneity and reverse causation. It is still possible that mental and physical health improved in the same time period as the couple formation took place, but shortly before the partner was found, which might imply reverse causation. For reasons of data availability, our findings are additionally restricted to the health benefits of the more stable couple relationships that shared households at least once during the observation window, and which are possibly more advantageous for health than less stable relationships. Finally, the results do not represent relationships that lasted longer than 14 years.

In sum, our results indicate that the intra-individual effects of a couple relationship on mental and physical health vary considerably by the educational levels of the partners. The results also indicate that partnership effects on health depend on mate choice and on the potential to find a partner that is highly educated and hence has valuable health-relevant resources. Further research is necessary to further examine and explain the gender differences we found.

References

Allison, P. D. (2009). *Fixed effects regression models*. Los Angeles: Sage. doi:10.4135/9781412993869.

Andersen, H. H., Mühlbacher, A., Nübling, M., Schupp, J. & Wagner, G. G. (2007). Computation of standard values for physical and mental health scale scores using the SOEP version of SF-12v2. *Schmollers Jahrbuch, 127, 1*, pp. 171-182.

Arránz Becker, O., Loter, K. & Becker, S. (2017). Familie und Gesundheit: Ein methodenkritischer Blick auf die aktuelle Forschung. *Handbuch Gesundheitssoziologie*, pp. 1-27. doi:10.1007/978-3-658-06477-8.

Baranowska-Rataj, A. & Strandh, M. (2017). Contagion of health effects of unemployment within families: Does becoming unemployed among young people affect health of their partners? (EXCEPT Working Papers, WP No. 13). Tallinn University, Tallinn.

Baum, A., Garofalo, J. P. & Yali, A. (1999). Socioeconomic status and chronic stress: does stress account for SES effects on health? *Annals of the New York Academy of Sciences, 896, 1*, pp. 131-144.

Berkman, L. F., Glass, T., Brissette, I. & Seeman, T. E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine, 51, 6*, pp. 843-857.

Blossfeld, H.-P. & Timm, A. (Eds.). (2003). *Who marries whom? Educational systems as marriage markets in modern societies*. Dordrecht: Kluwer.

Bourassa, K. J., Memel, M., Woolverton, C. & Sbarra, D. A. (2015). A dyadic approach to health, cognition, and quality of life in aging adults. *Psychology and Aging, 30*, *2*, pp. 449-461.

Brockmann, H. & Klein, T. (2004). Love and death in Germany: The marital biography and its effect on mortality. *Journal of Marriage and the Family, 66*, pp. 567-581.

Brown, D. C., Hummer, R. A. & Hayward, M. D. (2014). The importance of spousal education for the self-rated health of married adults in the United States. *Population Research and Policy Review, 33, 1,* pp. 127-151. doi: 10.1007/s11113-013-9305-6.

Brüderl, J. & Ludwig, V. (2015). Fixed-effects panel regression. In H. Best & C. Wolf (Eds.), *The Sage handbook of regression analysis and causal inference*. Los Angeles: Sage, pp. 327-357.

Bubonya, M., Cobb-Clark, D. B. & Wooden, M. (2017). Job loss and the mental health of spouses and adolescent children. *IZA Journal of Labor Economics, 6*, *1*, pp. 1-27.

Bünnings, C., Kleibrink, J. & Weßling, J. (2017). Fear of unemployment and its effect on the mental health of spouses. *Health economics, 26*, pp. 104-117.

Byrnes, J. P., Miller, D. C. & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological Bulletin, 125, 3*, pp. 367-383.

Cohen, S. & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98, 2,* pp. 310-357.

Cutler, D. M. & Lleras-Muney, A. (2006). *Education and health: Evaluating theories and evidence.* Washington DC: National Poverty Center. (National Poverty Center Working Paper Series).

Durkheim, E. (1897). *Le suicide: étude de sociologie*. Paris: F. Alcan.

Eeckhaut, M. C. W., Stanfors, M. A. & Van de Putte, B. (2013). Educational heterogamy and the division of paid labour in the family: A comparison of present-day Belgium and Sweden. *European Sociological Review, 30, 1*, pp. 64-75. doi: 10.1093/esr/jct022.

Egeland, G. M., Tverdal, A., Meyer, H. E. & Selmer, R. (2002). A man's heart and a wife's education: A 12-year coronary heart disease mortality follow-up in Norwegian men. *International Journal of Epidemiology, 31, 4*, pp. 799-805. doi: 10.1093/ije/31.4.799.

Gossen, H. H. (1983 [1854]). The laws of human relations and the rules of human action derived therefrom (R. C. Blitz, Trans.). Cambridge: MIT Press.

Gove, W. R., Style, C. B. & Hughes, M. (1990). The effect of marriage on the well-being of adults: A theoretical analysis. *Journal of Family Issues, 11, 1*, pp. 4-35.

Guner, N., Kulikova, Y. & Llull, J. (2016). Marriage and health: Selection, protection, and assortative mating. *Working Papers wp2016_1612, CEMFI.*

Hagedoorn, M., Sanderman, R., Bolks, H. N., Tuinstra, J. & Coyne, J. C. (2008). Distress in couples coping with cancer: A meta-analysis and critical review of role and gender effects. *Psychological Bulletin, 134, 1*, pp. 1-30. DOI: 10.1037/0033-2909.134.1.1

Hank, K. & Steinbach, A. (2018). Families and health: A review. In: Doblhammer, G. & Gumà, J.: *A Demographic perspective on gender, family and health in Europe.* Wiesbaden: Springer, pp. 23-29.

Hawkins, D. N. & Booth, A. (2005). Unhappily ever after: Effects of long-term, low-quality marriages on well-being. *Social Forces, 84, 1*, pp. 451-471.

Horwitz, A. V., White, H. R. & Howell-White, S. (1996). Becoming married and mental health: A longitudinal study of a cohort of young adults. *Journal of Marriage and the Family, 58*, pp. 895-907.

Huijts, T., Monden, C. W. S. & Kraaykamp, G. (2010). Education, educational heterogamy, and self-assessed health in Europe: A multilevel study of spousal effects in 29 European countries. *European Sociological Review, 26, 3*, pp. 261-276. doi: 10.1093/esr/jcp019

Jaffe, D. H., Eisenbach, Z., Neumark, Y. D. & Manor, O. (2006). Effects of husbands' and wives' education on each other's mortality. *Social Science & Medicine, 62, 8*, pp. 2014-2023. doi: https://doi.org/10.1016/j.socscimed.2005.08.030.

Kahn, R. S., Wise, P. H., Kennedy, B. P. & Kawachi, I. (2000). State income inequality, household income, and maternal mental and physical health: Cross sectional national survey. *BMJ: British Medical Journal, 321, 7272*, pp. 1311-1315. doi:10.1136/bmj.321.7272.1311.

Kalmijn, M. (2017). The ambiguous link between marriage and health: A dynamic reanalysis of loss and gain effects. *Social Forces*, *95, 4*, pp. 1607-1636.

Kiecolt-Glaser, J. K. & Newton, T. L. (2001). Marriage and health: His and hers. *Psychological Bulletin, 127, 4*, pp. 472-503.

Klein, T., Rapp, I. & Schneider, B. (2013). The influence of couples' living arrangements on smoking habits and body weight. *Comparative Population Studies, 38, 3*, pp. 673-694.

Laaksonen, M., Talala, K., Martelin, T., Rahkonen, O., Roos, E., Helakorpi, S., . . . Prättälä, R. (2007). Health behaviours as explanations for educational level differences in cardiovascular and all-cause mortality: A follow-up of 60 000 men and women over 23 years. *European Journal of Public Health, 18, 1*, pp. 38-43.

Li, Y., Fu, H., Zhao, F., Luo, J. & Kawachi, I. (2013). Influence of spousal education on partner's self-rated health: Cross-sectional study among 1382 married couples in Shanghai, China. *Asia Pacific Journal of Public Health, 25, 5*, pp. 398-408. doi:10.1177/1010539511420417.

Mendolia, S. (2014). The impact of husband's job loss on partners' mental health. *Review of Economics of the Household, 12, 2*, pp. 277-294.

Monden, C. W. S., van Lenthe, F., De Graaf, N. D. & Kraaykamp, G. (2003). Partner's and own education: Does who you live with matter for self-assessed health, smoking and excessive alcohol consumption? *Social Science & Medicine, 57, 10*, pp. 1901-1912. doi: https://doi.org/10.1016/S0277-9536(03)00055-8.

Polenick, C. A., Martire, L. M., Hemphill, R. C. & Stephens, M. A. (2015). Effects of change in arthritis severity on spouse well-being: The moderating role of relationship closeness. *Journal of Family Psychology, 29, 3*, pp. 331-338. doi:10.1037/fam0000093.

Rapp, I. (2018). Partnership Formation in Young and Older Age. *Journal of Family Issues, 39, 13*, pp. 3363-3390.

Rapp, I. & Gruhler, J. (2018). The impact of health and health behavior on the formation of intimate relationships. *Kölner Zeitschrift für Soziologie und Sozialpsychologie, 70, 1*, pp. 25-52.

Rapp, I. & Klein, T. (2015). *Familie und Gesundheit*. In: P. B. Hill & J. Kopp (Eds.), Handbuch Familiensoziologie. Wiesbaden: Springer VS, pp. 775-790.

Rapp, I. & Klein, T. (2017). *Lebensstil und Gesundheit.* In: M. Jungbauer-Gans & P. Kriwy (Eds.), Handbuch Gesundheitssoziologie. Wiesbaden: Springer Fachmedien Wiesbaden, pp. 1-19.

Ross, C. E. & Mirowsky, J. (2006). Sex differences in the effect of education on depression: resource multiplication or resource substitution? *Social Science & Medicine, 63, 5*, pp. 1400-1413. DOI: 10.1016/j.socscimed.2006.03.013.

Ross, C. E. & Mirowsky, J. (2010). Gender and the health benefits of education. *The Sociological Quarterly, 51, 1*, pp. 1-19. DOI: 10.1111/j.1533-8525.2009.01164-x.

Ross, C. E. & Mirowsky, J. (2013). Theory and modeling in the study of intimate relationships and health. *Journal of Health and Social Behavior, 54, 1*, pp. 67-71. DOI: 10.1177/0022146512474431.

Ross, C. E. & Wu, C.-L. (1995). The links between education and health. *American Sociological Review, 60, 27*, pp. 719-745.

Schupp, J., Goebel, J., Kroh, M., Schröder, C., Bartels, C., Erhardt, K., Fedorets, A., Grabka, M., Giesselmann, M., Krause, P., Kuehne, S., Richter, D., Siegers, R., Schmelzer, P., Schmitt, C., Schnitzlein, D., Wenzig, K., German Institute for Economic Research (2016). *Socio-economic Panel (SOEP), data from 1984-2015*. doi: https://doi.org/10.5684/soep.v32.

Skalická, V. & Kunst, A. E. (2008). Effects of spouses' socioeconomic characteristics on mortality among men and women in a Norwegian longitudinal study. *Social Science & Medicine, 66, 9*, pp. 2035-2047.

Umberson, D. (1992). Gender, marital status and the social control of health behavior. *Social Science & Medicine, 34, 8*, pp. 907-917.

Umberson, D., Williams, K., Powers, D. A., Liu, H. & Needham, B. (2006). You make me sick: Marital quality and health over the life course. *Journal of Health and Social Behavior, 47*, *1*, pp. 1-16.

Wagner, G., Frick, J. & Schupp, J. (2007). The German Socio-Economic Panel Study (SOEP) – Scope, evolution and enhancements. *Schmollers Jahrbuch: Journal of Applied Social Science Studies/ Zeitschrift für Wirtschafts- und Sozialwissenschaften, 127, 1*, pp. 139-169.

Waite, L. & Gallagher, M. (2002). The case for marriage: Why married people are happier, healthier and better off financially. New York: Broadway Books.

Ware, J. E., Dewey, J. E. & Kosinski, M. (2001). *How to score version 2 of the SF-36 health survey*. Lincoln RI. QualityMetric.

Westman, M., Keinan, G., Roziner, I. & Benyamini, Y. (2008). The crossover of perceived health between spouses. *Journal of Occupational Health Psychology, 13, 2*, pp. 68-180.

Wood, R. G., Goesling, B. & Avellar, S. (2007). *The effects of marriage on health: a synthesis of recent research evidence*. Washington, DC: Mathematica Policy Research Inc.

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Mental health dynamics around marital dissolution. Moderating effects of parenthood and children's age

Abstract
Our study is the first that aims at estimating the intra-individual effect of marital dissolution on mental health, conditional on parenthood status and age of the youngest biological child. We rely on the set point model that predicts a nonlinear, homeostatic self-regulation process with an anticipatory effect and a subsequent recovery phase. Assuming heterogeneous effects, we expect both parenthood status and age of the youngest biological child grouped into five distinct categories to moderate the strength of the dissolution-health nexus. We use GSOEP data and restrict our sample to women and men who were at risk for first marital dissolution within the observational period 2002 to 2016. The dependent variable is the mental health component of the SF-12 survey instrument. We estimate distributed fixed-effects (dummy impact functions), covering the time span from three (or more) years before marital dissolution up to six (or more) years afterwards. Compared to the baseline, childless women exhibit a considerable impairment in mental health after dissolution, experiencing a slower recovery than childless men. Our most unambiguous result is the negative anticipation and a subsequent downward trajectory of mental health among mothers of infants and toddlers, whereas in the respective group of fathers we do not observe any change over time. In all other parent groups, mental health reacts mostly in a short-term manner to dissolution, except for fathers of pre- and primary school children whose mental health remains unchanged. Our study provides new evidence on mental health dynamics around marital dissolution and raises the awareness of mental distress, loneliness and potential social exclusion faced by childless and parents, in particular by lone mothers of young children.

Key words: mental health dynamics; marital dissolution; parenthood; distributed fixed-effects, GSOEP

Introduction

During the year 2016, almost one million couples divorced in Europe, and over 160 thousand of them in Germany (Eurostat 2018). From all German divorces, 83% occurred just after the obligatory "separation year", 16% on average three years after separation, and the remaining 1% terminated exceptionally before the expiration of the separation year (Federal Statistical Office 2018). 51% of all divorce applications were filed by women, 41% by men and 8% by both spouses. About half of divorcing German couples had minor children (Federal Statistical Office 2018).

Separations and divorces have a multitude of effects for those involved. In this paper, we study temporal dynamics of mental health around marital dissolution. We are particularly interested to learn more about gender specific differences of these dynamics and the moderating role of (non)parenthood. Whether a couple has a child or not, may strongly influence the decision to separate and divorce. Couples having children are less likely to divorce, especially when they have several children (with 2-3 children minimizing the risk of divorce, Andersson 1997) and/or young children (Waite/Lillard 1991; Steele et al. 2005). Part of the effect may be causal, meaning that children increase partners' commitment to the (marital) union, but it may also reflect selection, as partners less committed to a union are less likely to have children together (Coppola/Di Cesare 2008; Lyngstad/Jalovaara 2010).

Presence of a child may also affect partners' experience of divorce. Although research from past decades accumulated vast evidence that divorce is detrimental to mental health (Amato/Keith 1991; Hank/Wagner 2013), the question of moderating effects of parenthood has been addressed by only a handful of papers (Blekesaune/Barrett 2005; Williams/Dunne-Bryant 2006; Leopold/Kalmijn 2016). Unfortunately, most previous studies use less than ideal research designs, making it difficult to draw firm conclusions. First of all, viewing marital dissolution as a dynamic process rather than an enduring state requires analyses of panel data and an adequate longitudinal modelling approach that considers anticipatory effects and subsequent adaptation (Amato 2000). Second, past research rarely accounts for the ages of children and typically pools together childless people in one category with parents of adult children. Our analysis overcomes these methodological limitations. First, we use fixed-effects regression for panel data to control for time-invariant intra-individual unobserved heterogeneity around marital dissolution. Second, we account for baseline age-related dynamics of mental health. And third, we distinguish five categories of (non)parenthood, from childless, through parents of infants and toddlers to those having pre- and primary school children, to those having adolescent or adult children.

Mental health—the outcome variable studied by us—is defined by the WHO as "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community" (WHO 2018). The question whether presence of children aggravates the consequences of marital dissolution for mental health is important from a substantive point of view: divorces affecting both parents and children are common and have long-reaching consequences. The experience of marital dissolution and conflict affects partners' well-being for several years afterwards (Lucas 2005), influences their children's well-being (Amato/Loomis/Booth 1995), and shapes family ties and behaviour among children and grandchildren of divorcees (Amato/Cheadle 2005). Moreover, we consider mental rather than physical health because mental health is more sensitive to life events in a short- and mid-term perspective.

Our study aims at the existing research gap on the role of diverse stages of parenthood in explaining mental health of parents around marital dissolution. Examining the complex role played by children at different developmental stages improves our understanding of negative consequences of marital dissolution as well as of benefits derived from marriage. Negative consequences of marital dissolution for mental health are typically interpreted in terms of being deprived of a protective effect of marriage itself. However, such reasoning

must be questioned, should the negative effects of marital dissolution be contingent on having children. More generally, studying the moderator effect of parenthood enriches our knowledge on the heterogeneity of mental health consequences around first marital dissolution, a topic that has been called for as an important direction of future research (Amato 2010).

Theoretical background

In order to theorize consequences of marital dissolution, several approaches have proved to be fruitful (Amato 2000). First, although marital dissolution is generally conceived of as a negative critical life event producing grief and suffering, it has been argued that for some individuals (e.g., a wife with an abusive husband) it might be potentially beneficial (Amato 2000). This implies that studies on health consequences around marital dissolution need to consider effect heterogeneity across individuals by identifying and modelling key moderator variables. Complementing previous studies which have focused, for instance, on cross-country differences in divorce effects (i.e., macro-level moderators, e.g., Kalmijn 2010) or moderation of divorce effects by union type (Kalmijn 2017), our study examines moderating effects of presence and age of biological children.

Second, even if the effects of dissolution are detrimental to mental health, these adverse effects may be short-lived (as posited by the so-called crisis model) rather than sustained long-term health declines (chronic strain model) (Amato 2000). The notion of short-term health declines after a dissolution with subsequent adaptation, i.e. recovery to a baseline level, is in line with the set point theory from happiness research (Lucas et al. 2003; Lucas 2016). Therefore, a thorough study of dissolution effects has to account for health shifts over time, and should employ a model sufficiently flexible to allow for distinguishing between short-lived and long-term effects.

This leads to the third point, the issue of causality. Arguably, marital dissolution is a process rather than an isolated event (Booth et al. 1983), which, first, implies that individuals may experience emotional distress at different stages in this process (Emery 1994) and, second, that for some individuals it may be rather pre-separation conflicts or marital abuse than the act of dissolution itself that generates mental health problems. Unfortunately, these rather subtle epiphenomena are harder to measure than objective transitions, especially in large scale studies. However, the processual nature of dissolution suggests that modelling several time points before and after it may be a better suited approach than considering dissolution as a dichotomy.

Fourth, while divorce is generally theorized to affect health, pre-divorce health may also affect the risk of dissolution (Wade/Pevalin 2004). Previous studies suggest that health problems are positively associated with the risk of marital dissolution (Rapp 2012). Unfortunately, it is not easy to rule out selection on health when studying causal effects of dissolution on health. Nonetheless, a fixed-effects analytical framework is a promising way of controlling for systematic (time-invariant) pre-divorce health differences among individuals (Brüderl/Ludwig 2015).

The moderating effect of children

The effect of marital dissolution on mental health may be more negative in marriages with children than among the childless. According to the economic model of the family, children are an example of union-specific capital, which means that having children might be more beneficial for partners living together than for those living separately (Lyngstad/Jalovaara 2010). This suggests that divorcing parents lose "more" during a marital breakup than divorcing childless do. However, one should be careful about involuntary childlessness, because it may trigger a dissolution among the childless (Lyngstad/Jalovaara 2010). Further, marital dissolution itself has been argued to impinge upon parent-child interactions (Grau/Bierhoff 2003; Tein/Sandler/Zautra 2000) increasing behavioural problems of the child. This may be aggravated by sharing the custody, as it forces parents to stay in regular contact with each other. All this suggests that parenthood could make a dissolution more painful and prolong the process of adjustment.

However, the benefits and burdens of having a child plausibly change with the age of the child, and the moderating effect of parenthood likely reflects that. Moreover, family is a gendered institution and experiences of mothers and fathers can be qualitatively different (Cooke 2004). Therefore, we systematically theorise on how mental health consequences of marital dissolution differs with child's age and parent's gender.

Age of the child

Having a young (defined as infant and toddler) child may exacerbate the effect of marital dissolution because child's fear, anxiety, and behavioural problems triggered by dissolution (Strohschein 2005) are an additional stressor for separating parents (Amato 2000). Moreover, because of the monetary costs of childrearing and institutional childcare, young children may increase the risk of economic hardship, especially for lone mothers (Casper/McLanahan/Garfinkel 1994). As noted before, the presence of children affects the risk of parental dissolution, with the strongest stabilizing effect of young children. This is a potential source of bias in causal estimates: If couples generally tend to avoid splitting up while having young children, marital dissolution that can occur in further period may take place in extremely troubled (e.g. abusive) marriages. This implies that mental health consequences of dissolutions involving young children may be particularly negative also due to self-selection. In principle, having a young child might also have a protective effect ("buffering effect", see Cohen/Wills 1985) during dissolution. The period shortly after birth stands out with an increased parental life satisfaction (Myrskylä/Margolis 2014; Pollmann-Schult 2014; Mikucka 2016), suggesting that especially young children may provide joy and a sense of meaning to their parents. However, this increase tends to wear off within a few years, which makes the overall protective effect implausible.

To our knowledge, past studies only rarely theorise the effects of school-aged or teenage children on parental mental health. The well-being gains from parenthood at these ages are generally smaller than with young children (Nomaguchi 2012), suggesting weaker protective effects and lower levels of parental satisfaction with the quality of parent-child-relationship. It is likely that behavioural problems associated with marital conflict combined

with children's increasing autonomy exacerbate the negative effects of divorce, especially during the adolescent stage (Masche 2008). However, the stabilizing effect of parenthood plausibly becomes weaker as children grow up, reducing the negative selection into divorce.

The effect of adult children is more often addressed theoretically. Economic models of parenthood postulate that adult children are a potential source of practical and emotional support for their parents (Ikkink/van Tilburg/Knipscheer 1999). Such support during a marital dissolution might in principle reduce the negative consequences of divorce. However, in Western European countries parents support their children into adulthood (Brandt/Deindl 2013), and the roles tend to reverse at older ages. Thus, whereas the protective effect of children in middle-age divorcing couples may be rather weak, it should be stronger for grey divorces of long-term marriages in old age (Kalmijn 2007). However, even after a late divorce, mothers have still more contact with children and receive more support from them than fathers (Kalmijn 2007).

Summing up, past conceptualizations suggest a negative moderating effect of young children during parental dissolution: not only children's behavioural problems may constitute additional stressors, but also (due to the stabilizing effect of small children) the dissolutions of marriages with small children may be particularly painful. These effects plausibly become weaker as children grow older.

Gender of the parent

In Germany, mothers are typically the main caregivers, and they shoulder most of child-related work, although formally in the year 2016, as many as 97% of divorcing couples shared custody (Federal Statistical Office 2018). After marital dissolution, mothers—especially of young children—may suffer from role strain, being caught between childcare responsibilities and breadwinner demands (Fokkema 2002). This may be aggravated by the worsening of their economic situation (Andreß et al. 2006), for example when alimonies fail to cover the costs of childrearing (Holden/Smock 1991).

All this may suggest that mothers take on the more difficult role after marital dissolution. However, fathers may suffer from the lack of everyday contact with a child (Juby et al. 2007) and associated relational problems (Amato/Booth 1996). Additionally, the obligation to pay alimonies (which in Germany increase with the age of the child according to the so-called "Düsseldorfer Tabelle") combined with higher (than the pre-divorce) costs of independent residence are likely to undermine their financial situation (Andreß et al. 2006).

In sum, the challenges of marital dissolution among mothers seem particularly high at child's younger ages and may reduce when increasing child's independence makes it easier to combine breadwinning and childcare. This pattern may be different for fathers, for whom the financial costs and the risk of conflict or lack of contact with children may become increasingly problematic as children grow older.

Previous research

A large body of research has documented that marital dissolution has a detrimental effect on many outcomes including health and well-being (Amato 2000; 2010). However, a

closer inspection of previous research shows that a major part of the evidence is based on cross-sectional studies, and most longitudinal studies include few time points (Turner 2006; Arránz Becker/Loter/Becker 2017). Moreover, relatively few studies have systematically scrutinized moderating effects of children by comparing effects of marital dissolution among parents to those among childless individuals.

Cross-sectional studies have shown that divorced mothers have higher odds of poor self-rated health (Lahelma et al. 2002), depression (Afifi/Cox/Enns 2006), and a variety of mental disorders (Afifi/Cox/Enns 2006; Cairney et al. 2006) and illnesses (Benzeval 1998). Interestingly, in these studies the divorce event itself (rather than the lack of marriage) appears to be crucial because, for instance, never married mothers did not exhibit a particularly high risk of psychiatric disorders (Afifi/Cox/Enns 2006; Cairney et al. 2006; Turner 2006). Moreover, this health-related disadvantage of divorced mothers seems to persist into older age (Berkman et al. 2015). As mentioned above, conclusions from cross-sectional studies regarding potential causal effects are ineligible because cross-sectional research cannot disentangle selection and causality and cannot contribute to our knowledge of the temporal shape of marital dissolution effects either. Thus, in the following, we focus on insights from the few existing longitudinal studies.

The probably most comprehensive study, so far, by Kalmijn and Leopold (2016) on the moderating effect of parenthood after divorce found stronger decreases in subjective well-being among parents of children at age 0-4 compared to childless individuals and parents of children at age 5-18, emphasizing the important role of parenthood as moderator. To our best knowledge, this is the only study using German panel data, focusing primarily on well-being and its dynamics after divorce. In line with these results, Williams and Dunne-Bryant (2006) found a positive effect of dissolution on depressive symptoms that was largely limited to parents with children at age 0-5. Similarly, a study by Blekesaune and Barrett (2005) using Norwegian registry data found negative but short-lived health consequences of marital dissolution, which were stronger among parents than among the childless. Finally, there are two studies by Lorenz et al. using a dataset on women in rural Iowa (Lorenz et al. 1997; 2006). The first one showed an elevated level of depression among divorced compared to married mothers which tended to become smaller over time but did not vanish before a period of three years (Lorenz et al. 1997). The second one showed that whereas divorce had an adverse short-term effect on mental health, declines in physical health only became visible a decade later (Lorenz et al. 2006).

Yet, findings from these studies should be interpreted with caution. First, some studies used a random-effects approach; thus unobserved heterogeneity may have introduced bias into the reported effect estimates. Second, some studies did not include a comparison group of constantly married. In doing so, health trends and other time-varying information of the married cannot be taken into account at baseline leading, not only to biased estimates of confounders but also biased estimates of the causal effect. Third, some studies pooled childless individuals together with parents having adult children and/or parents having non-coresident children ignoring an important substantial distinction. Fourth, some studies did not include pre-divorce observations and lastly, fifth, some used lagged dependent variable (LDV) regression with two time points, although LDV regression may yield biased estimates (Vaisey/Miles 2017).

In sum, previous studies on divorce effects on parental health outcomes suffer from considerable gaps and shortcomings. There are many cross-sectional studies which do not always distinguish between never married and divorced individuals. The few existing panel studies are often based on few waves of data (Turner 2006), so their capacity to determine the causal ordering (i.e., to control for selection effects when studying causal effects) is limited. Moreover, unobserved heterogeneity largely remains an unresolved issue, because pre-divorce health differences between people who separate and who stay married are not controlled for, which lead to an overestimation of causal divorce effects. And finally, the temporal shape of divorce effects has seldom been investigated, thus neglecting an important aspect for both scholarly research and for planning interventions.

Aims of the current paper

Against this background, our study provides a description of intra-individual trajectories of mental health among childless men and women, and mothers and fathers across a nine-year period surrounding dissolutions of first marriages. We analyse mental health as the outcome because we expect it to be of reactive nature in the relatively short run covered by this study, whereas shifts in physical health associated with dissolution may be rather slow and require data spanning decades rather than years (Lorenz et al. 2006). In line with research on the impact of divorce on well-being (Lucas et al. 2003; Lucas 2016), we expect that mental health declines already before union dissolution, and this decline is followed by a subsequent phase of (complete or partial) adaptation, i.e. recovery of mental health. Our first (general) hypothesis is that the effect of marital dissolution should be more evident among parents, both mothers and fathers, than among childless individuals. Further, we compare mental health trajectories of subgroups defined by the age of the youngest biological child at the time of marital dissolution, to test our second hypothesis that the negative moderating effect of children around dissolution should be more visible among parents of younger children than among parents of older children. We assume that this pattern is most clear-cut among mothers who suffer from role strain while combining breadwinning and caring for young children and who can abruptly be thrusted into a low-income group of single mothers. For fathers, changes in mental health related to growing up of children may be less pronounced.

Method

Data and sample

We use longitudinal data from the German Socio-Economic Panel (SOEP 2017), a panel survey that was initiated in West Germany in 1984 and in East Germany in 1990, with subsequent waves conducted annually.

Because our outcome of interest was first collected in the year 2002 and its last available measure is from the year 2016, the observational period is left-truncated and ranges from 2002 to 2016. Further, the data are prone to right-censoring—we cannot identify in-

dividuals who left the panel before marital dissolution occurred as well as individuals who are still in the panel but who will separate after 2016.

We restrict our estimation sample to men and women who were at risk for first marital dissolution within the observational period. Thus, it includes both individuals who experienced a transition to first marital dissolution between 2002 and 2016 (N=541 transitions for men and N=692 for women) and individuals who were potentially at risk for a transition into first marital dissolution but stayed married until the last wave they were observed, up to 2016 (N=9,883 men and N=10,070 women). The last mentioned served as comparison group. Basically, including a comparison group to the estimation sample does not affect the effect of marital dissolution, because this group does not contribute to the fixed-effects estimation. However, omitting the comparison group would lead to biased estimates of the confounders. For instance, the age effect estimated only for those who experienced marital dissolution might be underestimated or overestimated as compared to the full estimation sample, and this would in consequence bias the effect of marital dissolution as well (Brüderl 2010). Finally, all "treated" respondents who were not observed both before and during marital dissolution were excluded from the sample. This includes: (1) separated, divorced, widowed, and second married when first observed, (2) those whose spouse died during the observational period and (3) all person-years after widowhood of those who experienced a transition to separation first (married – separated – widowed). Yet, individuals who remarried after marital dissolution (married – separated – remarried) were not immediately censored and stayed in the estimation sample for up to four years after remarriage. This is because the initial years in a second marriage could serve as the continuation of a recovery process after marital dissolution.

Individuals younger than 16 (marriageable age in Germany), refugees, individuals who experienced child's death during the observational period, as well as marriages lasting shorter than 24 months (overlapping transitions to first marriage and first separation) were excluded from the analysis. Further, we dropped the first and the second marriage year for all individuals accounting for potential inflated levels of mental health due to honeymoon effects.

Finally, because our outcome of interest was measured only in even numbered years, we had to drop observations from odd years losing for this reason several transitions (N = 243 for men and N = 322 for women). The final sample consists of 10,181 men and 10,440 women, out of which 298 men and 370 women got separated between 2002 and 2016 and who were observed at least three years prior to marital dissolution. For less than 10% of men and women who experienced a transition, the year of marital separation was missing and replaced by the year of divorce for further analyses.

Dependent variable

Our dependent variable is mental health-related quality of life—one of two subdimensions within the framework of the SF-12 health survey instrument, available in GSOEP biennially since 2002 (Nübling/Andersen/Mühlbacher 2006). When referring to perceived mental health-related quality of life, for the sake of brevity we will use the shorter term "mental health". Originally, the SF-12 physical and mental health composite scores were extracted via principal component analysis (PCA) with varimax rotation based on twelve health-

related items pertaining to eight subscales (see Appendix in Nübling/Andersen/ Mühlbacher 2006). The mental health component consists conceptually of the following four subscales: vitality (one item: energy level), social functioning (one item: limitation of social activities due to health), role emotional (two items: accomplished less due to emotional problems, less careful due to emotional problems) and mental health (two items: blue and downhearted, calm and peaceful). The scores used in this study were also extracted via PCA; however, we applied oblimin rotation, allowing the components to be non-orthogonal (the component correlation was 0.53). Our analysis yielded the expected two-component solution for the total estimation sample (criterion: eigenvalues greater than 1) with standardized PCA loadings for mental health ranging from 0.71 to 0.90 (except for the loading on vitality which was 0.57). Finally, we rescaled the PCA scores to the range 0 to 100. Higher values correspond to better mental health, lower values to poorer mental health.

Grouping variable: child's age

Because our focus is on maternal and paternal trajectories of mental health, we created five distinct groups of separated individuals defined by the age of the youngest biological child in the year of marital dissolution. Our age categories reflect the theoretical arguments presented in the background section and correspond both to institutional care arrangements in Germany (nurseries and kindergartens, pre-elementary and elementary schooling, secondary schooling) and to four stages of life course development derived from the literature (Kuh et al. 2003): early childhood, middle childhood, adolescence and adulthood.

For individuals who experienced a transition to marital dissolution, the age of the youngest child in the year of dissolution was the criterion to categorize the respondents into distinct groups. For individuals belonging to the comparison group without a transition until 2016 but who were still at risk of a dissolution, we used the year of the last observation in the panel and computed the age of the youngest child based on the next year (i.e. last observation + 1). For instance, if the last panel observation for a (first married) respondent was 2014 and the youngest child was born 2012, this respondent was placed in the group of parents with children at age 0-4 (the youngest child was three years old in 2015). The main reason for using the last panel observation instead of, for example, the first one is the closest temporal proximity to a potential dissolution that might have occurred after the last available observation (e.g., after 2014 as in the example above). Our grouping scheme can be summarised as follows:

(1) childless individuals (771 women including 54 transitions; 1,617 men including 60 transitions)
(2) parents of infants and toddlers aged 0 to 4 (860 mothers including 49 transitions; 754 fathers including 32 transitions)
(3) parents of pre- and primary school children aged 5 to 10 (1,892 mothers including 86 transitions; 1,705 fathers including 67 transitions)
(4) parents of adolescent children aged 11 to 17 (1,476 mothers including 98 transitions; 1,350 fathers including 67 transitions)
(5) parents of adult children aged 18 and older (5,441 mothers including 83 transitions; 4,755 fathers including 72 transitions).

Event time dummies

To model health dynamics around marital dissolution, we constructed an "event-centered" time scale that ranges from -14 years before to +11 years after dissolution. Again, because our observational period starts 2002 and ends 2016, we can observe each individual for 14 years at the most. As we are interested not only in adaption after marital dissolution but also in anticipation prior to dissolution, we set the reference category (our baseline) to "-3 years before marital dissolution and earlier" (up to max. -14 years before). Thus, one extremum would be: start of observation at "-14" and end of observation at "0" which refers to the year of marital dissolution, and the other extremum would be: start of observation at "-3" (because we observe all individuals at least three years prior to marital dissolution) and end of observation at "+11". The baseline category "-3 years before dissolution and earlier" comprises (1) all person-years between the 14th and the 3rd year before marital dissolution of individuals who experienced a transition and (2) all person-years of individuals without a transition, i.e. the comparison group of constantly married. After specifying the baseline, we created five time dummies for those with transition to marital dissolution, generating a progressive time axis starting after -3. According to this, the first time dummy captures mental health shifts prior to marital dissolution (i.e., anticipation) and covers the period two to one year before marital dissolution ("-2 to -1"). The biennial coding of the dummies (either the second or first year before dissolution) results from the biennial collection of data on mental health in the GSOEP data.[1] Therefore, the second time dummy captures the immediate and short-term effect of the event "year of first marital dissolution to +1" and covers a period between the dissolution and one year after (carefully differentiating between those who were still married and those who have been already separated at the time of interview in the year of marital dissolution), whereas the last three dummies capture mental health shifts following the event (i.e., adaptation): "+2 to +3" years after dissolution, "+4 to +5" years afterwards and "+6 and later" (up to max. +11 years after marital dissolution).

Time-varying confounders

To reduce potential risk of overcontrol bias (Elwert/Winship 2014), we carefully chose only five substantively important confounders. We include (1) linear and quadratic individual's age terms that capture general health decline, (2) a dummy for co-residence with current partner (1=yes, 0=no), (3) a dummy for co-residence with at least one child, without differentiating whether it is a biological one or not (1=yes, 0=no), (4) a dummy capturing pregnancy and birth coded '1' for the period of one year before a birth of a child, up to one year after it, and '0' otherwise, and (5) a dummy for remarriage (1=yes, 0=no).

1 Respondents for whom the year of dissolution was an odd year can thus contribute to the time axis only at years -13, -11, -9, -7, -5, -3, -1, +1, +3, +5, +7, +9, +11. Respondents for whom the year of dissolution was an even year can contribute to the time axis only at years -12, -10, -8, -6, -4, -2, 0, +2, +4, +6, +8, +10. Hence, to avoid potential selection and to ascertain that we observe all individuals at each particular time point (and not only at every second wave), we combined one odd and one even time point creating each time dummy.

Method of analysis

We estimate distributed fixed-effects (FE) regression models (Dougherty 2006) for mental health, separately for men and women by childrens' age group. Instead of contrasting the global average before and after the transition, we assume the effect of marital dissolution on mental health to be "distributed" across time. In other words: The within estimator compares the average mental health from the baseline "-3 years before marital dissolution and earlier" with the average mental health in each particular time dummy. The model equation for our analysis on mental health (abbreviation: MH) is presented below (see also Clark/Georgellis 2013):

$$MH_{it} = \alpha_i + \beta_{-2/-1} D_{-2/-1,it} + \beta_{0/+1} D_{0/+1,it} + \beta_{+2/+3} D_{+2/+3,it} + \beta_{+4/+5} D_{+4/+5,it} + \beta_{+6+} D_{+6+,it} + \beta' X_{it} + \varepsilon_{it}$$

where $D_{-2/-1,it}$ to $D_{+6+,it}$ are time dummies, X_{it} is a vector of time-varying confounders and $D_{-3,it}$ (not shown in the equation) is the omitted reference category (baseline).

This kind of modelling enables us, first, to carefully examine patterns of temporal mental health dynamics prior to the event (anticipation), in the year of the event or shortly afterwards (immediate and short-term effect) as well as following the event (adaptation). Second, comparing the same individuals before and after the event (within-subject design) brings us an advantage over previous studies by eliminating person-related time-invariant unobserved heterogeneity from the analysis. Third, this approach also accounts for potential selection of married individuals with poorer health into marital dissolution.

All FE regression models were estimated with the xtreg-command in Stata (Version 15.1) applying panel-robust standard errors.

Results

Descriptives

Tables 1 and 2 present sample composition by the age of the youngest biological child for women (Table 1) and men (Table 2): without transition to marital dissolution (comparison group) as well as with transition to marital dissolution—at baseline and at the first available observation as separated.

For the two comparison groups, the descriptives show the highest levels of mental health for mothers and fathers of children at age 0-4 and 5-10 (69.95 and 69.50 as well as 73.08 and 72.07, respectively). In contrast, childless women and men, and mothers and fathers of adult children report the lowest levels of mental health (67.63 and 66.44 as well as 67.48 and 69.87, respectively). All subgroups of individuals who experienced a transition to marital dissolution, except for childless men, showed lower levels of mental health already three years before marital dissolution compared to the respective comparison group. The average mental health decreases after marital dissolution by about 3 to 4 scale points for women and by 3 to 8 scale points for men. Lowest levels of mental health after marital dissolution are reported by women with adult children (58.62) and childless men (60.53), whereas separated fathers of children at age 5-10 and also fathers of adult children report the highest levels of mental health (66.27 and 65.01, respectively).

Table 1: Sample composition by age of the youngest biological child before and after marital separation for women

	WOMEN IN THE COMPARISON GROUP (last available observation as married)				
	Childless (*N* = 717)	Child at age 0-4 (*N* = 811)	Child at age 5-10 (*N* = 1,806)	Child at age 11-17 (*N* = 1,378)	Child at age 18+ (*N* = 5,358)
Mental health-related quality of life, *M* (*SD*)	67.63 (17.06)	69.95 (13.80)	69.50 (14.16)	68.87 (15.17)	67.48 (16.26)
Confounders					
Age, *M* (*SD*)	52.27 (15.88)	33.89 (5.04)	39.03 (5.25)	44.48 (5.16)	62.05 (10.82)
Co-residence: current partner, (%)	99%	99%	99%	99%	99%
Co-residence: child, (%)	2%	98%	99%	99%	6%
1 year before and after birth, (%)	0%	42%	0%	---	---
Remarriage, (%)	---	---	---	---	---
Additional information					
Marital duration, *M (SD)*	23.61 (16.17)	8.37 (4.39)	12.56 (4.87)	18.87 (5.23)	38.74 (11.55)
Two and more children, (%)	---	77%	83%	84%	76%
	WOMEN WITH TRANSITION TO MARITAL SEPARATION (at baseline: -3 and before)				
	Childless (*N* = 54)	Child at age 0-4 (*N* = 49)	Child at age 5-10 (*N* = 86)	Child at age 11-17 (*N* = 98)	Child at age 18+ (*N* = 83)
Mental health-related quality of life, *M* (*SD*)	64.78 (15.05)	66.43 (17.05)	66.75 (15.23)	67.49 (14.06)	61.12 (18.11)
Confounders					
Age, *M* (*SD*)	36.59 (10.22)	30.82 (5.67)	35.77 (5.08)	41.36 (5.10)	53.51 (9.86)
Co-residence: current partner, (%)	100%	100%	100%	98%	99%
Co-residence: child, (%)	0%	96%	100%	100%	31%
1 year before and after birth, (%)	0%	63%	1%	---	---
Remarriage, (%)	---	---	---	---	---
Additional information					
Marital duration, *M (SD)*	7.78 (7.26)	6.04 (3.95)	10.05 (4.83)	15.83 (5.49)	29.25 (11.37)
Two and more children, (%)	---	67%	65%	75%	74%
	WOMEN WITH TRANSITION TO MARITAL SEPARATION (first available observation as separated)				
	Childless (*N* = 54)	Child at age 0-4 (*N* = 49)	Child at age 5-10 (N =86)	Child at age 11-17 (*N* = 98)	Child at age 18+ (*N* = 83)
Mental health-related quality of life, *M* (*SD*)	61.96 (16.70)	62.31 (19.21)	63.42 (19.33)	63.03 (17.56)	58.62 (19.28)
Confounders					
Age, *M* (*SD*)	40.18 (10.47)	34.37 (5.74)	39.46 (5.08)	45.23 (5.09)	57.22 (9.85)
Co-residence: current partner, (%)	17%	25%	24%	55%	41%
Co-residence: child, (%)	0%	94%	95%	67%	1%
1 year before and after birth, (%)	4%	12%	5%	---	---
Remarriage, (%)	0%	0%	1%	0%	0%
Additional information					
Marital duration *M (SD)*	10.24 (7.22)	8.43 (3.96)	12.55 (4.74)	18.47 (5.41)	31.89 (11.38)
Two and more children, (%)	0%	75%	65%	75%	74%

Note: Symbol "---" in place of percentage indicates no valid observations for a given variable at a given time point or at any time point

Table 2: Sample composition by age of the youngest biological child before and after marital separation for men

	MEN IN THE COMPARISON GROUP (last available observation as married)				
	Childless (*N* = 1,557)	Child at age 0-4 (*N* = 722)	Child at age 5-10 (*N* = 1,638)	Child at age 11-17 (*N* = 1,283)	Child at age 18+ (*N* = 4,683)
Mental health-related quality of life, *M* (*SD*)	66.44 (18.23)	73.08 (13.12)	72.07 (13.29)	70.52 (15.12)	69.87 (15.98)
Confounders					
Age, *M* (*SD*)	64.53 (15.18)	36.64 (5.63)	41.81 (5.92)	47.00 (5.79)	64.08 (10.93)
Co-residence: current partner, (%)	99%	99%	99%	99%	99%
Co-residence: child, (%)	2%	98%	99%	99%	6%
1 year before and after birth, (%)	0%	43%	1%	---	---
Remarriage, (%)	---	---	---	---	---
Additional information					
Marital duration, *M (SD)*	36.36 (17.57)	8.24 (4.38)	12.42 (4.89)	18.83 (5.26)	38.06 (11.49)
Two and more children, (%)	---	76%	82%	84%	71%
	MEN WITH TRANSITION TO MARITAL SEPARATION (at baseline: -3 and before)				
	Childless (*N* = 60)	Child at age 0-4 (*N* = 32)	Child at age 5-10 (*N* = 67)	Child at age 11-17 (*N* = 67)	Child at age 18+ (*N* = 72)
Mental health-related quality of life, *M* (*SD*)	68.88 (15.62)	67.40 (14.56)	69.82 (14.32)	65.91 (15.48)	69.38 (14.36)
Confounders					
Age, *M* (*SD*)	45.72 (16.07)	34.53 (6.73)	37.96 (5.23)	43.49 (5.64)	54.61 (11.18)
Co-residence: current partner, (%)	100%	100%	100%	99%	100%
Co-residence: child, (%)	17%	91%	100%	100%	29%
1 year before and after birth, (%)	0%	75%	0%	---	---
Remarriage, (%)	---	---	---	---	---
Additional information					
Marital duration, *M (SD)*	14.20 (17.28)	6.84 (6.95)	9.69 (4.54)	16.19 (4.97)	28.35 (11.79)
Two and more children, (%)	---	59%	73%	75%	64%
	MEN WITH TRANSITION TO MARITAL SEPARATION (first available observation as separated)				
	Childless (*N* = 60)	Child at age 0-4 (N = 32)	Child at age 5-10 (*N* = 67)	Child at age 11-17 (*N* = 67)	Child at age 18+ (*N* = 72)
Mental health-related quality of life, *M* (*SD*)	60.53 (19.94)	61.49 (16.36)	66.27 (15.81)	62.22 (18.22)	65.01 (17.75)
Confounders					
Age, *M* (*SD*)	49.02 (16.00)	38.09 (6.65)	41.63 (5.13)	47.16 (5.49)	58.12 (11.13)
Co-residence: current partner, (%)	28%	19%	22%	45%	39%
Co-residence: child, (%)	3%	12%	33%	36%	0%
1 year before and after birth, (%)	0%	6%	4%	---	---
Remarriage, (%)	0%	3%	0%	1%	0%
Additional information					
Marital duration *M (SD)*	16.90 (17.42)	9.25 (6.92)	12.16 (4.50)	18.76 (4.88)	30.89 (11.80)
Two and more children, (%)	0%	69%	73%	75%	64%

Note: Symbol "---" in place of percentage indicates no valid observations for a given variable at a given time point or at any time point

With regard to age, comparison subgroups matched individuals with transitions well. Parents who experienced marital dissolution are of similar age as continuously married parents in the respective child's age group. The only exception are childless individuals with transition who are on average 12 to 15 years younger immediately after the event than those in the comparison group. Similar patterns were observed for marital duration: the groups of parents differ little, whereas the duration of marriage of childless individuals in intact marriages is on average longer than that of the childless who experienced dissolution.

The pre-dissolution rate of co-residence with spouse is similar across all groups: 98%-100% of married individuals live with a partner, no matter whether they will separate or not. After dissolution, the percentage of those living with some partner (new partner or ex-spouse) shrinks to 17% for childless women, to 19% for fathers of children at age 0-4 and to 22% for fathers of children at age 5-10. In contrast, 55% of mothers and 45% of fathers of adolescent children remain co-resident with their ex-spouse or live together with a new partner.

In Germany, children of separated parents are much more likely to stay in the maternal household than in the paternal one: About 88% of fathers live apart from their children after marital dissolution (Federal Statistical Office 2018). In the comparison group, over 98% of parents live with a child in the household, except for parents of adult children (only 6%). Pre-dissolution percentages are similar: More than 94% of mothers with children at age 10 years or younger live with children before and after marital dissolution. For fathers with children in the same age group, the percentage decreases from 91% to 12% in the age group 0-4 and from 100% to 33% in the age group 5-10. Adolescent children stay in about 67% with mothers and in about 36% with fathers after marital dissolution. These percentages mirror the well-known gendered co-residence patterns in postdivorce families in Germany (Arránz Becker/Lois/Salzburger 2015). Co-residence with adult children is more common before marital dissolution (about 30%) and rare after marital dissolution (1% or less) which indicates that in this age group marital dissolution often goes along with moving out of the youngest child (empty nest syndrome). The respective percentage is 6% in the comparison group.

The great majority of parents in our sample has two or more children (also before marital dissolution). The share of parents having two or more children is higher among continuously married parents (71% to 84%) than among parents who experienced marital dissolution (59% to 75%).

Overall, the descriptive statistics show that individuals in the comparison group are similarly distributed to individuals who experienced a transition, in particular with regard to age and marital duration (especially among parents) as well as co-residence with a partner. However, individuals who separate have poorer mental health than the comparison group already before marital dissolution, have fewer children, and depict a distinctive pattern of co-residence after dissolution.

Distributed Fixed-Effects (FE) models

Table 3 and Figure 1 illustrate the results from distributed fixed-effects (FE) models, separately for women and men depending on their parental status and the age of the youngest

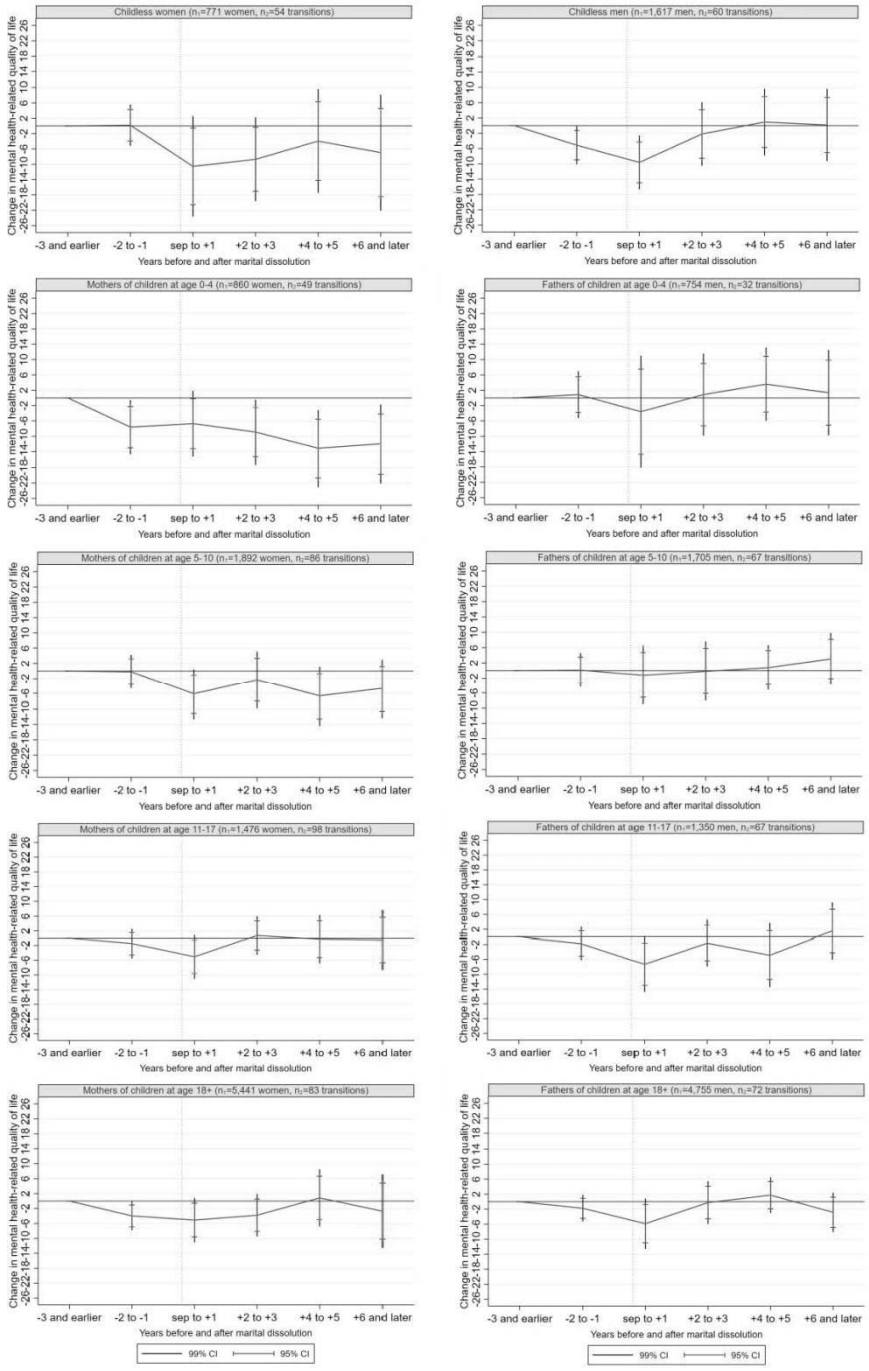
child. The regression coefficients for all ten models can be found in Table 3. Because we did not record any valid observations for the dummy capturing the time around pregnancy and birth for parents of adolescent and adult children, we excluded this variable from analysis in these two groups.

Table 3: Distributed fixed-effects by age of the youngest child for men and women

			WOMEN		
	Model 1 Childless	**Model 2** Child at age 0-4	**Model 3** Child at age 5-10	**Model 4** Child at age 11-17	**Model 5** Child at age 18+
	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$
D1: -2 to -1	0.18 (2.09)	-7.62 (2.73)**	-0.21 (1.72)	-1.50 (1.57)	-3.98 (1.49)**
D2: sep to +1	-10.55 (5.09)*	-6.70 (3.32)*	-6.13 (2.55)*	-5.07 (2.30)*	-5.10 (2.30)*
D3: +2 to +3	-8.72 (4.24)*	-8.90 (3.27)**	-2.33 (2.88)	0.73 (2.03)	-3.80 (2.21)
D4: +4 to +5	-3.95 (5.24)	-13.11 (3.86)***	-6.67 (3.01)*	-0.27 (2.56)	0.84 (2.97)
D5: +6 and later	-6.96 (5.85)	-11.96 (3.95)**	-4.69 (2.98)	-0.52 (3.16)	-2.70 (3.83)
Age (linear)	0.26 (0.36)	-0.35 (1.40)	-0.98 (0.63)	0.18 (0.42)	0.81 (0.15)***
Age (quadratic)	-0.00 (0.00)	0.01 (0.02)	0.01 (0.01)	-0.00 (0.00)	-0.01 (0.00)***
Co-residence: current partner	-5.29 (4.27)	-3.16 (2.33)	-3.21 (1.96)	-1.72 (1.75)	-1.21 (2.01)
Co-residence: child	1.80 (5.53)	2.86 (1.58)	-3.90 (1.66)*	1.65 (1.66)	0.73 (0.37)*
1 year before and after birth	-1.23 (4.30)	0.51 (0.77)	0.20 (0.70)	---	---
Remarriage	8.28 (6.72)	9.62 (11.6)	3.21 (5.25)	-1.43 (3.00)	-16.13 (7.45)*
Number of cases					
Number of person-years	N = 2,901	N = 1,767	N = 4,581	N = 5,141	N = 24,080
Number of individuals	N = 771	N = 860	N = 1,892	N = 1,476	N = 5,441
			MEN		
	Model 6 Childless	**Model 7** Child at age 0-4	**Model 8** Child at age 5-10	**Model 9** Child at age 11-17	**Model 10** Child at age 18+
	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$	$\hat{b}$ $(\widehat{SE})$
D1: -2 to -1	-5.12 (1.95)**	0.86 (2.36)	0.12 (1.74)	-1.79 (1.72)	-1.77 (1.37)
D2: sep to +1	-9.63 (2.71)***	-3.59 (5.66)	-1.21 (3.01)	-7.33 (2.90)**	-5.85 (2.61)*
D3: +2 to +3	-2.19 (3.23)	0.86 (4.14)	-0.19 (3.04)	-1.63 (2.43)	-0.24 (2.21)
D4: +4 to +5	0.93 (3.39)	3.60 (3.71)	0.77 (2.29)	-4.89 (3.33)	1.73 (1.85)
D5: +6 and later	0.16 (3.68)	1.37 (4.31)	3.03 (2.63)	1.58 (2.97)	-2.83 (2.04)
Age (linear)	1.51 (0.26)***	-0.26 (0.92)	-0.87 (0.62)	-0.10 (0.40)	1.10 (0.17)***
Age (quadratic)	-0.01 (0.00)***	0.00 (0.01)	0.01 (0.01)	-0.00 (0.01)	-0.01 (0.00)***
Co-residence: current partner	4.12 (3.18)	3.63 (2.61)	3.89 (1.95)*	-1.17 (2.26)	1.30 (1.77)
Co-residence: child	-2.57 (2.01)	-0.08 (1.14)	-0.26 (1.29)	-1.83 (1.77)	0.73 (0.39)
1 year before and after birth	-8.78 (6.92)	-0.45 (0.67)	-0.03 (0.66)	---	---
Remarriage	1.75 (6.24)	-1.27 (3.62)	8.77 (3.36)**	-3.02 (4.24)	11.10 (5.17)*
Number of cases					
Number of person-years	N = 7,054	N = 1,535	N = 4,132	N = 4,736	N = 20,785
Number of individuals	N = 1,617	N = 754	N = 1,705	N = 1,350	N = 4,755

Notes: *p < .05. **p < .01. ***p < .001.

Figure 1: Distributed fixed-effects by age of the youngest biological child for women and men



The coefficients of time dummies in Table 3 (*D1*: "-2 to -1" to *D5*: "+6 and later") correspond to the intra-individual time path of mental health around marital dissolution and are illustrated via coefficient plots (addon coefplot, Jann 2014) in Figure 1. To begin with, mental health trajectories of childless men and women around marital dissolution (Model 1 and 6 in Table 3) are not only similar with regard to the overall pattern of decline and recovery but also with regard to the size of shifts (the maximal negative change in mental health is as large as 10 scale points for each group). Yet, whereas childless women's health starts to deteriorate immediately after dissolution and the recovery is rather slow and only partial (their mental health remains below the baseline for as long as 6 years after dissolution), childless men begin to suffer mentally already two to one year before dissolution and recover fully four years after it at the latest (Figure 1: coefficient plots in the first row).

Trajectories for mothers of infants and toddlers at age 0-4 and pre- and primary school children at age 5-10 differ fundamentally from the respective results for fathers. The group of mothers with infants and toddlers deserves particular attention, because this is the only group with a pronounced negative anticipation effect (the decline in mental health two to one year before marital dissolution is larger than 7 scale points and significant) being exacerbated continuously up to six years after dissolution, with -13 as the greatest decline at time point "+4 to +5" (Model 2). Interestingly, this decline does not seem to be triggered either by birth-related events or co-residence issues. Also, mental health of mothers of pre- and primary school children at age 5-10 years remains basically below the baseline (with one short-term, slight increase two to three years after dissolution), though the decline does not exceed 7 scale points (Model 3). In contrast, fathers of infants and toddlers (Model 7) and fathers of pre- and primary school children (Model 8) do not show any significant change in mental health at any time before and after marital dissolution compared to the baseline (Figure 1: coefficient plots in the second and third row).

Both parents of adolescent children (Model 4 and 9) and fathers of adult children (Model 10) experience negative mental health consequences immediately after dissolution but recover to the baseline within two to three years (Figure 1: coefficient plots in the fourth row). In contrast, mothers of adult children (Model 5) suffer mentally already prior to dissolution (the decline is not larger than 4 scale points though), and recover fully (but slower over time than men) within four to five years afterwards. (Figure 1: coefficient plots in the fifth row).

In our estimation sample, mental health systematically changes with (increasing) age for childless men and parents of adult children, indicating a reversed U-shape pattern. The effect of co-residence with current partner is negative for women and predominantly positive for men, with a significant positive effect for fathers of pre- and primary school children. The effect of co-residence with child(ren) is negative for mothers of pre- and primary school children and positive for mothers of adult children (5% level of significance). Further, although non-significant, the effect of co-residence with child(ren) on mental health is positive in all other women's groups and negative in all men's groups, except for fathers with adult children. Furthermore, we do not observe any significant effects related to the period surrounding pregnancy and birth. Finally, the effect of remarriage on mental health is strongly negative for mothers of adult children but positive for fathers of children at age 5-10 and fathers of adult children. Therefore, older fathers seem to benefit from remarriage whereas older mothers do not.

Discussion

This paper examines trajectories of mental health around marital dissolution among childless and parents of children of various ages. We overcome several methodological limitations of past research by employing a within-subject design, by reducing estimation bias from confounders and by including a comparison group to the estimation sample (e.g., to adjust correctly the age-related dynamics of mental health of those who experienced a transition). Moreover, and unlike most previous studies, we consider the age of the youngest child at the time point of marital dissolution and differentiate between parents of adult children and childless individuals. We also systematically distinguish between men and women as we expect that they experience different effects of dissolution on mental health.

The results indicate that childless women exhibit a considerable long-term impairment in mental health after marital dissolution, experiencing a markedly slower recovery afterwards than childless men. In contrast, childless men begin to suffer mentally before marital dissolution, and, thus, earlier than childless women but recover faster and completely. One supposable reason for the significant negative anticipation for childless men might be that they are more sensitive to negative spousal dynamics (e.g., marital conflicts or sexual abstinence) than childless women (Keizer/Ivanova 2017). According to our findings, childless individuals, especially childless women, turn out to be one of the most vulnerable groups struggling mentally with dissolution, just alongside mothers with infants and toddlers. This is a new insight emphasizing the necessity of differentiating between real childlessness and parenting of adult children, even if they have already moved out of the parental household (empty nest). Hence, our results do not support the first hypothesis that the (negative) effect of marital dissolution should be more evident among parents than among childless individuals. At this point we can only speculate about the reasons for this finding. On the one hand, if a childless marriage is not working, it should be easier for the spouses (legally, financially and even emotionally) to split up because there is no child motivating them to stay together (Lyngstad/Jalovaara 2010). On the other hand, childless might struggle with loneliness after marital dissolution that afflicts childless women less than men, however men are more likely to remarry faster (Zhang/Hayward 2001). There are two other important aspects we may only speculate about, namely, involuntary childlessness and postponing the decision about parenthood. As has been shown in Table 1, childless women who experienced a transition to marital dissolution were on average about 40 years old. This age corresponds for several women to the beginning of a menopause transition and thus to the end of the reproductive phase with little chances to get pregnant. There should be a difference in coping with marital dissolution in case of a – deliberately or involuntarily – childless marriage (Lyngstad/Jalovaara 2010). First, unsuccessful attempts to get pregnant may force spouses to use alternative methods like adoption, surrogates or in vitro fertilization which can lead to mental distress, marital conflicts and in consequence to marital dissolution. Second, if only one spouse wants to have children and the other does not, the age of 40 would be the very last chance to get pregnant. Hence, the decline in mental health after marital dissolution may signal, in particular among childless women, stress and fear of not only staying lonely after a broken up marriage but also staying involuntarily childless permanently.

Our next clear-cut result is the downward trajectory of mental health among mothers of infants and toddlers at age 0-4. For this group, the decline in mental health starts before dissolution and enlarges continuously up to the next six years afterwards. For mothers of pre- and primary school children at age 5-10, we also observe continuous drops of mental health after dissolution compared to the baseline, but not as markedly as for mothers with younger children. Contrary to the findings for mothers of children at age 0-10, we cannot observe any significant effect of marital dissolution on mental health of fathers of children belonging to the same age group. In general, for parents with adolescent and adult children, the negative effect of marital dissolution on mental health is rather short-term and limited to the first observation after dissolution (which suggests fast adaptation and the typical V-shaped temporary "shock"), except for mothers of adult children who begin to suffer mentally before dissolution and experience relatively slow recovery afterwards.

As for mothers, these findings fully support our second hypothesis that the negative moderating effect of parenthood around dissolution should be more visible among parents of younger children than among parents of older ones. Interestingly, for fathers, we cannot find any support for this hypothesis. According to our results, mothers of infants and toddlers are the most vulnerable and disadvantaged group during the process of marital dissolution. Based on our estimation sample, the majority of these mothers was married for eight years on average and has more than one child. We can only speculate about the reason for the negative anticipation prior to marital dissolution in this group. It might be that these marriages were of bad quality and a dissolution was the only way out of it, despite having an infant or toddler. In such case, marital quality might have been responsible for the initial downward slope before dissolution. Unfortunately, we cannot disentangle these effects, because GSOEP does not contain questions on partnership quality. It might also be that some couples tried to salvage their marriage by having another child and this attempt failed contributing to a decrease of mental health prior to marital dissolution. Yet, we can exclude prenatal and postnatal depression as a possible explanation because the effect of time around another pregnancy and birth was not significant in any group. The downward trajectory after marital dissolution might be produced by difficulties of combining childcare responsibilities with breadwinning, by time constraints, stress, overfatigue and anxiety about the future as a lone mother (Fokkema 2002). Aside from that, one possible factor responsible for the prolonged negative consequences of dissolution for mental health in this group may be difficulties in re-partnering faced by these mothers (de Graaf/Kalmijn 2003; de Jong Gierveld/Merz 2013). Arguably, time pressures may prevent them from searching for a new partner, and potential partners may find them less attractive than childless women or mothers of older children. Moreover, the reason why mothers of children at age 5-10 are less vulnerable than mothers with younger children may be the fact that children at this age are more autonomous and can express empathy which may help these mothers to cope better mentally after marital dissolution.

Interestingly, parents with younger children at age 0-10 are the only two groups for which we observe strong gender-specific differences in the temporal shape of mental health around dissolution. Mothers of these children suffer mentally, fathers do not. This is perhaps not surprising, considering that, first, early parenthood remains probably the most gendered life course stage in contemporary societies, with sharp differences with regard to women's and men's time use patterns, division of household labour, different em-

ployment perspectives, etc. (Mattingly/Bianchi 2003). Second, despite the common use of shared custody, about 95% of children stay in the maternal household after marital dissolution. It is surprising, however, that fathers of children at age 0-10 do not suffer mentally at all. This could be due to selection: Although marital dissolution may lead to paternal role strain and distress, those fathers who are more distressed may be more likely to divorce and overcome divorce faster (Umberson/Williams 1993).

While parenting of younger children seems to make a dissolution more difficult for mothers, the period of adolescence proves to be difficult for both mothers and fathers. Among parents whose youngest child was at age 11-17 in the year of marital dissolution, a significant decrease of mental health is visible up to one year after dissolution. This may reflect the usual mental coping with dissolution but also peculiarities of adolescence and behavioural problems triggered by dissolution (Strohschein 2005).

In our estimation sample, parents of adult child(ren) who decided to separate are older than 50 and have been married for 30 years, on average. Previous research on adaptation to divorce after a long-term marriage identified personality, repartnering and financial situation as the main determinants of adaptation (Perrig-Chiello/Hutchison/Morselli 2015). For fathers of adult children, we observe a similar V-shaped short-term pattern as for parents of adolescent children, whereas mothers of adult children begin to suffer mentally earlier and recover slowly afterwards. On the one hand, older mothers who experience a marital dissolution are less likely to suffer from loneliness than older fathers because of gender-specific support provided by children (Kalmijn 2007) but they are more likely to fare worse economically (Carr 2004). On the other hand, if they remarry, the new marriage would perhaps affect the contact with children and also the support from children in a negative way (Kalmijn 2007). Our results support these arguments: The effect of remarriage is positive for older fathers and strongly negative for older mothers. Finally, it is likely that (especially) mothers may suffer more from empty nest prior to dissolution, realize that without the buffer of resident children the marriage does not work anymore and make the decision to separate (Hiedemann/Suhomlinova/O'Rand 1998).

This study has limitations. First, it does not focus on mechanisms mediating the nexus between marital dissolution and mental health. Our intention was to specify parsimonious models to estimate the time path of mental health around marital dissolution while reducing the risk of overcontrol bias. In consequence, the role played by potential mediators, such as family relations and negative interactions with the ex-spouse after divorce (Afifi/Cox/Enns 2006), economic deprivation (Colletta 1983), or stressful life events (Lorenz et al. 2006) remains unclear and investigating them seems to be a promising task for future studies. Second, even if we use the longest panel data set for Germany, our data are limited. First, our outcome of interest is available biennially which produces gaps in the data. Second, information on partnership quality, involuntarily childlessness, miscarriages or stillbirths has not been collected, so we miss potentially important antecedents for our analysis.

To sum up, our study provides new longitudinal evidence on mental health dynamics around marital dissolution in Germany and raise the awareness of mental distress, loneliness and potential social exclusion faced by childless and parents, in particular mothers of infants and toddlers. Because consequences of dissolution may vary across legal and welfare regimes, further research studying other societal contexts is indispensable to provide comprehensive knowledge on mental health dynamics around marital dissolution.

References

Afifi, T. O., Cox, B. J. & Enns, M. W. (2006). Mental health profiles among married, never-married, and separated/ divorced mothers in a nationally representative sample. *Social psychiatry and psychiatric epidemiology*, *41*, *2*, pp. 122-129. doi:10.1007/s00127-005-0005-3.

Amato, P. R. (2000). The Consequences of divorce for adults and children. *Journal of Marriage and Family*, *62*, *4*, pp. 1269-1287. doi:10.1111/j.1741-3737.2000.01269.x.

Amato, P. R. (2010). Research on divorce: Continuing trends and new developments. *Journal of Marriage and Family*, *72*, *3*, S. 650-666. doi:10.1111/j.1741-3737.2010.00723.x.

Amato, P. R. & Booth, A. (1996). A prospective study of divorce and parent-child relationships. *Journal of Marriage and the Family*, *58*, *2*, p. 356. doi:10.2307/353501.

Amato, P. R. & Cheadle, J. (2005). The long reach of divorce. Divorce and child well-being across three generations. *Journal of Marriage and Family*, *67*, *1*, pp. 191-206. doi:10.1111/j.0022-2445.2005.00014-x.

Amato, P. R. & Keith, B. (1991). Parental divorce and adult well-being. A meta-analysis. *Journal of Marriage and the Family*, *53*, *1*, pp. 43-58. doi:10.2307/353132

Amato, P. R., Loomis, L. S. & Booth, A. (1995). Parental divorce, marital conflict, and offspring well-being during early adulthood. *Social Forces*, *73*, *3*, pp. 895-915. doi:10.1093/sf/73.3.895.

Andersson, G. (1997). The impact of children on divorce risks of Swedish women. *European Journal of Population*, *13*, *2*, pp. 109-145. doi:10.1023/A:1005803001129.

Andreß, H.-J., Borgloh, B., Brockel, M., Giesselmann, M. & Hummelsheim, D. (2006). The economic consequences of partnership dissolution – A comparative analysis of panel studies from Belgium, Germany, Great Britain, Italy, and Sweden. *European Sociological Review*, *22*, *5*, pp. 533-560. doi:10.1093/esr/jcl012.

Arránz Becker, O., Lois, N. & Salzburger, V. (2015). Intergenerational contact between parents and adult (step) children. The role of biological descent and co-resident patterns. *Zeitschrift für Familienforschung – Journal of Family Research, 27 (Special Issue 10 "Family dynamics after separation")*, pp. 43-63.

Arránz Becker, O., Loter, K. & Becker, S. (2017). Familie und Gesundheit: Ein methodenkritischer Blick auf die aktuelle Forschung. In: Kriwy, P. & Jungbauer-Gans, M. (Eds.), *Handbuch Gesundheitssoziologie*. Wiesbaden: Springer VS, pp. 1-27. doi:10.1007/978-3-658-06477-8_45-1.

Benzeval, M. (1998). The self-reported health status of lone parents. *Social Science & Medicine*, *46*, *10*, pp. 1337-1353. doi:10.1016/S0277-9536(97)10083-1.

Berkman, L. F., Zheng, Y., Glymour, M. M., Avendano, M., Börsch-Supan, A. & Sabbath, E. L. (2015). Mothering alone. Cross-national comparisons of later-life disability and health among women who were single mothers. *Journal of epidemiology and community health*, *69*, *9*, pp. 865-872. doi:10.1136/jech-2014-2015149.

Blekesaune, M. & Barrett, A. E. (2005). Marital dissolution and work disability: A longitudinal study of administrative data. *European Sociological Review*, *21*, *3*, pp. 259-271. doi:10.1093/esr/jci016.

Booth, A., Johnson, D. R. & Edwards, J. N. (1983). Measuring marital instability. *Journal of Marriage and the Family*, *45*, pp. 387-394. doi:10.2307/351516.

Brandt, M. & Deindl, C. (2013). Intergenerational transfers to adult children in Europe. Do social policies matter? *Journal of Marriage and Family*, *75*, *1*, pp. 235-251. doi:10.1111/j.1741-3737.2012.01028.x.

Brüderl, J. (2010). Kausalanalyse mit Paneldaten. In: Christoph, W. & Best, H. (Eds.), *Handbuch der sozialwissenschaftlichen Datenanalyse.* Wiesbaden: VS Verlag für Sozialwissenschaften, pp. 963-994. Doi:10.1007/978-3-92038-2.

Brüderl, J. & Ludwig, V. (2015). Fixed-effects panel regression. In: Best, H. & Wolf, C. (Eds.), *The SAGE handbook of regression analysis and causal inference*. London: SAGE Publications, pp. 327-358. doi:10.4135/9781446288146.n15.

Cairney, J., Pevalin, D. J., Wade, T. J., Veldhuizen, S. & Arboleda-Florez, J. (2006). Twelve-month psychiatric disorder among single and married mothers: The role of marital history. *The Canadian Journal of Psychiatry*, *Vol 51, No 10*, pp. 671-676. doi: 10.1177/070674370605101007.

Carr, D. (2004). The desire to date and remarry among widows and widowers. *Journal of Marriage and Family*, *66*, *4*, pp. 1051-1068. doi:10.1111/j.0022-2445.2004.00078.x.

Casper, L. M., McLanahan, S. S. & Garfinkel, I. (1994). The gender-poverty gap. What we can learn from other countries. *American sociological review*, pp. 594-605. doi:10.2307/2095933.

Clark, A. E. & Georgellis, Y. (2013). Back to baseline in Britain. Adaptation in the British Household Panel Survey. *Economica*, *80*, *319*, pp. 496-512. doi:10.1111/ecca.12007.

Cohen, S. & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*, *2*, pp. 310-357. doi:10.1037/0033-2909.98.2.310.

Colletta, N. D. (1983). Stressful lives. The situation of divorced mothers and their children. *Journal of Divorce*, *6*, *3*, pp. 19-31. doi:10.1300/J279v06n03_02.

Cooke, L. P. (2004). The gendered division of labor and family outcomes in Germany. *Journal of Marriage and Family*, *66*, *5*, pp. 1246-1259. doi: 10.1111/j.0022-2445.2004.00090.x.

Coppola, L. & Di Cesare, M. (2008). How fertility and union stability interact in shaping new family patterns in Italy and Spain. *Demographic Research*, *18*, pp. 117-144. doi:10.4054/DemRes.2008.18.4.

de Graaf, P. M. & Kalmijn, M. (2003). Alternative routes in the remarriage market. Competing-risk analyses of union formation after divorce. *Social Forces*, *81*, *4*, pp. 1459-1498. doi:10.1353/sof.2003.0052.

de Jong Gierveld, J. & Merz, E. (2013). Parents' partnership decision making after divorce or widowhood. The role of (step) children. *Journal of Marriage and Family*, *75*, *5*, pp. 1098-1113. doi:10.1111/jomf.12061.

Dougherty, C. (2006). The marriage earnings premium as a distributed fixed effect. *Journal of Human Resources*, *XLI*, *2*, pp. 433-443. doi:10.3368/jhr.XLI.2.433.

Elwert, F. & Winship, C. (2014). Endogenous selection bias. The problem of conditioning on a collider variable. *Annual review of sociology*, *40*, pp. 31-53. doi:10.1146/annurev-soc-071913-043455.

Emery, R. E. (1994). *Renegotiating family relationships*. New York: Guilford.

Eurostat (2018). *Divorce indicators*: Eurostat. url: https://ec.europa.eu/eurostat/web/population-demography-migration-projections/marriages-and-divorces-data/database [retrieved: 2019-06-26].

Federal Statistical Office (2018). *Datenreport 2018. Ein Sozialbericht für die Bundesrepublik Deutschland*. Bonn: Destatis.

Fokkema, T. (2002). Combining a job and children: contrasting the health of married and divorced women in the Netherlands? *Social Science & Medicine*, *Volume 54, Issue 5*, pp. 741-752. doi: 10.1016/S0277-9536(01)00106-X.

Grau, I. & Bierhoff, H.-W. (Hrsg.) (2003). *Sozialpsychologie der Partnerschaft*. Berlin, Heidelberg: Springer. doi:10.1007/978-3-642-55590-9.

Hank, K. & Wagner, M. (2013). Parenthood, marital status, and well-being in later life. Evidence from SHARE. *Social Indicators Research*, *114*, *2*, pp. 639-653. doi.10.1007/s11205-012-0166-x.

Hiedemann, B., Suhomlinova, O. & O'Rand, A. M. (1998). Economic independence, economic status, and empty nest in midlife marital disruption. *Journal of Marriage and the Family*, *60*, *1*, pp. 219-231. doi:10.2307/353453.

Holden, K. C. & Smock, P. J. (1991). The economic costs of marital dissolution. Why do women bear a disproportionate cost? *Annual review of sociology*, *17*, pp. 51-78. doi.10.1146/annurev.so.17.080191.000411.

Ikkink, K. K., van Tilburg, T. & Knipscheer, K. C. P. M. (1999). Perceived instrumental support exchanges in relationships between elderly parents and their adult children. Normative and structural explanations. *Journal of Marriage and the Family*, *61*, *4*, pp. 831. doi:10.2307/354006.

Jann, B. (2014). Plotting regression coefficients and other estimates. *The Stata Journal: Promoting communications on statistics and Stata*, *14*, *4*, pp. 708-737. doi:10.1177/1536867X1401400402.

Juby, H., Billette, J.-M., Laplante, B. & Le Bourdais, C. (2007). Nonresident fathers and children. *Journal of Family Issues*, *28*, *9*, pp. 1220-1245. doi:10.1177/0192513X07302103.

Kalmijn, M. (2007). Gender differences in the effects of divorce, Widowhood and remarriage on intergenerational support. Does marriage protect fathers? *Social Forces*, *85*, *3*, pp. 1079-1104. doi:10:1353/sof.2007.0043.

Kalmijn, M. (2010). Country differences in the effects of divorce on well-being. The role of norms, support, and selectivity. *European Sociological Review*, *26*, *4*, pp. 475-490. doi:10.1093/esr/jcp035.

Kalmijn, M. (2017). The ambiguous link between marriage and health. A dynamic reanalysis of loss and gain effects. *Social Forces*, *95*, *4*, pp. 1607-1636. doi:10.1093/sf/sox015.

Keizer, R. & Ivanova, K. (2017). What's a (childless) man without a woman? The differential importance of couple dynamics for the wellbeing of childless men and women in the Netherlands. In: Kreyenfeld, M. & Konietzka, D. (Eds.), *Childlessness in Europe: Contexts, causes, and consequences*. Cham: Springer International Publishing, pp. 313-330. doi:10.1007/978-3-319-44667-7_15.

Kuh, D., Ben-Shlomo, Y., Lynch, J., Hallqvist, J. & Power, C. (2003). Life course epidemiology. *Journal of epidemiology and community health*, *57*, *10*, pp. 778-783. doi:10.1146/jec.57.10.778.

Lahelma, E., Arber, S., Kivelä, K. & Roos, E. (2002). Multiple roles and health among British and Finnish women: the influence of socioeconomic circumstances. *Social Science & Medicine*, *54*, pp. 727-740. doi: 10.1016/s0277-9536(01)00105-8.

Leopold, T. & Kalmijn, M. (2016). Is divorce more painful when couples have children? Evidence from long-term panel data on multiple domains of well-being. *Demography*, *53*, *6*, pp. 1717-1742. doi:10.1007/s13524-016-0518-2.

Lorenz, F. O., Simons, R. L., Conger, R. D., Elder Jr, G. H., Johnson, C. & Chao, W. (1997). Married and recently divorced mothers' stressful events and distress: Tracing change across time. *Journal of Marriage and Family*, *Vol. 59, No. 1*, pp. 219-232. doi:10.2307/353674.

Lorenz, F. O., Wickrama, K. A. S., Conger, R. D. & Elder, G. H. (2006). The short-term and decade-long effects of divorce on women's midlife health. *Journal of Health and Social Behavior*, *47*, *2*, pp. 111-125. doi:10.1177/002214650604700202.

Lucas, R. E. (2005). Time does not heal all wounds. A longitudinal study of reaction and adaptation to divorce. *Psychological Science*, *16*, *12*, pp. 945-950. Doi:10.1111/j.1467-9280.2005.01642.x.

Lucas, R. E. (2016). Adaptation and the set-point model of subjective well-being. *Current Directions in Psychological Science*, *16*, *2*, pp. 75-79. doi:10.1111/j.1467-8721.2007.00479.x.

Lucas, R. E., Clark, A. E., Georgellis, Y. & Diener, E. (2003). Reexamining adaptation and the set point model of happiness. Reactions to changes in marital status. *Journal of Personality and Social Psychology*, *84*, *3*, pp. 527-539. doi:10.1037/0022-3514.84.3.527.

Lyngstad, T. & Jalovaara, M. (2010). A review of the antecedents of union dissolution. *Demographic Research*, *23*, pp. 257-292. doi: 10.4054/DemRes.2010.23.10.

Masche, J. G. (2008). Reciprocal influences between developmental transitions and parent–child relationships in young adulthood. *International Journal of Behavioral Development*, *32*, *5*, pp. 401-411. doi: 10.1177/0165025408093658.

Mattingly, M. J. & Bianchi, S. M. (2003). Gender differences in the quantity and quality of free time: The U.S. experience. *Social Forces*, *81*, pp. 999-1030. doi:10.1353/sof.2003.0036.

Mikucka, M. (2016). How does parenthood affect life satisfaction in Russia? *Advances in Life Course Research*, *30*, pp. 16-29. doi:10.1016/j.alcr.2016.03.004.

Myrskylä, M. & Margolis, R. (2014). Happiness. Before and after the kids. *Demography*, *51*, *5*, pp. 1843-1866. doi:10.1007/s13524-014-0321-x.

Nomaguchi, K. M. (2012). Parenthood and psychological well-being: Clarifying the role of child age and parent-child relationship quality. *Social science research*, *41*, *2*, pp. 489-498. doi: 10.1016/j.ssresearch.2011.08.001

Nübling, M., Andersen, H. H. & Mühlbacher, A. (2006). Entwicklung eines Verfahrens zur Berechnung der körperlichen und psychischen Summenskalen auf Basis der SOEP – Version des SF 12 (Algorithmus). Data Documentation 16. *DIW Berlin*.

Perrig-Chiello, P., Hutchison, S. & Morselli, D. (2015). Patterns of psychological adaptation to divorce after a long-term marriage. *Journal of Social and Personal Relationships*, *32*, *3*, pp. 386-405. doi:10.1177/026540751433769.

Pollmann-Schult, M. (2014). Parenthood and life satisfaction. Why don't children make people happy? *Journal of Marriage and Family*, *76*, *2*, pp. 319-336. doi:10.1111/jomf.12095.

Rapp, I. (2012). In Gesundheit und Krankheit? *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, *64*, *4*, pp. 783-803. doi:10.1007/s11577-012-0184-3.

SOEP (2017). Socio-Economic Panel (SOEP), data for years 1984-2016, version 33.

Steele, F., Kallis, C., Goldstein, H. & Joshi, H. (2005). The relationship between childbearing and transitions from marriage and cohabitation in Britain. *Demography*, *42*, *4*, pp. 647-673. doi:10.1353/dem.2005.0038.

Strohschein, L. (2005). Parental divorce and child mental health trajectories. *Journal of Marriage and Family*, *67*, *5*, pp. 1286-1300. doi: 10.1111/j.1741-3737.2005.00217.x.

Tein, J.-Y., Sandler, I. N. & Zautra, A. J. (2000). Stressful life events, psychological distress, coping, and parenting of divorced mothers. A longitudinal study. *Journal of Family Psychology*, *14*, *1*, pp. 27-41. doi: 10.1037//0893-3200.14.1.27.

Turner, H. A. (2006). Stress, social resources, and depression among never-married and divorced rural mothers. *Rural Sociology*, *71*, *3*, pp. 479-504. doi:10.1526/003601106778070644.

Umberson, D., & Williams, C. L. (1993). Divorced fathers. *Journal of Family Issues*, *14*, *3*, pp. 378-400. doi: 10.1177/019251393014003003.

Vaisey, S. & Miles, A. (2017). What you can – and can't – do with three-wave panel data. *Sociological Methods & Research*, *46*, *1*, pp. 44-67. doi:10.1177/0049124114547769.

Wade, T. J. & Pevalin, D. J. (2004). Marital transitions and mental health. *Journal of Health and Social Behavior*, *45*, *2*, pp. 155-170. doi:10.1177/002214650404500203.

Waite, L. J. & Lillard, L. A. (1991). Children and marital disruption. *American Journal of Sociology*, *96*, *4*, pp. 930-953. doi:10.1086/229613.

WHO (2018). *Mental health: a state of well-being*. https://www.who.int/features/factfiles/mental_health/en/ [retrieved: 2019-06-26].

Williams, K. & Dunne-Bryant, A. (2006). Divorce and adult psychological well-being. Clarifying the role of gender and child age. *Journal of Marriage and Family*, *68*, *5*, pp. 1178-1196. doi:10.1111/j.1741-3737.2006.00322.x.

Zhang, Z. & Hayward, M. D. (2001). Childlessness and the psychological well-being of older persons. *The journals of gerontology. Series B, Psychological sciences and social sciences*, *56*, *5*, pp. S311-320. Doi:10.1093/geronb/56.5.S311.

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Exploring the role of family ties on life satisfaction in later life in Europe

Abstract:
We analyzed the relationship between family ties and the life satisfaction of people between the ages of 50 and 85 years in 13 European countries. We aim at determining the effects of partnership (being currently in a partnership) and parenthood (having remained childless). We use individual-level data from the sixth wave of the Survey of Health, Ageing and Retirement in Europe (SHARE). The analyses are restricted to respondents who are partnered or who have ever been married. We apply a multivariate analysis to examine the association of life satisfaction with family ties for men and for women. We add controls for age groups and education level, and we pay special attention to the role of individuals' network size. Our findings indicate that in all countries, having no partner has the strongest and most negative association with life satisfaction. However, there was no clear association between not having children and life satisfaction across countries. We also find an important role of some protector variables, such as having a strong network which, in most countries, significantly increase one's life satisfaction. We find that there is a relationship between individuals' family situation and life satisfaction, but it is restricted to being in a partnership. The protection factor of having a partner improves one's life satisfaction at older ages much more than protection by having children. This finding can reduce the concern about the long run implications of increasing childlessness among younger cohorts as it is not necessarily associated to a higher risk of low life satisfaction.

Key words: family ties, life satisfaction, Europe, old people

Introduction

Family life and family history play an important role in health conditions and in mortality differentials in later life. The relationship between family life and subjective indicators of well-being (i.e. life satisfaction) is an increasingly interesting issue in a context in which new family arrangements along with an aging population are undergoing important changes that could have an impact on people in their advanced stages, according to the life-course perspective. The implications of childlessness on social isolation and lack of support in their later life has already been explored and might imply an increasing demand for the public provision of long-term care services (Albertini/Mencarini 2014).

In this article we analyse the relationship between family ties and life satisfaction for people 50 years of age and older in 13 European countries. We are specifically interested in distinguishing between partnership and parenthood ties: whether people have remained childless or have had any children and how far away they live, as well as whether they are currently in a partnership. We restricted our analysis to a sample of people who have ever been married in order to overcome the association between not having children and never having had a partner.

The importance of this investigation is to establish how quality of life is shaped by the family situation. Our aim is to understand whether the presence of a co-residing partner and/or the presence of children living in proximity, interact with other components of elderly people's social life. Therefore, we explore the role of mediator factors offering protection at older ages, such as the size of the social network. Finally, we explore gender differences in order to understand to what extent the relationship of the family constellation and social networks and support work differently for men versus for women.

The article is structured as follows: First, we review the latest findings on life satisfaction and subjective wellbeing indicators. Second, we present the key elements of new family trends in Europe in the last decades. Third, we formulate our main research hypotheses based on the theoretically complex relationship between family life and life satisfaction. After presenting the data and methods used, we report the findings of our analyses and we discuss their implications.

Life satisfaction: The importance of subjective well-being indicators

Concerns about quality of life, particularly in old age, have been investigated during the last decades in the social and behavioral sciences (George 2006; Solé-Auró/Lozano 2019). Population well-being has been largely examined by computing trends in healthy life expectancy. Particularly, at the population level, healthy life expectancy is more than a measure of health. It is an indicator of an important dimension of well-being as quality of life. Today, subjective indicators such as life satisfaction are commonly used by quantitative social scientists to better understand our societies' well-being.

Health is always a dimension of well-being and quality of life. High levels of happiness might influence longevity by reducing mortality through several direct and indirect mechanisms. Koopmans et al. (2010) found that increased levels of happiness predicted a lower mortality rate, and therefore happier people live longer. Being happy has been associated with having lower incidence of chronic conditions (Siahpush et al. 2008). Some empirical analyses have indicated that happier people have lower levels of hypertension (Blanchflower/Oswald 2008) and are able to manage stress better than their unhappier counterparts (Papousek et al. 2010). On opposite side, low levels of life satisfaction, or dissatisfaction, are associated with increased morbidity and mortality (Mojon-Azzi/Sousa-Poza 2011; Koivumaa-Honkanen et al. 2000). Individuals with low levels of happiness are also more likely to have poor self-rated health, physical disabilities, depressive symptoms, and other common health conditions (Strine et al. 2008).

Patterns of subjective well-being change throughout the life course. The latest evidence for the age pattern of happiness points at an upside-down U-shape with the highest levels observed in midlife (Easterlin 2010). Different assessments of males and females of subjective well-being have also been well studied. Some studies have demonstrated that women tend to be (slightly) happier than men, particularly in Western Europe (Arrossa/Gandelman 2016). Considering happiness across the lifespan, and in countries with high life expectancies, one would expect that older people fare worse and, as a consequence, have lower levels of happiness than their younger counterparts. But when analyzing gender differences in this pattern, some studies have shown that men are happier or more satisfied with life than women across all ages even though the gender gap widens with age (Pinquart/Sörensen 2001) while others found that women at the beginning of life seem to be happier than men. However, with women, the pattern reverses, (Easterlin 2010), as at middle adulthood women tend to report higher levels of stress than men, which might make them feel less happy (Jacobs/Gerson 2004; Mattingly/Sayer, 2006).

New family trends: Changing partnership patterns and increasing childlessness

In Western societies family trends are being redefined as a result of new nuptiality and fertility dynamics. First, partnership patterns across the life course have changed extraordinarily in Western societies in the last few decades (Perelli-Harris/Lyons-Amos 2015). The main drivers have been the postponement of family and partnership formation (Sobotka/Toulemon 2008), the diffusion of premarital cohabitation and cohabitation as an alternative to marriage (Kiernan 2004), and increasing union dissolution rates (Kalmijn 2007).

Second, fertility patterns have undergone substantial changes, among which is the notable increase of childlessness in Europe in the second half of the twentieth century. The proportion of women who had not had children by the end of their reproductive age has considerably increased—in Western European countries for the cohorts born since 1945, in Southern European countries for the cohorts born since 1955, and, a little bit later in Eastern European countries—since 1965 (Devolder/Merino 2007). Female childlessness has reached levels close to 20% in such countries as Italy, The Netherlands, Switzerland, Belgium, and the UK for the cohorts born in the 1960s while the Eastern European countries show the lowest levels (Miettinen et al. 2015). This general increasing trend has not altered the consistent gender differences defined by higher childlessness for men than for women.

This increase of childlessness is clearly associated with the effects of the postponement of family formation and childbearing (González/Jurado-Guerrero 2006). But to understand the phenomenon, one must distinguish between voluntary and involuntary childlessness, which might affect differently individuals' levels of life satisfaction. Not having had children as a result of a personal life project might positively affect one's life satisfaction while not having been able to become a parent (due to infecundity, the absence of a partner or to the career costs associated to parenthood) most probably impacts life satisfaction negatively. We might also expect marital childlessness to be more associated with

involuntary factors than with voluntary decisions due to a selection into partnership of those with no childlessness intentions or ideals (Miettinen/Szalma 2014).

Life satisfaction and family life: Overview of a complex relationship

Before examining the relationship between family ties and life satisfaction, we must address the problem of selection. Selection can operate in opposite directions, as the specific characteristics of the selected group can be positively or negatively associated with the outcome variable. Healthier and happier individuals are more likely to marry (Stutzer/Frey 2006) and to have children, and this partially explains why married people and parents are healthier than unmarried and childless adults. However, alternative studies have suggested that recent changes in the socio-economic profile of the childless population could compensate for the effects derived from not having had children and operate as a positive selection (Cwikel/Gramotnev/Lee 2006).

Despite these selection issues, the life course perspective states clearly that family formation at young ages has an impact on one's circumstances at later stages. Fertility and mortality patterns, in particular, shape the family ties over a lifetime. Several studies have outlined the consequences of being childless on different aspects of life conditions in the long run, such as social networks, social support, income, and intergenerational transfers (Albertini/Kohli 2009, 2017; Klaus/Shnettler 2016, Kreyenfeld/Konietzka 2017). However, other studies have shown that marital history more strongly predicts social support than parental status itself (Penning 2014; Schnettler/Wöhler 2016). This is in line with the previous evidence on the crucial effect of marital status on mortality, showing that married people live longer than people who are unmarried (Vallin/Meslé/Valkonen 2001; van Poppel/Joung 2001).

Marriage has been shown to have beneficial effects on health (Waldron/Hughes/Brooks 1996) and so has living with a partner (Gumà/Solé-Auró/Arpino 2019). However, in order for us to summarize the relationship between family and life satisfaction or happiness at older ages, it is important to distinguish between the immediate effects caused by family events such as marriage and the birth of a child and the long-term effects that can only be understood considering the whole family life trajectory.

Considering first the immediate effects, some authors have argued that partnerships and family ties (together with good relations with others), rather than economic circumstances, are strong determinants of happiness and possible explanations of gender differences (Azizi et al. 2017). Regarding parenthood, numerous studies have supported the finding that the well-being effects of children on mothers or fathers are absent or even negative as a result of the combination of stressful situations and positive incentives (Veenhoven 1984; McLanahan/Adams 1987; Umberson/Pudrovska/Reczek 2010). Others have identified that these effects vary over time as studies have shown that parents' happiness increases in the years around giving birth but then decreases to the point it was at before children arrived (Myrskylä/Margolis 2014). Regarding partnerships, it has been shown that the benefits from marriage are largely different from one couple to another, depending mainly on their educational homogamy and the distribution of the household

tasks (Stutzer/Frey 2006). Moreover, previous studies have shown that widowhood has a clear and strong negative impact on life satisfaction that dissipates over time while the immediate effect of a divorce is rather positive (Clark et al. 2008).

Second, regarding the long-term consequences, not having had children might impact ulterior life satisfaction not only through the frustration of the reproductive project (Esteve/Devolder/Domingo 2016) but more importantly through the absence of care provision and emotional support at older ages when there are no adult children (Abellán/Esparza 2009). Recent evidence has shown that support networks of elderly non-parents are weaker than those of parents (Albertini/Kohli 2009) or that support networks are not that different between parents and non-parents, but that non-parents are more likely to be helped by non-relatives and non-profit organisations (Albertini/Mencarini 2014). The implications of not having a partner might differ between men and women due to the gender gap in re-partnering, among other factors. After a divorce or the loss of the partner, the likelihood of re-partnering is higher for men than for women (Di Nallo 2019).

Building on previous evidence, in this article, we adopted a cross-sectional perspective to explore how people's life satisfaction at older ages is shaped by the fact of not having a partner and/or not having children. Within this perspective, we focused on the instrumental nature of family ties, understanding that primary kin are able to offer both emotional and material supports that are positively associated with an individual's life evaluation. Our main argument is that the effect of not having a partner or of being childless will be mediated by the extension of a social network and of social support. Therefore, our main hypotheses are the following:

H1: We expect that not currently having a partner will have a substantial negative association with life satisfaction, regardless of social network.

H2: We expect that being childless will have a moderately negative association with life satisfaction, but this association is mediated by the extent of social network.

H3: We expect that that not having children will affect both men and women, while we expect not having a partner will be more important for men than for women.

Data, measures and methods

Data

In this study, we used individual-level data from the Survey of Health, Ageing and Retirement in Europe (SHARE), a multidisciplinary longitudinal survey that is representative of the non-institutionalised population aged 50 years and older (Börsch-Supan et al. 2005; Börsch-Supan/Jürges 2005). The data collection instruments and study design have been harmonized to facilitate European comparisons of health, family circumstances, socioeconomic characteristics, and social and family networks across countries.

Our work is based on a cross-sectional analysis using data from the sixth (2015) wave of SHARE. We focused on the most recent data not only because our interest was to ad-

dress our research question in the present time, but also because this wave contains the social network module that measures individuals' personal social environment. The social network module contains a detailed description of respondents' personal social networks. The respondents can name a maximum of seven persons whom they consider confidants. Due to the large variability of the prevalence of childlessness across nations among people in their older ages (85-plus) and to avoid the effect of the high association between life evaluation and health conditions, we restricted our sample to women and men in 13 European countries (Austria, Belgium, Czech Republic, Denmark, Estonia, France, Greece, Germany, Italy, Spain, Slovenia, Sweden, Switzerland) who were aged 50 to 85 years of age and who lived with a partner (married or cohabiting) at the time of data collection or who currently did not have a partner but had ever been married (divorced and widowed). The reason to limit our analysis to ever married individuals is the strong association of never been married and childlessness: only 32% of never married individuals are parents while 93% of those who married are.

The total sample consisted of 50,777 individuals (22,310 men and 28,467 women) born in 1965 or earlier (see Table 2 for more details). The sample sizes varied by gender and country, with the largest samples coming from Belgium (4,964 respondents) and Estonia (4,776 respondents), while Switzerland had the smallest (2,417 respondents).

Measures

Dependent variable

Participants were asked to evaluate their life satisfaction by responding to a single question: "On a scale from 0 to 10 where 0 means completely dissatisfied and 10 means completely satisfied, how satisfied are you with your life?" In this work we used the scale (continuous variable) to analyze how individuals rated their life satisfaction level.

Explanatory variables

Our analysis had two main explanatory variables measuring the family ties: parenthood and partnership. First, we define parenthood in three categories considering the presence and residential proximity of children: i) those who were childless (had never had a child), ii) those who had at least one child (including biological, step, foster and adopted children) living less than 1 km away and iii) those who had at least one child and all children were living more than 1 km away. Second, we define partnership distinguishing three categories: i) those respondents who at the time of data collection were currently living with a partner (married or cohabiting); ii) those without a partner divorced; iii) those without a partner widowed.

We considered an additional variable associated with family life and family trajectory that might play a role as potential protectors of life satisfaction: the size of the respondents' social networks. It can reflect the degree of protection, potential care, and emotional support that the individuals could rely on. The variable ranged from 0 to 7, and we counted the number of persons a respondent identified as people with whom he or she most of-

ten discussed important things over the last 12 months. These people could include one's family members, friends, neighbors, or other acquaintances.

Control variables

Socio-demographic control variables included two age groups: younger adults from 50 to 64 years of age and older adults from 65 to 85 years of age. To assess whether educational inequalities in life satisfaction among older Europeans exists, we considered three educational groups, based on the level of education achieved, using the International Standard Classification of Education[1] (ISCED): "low" (where no or primary education corresponded to ISCED 0-1, and lower secondary education corresponded to ISCED 2), our reference category, "medium" (ISCED 3-4, higher secondary education) and "high" (ISCED 5-6, tertiary education). We added these control variables into the model due to their association with education and life satisfaction (Solé-Auró/Lozano 2019).

Methods

The aim of this article is to analyse the relationship between life satisfaction and parenthood and partnership across 13 European countries and to test whether this relationship differs for men and women. First, we document the average life satisfaction and the distribution of parenthood and partnership for men and women. Second, we provide information on the average life satisfaction by parenthood and partnership for men and women for the pooled sample and across these 13 European countries. Third, we show the sociodemographic characteristics of our sample by gender, which later will be used as controls. Finally, we run separate OLS regression models for the pooled sample (Europe as a whole) and for each country separately, adding a set of control variables that have been found to be related with life satisfaction and therefore may confound the associations under study.

Model 1 of the OLS regression model estimates the effect of our predictors of interest (parenthood and partnership) controlling for some socioeconomic variables (two age groups, being female and level of education). Model 2 adds to Model 1's controls for our protector variable (the size of one's social network). For the pooled sample, model 1 and model 2 also controls for country dummies.

Results

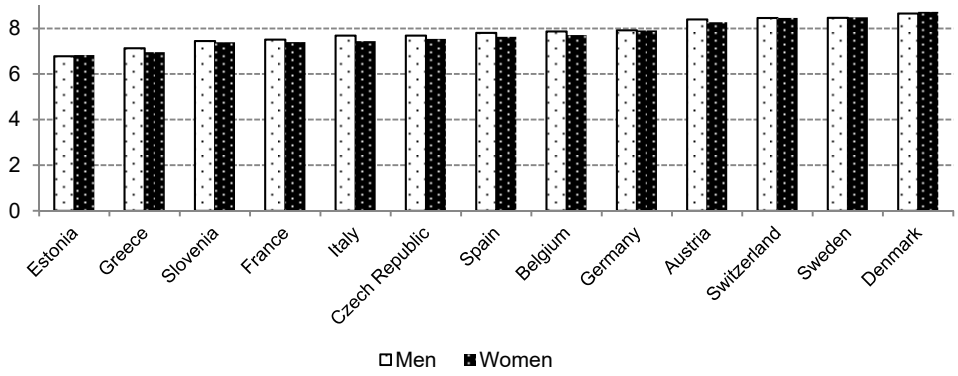
Descriptive statistics

Figure 1 shows the average life satisfaction for men and women across the 13 studied European countries. We found a large variation across countries in terms of the average levels of life satisfaction. On one side, Estonians and Greeks showed the lowest average lev-

1 http://www.uis.unesco.org/education/pages/international-standard-classification-of-education.aspx.

el of life satisfaction while on the other side, Nordic countries led with the highest average level. In general, the average life satisfaction was higher for men than for women in all countries. The exceptions were Switzerland, Sweden, Denmark, Germany and Estonia where men and women scored their average life satisfaction in a similar way.

Figure 1: Average life satisfaction for men and women (aged 50-85 years old) across 13 European countries

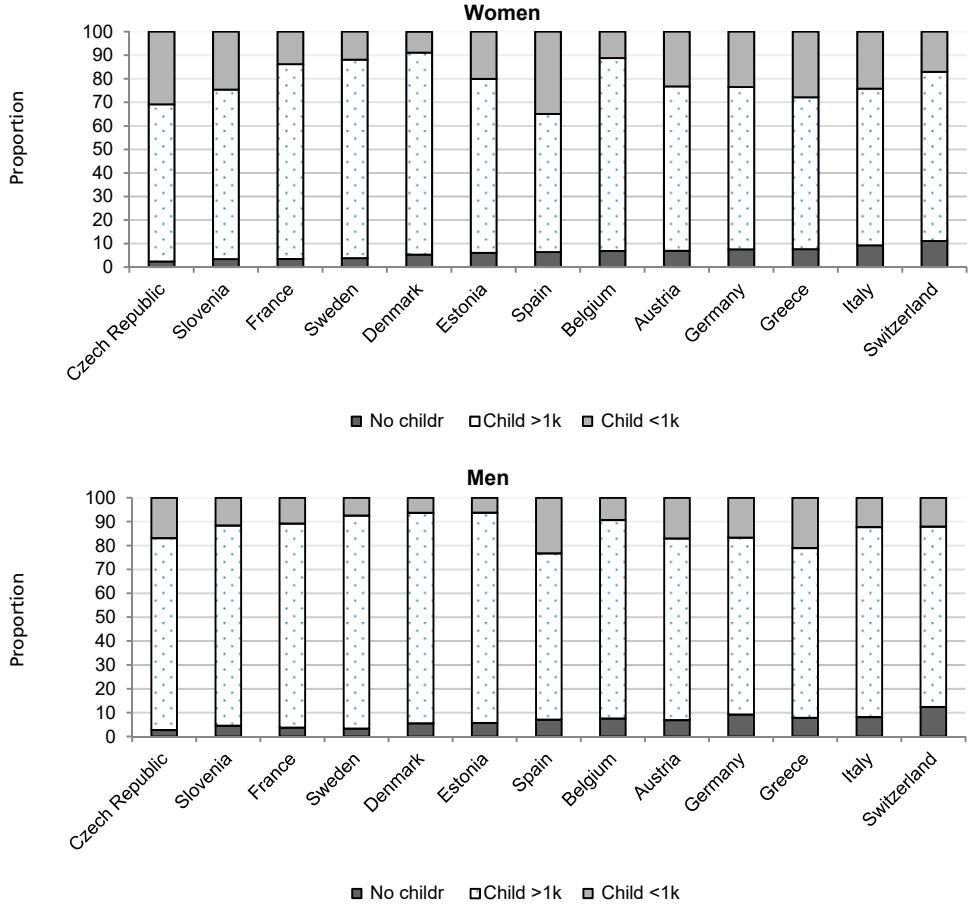


Source: SHARE (2015): wave 6.

Figure 2 presents the proportions of parenthood and partnership across Europe. We observe that parenthood status varied substantially across countries and between men and women. Czech and Swiss respondents showed the lowest and the highest proportion of childlessness for both men and women (from 2.7 to 12.4 and from 2.4 to 11.1, respectively). In general, the prevalence of childlessness was larger for men than for women, except in Sweden, Estonia, and Italy. The highest gender differences on the proportion of childlessness were found among the Germans (1.8 percentage points) while we encountered almost no gender differences in Austria, Greece, and Estonia. In the majority of the European countries the large majority of parents have their children living more than 1 Km away. Parents that have children living close by (<1Km) are more common in Southern and Eastern Europe (Spain, Greece, Italy and Czech Republic); in general, more women than men have at least one child living less than one kilometer away.

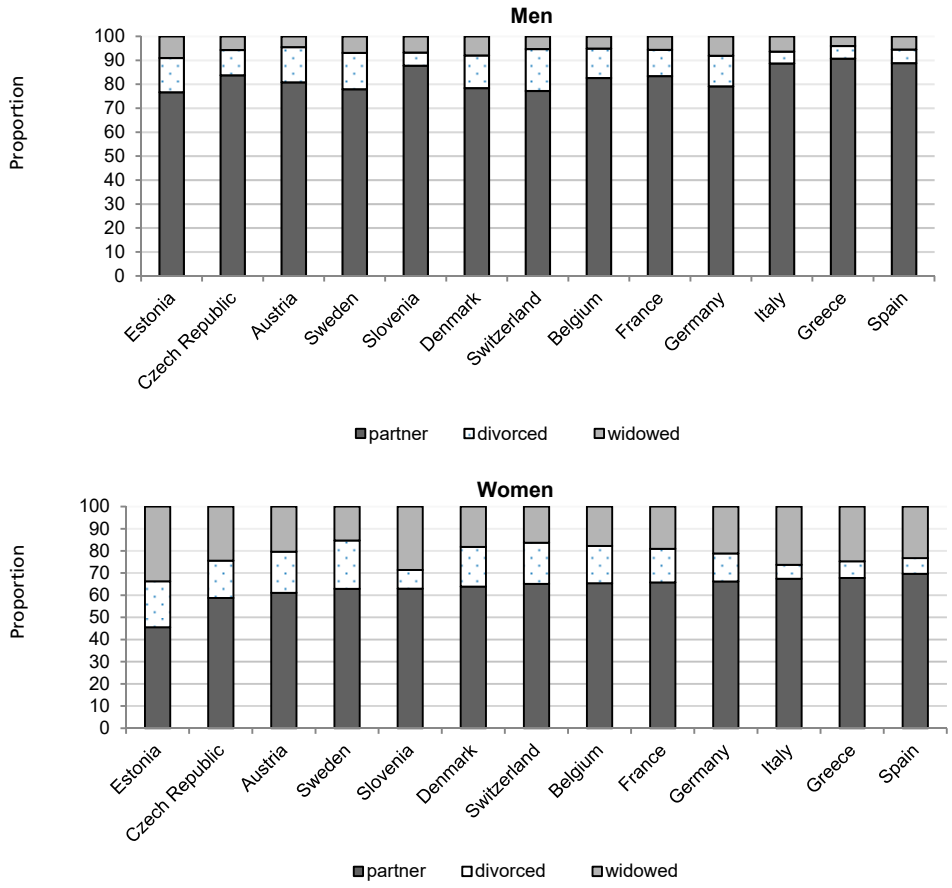
Additionally, Figure 3 presents the partnership status differences by gender. There was a clear partnership pattern as our data show a higher prevalence of women without a partner and fewer variations across countries compared to men (being widowed or divorced) at older ages (50 to 85). The composition by marital status of individuals without a partner was different for men and women: men were more likely to be divorced (60.4%) than widowed (39.6%) while women were more likely to be widowed (64.9%) than divorced (35.1%).

Figure 2: Prevalence of parenthood among men and women (aged 50-85 years old) across 13 European countries



Source: SHARE (2015): wave 6.

Figure 3: Prevalence of partnership among men and women (aged 50-85 years old) across 13 European countries



Source: SHARE (2015): wave 6.

Table 1 shows the average levels of life satisfaction by partnership and parenthood for men and for women across Europe. The overall average of life satisfaction was 7.7. Similar patterns can be observed for both men and women in terms of the average life satisfaction by partnership and parenthood. In particular, we found that the average level of life satisfaction was always higher among those who had children (regardless of the residential proximity) than among those who were childless in Europe. This pattern was similar for being in a partnership, and in general, we found a higher average level of life satisfaction among those who currently had a partner at the time of data collection. There is no clear pattern in terms of life satisfaction according to the marital status (widowed and divorced) of those without a partner.

Table 1: Average life satisfaction by partnership and childlessness for men and women for the pooled sample and across 13 European countries. Individuals aged 50-85 years

Country	Overall Average of Life Satis-faction	Men						Women					
		Parenthood			Partnership			Parenthood			Partnership		
		Child-less	Child in <1km	Child in >1km	With partner	Di-vorced	Wid-owed	Child-less	Child in <1km	Child in >1km	With partner	Di-vorced	Wid-owed
Austria	8.33	7.96	8.46	8.43	8.48	7.95	8.12	7.87	8.20	8.34	8.45	7.96	8.01
Belgium	7.78	7.59	8.06	7.88	8.00	7.30	7.79	7.64	7.69	7.72	7.88	7.23	7.48
Czech Rep.	7.60	7.63	7.72	7.68	7.76	7.15	7.58	7.17	7.48	7.58	7.74	7.14	7.34
Denmark	8.70	8.40	8.60	8.68	8.77	8.23	8.00	8.53	8.78	8.75	8.82	8.40	8.61
Estonia	6.81	6.77	6.59	6.79	6.88	6.27	6.37	6.17	6.75	6.90	7.00	6.69	6.57
France	7.45	7.37	7.49	7.52	7.59	7.22	7.00	7.34	7.35	7.41	7.60	6.77	7.18
Germany	7.91	7.62	8.05	7.92	8.02	6.97	7.89	7.95	7.96	7.89	8.02	7.33	7.69
Greece	7.03	7.11	7.25	7.09	7.18	6.75	6.34	6.74	6.79	7.06	7.16	6.19	6.53
Italy	7.56	7.56	7.75	7.70	7.75	7.25	6.88	7.18	7.44	7.48	7.65	6.57	6.70
Slovenia	7.41	7.20	7.31	7.47	7.50	6.52	6.96	7.47	7.23	7.43	7.54	7.15	6.87
Spain	7.71	7.61	7.84	7.83	7.86	7.44	7.09	7.57	7.57	7.67	7.75	7.28	7.20
Sweden	8.48	8.04	8.27	8.50	8.55	8.15	7.93	8.19	8.50	8.50	8.58	8.22	8.29
Switzerland	8.46	8.41	8.51	8.45	8.47	8.28	8.60	8.39	8.35	8.49	8.55	8.02	8.42
Total	7.71	7.62	7.78	7.79	7.85	7.37	7.38	7.48	7.51	7.72	7.83	7.32	7.25

Source: SHARE (2015), wave 6.

Then we provide the total sample size and descriptive statistics of the control variables for the pooled sample by country and sex (Table 2). Sample sizes varied across countries, but the proportion of the sample was always higher for females than for males. Almost half of the male sample was 65 or older, while over half of the female sample was in this age group. The educational composition of our sample presented a high variation across countries and by gender. On average, women were less educated than men. Finally, the variables on social support indicate that both the mean network size and the help received from outside the household were greater for women than for men. Country differences were observed for all the control variables, but we want to highlight the variation among our explanatory variables: for instance, in some countries, the mean network size was twice that of others.

Table 2: Sample size and descriptive statistics of the control variables for the pooled sample and across 13 European countries. Individuals aged 50-85 years

	MEN					
	Sample Size	Age 65+	Education			Mean Network Size
			Low	Medium	High	
Austria	1 218	48.1	5.3	5.7	89.1	2.11
Belgium	2 207	46.7	12.3	21.3	66.4	1.54
Czech Rep.	1 800	47.9	3.7	28.7	67.6	1.92
Denmark	1 491	50.2	5.4	6.2	88.4	1.63
Estonia	1 892	46.1	2.3	19.4	78.4	1.26
France	1 405	48.7	21.9	6.8	71.3	1.64
Germany	1 848	49.0	0.8	4.6	94.6	2.00
Greece	1 913	49.4	32.9	10.2	57.0	1.78
Italy	2 141	51.4	35.8	29.1	35.2	1.21
Slovenia	1 633	43.6	7.7	13.2	79.0	1.06
Spain	2 120	45.8	43.8	26.9	29.3	2.36
Sweden	1 535	51.7	16.1	13.7	70.2	2.01
Switzerland	1 107	46.9	4.3	5.1	90.6	1.96
Total	22 310	48.9	19.9	14.9	65.2	1.78
	WOMEN					
	Sample Size	Age 65+	Education			Mean Network Size
			Low	Medium	High	
Austria	1 662	49.9	11.9	18.6	69.6	2.38
Belgium	2 757	50.5	16.3	21.3	62.4	1.70
Czech Rep.	2 695	52.9	14.5	22.2	63.4	2.00
Denmark	1 750	52.7	9.6	11.3	79.2	1.95
Estonia	2 884	55.4	3.2	18.8	78.1	1.70
France	1 816	51.3	29.2	9.8	61.0	1.85
Germany	2 097	51.3	1.5	16.7	81.8	2.25
Greece	2 434	51.4	47.1	10.2	42.7	1.88
Italy	2 530	56.1	46.3	24.4	29.3	1.39
Slovenia	2 144	49.9	9.4	29.5	61.1	1.37
Spain	2 592	49.9	53.9	22.4	23.7	2.44
Sweden	1 796	56.8	14.6	13.0	72.4	2.28
Switzerland	1 310	48.9	10.3	12.4	77.3	2.18
Total	28 467	52.2	26.0	17.6	56.4	2.0

Source: SHARE (2015), wave 6.

Linear regression analysis

Table 3 shows the OLS estimates, which indicate the effect of parenthood and partnership on the life satisfaction of individuals aged 50-plus who have ever been married, for men and women separately. In comparison to Model 1, Model 2 considers the mediator effect of the size of the social network (in both models, additional variables were included as

controls; see note in Table 3). When all countries were pooled, we observed that, as we expected, not having any children and being without a partner, both divorced and widowed, have a negative association with life satisfaction (Model 1). On the contrary, having a child living less than 1 km away improves significantly the life satisfaction, particularly for men. The negative association with life satisfaction is overall larger for divorced compared to widowed and for both men and women. According to our hypothesis, the effect of not having a partner more than doubled the effect of being childless both for men and for women in Model 1 (-0.65 and -0.47 versus -0.23 for men and -0.88 and -0.49 versus -0.09 for women). However, we didn't see a stronger effect for males compared to females regarding not having a partner.

When we added controls for the two mediator variables in the pooled Model 2, our estimates show that for men the effects the proximity of the children disappeared suggesting that children are an important source of support. However, for women with children living closer the life satisfaction decreases when controlling for the mediator variables. This result might reflect a selection effect of women who moved closer to their children when they needed support or alternatively of women who might suffer from providing care to their children.

Model 2 also shows that not having a partner after widowhood or divorce remained a significant negative factor for life satisfaction at older ages, and it could not be compensated for by alternative relatives or institutional agents. Our results clearly show that having a large network among older Europeans has a statistically significant and positive effect on life satisfaction (0.11 for men and 0.16 for women).

Interesting findings emerged when we looked at the country differences. Having no partner was significantly associated with a reduction of one's life satisfaction in most countries, and the effect was larger for divorced people than for widowed persons. When controls for network size were added (Model 2), in general the effect of being childless remained negatively associated with life satisfaction, but only statistically significant in Austria and Czech Republic for men and in Austria, Czech Republic, Estonia and Greece for women. This result indicates that childless individuals are balanced by the richness of their social networks, as those factors are positively associated with life satisfaction (Model 2). The effect of having no partner continued to reduce significantly levels of life satisfaction in most countries for men and for women both divorced and widowed, even when controlling for this protection variable. However, for women the significant effect of widowhood vanishes in some countries. In general, the network size increased significantly their levels of life satisfaction in all countries but Austria for women and in one third of the countries for men.

Table 3: Linear regression of life satisfaction on childlessness, singlehood, and social support. 13 European countries, persons aged 50-85 years old.

MEN

Country	Model 1				Model 2				
	Parenthood		Partnership		Parenthood		Partnership		Network size
	Childless	Child in <1km	Divorced	Widowed	Childless	Child in <1km	Divorced	Widowed	
Austria	-0.53**	0.03	-0.55 ***	-0.40 *	-0.54 **	0,04	-0.56 ***	-0.41 **	-0.02
Belgium	-0.20	0.20**	-0.63 ***	-0.29 *	-0.17	0.03	-0.60 ***	-0.28 *	0.11 ***
Czech Rep.	-1.22	0.18	-0.85 ***	-0.13	-1.20 *	0.15	-0.84 ***	-0.12	0.03
Denmark	-0.25	0.02	-0.61 ***	-0.83 ***	-0.23	-0.07	-0.59 ***	-0.82 ***	0.06 **
Estonia	0.18	-0.02	-0.75 ***	-0.47 **	0.22	-0.16	-0.72 ***	-0.45 **	0.11 **
France	-0.12	0.03	-0.41 **	-0.54 **	-0.07	-0.12	-0.37 *	-0.53 **	0.13 ***
Germany	-0.31	0.21 *	-0.99 ***	-0.23	-0.23	0.12	-0.91 ***	-0.18	0.13 ***
Greece	0.04	0.20 **	-0.42 *	-0,80 ***	0.10	0.02	-0.32	-0.68 ***	0.15 ***
Italy	-0.11	0.14	-0.33	-0.92 ***	-0.03	-0.12	-0.26	-0.83 ***	0.18 ***
Slovenia	0.24	-0.01	-0.88 ***	-0.47 **	0.30	-0.38 **	-0.79 **	-0.32	0.21 ***
Spain	-0.17	0.01	-0.35	-0.46 **	-0.13	-0.08	-0.30	-0.41 *	0.07
Sweden	-0.16	-0.13	-0.63 ***	-0.62 ***	-0.15	-0.21	-0.59 ***	-0.58 ***	0.08 **
Switzerland	0.06	0.10	-0.22	0.10	0.07	0.08	-0.21	0.10	0.02
Total	-0.23**	0.12 **	-0.65 ***	-0.47 ***	-0.17 *	-0.01	-0.60 ***	-0.42 ***	0.11 ***

WOMEN

Country	Model 1				Model 2				
	Parenthood		Partnership		Parenthood		Partnership		Network size
	Childless	Child in <1km	Divorced	Widowed	Childless	Child in <1km	Divorced	Widowed	
Austria	-0.35**	-0.05	-0.71***	-0.40***	-0.32*	-0.08	-0.69***	-0.38***	0.04
Belgium	0.10	-0.08	-0.45***	-0.28***	0.13	-0.16	-0.43***	-0.26***	0.08***
Czech Rep.	-0.66**	-0.06	-0.77***	-0.42***	-0.63*	-0.17	-0.70***	-0.35***	0.13***
Denmark	-0.19	0.10	-0.48***	-0.27**	-0.13	-0.02	-0.43**	-0.24**	0.12***
Estonia	-0.65***	-0.07	-0.30***	-0.37***	-0.60***	-0.14	-0.26**	-0.32***	0.10***
France	0.05	0.03	-0.98***	-0.39***	0.14	-0.14	-0.84***	-0.31**	0.15***
Germany	0.08	0.15	-0.75***	-0.22*	0.13	0.07	-0.69***	-0.16	0.12***
Greece	-0.32**	-0.15	-1.02***	-0.54***	-0.24*	-0.22***	-0.94***	-0.46***	0.13***
Italy	-0.29	0.21*	-1.27***	-1.02***	-0.23	-0.12	-1.14***	-0.86***	0.22***
Slovenia	0.17	-0.12	-0.52**	-0.35***	0.19	-0.40***	-0.44**	-0.24**	0.16***
Spain	-0.14	-0.07	-1.09	-0.40*	-0.01	-0.20	-0.95	-0.26	0.19***
Sweden	-0.06	0.02	-0.30**	-0.24**	-0.03	-0.06	-0.23*	-0.19*	0.10***
Switzerland	-0.06	-0.11	-0.62***	-0.19	0.04	-0.20**	-0.52***	-0.14	0.13***
Total	-0.09	0.07	-0.88***	-0.49***	-0.03	-0.08	-0.78***	-0.40***	0.16***

Notes: Parents has 3 categories: 1. Being childless; 2. Having a child that lives in less than 1 km; 3. Having a child that lives in more than 1 km (reference group). No partner has 3 categories: 1. Having a partner (reference category); 2. Being divorced; 3. Being widowed. Model 1 also controls for age groups and education level. Model 2 adds additional controls to Model 1: network size. In the pooled model (Total), country dummies are also included. *** p<0.01; ** p<0.05; * p<0.1. Linear regression models were employed for the life satisfaction measure. *Source*: SHARE (2015), wave 6.

Discussion

This study investigated how older people's quality of life is shaped by their family ties. The aims of this paper were first to understand whether having a partner and/or having children at older ages, for men and for women, affect their life evaluation, and second, whether social networks and social supports can mediate the effect of family situation.

From a descriptive and aggregate point of view, our results show important differences on the average life satisfaction by gender across countries. Nordic countries not only showed the highest average levels of life satisfaction but also presented more gender-balanced scores while Eastern and some Southern European countries reported the lowest average scores for life satisfaction and they had higher gender differences. We also detected substantial differences across countries in the levels of childlessness and in the residential proximity of the children. Fewer variations appeared when we looked at the composition by partnership in the proportion of individuals who have a partner however differences emerged in the proportions of widows and divorced by country and especially by sex.

Our multivariate results indicate that having no partner, both divorced and widowed, has the strongest and most negative effect on life satisfaction in all countries and for both men and women. On the other hand, we found no clear effect of having no children on life satisfaction for those who had ever been married once we considered their current partnership status. These are net effects after we included several control variables (Table 3, Model 2). The results also demonstrate that in most of these European countries, having a strong network significantly increase one's life satisfaction. Based on these findings, we confirm our first hypothesis which stated that not living with a partner has a negative association with life satisfaction. We do not confirm our second hypothesis on the moderate effect of childlessness on life satisfaction as the negative effect of childlessness vanished when social support was considered; and our third hypothesis is partially confirmed as the effect of not having children was not significant either for men or women, but contrary to our expectations no clear gender differences were found for not having a partner.

Overall the dimension of one's network and currently having a partner are the key consistent factors that are associated with the degree of life satisfaction, while having children and the residential proximity of them is less important. Therefore, we find a relationship between family ties and life satisfaction but restricted to the marital status. This finding goes along with previous results (Vikström et al. 2011) and can reduce the concern on younger cohorts about the long-run implications of their following the trend to remain childless as it does not appear that they are at any greater risk of social isolation (Rowland 1998). Having a partner is a greater protector of life satisfaction at older ages than is having children.

We are aware that these results cannot be a gold standard as there are other individual factors that are likely to modify the average life satisfaction and that relate to our results. First, regarding gender differences, we should consider the general worse health of women (Crimmins/Kim/Solé-Auró 2011) and the fact that older women are less likely to get care at home as they are more likely to live alone or to lose partners. Second, social class is a factor that has a direct effect on life satisfaction and might also exacerbate or mitigate the effect of family status itself. However, the restricted number of cases per country did not allow us to explore the association between the level of education, family status, and life satisfaction.

Our future research plans include investigating how additional characteristics at macro-level settings can influence the relationship between family structures and life satisfaction in order to be able to explain the observed cross-country differences. Living in a country with higher gender equality rates (e.g. with a low gender pay gap) or in a country that offers high levels of social support for people of older ages (e.g. availability of home services versus long-term care facilities) might modify the perception of life satisfaction from a family-status point of view. So the importance of social values and of welfare systems might determine the actual effect of family life on well-being outcomes.

Finally, the contribution of our paper should be read considering that it is based on self-reported life evaluations through the SHARE survey. The estimation of subjective measures is always complex as people with higher levels of life satisfaction might be more willing to participate in the survey, especially in countries with lower participation rates. Moreover, we might not detect gender-specific patterns in terms of life satisfaction as men and women might report life satisfaction differently within and across countries.

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References

Abellán, A. & Esparza, C. (2009). Solidaridad familiar y dependencia entre las personas mayores. *Informes Portal Mayores*, 99.

Albertini, M. & Kohli, M. (2009). What childless older people give: Is the generational link broken? *Ageing and Society*, *29*, *8*, pp. 1261-1274. https://doi.org/10.1017/S0144686X099033X.

Albertini, M. & Kohli, M. (2017). Childlessness and intergenerational transfers in later life. In: M. Kreyenfeld & D. Konietzka (Eds.), *Childlessness in Europe: Contexts, causes, and consequences.* Netherlands: Springer, pp. 351-368.

Albertini, M. & Mencarini, L. (2014) Childlessness and support networks in later life: New pressures on familistic welfare state. *Journal of Family Issues 35, 3*, pp. 331-357. https.//doi.org/10.1177/0192513X12462537.

Arrosa, M. L. & Gandelman N. (2016). Happiness decomposition: Female optimism. *Journal of Happiness Studies*; *17*, pp. 731-756. https://doi.org/10.1007/s10902-015-9618-8.

Azizi, M., Mohamadian, F., Ghajarieah, M. & Direkvand-Moghadam, A. (2017). The effect of individual factors, socioeconomic and social participation on individual happiness: A cross-sectional study. *Journal of Clinical & Diagnostic Research*, *11, 6*, pp. VC01-VC04. https://doi.org/10.7860/JCDR/2017/24658.9982.

Blanchflower, D. G. & Oswald, A. J. (2008). Hypertension and happiness across nations. *Journal of Health Economics*, *27*, pp. 218-233. https://doi.org/10.1016/j.jealeco.2007.06.002.

Börsch-Supan, A., Brugiavini, A., Juerges, H., Mackenbach, J., Siegrist, J. & Weber, G. (Eds.). (2005). *Health, ageing and retirement in Europe: First results from the survey of health, ageing and retirement in Europe*. Mannheim, Germany: Mannheim Research Institute for the Economics of Aging.

Börsch-Supan, A. & Jürges, H. (Eds.). (2005). *The survey of health, ageing and retirement in Europe: Methodology*. Mannheim, Germany: Mannheim Research Institute for the Economics of Aging.

Clark, A. E.; Diener, E.; Georgellis, Y.; Lucas, R. E. (2008). Lags and leads in life satisfaction: A test of the baseline hypothesis. *The Economic Journal*, 118(529), pp. F222-F243. https://doi.org/10.1111/j.1468-0297.2008.02150.x.

Crimmins, E. M., Kim, J. K. & Solé-Auró, A. (2011). Gender differences in health: Results from SHARE, ELSA and HRS. *The European Journal of Public Health, 21, 1*, pp. 81-91. https://doi.org/10.1093/eurpub/ckq022.

Cwikel, J., Gramotnev, H. & Lee, C. (2006). Never-married childless women in Australia: Health and social circumstances in older age. *Social Science and Medicine*, *62,* pp. 1991-2001. https://doi.org/10.1016/j.socscimed.2005.09.006.

Devolder, D. & Merino, M. (2007). Evolución reciente de la infecundidad y la fecundidad total: España en el contexto europeo. In: Cabré Pla, A. (Ed.) *La constitución familiar en España*, Madrid: Fundación BBVA.

Di Nallo, A. (2019) Gender gap in repartnering: The role of parental status and custodial arrangements. *Journal of Marriage and Family*, *81, 1*, pp. 59-78. https://doi.org/10.111/jomf.12527.

Easterlin, R. A. (2010). Happiness, growth, and the life cycle. *Europe Journal of Psychology*, *7, 2*, pp. 395-398. https://doi.org/10.5964/ejop.v7i2.136.

Esteve, A., Devolder, D. & Domingo, A., (2016) Childlessness in Spain: Tick tock, tick tock, tick tock! *Perspectives Demogràfiques*, *1*, pp. 1-4.

George, L. K. (2006). Perceived quality of life. In: Binstock, R. H., George, L. K. (Eds.), *Handbook of aging and the social sciences*, San Diego: Elsevier, pp. 320-336.

González, M. J. & Jurado-Guerrero, T. (2006) Remaining childless in affluent economies: a comparison of France, West Germany, Italy and Spain, 1994-2001. *European Journal of Population*, *22, 4*, pp. 317-352. https://doi.org/10.1007/s10680-006-9000-y.

Gumà, J., Solé-Auró, A., & Arpino, B. (2019). Examining social determinants of health: the role of education, household arrangements and country groups by gender. *BMC Public Health,* 19: 699. https://doi.org/10.1186/s12889-019-7054-0.

Jacobs, J. A. & Gerson, K. (2004). *The time divide. Work, Family and Gender Inequality*. Cambridge: Harvard University Press.

Kalmijn, M. (2007). Explaining cross-national differences in marriage, cohabitation, and divorce in Europe, 1990-2000. *Population Studies 61, 3*, pp. 243-263. https://doi.org/10.1080/00324720701571806.

Kiernan, K. (2004). Unmarried cohabitation and parenthood: here to stay? European perspectives. In: Smeeding, T. M., Rainwater, L. & Moynihan, D. P. (Eds.). *The future of the family*. New York: Russell Sage Foundation, pp. 66-95.

Klaus, D., & Schnettler, S. (2016). Social networks and support for parents and childless adults in the second half of life: Convergence, divergence, or stability? *Advances in Life Course Research, 29*, pp. 95-105. https://doi.org/10.1016/j.alcr.2015.12.004.

Koivumaa-Honkanen, H., Honkanen, R., Viinamäki, H., Heikkilä, K., Kaprio, J. & Koskenvuo, M. (2000). Self-reported life satisfaction and 20-year mortality in healthy Finnish adults. *American Journal of Epidemiology, 152, 10*, pp. 983-991. https://doi.org/10.1093/aje/152.10.983.

Koopmans, T. A., Geleijnse, J. M., Zitman, F. G. & Giltay, E. J. (2010). Effects of happiness and all-cause mortality during 15 years of follow-up: The Arnhem elderly study. *Journal of Happiness Studies*, *11, 1*, pp. 113-124. https://doi.org/10.1007/s10902-008-9127-0.

Kreyenfeld, M., & Konietzka, D. (2017). Childlessness in Europe: contexts, causes, and consequences. In: Kreyenfeld, M. & Konietzka, D. (Eds.), *Childlessness in Europe: Contexts, causes, and consequences.* Netherlands: Springer, pp. 3-15.

Mattingly, M. J. & Sayer, L.C. (2006). Under pressure: Gender differences in the relationship between free time and feeling rushed. *Journal of Marriage and Family, 68, 1*, pp. 205-221. https://doi.org/10.1111/j.1741-3737.2006.00242.x.

McLanahan, S., & Adams, J. (1987). Parenthood and psychological well-being. *Annual Review of Sociology*, *5*, pp. 237-257. https://doi.org/10.1146/annurev.so.13.080187.001321.

Miettinen, A., Rotkirch, A., Szalma, I., Donno, A. & Tanturri, M. L. (2015) Increasing childlessness in Europe: Time trends and country differences. *Families and Societies Working papers*, *33*.

Miettinen, A., Szalma, I. (2014) Childlessness intentions and ideals in Europe. *Finnish Yearbook of Population Research*, *49*, pp.31-55.

Mojon-Azzi, S. & Sousa-Poza, A. (2011). Hypertension and life satisfaction: An analysis using data from the survey of health, ageing and retirement in Europe. *Applied Economics Letters*, *18, 2*, pp. 183-187. https://doi.org/10.1080/13504850903508291.

Myrskylä, M., & Margolis, R. (2014) Happiness: Before and after the kids, *Demography*, *51, 5*, pp.1843-1866. https://doi.org/10.1007/s13524-014-0321-x.

Papousek, I., Nauschnegg, K., Paechter, M., Lackner, H. K., Goswami, N. & Schulter, G. (2010). Trait and state positive affect and cardiovascular recovery from experimental academic stress. *Biological Psychology*, *83,* pp. 108-115. https://doi.org/10.1016/biopsycho.2009.11.008.

Penning, M. J. & Wu, Z. (2014). Marital status, childlessness, and social support among older Canadians. *Canadian Journal on Aging*, *33, 4*, pp. 426-447. https://doi.org/10.1017/S0714980814000385.

Perelli-Harris, B. & Lyons-Amos, M. (2015). Changes in partnership patterns across the life course. *Demographic Research*, *33*, pp.145-178. https://doi.org/10.4054/DemRes.2015.33.6.

Pinquart, M. & Sörensen, S. (2001). Gender differences in self-concept and psychological well-being in old age: A meta-analysis. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *56*, pp. 195-P213. https://doi.org/10.1093/geronb/56.4.P195.

Rowland, D. T. (1998). Consequences of childlessness in later life. *Australasian Journal on Ageing 17, 1*, pp. 24-28. https://doi.org/10.1111/j.1741-6612.1998.tb00220.x.

Schnettler, S. & Wöhler, T. (2016). No children in later life, but more and better friends? Substitution mechanisms in the personal and support networks of parents and the childless in Germany. *Ageing and Society, 36, 7*, pp. 1339-1363. https://doi.org/10.1017/S0144686X15000197.

Siahpush, M., Spittal, M., & Singh, G. K. (2008). Happiness and Life Satisfaction Prospectively Predict Self-Rated Health, Physical Health, and the Presence of Limiting, Long-Term Health Conditions. *American Journal of Health Promotion*, *23, 1*, pp. 18-26. https://doi.org/10.4278/ajhp.061023137.

Sobotka, T. & Toulemon, L. (2008). Overview chapter 4: Changing family and partnership behavior: Common trends and persistent diversity across Europe. *Demographic Research*, *19, 6*, pp. 85-138. https://doi.org/10.4054/DemRes.2008.19.6.

Solé-Auró, A. & Lozano, M. (2019). Inequalities in longevity by education level in Spain: A life satisfaction approach. *Social Indicators Research*. https://doi.org/10.1007/s11205-018-02057-w.

Strine, T. W., Chapman, D. P., Balluz, L. S., Moriarty, D. G. & Mokdad, A. H. (2008). The associations between life satisfaction and health-related quality of life, chronic illness, and health behaviors among U.S. community-dwelling adults. *Journal of Community Health*, *33, 1*, pp. 40-50. https://doi.org/10.1007/s10900-007-9066-4.

Stutzer, A. & Frey, B. S. (2006) Does marriage make people happy, or do happy people get married? *The Journal of Socio-Economics, 35, 2*, pp. 326-347. https://doi.org/10.1016/j.socec.2005.11.043.

Umberson, D., Pudrovska, T. & Reczek, C. (2010). Parenthood, childlessness, and well-being: A life course perspective. *Journal of Marriage and Family*, *72*, *3*, pp. 612-629. https://doi.org/10.1111/j.1741-3737.2010.00721.x.

Vallin, J., Meslé, F. & Valkonen, T. (2001). *Trends in mortality and differential mortality*. Strasbourg: Council of Europe Publishing.

van Poppel, F. & Joung, I. (2001). Long-term trends in marital status mortality differences in The Netherlands 1850-1970. *Journal of Biosocial Science* 33(2), pp. 279-303. https://doi.org/10.1017/S00219320001002796.

Veenhoven, R. (1984). Conditions of Happiness. *Springer Netherlands*, 462.

Vikström, J., Bladh, M., Hammar, M., Marcusson, J., Wressle, E. & Sydsjö, G. (2011). The influences of childlessness on the psychological well-being and social network of the oldest old. *BMC geriatrics*, *11*, *78*. https://doi.org/10.1186/1471-2318-11-78.

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Offspring and later-life loneliness in Eastern and Western Europe

Abstract
Later-life loneliness is increasingly recognized as an important public health issue. In this study, we examine whether having more children and grandchildren is protective against later life loneliness in a group of Eastern and Western European countries. Drawing on data from the Generation and Gender Surveys, we estimated logistic regression models of the likelihood of being lonely among men and women aged 65 and older. The results showed a negative association between number of children and loneliness among men and women in both Eastern-European and Western-European countries. A mediation analysis performed using the KHB decomposition method showed that grandparenthood status partly explained differences in the loneliness risks of childless women, mothers with one child and those with two or more children. Among men, the mediating role of grandparenthood was significant in Eastern Europe and marginally significant in Western countries. Given the relatively strong reliance of older people on the family in Eastern Europe, we expected that the protective effects of offspring on loneliness would be stronger in Eastern-European countries than in Western-European countries. This hypothesis was supported only in part by our results. The protective effect of having four or more children was larger in the East than in the West. Overall, our findings indicate that having close family members, including more children and at least one grandchild, has a protective effect against later-life loneliness in both country clusters considered.

Key words: loneliness, psychosocial wellbeing, isolation, mental health, ageing, intergenerational relations, grandparenthood

Introduction

Loneliness is not an inevitable part of later life, nor is the experience of loneliness restricted to older people. Nevertheless, later life is marked by an increased chance of experiencing events and circumstances, such as widowhood, onset of health limitations and financial hardship, which are associated with increased risks of loneliness, and the prevalence of loneliness among adults is often higher in older than in younger age groups (Nicolaisen/Thorsen 2014; Yang/Victor 2011). Not only is loneliness – a perceived deficit in the quality or quantity of social interaction – distressing and stigmatised, it is also asso-

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ciated with adverse health conditions, including stress and inflammation, depression, heart disease, a range of other diseases and increased mortality risks (Cacioppo/Hughes/Waite/Hawkley/Thisted 2006; Courtin/Knapp 2017; Hawkley/Cacioppo 2010; Holt-Lunstad/Smith/Baker/Harris/Stephenson 2015)

Levels of reported later-life loneliness tend to be higher in Southern than in Northern European countries (Fokkema/De Jong Gierveld/Dykstra 2012; Vozikaki/Papadaki/Linardakis,/Philalithis 2018), but an even more marked difference has been noted between Eastern and Western European countries (De Jong Gierveld/Dykstra/Schenk 2012; Hansen/Slagsvold 2016; Yang/Victor 2011). Explanations for these differences include a range of cultural, health related and socio-economic factors and the effects of the upheaval following the collapse of the Soviet Union; these may have been most challenging for older adults, especially as previous care systems and pensions were eroded (Botev 2012; Marmot/Bobak 2005).

Dykstra (2009) has argued that, when looking into regional loneliness differences, it should be recognised that the importance of particular individual-level predictors might vary across (clusters of) countries. As elaborated later, there are reasons for supposing that the protective role of offspring against later-life loneliness might be more pronounced in Eastern Europe than in Western Europe, given that Easter-European societies tend to be more family-oriented. In this study, we assess whether there are differences between Eastern-European and Western-European countries in the protective effects of having children and grandchildren against later-life loneliness. Disentangling the roles of children and grandchildren in shaping older adults' mental health is of increasing relevance. As a consequence of increasing longevity, family generations spend longer parts of their lives together, during which they may provide support for each other (Bengtson 2001).

Theoretical background

Next to partners and spouses, adult children are the most important source of emotional and practical support for older people (Dykstra 2015; Wolff/Kasper 2006). The presence of children increases opportunities for exchange and companionship, and may reassure parents that they have potential providers of support that they can fall back on in case of need (Evenson/Simon 2005; Grundy/Read 2012; Tosi/Grundy 2018). It is therefore not surprising that parents, and particularly mothers (Van den Broek 2017; Van den Broek/Grundy 2017), tend to be less lonely than their childless counterparts (De Jong Gierveld/Broese van Groenou/Hoogendoorn/Smit 2009; Pinquart/Sörensen 2001).

Having children also implies that one can eventually become a grandparent. The potential protective effect against loneliness of having grandchildren has received much less scholarly attention than the effects of having children. However, some studies have reported positive effects of providing grandchild care on health and subjective indicators of well-being. A longitudinal Chilean study, for example, found that provision of help to grandchildren benefited grandfathers' (but not grandmothers') psychosocial health (Grundy et al. 2012). In a European study, Di Gessa et al. (2016) found that providing grandchild care was associated with better self-rated health among older people, although they did not find any association with depressive symptoms. Other studies have suggested that

providing childcare may be a stimulating social activity that has beneficial effects on older people's cognitive ability (Arpino/Bordone 2014), health behaviours (Waite/Hughes/LaPierre/Luo 2007), and life satisfaction (Powdthavee 2011). Having grandchildren and providing care for them may make older people feel needed, and in this way provide a sense of purpose. Grandparenthood may also be protective against loneliness, regardless of whether grandchild care is provided. Adult children are less likely to live far away from their older parents (Van den Broek/Dykstra 2017; Van den Broek/Dykstra/Schenk 2014) and tend to have more contact with their parents if they have children themselves (Grundy/Shelton 2001; Knoester/Eggebeen 2006). Grandparenthood may also encourage people to look forward to the future (Rowe/Kahn 1998), all of which may be beneficial for mental well-being and protect against loneliness.

It appears counterintuitive that, within Europe, levels of later-life loneliness tend to be higher in regions in which levels of family contact and co-residence between older parents and their children are also higher (Vozikaki et al. 2018; Yang/Victor 2011). However, in more 'family orientated' societies (Reher 1998), such as those of Southern and Eastern Europe (Daatland/Herlofson/Lima 2011), individuals who lack important family resources may have fewer alternative sources of support and social interaction. Sparse family links may therefore be a stronger risk factor for loneliness in Eastern-European than in Western-European countries, especially as in Eastern Europe levels of interaction with friends are rather low in comparison with other European regions (Grundy/Murphy 2018). It has been argued that the erosion of care systems and the value of pensions has further reinforced familialism and the reliance on family supports in Eastern Europe (Castiglioni/Hărăguş/Faludi/Hărăguş 2016; Moor/Komter 2012; Saraceno/Keck 2010). Consistent with this argument, a recent study has shown that the protective effects of children on depressive symptoms were greater in Eastern Europe than in Western Europe (Grundy/Van den Broek/Keenan 2019).

In this paper, we use data from the Generations and Gender Surveys to analyse associations between loneliness and number of children and grandparent status. Based on the arguments outlined above, we expect (i) that having more children would be associated with a lower risk of loneliness, and (ii) that the protective effects of having more children may, in part, be explained by the fact that having more children increases the chance of being a grandparent. Given that the strong sense of family obligations and the eroded public support system for older persons encourage older adults in Eastern Europe to rely on family support, we furthermore expect (iii) that differences in risks of loneliness by number of children and by grandparenthood status would be more pronounced in Eastern-European countries than in Western-European countries.

We assess the links between number of offspring and loneliness separately for women and men, because of the gendered nature of family involvement. Women invest more in family relationships and play a larger role in caregiving activities, whether for children or other adults. The kin-keeping role of the mother means that women are more likely to maintain contact with kin and serve as generational bridges in grandparent-grandchild relationships. This may translate into closer and more satisfying bonds between children and parents, and between grandchildren and grandparents on the maternal side (Albertini/Tosi 2018; Chan/Elder 2000; Monserud 2008). Ties with children and grandchildren may be more meaningful and thus protective against later-life loneliness for women (Van den Broek

2017). Earlier research has shown that having a partner has primary importance for men (Dykstra/De Jong Gierveld 2004; Van den Broek 2017), who may obtain support from their children and grandchildren through the kin-keeping role of the spouse.

Data and methods

Data

We use harmonized data from Wave 1 of the Generations and Gender Surveys (GGS), a cross-national survey of nationally representative samples of respondents aged 18-80. Details of sampling and fieldwork procedures have been reported elsewhere (Vikat et al. 2007). This study focuses on loneliness in later-life. We therefore followed earlier work on later-life loneliness (e.g., Dahlberg/McKee 2014; Kamiya/Doyle/Henretta/Timonen 2014; Victor/Bowling 2012), and restricted our sample to people aged 65 and older. We used data on older people from twelve countries that we divided into two groups along geo-political lines. The first group included five Western European countries (Belgium, Germany, France, Norway, Sweden) and the second group included seven countries that were formerly part of the Soviet Union or the Eastern bloc (Bulgaria, Czech Republic, Georgia, Lithuania, Poland, Romania, Russia).

Baseline surveys in the selected countries were fielded between 2004 and 2013. Response rates ranged from 36% in Lithuania to 84% in Romania (Fokkema/Kveder/Hiekel/Emery/Liefbroer 2016). Information on 14,117 women and 11,097 men aged 65-80 was available. After list-wise deletion of cases with missing information on variables of interest, a final analytical sample of 13,324 women and 10,183 men remained. We used the supplied country-specific weights in the multivariable analyses to adjust for potential non-response bias. Fokkema et al. (2016) have shown that these weights are effective in making the data more population representative in terms of age, sex, household structure and region.

Measures

Loneliness was measured using the shortened version of the De Jong Gierveld loneliness scale (De Jong Gierveld/Van Tilburg 2006). Translations of this scale have been tested for reliability and validity on GGS data for two of the Western and three of the Eastern countries we consider here (De Jong Gierveld/Van Tilburg 2010). This scale contains three negatively formulated items (“I experience a general sense of emptiness”, “I miss having people around”, and “Often, I feel rejected”) and three positively formulated items (“There are plenty of people that I can lean on in case of trouble”, “There are many people that I can count on completely”, and “There are enough people that I feel close to”), all of which have response categories of “yes”, “no” or “more or less” and refer to the current state of respondents’ lives. We derived a loneliness scale score ranging from 0 (not lonely) to 6 (intensely lonely) by summing up the neutral and positive answers (“more or less”, “yes”) on the negatively formulated items and neutral and negative answers (“more or less”, “no”) on

the positively formulated items. This score was skewed. Therefore, we dichotomised it distinguishing between those with scores of less than 2, defined as not being lonely, and those with scores of 2 or more, defined as being lonely. This approach is consistent with the manual of the scale (De Jong Gierveld/Van Tilburg 1999), and has been taken in several other studies (cf. Nicolaisen/Thorsen 2014; Prieto-Flores/Forjaz/Fernandez-Mayoralas/Rojo-Perez/ Martinez-Martin 2011; Van den Broek 2017).

The main explanatory variables of interest were number of children and grandparenthood status. Given that non-linear effects of fertility on psycho-social wellbeing have been reported in earlier studies (e.g., Kravdal/Grundy/Skirbekk 2015), we treated number of living children as a categorical variable, with categories of 0, 1, 2, 3, and 4+ children (cf. Grundy et al. 2019). Living children included social (e.g. step) as well as biological children. We also included a dummy variable indicating whether or not respondents had ever experienced the death of a child. We derived a dichotomous variable indicating whether or not the respondent had one or more grandchildren. Again, this was self-defined and therefore includes social (e.g., grandchildren of current partner) as well as biological grandchildren.

We adjusted for a range of variables known to be associated both with family composition and with loneliness. These included partnership status, age, educational level, and current perceived financial and health status. Partnership status was dichotomised into living with a spouse or partner (hereafter referred to as partnered) or not. Age in years was included as a continuous variable. We coded educational attainment in accordance with the International Standard Classification of Education (ISCED-97) distinguishing between those with low (ISCED 0-2; pre-primary to lower secondary); medium (ISCED 3-4; upper secondary to post-secondary non-tertiary) or high (ISCED 5-6; tertiary) levels of education. Perceived financial difficulty was dichotomised into having difficulty/not having difficulty based on responses to the question "Thinking of your household's total monthly income, is your household able to make ends meet?" We coded respondents who reported having "some difficulty", " difficulty" or "great difficulty" into the 'has difficulty' group and those who reported making ends meet "fairly easily", "easily", or "very easily" into the 'do difficulty' category. The Romanian questionnaire additionally included the response "neither with difficulty nor easily", which we coded as not having difficulty. Health status indicators considered were self-reported long-standing illness and need for regular help with personal care, such as eating, getting up, dressing, bathing, or using the toilet. Both of these were binary indicators (yes/no).

Methods

We estimated a series of country fixed effects binary logit models to test our hypotheses. All models were estimated with robust standard errors to correct for potential heteroscedasticity (White 1980). We estimated models for Eastern and Western European countries separately, and subsequently tested whether the impact of particular individual-level predictors varied significantly between East and West. We conducted formal tests of mediation using Karlson, Holm and Breen's KHB decomposition method (Kohler/Karlson/ Holm 2011) to assess to what extent effects of childlessness on reported loneliness were mediated by grandparenthood status. The KHB method is suitable for the analysis of me-

diation in non-linear models, because it accounts for the attenuation bias that may occur in such models. As considered earlier, we undertook all analyses separately for men and women, because of known gender differences in the antecedents of loneliness (Dykstra/ De Jong Gierveld 2004; Pinquart/Sörensen 2001; Van den Broek 2017).

Results

Descriptive results

Sample characteristics are presented in Table 1. Consistent with the findings of earlier research (De Jong Gierveld et al. 2012; Hansen/Slagsvold 2016; Yang/Victor 2011), the prevalence of loneliness was significantly higher in the Eastern than the Western-European country group for both women (χ^2 (1, n=13,324)=912.32, $p < .001$) and men (χ^2 (1, n=10,183)=764.31, $p < .001$). Compared to their counterparts in the Eastern-European country group, men in the Western-European country group were somewhat less likely to live with a partner (χ^2 (1, n=10,183)=11.73, $p < .001$). Women in the Western-European group were, however, much more likely to be partnered than women in the Eastern-European group (χ^2 (1, n=13,324)=114.49, $p < .001$)). This reflects high levels of mortality, and in particular, high excess male mortality, with a concomitant higher prevalence of widowhood, in many Eastern countries.

Consistent with documented past differences in family building patterns and mortality (Coleman 1996), there were notable differences between the two country groups in number of living children. Women and men in the Eastern-European country group were more likely than their counterparts in the Western-European country group to have one or two children, whereas childlessness and high parity were both more prevalent in the Western-European group. These differences in distributions by number of children were statistically significant for both women (χ^2 (4, n=13,324)=341.81, $p < .001$) and men (χ^2 (4, n=10,183)=266.68, $p < .001$). Women (χ^2 (1, n=13,324)=50.38, $p < .001$) and men (χ^2 (1, n=10,183)=102.17, $p < .001$) in the Western-European country group were less likely than their counterparts in the Eastern-European country group to have grandchildren, again as would be expected given the higher prevalence of childlessness and later age of childbearing in the Western countries (Grundy/Foverskov 2016).

Table 1: Sample characteristics; means and percentages

	Women		Men	
	East	West	East	West
Lonely	73.1	43.3	71.0	40.7
Number of children:				
Childless	12.7	15.3	11.2	16.6
1 child	26.6	17.0	22.8	14.6
2 children	38.0	30.5	41.7	32.7
3 children	13.8	21.3	15.5	21.6
4+ children	8.9	16.0	8.7	14.6
Has at least one grandchild	84.2	78.8	83.7	75.1
Lives with partner	42.1	52.9	80.7	77.8
Age	71.1	71.4	71.0	71.0
(standard deviation)	(4.1)	(4.4)	(4.2)	(4.3)
Education:				
ISCED 0-2	54.8	47.4	45.4	35.3
ISCED 3-4	33.4	38.7	38.0	43.5
ISCED 5-6	11.8	13.9	16.6	21.2
Deceased child	11.2	7.2	7.8	4.6
Difficulty making ends meet	80.5	24.0	73.8	18.6
Long-standing illness	62.9	45.1	51.1	41.3
Needs help with personal care	5.2	2.4	5.6	2.2
Country:				
Bulgaria	16.5		18.6	
Czech Republic	9.9		8.1	
Georgia	12.1		13.6	
Lithuania	13.6		12.9	
Poland	21.0		20.9	
Romania	14.2		15.9	
Russia	12.6		9.9	
Belgium		11.7		13.5
France		20.9		19.0
Germany		22.1		20.1
Norway		26.4		27.2
Sweden		18.9		20.2
Number of observations	9,062	4,262	6,219	3,964

Notes: Data are from Generations and Gender Surveys, Wave 1; weighted.

Results of multivariate analyses

Women

Results of the logistic regression analyses of loneliness among women are presented in Table 2. Model 1 includes all co-variates except the grandchild indicator, which was added in Model 2. The model shows that women in both country groups were less likely to report loneliness when they were partnered. Compared with mothers of two children, childless women and those with only one child were more, and mothers of four or more children less, likely to report loneliness. In the Eastern group mothers of three children

were also less likely to report loneliness than mothers of two. The effect of large family size on loneliness was significantly stronger for women in the Eastern-European group than for their counterparts in the Western-European group.

Results from Model 1 further show that older age, lower levels of educational attainment, perceived financial strain, and having a long-standing illness were associated with a higher loneliness risk in both country groups. In the Eastern-European country group being in need of help with personal care was also significantly associated with a raised loneliness risk.

Table 2: Coefficient estimates from logistic regression models for loneliness among women

	East (n=9,062)				West (n=4,262)			
	Model 1		Model 2		Model 1		Model 2	
	B	[95% CI]	B	[95% CI]	B	[95% CI]	B	[95% CI]
Number of children:								
Childless	0.72***	[0.52,0.92]	0.37**	[0.11,0.63]	0.51***	[0.30,0.73]	0.30*	[0.00,0.59]
1 child	0.29***	[0.14,0.43]	0.24**	[0.09,0.39]	0.50***	[0.29,0.70]	0.46***	[0.25,0.67]
2 children	Ref.		Ref.		Ref.		Ref.	
3 children	-0.20*	[-0.36,-0.04]	-0.19*	[-0.35,-0.03]	-0.17	[-0.37,0.02]	-0.16	[-0.36,0.03]
4+ children	**-0.74*** **	[-0.93,-0.55]	**-0.73*** **	[-0.92,-0.54]	**-0.32** **	[-0.54,-0.10]	**-0.31** **	[-0.52,-0.09]
Has at least one grandchild			-0.47***	[-0.70,-0.24]			-0.26*	[-0.51,-0.02]
Lives with partner	-0.45***	[-0.56,-0.33]	-0.44***	[-0.56,-0.33]	-0.44***	[-0.59,-0.30]	-0.44***	[-0.58,-0.29]
Age	0.02*	[0.00,0.03]	0.02*	[0.00,0.03]	0.02*	[0.00,0.03]	0.02*	[0.00,0.04]
Education:								
ISCED 0-2	Ref.		Ref.		Ref.		Ref.	
ISCED 3-4	**-0.29*** **	[-0.41,-0.16]	**-0.29*** **	[-0.42,-0.16]	**0.04**	[-0.12,0.20]	**0.04**	[-0.13,0.20]
ISCED 5-6	-0.43***	[-0.61,-0.25]	-0.44***	[-0.63,-0.26]	-0.26*	[-0.47,-0.05]	-0.27**	[-0.48,-0.07]
Deceased child	0.06	[-0.12,0.23]	0.10	[-0.07,0.28]	0.14	[-0.12,0.40]	0.15	[-0.11,0.41]
Difficulty making ends meet	0.64***	[0.50,0.77]	0.63***	[0.50,0.77]	0.60***	[0.43,0.76]	0.60***	[0.43,0.77]
Long-standing illness	0.24***	[0.12,0.36]	0.24***	[0.13,0.36]	0.30***	[0.17,0.44]	0.31***	[0.17,0.45]
Needs help with personal care	0.68***	[0.36,1.01]	0.69***	[0.36,1.01]	0.43	[-0.01,0.87]	0.44	[-0.01,0.88]
Country specific intercepts:								
Bulgaria	-0.12	[-1.12,0.89]	0.26	[-0.77,1.28]				
Czech Republic	-0.59	[-1.61,0.42]	-0.22	[-1.25,0.81]				
Georgia	0.56	[-0.46,1.58]	0.94	[-0.11,1.98]				
Lithuania	-0.27	[-1.27,0.72]	0.09	[-0.93,1.11]				
Poland	-1.43**	[-2.44,-0.42]	-1.06*	[-2.09,-0.04]				
Romania	0.22	[-0.77,1.22]	0.58	[-0.44,1.59]				
Russia	-0.77	[-1.77,0.24]	-0.36	[-1.39,0.66]				
Belgium					-1.77**	[-3.00,-0.54]	-1.59*	[-2.83,-0.35]
France					-1.62**	[-2.83,-0.41]	-1.44*	[-2.67,-0.22]
Germany					-1.64**	[-2.85,-0.43]	-1.48*	[-2.70,-0.26]
Norway					-2.08***	[-3.29,-0.86]	-1.90**	[-3.13,-0.67]
Sweden					-1.20	[-2.42,0.02]	-1.02	[-2.25,0.21]

Notes: Data are from Generations and Gender Surveys, Wave 1; weighted; robust standard errors; coefficient estimates that differ significantly ($p < .05$) between Eastern-European and Western-European country groups are in bold; * $p < .05$, ** $p < .01$; *** $p < .001$.

In the second model, we added the variable indicating whether or not respondents were grandmothers. Being a grandmother was associated with lower odds of loneliness in both country groups. Consistent with our expectations, mediation analyses using the KHB decomposition method showed that for women in both country groups, differences in the prevalence of grandparenthood partly accounted for the higher loneliness risk of childless

women (West: Δb=0.22; 95% CI: 0.01, 0.42; p < .05; East: Δb=0.35; 95% CI: 0.18, 0.53; p < .001). Differences in grandparenthood status also seemed to explain some of the loneliness risk differences between women with two children and women with one child (East: Δb=.05; 95% CI: .02, .08; p < .01), although this was only of borderline significance in the Western-European country group (West: Δb=.05; 95% CI: -0.00, 0.08; p =.051). Grandparenthood did not account for differences in loneliness between mothers of two children and mothers with larger family sizes, however. In both country groups, a large majority of mothers with two or more children had at least one grandchild.

Men

Table 3: Coefficient estimates from logistic regression models for loneliness among men

	East (n=6,219)				West (n=3,964)			
	Model 1		Model 2		Model 1		Model 2	
	B	[95% CI]	B	[95% CI]	B	[95% CI]	B	[95% CI]
Number of children:								
Childless	0.65***	[0.41,0.90]	0.40*	[0.09,0.70]	0.48***	[0.26,0.70]	0.28	[-0.02,0.58]
1 child	0.25**	[0.08,0.42]	0.21*	[0.03,0.38]	0.32**	[0.09,0.55]	0.28*	[0.05,0.51]
2 children	Ref.		Ref.		Ref.		Ref.	
3 children	-0.34***	[-0.53,-0.16]	-0.33***	[-0.52,-0.15]	-0.30**	[-0.51,-0.09]	-0.29**	[-0.50,-0.08]
4+ children	-0.42***	[-0.65,-0.20]	-0.41***	[-0.64,-0.19]	-0.27*	[-0.50,-0.04]	-0.26*	[-0.49,-0.03]
Has at least one grandchild			-0.34**	[-0.58,-0.11]			-0.24	[-0.48,0.00]
Lives with partner	-0.92***	[-1.10,-0.73]	-0.91***	[-1.10,-0.72]	-0.71***	[-0.89,-0.53]	-0.70***	[-0.88,-0.52]
Age	0.01	[-0.01,0.03]	0.01	[-0.00,0.03]	-0.01	[-0.03,0.01]	-0.01	[-0.02,0.01]
Education:								
ISCED 0-2	Ref.		Ref.		Ref.		Ref.	
ISCED 3-4	-0.16*	[-0.31,-0.02]	-0.16*	[-0.31,-0.02]	-0.10	[-0.28,0.08]	-0.10	[-0.28,0.08]
ISCED 5-6	-0.25*	[-0.44,-0.06]	-0.26**	[-0.45,-0.06]	-0.28**	[-0.49,-0.08]	-0.29**	[-0.50,-0.08]
Deceased child	0.05	[-0.20,0.29]	0.10	[-0.15,0.34]	0.12	[-0.22,0.47]	0.13	[-0.22,0.47]
Difficulty making ends meet	0.56***	[0.42,0.71]	0.57***	[0.42,0.72]	0.49***	[0.30,0.67]	0.49***	[0.30,0.68]
Long-standing illness	0.27***	[0.13,0.40]	0.27***	[0.14,0.40]	0.23**	[0.08,0.38]	0.23**	[0.08,0.38]
Needs help with personal care	0.64***	[0.29,0.99]	0.65***	[0.30,1.00]	0.28	[-0.25,0.80]	0.26	[-0.27,0.79]
Country specific intercepts:								
Bulgaria	0.85	[-0.30,2.00]	1.06	[-0.10,2.22]				
Czech Republic	0.50	[-0.67,1.67]	0.71	[-0.47,1.89]				
Georgia	1.48*	[0.33,2.63]	1.69**	[0.52,2.85]				
Lithuania	0.68	[-0.46,1.82]	0.89	[-0.26,2.04]				
Poland	-0.58	[-1.73,0.57]	-0.38	[-1.54,0.78]				
Romania	1.16*	[0.02,2.31]	1.36*	[0.20,2.51]				
Russia	0.13	[-1.03,1.29]	0.36	[-0.81,1.53]				
Belgium					0.40	[-0.87,1.68]	0.51	[-0.77,1.80]
France					0.52	[-0.75,1.79]	0.62	[-0.65,1.89]
Germany					0.60	[-0.67,1.86]	0.69	[-0.58,1.96]
Norway					0.27	[-0.99,1.53]	0.37	[-0.89,1.63]
Sweden					1.50*	[0.24,2.76]	1.60*	[0.33,2.86]

Notes: Data are from Generations and Gender Surveys, Wave 1; weighted; robust standard errors; coefficient estimates that differ significantly (p <.05) between Eastern-European and Western-European country groups are in bold; * p < .05, ** p < .01; *** p < .001.

Table 3 presents results for men. Results from Model 1 show that childless men and men with only one child were more likely to report loneliness than their counterparts with two

children. Moreover, a further protective effect of having three or four or more children was found across country groupings.

As for women, living without a spouse or partner, financial difficulties, having a long-standing illness, and having low as opposed to high educational attainment were associated with a higher likelihood of loneliness for men in both country groups. Needing help with personal care was associated with a higher loneliness risk, but this was only statistically significant in the Eastern-European country group.

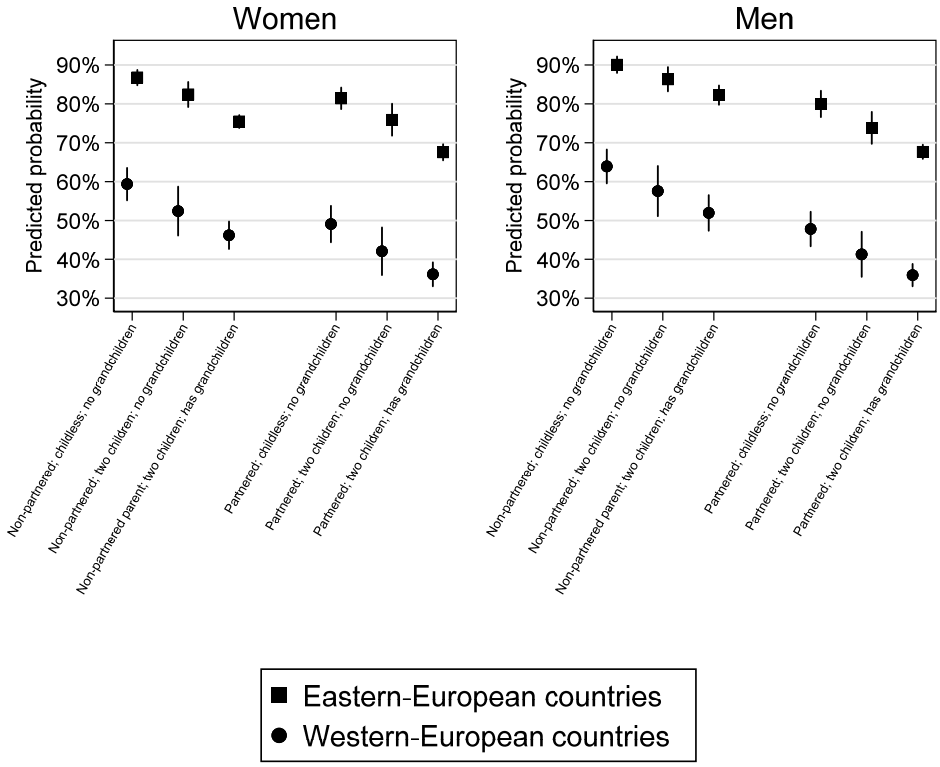
Model 2 shows that having grandchildren was associated with a lower loneliness risk for men in the Eastern-European country group. In the Western-European country group, the protective effect of having grandchildren was not statistically significant. The addition of grandparenthood status significantly attenuated the effects of childlessness (Δb=0.25; 95% CI: 0.08, 0.43; $p < .01$) and of having one child (Δb=.05; 95% CI: 0.01, 0.09; $p < .05$) in the Eastern-European country group. In the Western-European country group, grandparenthood status did not significantly explain any of the loneliness risk differences by family size.

Predicted probabilities of loneliness

In order to facilitate an easier interpretation of the results of our logistic regression, we calculated the predicted probabilities of loneliness by partner status, parity and grandparenthood status for both women and men in the two country clusters. We set the values for these three variables at distinct values and used observed values for each case for all other covariates included in Model 2. We then computed the predicted probability of loneliness for each case with the fixed and observed values of variables, and subsequently averaged the predicted values. All this was done using the margins command in Stata 15.1 (Williams 2012).

Women's predicted probabilities of loneliness are presented in the left-hand panel of Figure 1. Women in the Eastern-European country group had a considerably higher predicted probability of loneliness than their counterparts in the Western-European country group in all subgroups. In both country groupings the partnered had a lower predicted probability of loneliness than the unpartnered (West: Average Marginal Effect (AME)=-10.0%, 95% CI: -13.3%, -6.7%, $p < .001$; East: AME=-7.5%, 95% CI: -9.5%, -5.5%, $p < .001$). Having two children versus none (West: AME=-6.9%, 95% CI: -13.8%, -0.1%, $p < .05$; East: AME=-4.8%, 95% CI: -8.4%, -1.2%, $p < .01$) and additionally having one of more grandchildren (West: AME=-6.0%, 95% CI: -11.7%, -0.3%, $p < .05$; East: AME=-7.5%, 95% CI: -10.9%, -4.1%, $p < .001$) lowered the predicted probability of loneliness further.

Figure 1: Predicted probability of loneliness by presence of partner, children and grandchildren



The right-hand panel of Figure 1 shows the predicted probabilities of loneliness by partner status, parity and grandparenthood status for men. Patterns are largely similar to those found among women. In both the Eastern-European and the Western-European country groups men who were living with a spouse or partner had a much lower predicted probability of loneliness than their counterparts who did not (West: AME=-15.8%, 95% CI: -19.9%, -11.7%, $p < .05$; East: AME=-14.1%, 95% CI: -16.7%, -11.6%, $p < .001$). In the Eastern-European country group, fathers of two were significantly less likely to be lonely than childless men (AME=-5.7%, 95% CI: -10.1%, -1.3%, $p < .05$), and having grandchildren was also associated with a significantly lower probability of loneliness (AME= -5.8%, 95% CI: -9.4%, -2.1%, $p < .01$). Patterns for men in the Western-European country group appeared to be largely similar. However, the loneliness risk differences between childless men and fathers of two men (AME=-6.4%, 95% CI: -13.3%, 0.4%, $p = .06$), and between fathers of two with and without grandchildren (AME=-5.4%, 95% CI: -10.9%, 0.1%, $p = .06$) were not statistically significant at the conventional alpha level of 5 percent in the Western-European country group.

Discussion

In the current study, we examined potential protective effects of offspring on later-life loneliness in Eastern and Western Europe. Earlier research suggests that older persons, particularly women, are less lonely when they have (more) children (Pinquart/Sörensen 2001; Van den Broek 2017). We argued that this might, in part, be because with a greater number of children comes a higher probability for older persons to be grandparents. Compared to the scholarly attention paid to links between parenthood and loneliness, research on the potential protective effect against loneliness of having grandchildren has thus far been scarce. However, grandchildren may provide a sense of purpose, encourage older people to look forward to the future, and intensify the bonds with children and so the impacts of this relationship deserve attention.

Consistent with the findings of earlier research (De Jong Gierveld et al. 2012; Hansen/Slagsvold 2016; Yang/Victor 2011), the current study shows that prevalence of loneliness is much higher in Eastern than in Western Europe. In line with the plea by Dykstra (2009), we assessed whether the importance of a particular individual-level factor in shaping loneliness, namely the presence of offspring, differed between Eastern-European and Western-European countries. Given the relatively strong reliance of older people on the family in Eastern Europe, we expected that the protective effects of offspring on loneliness would be stronger in Eastern-European countries than in Western-European countries. We therefore estimated models stratified by country cluster and conducted formal tests of differences in coefficient estimates to test this expectation.

The current study confirmed findings reported in earlier work on the protective effects of close family against loneliness (Fernández-Alonso/Trabalón-Pastor/Vara/Chedraui/Pérez-López 2017; Hansen/Slagsvold/Moum 2009; Van den Broek 2017; Victor/Yang 2012). Consistent with our expectations, women and men in both Eastern-European and Western-European countries were more likely to be lonely when they were childless or had only one child rather than two. Having at least three or, in the case of women in Western Europe, four children as opposed to two was associated with a further reduction of the loneliness risk. We also found a protective effect of being a grandparent, although this effect was only borderline significant among Western-European men. As we expected, the detrimental effects of childlessness and of having only one child as opposed to having two children were to a substantial extent attributable to differences in grandparenthood status among women in both country groups and among Eastern-European men. Our expectation that the protective effects of offspring on loneliness would be stronger in Eastern-European countries than in Western-European countries was supported only in part by the results of our analyses. For women, the protective effect of having four or more children, as opposed to two, was larger in the East than in the West.

This study has a number of limitations. Firstly, the analysis is cross-sectional. Although the GGS is a longitudinal study, at the time of writing harmonised longitudinal data were available for only a small sub-set of countries. Moreover, in the theoretical background section we presented reasons why we expected grandparenthood status to explain part of the protective effects of number of children on loneliness. We expected this to be related to a heightened sense of purpose, a stronger tendency to look forward to the future (Rowe/Kahn 1998), and closer proximity to children (Van den Broek/Dykstra 2017; Van den Broek et al.

2014) and more frequent contact with children (Grundy/Shelton 2001; Knoester/Eggebeen 2006). We could, however, not test whether these reasons effectively underlay the effects of grandparenthood reported here. Information on contact frequency with children was, for instance, not available for all countries included in our analyses, and questions about the extent to which respondents looked forward to the future were not collected at all. Also, information about contacts with friends and engagement in social activities was not available. This is unfortunate, because part of the reason why we expected offspring to be particularly important for older persons in Eastern Europe was the low level of interaction with friends in this part of Europe (cf. Grundy/Murphy 2018). Additionally and importantly, there may be important unobserved variables which influence both family composition and loneliness. For example personality type may influence both chances of marriage, preferences about family size and propensity for loneliness.

Loneliness in later life is increasingly recognized as an important public health issue, as it is associated with concurrent and subsequent indicators of poor health and with mortality. The results presented here indicate that the absence of offspring is a strong risk factor for later-life loneliness. This is, moreover, not just the case in Eastern-European societies that tend to be family-oriented, and where the erosion of pension and care systems has further reinforced older people's reliance on their families. In the Western-European context, where welfare state arrangements are more generous and norms of family obligation tend to be weaker, older people without offspring are also at increased risk of loneliness.

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References

Albertini, M. & Tosi, M. (2018). Grandparenting after parental divorce: The association between non-resident parent–child meetings and grandparenting in Italy. *European Journal of Ageing*, *15, 3*, pp. 277-286. https://doi.org/10.1007/s10433-018-0478-z.

Arpino, B. & Bordone, V. (2014). Does grandparenting pay off? The effect of child care on grandparents' cognitive functioning. *Journal of Marriage and Family*, *76, 2*, pp. 337-351. https://doi.org/10.1111/jomf.12096.

Bengtson, V. L. (2001). Beyond the nuclear family: The increasing importance of multigenerational bonds. *Journal of Marriage and Family*, *63, 1*, pp. 1-16. https://doi.org/10.1111/j.1741-3737.2001.00001.x.

Botev, N. (2012). Population ageing in Central and Eastern Europe and its demographic and social context. *European Journal of Ageing*, *9, 1*, pp. 69-79. https://doi.org/10.1007/s10433-012-0217-9.

Cacioppo, J. T., Hughes, M. E., Waite, L. J., Hawkley, L. C. & Thisted, R. A. (2006). Loneliness as a specific risk factor for depressive symptoms: Cross-sectional and longitudinal analyses. *Psychology and Aging*, *21, 1*, pp. 140-151. https://doi.org/10.1037/0882-7974.21.1.140.

Castiglioni, M., Hărăguş, M., Faludi, C. & Hărăguş, P. T. (2016). Is the family system in Romania similar to those of Southern European countries? *Comparative Population Studies*, *41, 1*, pp. 57-86. https://doi.org/10.12765/CPoS-2016-01en.

Chan, C. G. & Elder, G. H. (2000). Matrilineal advantage in grandchild–grandparent relations. *The Gerontologist*, *40, 2*, pp. 179-190. https://doi.org/10.1093/geront/40.2.179.

Coleman, D. (1996). New trends and patterns in European fertility: International and sub-national comparisons. In D. Coleman (Ed.), *Europe's Population in the 1990s* (pp. 1-61). Oxford: Oxford University Press.

Courtin, E. & Knapp, M. (2017). Social isolation, loneliness and health in old age: A scoping review. *Health & Social Care in the Community*, *25, 3*, pp. 799-812. https://doi.org/10.1111/hsc.12311.

Daatland, S. O., Herlofson, K. & Lima, I. A. (2011). Balancing generations: on the strength and character of family norms in the West and East of Europe. *Ageing and Society*, *31*, pp. 1159-1179. https://doi.org/10.1017/S0144686X10001315.

Dahlberg, L. & McKee, K. J. (2014). Correlates of social and emotional loneliness in older people: Evidence from an English community study. *Aging & Mental Health*, *18, 4*, pp. 504-514. https://doi.org/10.1080/13607863.2013.856863.

De Jong Gierveld, J., Broese van Groenou, M., Hoogendoorn, A. W. & Smit, J. H. (2009). Quality of marriages in later life and emotional and social loneliness. *The Journals of Gerontology: Series B*, *64B, 4*, pp. 497-506. https://doi.org/10.1093/geronb/gbn043.

De Jong Gierveld, J., Dykstra, P. A. & Schenk, N. (2012). Living arrangements, intergenerational support types and older adult loneliness in Eastern and Western Europe. *Demographic Research*, *27*, pp. 167-200. https://doi.org/10.4054/DemRes.2012.27.7.

De Jong Gierveld, J. & Van Tilburg, T. (1999). *Manual of the loneliness scale*. Amsterdam: Vrije Universiteit. Retrieved from https://research.vu.nl/ws/portalfiles/portal/1092113.

De Jong Gierveld, J. & Van Tilburg, T. (2006). A 6-item scale for overall, emotional, and social loneliness. *Research on Aging*, *28, 5*, pp. 582-598. https://doi.org/10.1177/0164027506289723.

De Jong Gierveld, J. & Van Tilburg, T. (2010). The De Jong Gierveld short scales for emotional and social loneliness: Tested on data from 7 countries in the UN Generations and Gender Surveys. *European Journal of Ageing*, *7, 2*, pp. 121-130. https://doi.org/10.1007/s10433-010-0144-6.

Di Gessa, G., Glaser, K. & Tinker, A. (2016). The health impact of intensive and nonintensive grandchild care in Europe: New evidence from SHARE. *The Journals of Gerontology: Series B*, *71, 5*, pp. 867-879.

Dykstra, P. A. (2009). Older adult loneliness: Myths and realities. *European Journal of Ageing*, *6, 2*, pp. 91-100. https://doi.org/10.1007/s10433-009-0110-3.

Dykstra, P. A. (2015). Aging and social support. In G. Ritzer (Ed.), *The Blackwell encyclopedia of sociology* (Blackwell, pp. 88-93). Oxford.

Dykstra, P. A. & De Jong Gierveld, J. (2004). Gender and marital-history differences in emotional and social loneliness among Dutch older adults. *Canadian Journal on Aging*, *23, 2*, pp. 141-155. https://doi.org/10.1353/cja.2004.0018.

Evenson, R. J. & Simon, R. W. (2005). Clarifying the relationship between parenthood and depression. *Journal of Health and Social Behavior*, *46, 4*, pp. 341-358. https://doi.org/10.1177/002214650504600403.

Fernández-Alonso, A. M., Trabalón-Pastor, M., Vara, C., Chedraui, P. & Pérez-López, F. R. (2017). Life satisfaction, loneliness and related factors during female midlife. *Maturitas*, *72, 1*, pp. 88-92. https://doi.org/10.1016/j.maturitas.2012.02.001.

Fokkema, T., De Jong Gierveld, J. & Dykstra, P. A. (2012). Cross-national differences in older adult loneliness. *The Journal of Psychology*, *146, 1-2*, pp. 201-228. https://doi.org/10.1080/00223980.2011.631612.

Fokkema, T., Kveder, A., Hiekel, N., Emery, T. & Liefbroer, A. C. (2016). Generations and Gender Programme Wave 1 data collection: An overview and assessment of sampling and fieldwork methods, weighting procedures, and cross-sectional representativeness. *Demographic Research*, *34, 18*, pp. 499-524. https://doi.org/10.4054/DemRes.2016.34.18.

Grundy, E., Albala, C., Allen, E., Dangour, A. D., Elbourne, D. & Uauy, R. (2012). Grandparenting and psychosocial health among older Chileans: A longitudinal analysis. *Aging & Mental Health*, *16, 8*, pp. 1047-1057. https://doi.org/10.1080/13607863.2012.692766.

Grundy, E. & Foverskov, E. (2016). Age at first birth and later life health in Western and Eastern Europe. *Population and Development Review*, *42, 2*, pp. 245-269. https://doi.org/10.1111/j.1728-4457.2016.00128.x.

Grundy, E. & Murphy, M. (2018). Coresidence with a child and happiness among older widows in Europe: Does gender of the child matter? *Population, Space and Place*, *24, 3*, e2102. https://doi.org/10.1002/psp.2102.

Grundy, E. & Read, S. (2012). Social contacts and receipt of help among older people in England: Are there benefits of having more children? *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *67, 6*, pp. 742-754. https://doi.org/10.1093/geronb/gbs082.

Grundy, E. & Shelton, N. (2001). Contact between adult children and their parents in Great Britain 1986–99. *Environment and Planning A: Economy and Space*, *33, 4*, pp. 685-697. https://doi.org/10.1068/a33165.

Grundy, E., Van den Broek, T. & Keenan, K. (2019). Number of children, partnership status, and later-life depression in Eastern and Western Europe. *The Journals of Gerontology, Series B*, *74, 2*, pp. 353-363. https://doi.org/10.1093/geronb/gbx050.

Hansen, T. & Slagsvold, B. (2016). Late-life loneliness in 11 European countries: Results from the Generations and Gender Survey. *Social Indicators Research*, *129, 1*, 445-464. https://doi.org/10.1007/s11205-015-1111-6.

Hansen, T., Slagsvold, B. & Moum, T. (2009). Childlessness and psychological well-being in midlife and old age: An examination of parental status effects across a range of outcomes. *Social Indicators Research*, *94, 2*, 343-362. https://doi.org/10.1007/s11205-008-9426-1.

Hawkley, L. C. & Cacioppo, J. T. (2010). Loneliness matters: A theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine*, *40, 2*, pp. 218-227. https://doi.org/10.1007/s12160-010-9210-8.

Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T. & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: A meta-analytic review. *Perspectives on Psychological Science*, *10, 2*, pp. 227-237. https://doi.org/10.1177/1745691614568352.

Kamiya, Y., Doyle, M., Henretta, J. C. & Timonen, V. (2014). Early-life circumstances and later-life loneliness in Ireland. *The Gerontologist*, *54, 5*, pp. 773-783. https://doi.org/10.1093/geront/gnt097.

Knoester, C. & Eggebeen, D. J. (2006). The effects of the transition to parenthood and subsequent children on men's well-being and social participation. *Journal of Family Issues*, *27, 11*, pp. 1532-1560. https://doi.org/10.1177/0192513X06290802.

Kohler, U., Karlson, K. B. & Holm, A. (2011). Comparing coefficients of nested nonlinear probability models. *Stata Journal*, *11, 3*, pp. 420-438.

Kravdal, Ø., Grundy, E. & Skirbekk, V. (2015). Fertility history and use of antidepressant medication in late mid-life: a register-based analysis of Norwegian women and men. *Aging and Mental Health*, 1-10. https://doi.org/10.1080/13607863.2015.1118010.

Marmot, M. & Bobak, M. (2005). Social and economic changes and health in Europe East and West. *European Review*, *13, 1*, pp. 15-31. https://doi.org/10.1017/S1062798705000037.

Monserud, M. A. (2008). Intergenerational relationships and affectual solidarity between grandparents and young adults. *Journal of Marriage and Family*, *70, 1*, pp. 182-195. https://doi.org/10.1111/j.1741-3737.2007.00470.x.

Moor, N. & Komter, A. (2012). Family ties and depressive mood in Eastern and Western Europe. *Demographic Research*, *27*, pp. 201-232. https://doi.org/10.4054/DemRes.2012.27.8.

Nicolaisen, M. & Thorsen, K. (2014). Who are lonely? Loneliness in different age groups (18-81 years old) using two measures of loneliness. *The International Journal of Aging and Human Development*, *78, 3*, pp. 229-257. https://doi.org/10.2190/AG.78.3.b.

Pinquart, M. & Sörensen, S. (2001). Influences on loneliness in older adults: A meta-analysis. *Basic and Applied Social Psychology*, *23, 4*, pp. 245-266. https://doi.org/10.1207/S15324834BASP2304_2.

Powdthavee, N. (2011). Life satisfaction and grandparenthood: Evidence from a nationwide survey. Bonn: IZA Institute of Labor Economics (IZA Discussion Paper No. 5869).

Prieto-Flores, M.-E., Forjaz, M. J., Fernandez-Mayoralas, G., Rojo-Perez, F. & Martinez-Martin, P. (2011). Factors associated with loneliness of noninstitutionalized and institutionalized older adults. *Journal of Aging and Health*, *23, 1*, pp. 177-194. https://doi.org/10.1177/0898264310382658.

Reher, D. S. (1998). Family ties in Western Europe: Persistent contrasts. *Population and Development Review*, *24, 2*, pp. 203-234. https://doi.org/10.2307/2807972.

Rowe, J. W. & Kahn, R. L. (1998). *Successful aging*. New York: Pantheon/Random House.

Saraceno, C. & Keck, W. (2010). Can we identify intergenerational policy regimes in Europe? *European Societies*, *12, 5*, pp. 675-696. https://doi.org/10.1080/14616696.2010.483006.

Tosi, M. & Grundy, E. (2018). Intergenerational contacts and depressive symptoms among older parents in Eastern Europe. *Aging & Mental Health*, 1-7. https://doi.org/10.1080/13607863.2018.1442412.

Van den Broek, T. (2017). Gender differences in the correlates of loneliness among Japanese persons aged 50-70. *Australasian Journal on Ageing*, *36, 3*, pp. 234-237. https://doi.org/10.1111/ajag.12448.

Van den Broek, T. & Dykstra, P. A. (2017). The impact of siblings on the geographic distance between adult children and their ageing parents. Does parental need matter? *Population, Space and Place*, *23, 6*, e2048. https://doi.org/10.1002/psp.2048.

Van den Broek, T., Dykstra, P. A. & Schenk, N. (2014). Regional economic performance and distance between parents and their employed children – A multilevel analysis. *Population, Space and Place*, *20, 3*, pp. 222-234.

Van den Broek, T. & Grundy, E. (2017). Loneliness among Polish migrants in the Netherlands: The impact of presence and location of partners and offspring. *Demographic Research*, *37, 23*, pp. 727-742. https://doi.org/10.4054/DemRes.2017.37.23.

Victor, C. R. & Bowling, A. (2012). A longitudinal analysis of loneliness among older people in Great Britain. *The Journal of Psychology*, *146, 3*, pp. 313-331. https://doi.org/10.1080/00223980.2011.609572.

Victor, C. R. & Yang, K. (2012). The prevalence of loneliness among adults: A case study of the United Kingdom. *The Journal of Psychology*, *146, 1-2*, pp. 85-104. https://doi.org/10.1080/00223980.2011.613875.

Vikat, A., Spéder, Z., Beets, G., Billari, F., Bühler, C., Aline, D., … Solaz, A. (2007). Generations and Gender Survey (GGS): Towards a better understanding of relationships and processes in the life course. *Demographic Research*, *17, 14*, pp. 389-440. https://doi.org/10.4054/DemRes.2007.17.14.

Vozikaki, M., Papadaki, A., Linardakis, M. & Philalithis, A. (2018). Loneliness among older European adults: Results from the Survey of Health, Aging and Retirement in Europe. *Journal of Public Health*, *26, 6*, pp. 613-624. https://doi.org/10.1007/s10389-018-0916-6.

Waite, L. J., Hughes, M. E., LaPierre, T. A. & Luo, Y. (2007). All in the family: The impact of caring for grandchildren on grandparents' health. *The Journals of Gerontology: Series B*, *62, 2*, pp. S108-S119. https://doi.org/10.1093/geronb/62.2.S108.

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, *48, 4*, pp. 817-838. https://doi.org/10.2307/1912934.

Williams, R. (2012). Using the margins command to estimate and interpret adjusted predictions and marginal effects. *Stata Journal*, *12, 2*, pp. 308-331.

Wolff, J. L. & Kasper, J. D. (2006). Caregivers of frail elders: Updating a national profile. *The Gerontologist*, *46, 3*, pp. 344-356. https://doi.org/10.1093/geront/46.3.344.

Yang, K. & Victor, C. (2011). Age and loneliness in 25 European nations. *Ageing and Society*, *31, 08*, pp. 1368-1388. https://doi.org/10.1017/S0144686X1000139X.

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Grandparenthood, grandchild care and depression among older people in 18 countries

Abstract
Due to the increasing central role of grandparenthood in later life, sound knowledge about its effects on older people's health is more and more important. This paper examines the impact of becoming a grandparent, having more grandchildren, and engaging in grandchild care on depressive symptoms. Moreover, based on the structural ambivalence theory, we expect that such effects differ across contexts as (grand)childcare is differently organised across Europe. Taking advantage of the longitudinal structure of the Survey of Health, Ageing and Retirement in Europe (SHARE), we estimate fixed-effects models. Our results show that women face a decline in depressive symptoms when becoming grandmothers, but neither an increase in the number of grandchildren nor changes in grandchild care are associated with changes in depressive symptoms. The analyses by country highlight differences across Europe, without, however, drawing a clear pattern. Our results show that depression consequences of grandparenthood also vary between countries characterised by similar roles of grandparents. This suggests the need to make available more refined questions about grandparenthood in surveys on older people.

Key words: grandparenthood, grandchild care, depression, Europe.

Introduction

As a consequence of the socio-demographic changes in terms of increasing longevity, decreasing fertility, and postponement of childbearing, the role of grandparents has become more and more a central feature of later life (Leopold/Skopek 2015; Margolis 2016). Its benefits have been shown, in line with the active ageing framework (WHO 2002; Zaidi et al. 2013), mainly in terms of engagement in grandchild care as an activity that positively affects health and subjective wellbeing (e.g., Arpino et al. 2018; Arpino/Bordone 2014; Di Gessa et al. 2016). In this study, we extend the knowledge in this field by investigating whether the broader concept of grandparenthood (including becoming a grandparent, having additional grandchildren, and changes in the engagement in grandchild care) affects older people's mental health. In particular, we analyse changes in depressive symptoms

by relying on longitudinal data from the Survey of Health, Ageing and Retirement in Europe (SHARE). Depression has been estimated to be the fourth leading cause of the global burden of disease (Ustün et al. 2004), it is the second leading cause of disability worldwide (Ferrari et al. 2013) and is expected to become the leading cause of disability in later life by 2030 (Kok et al. 2012). Such a debilitating condition, characterised by the presence of specific symptoms as anxiety, insomnia, fatigue and a number of psychosomatic disorders that can be triggered by biological, psychological and socio-economic factors, places a substantial burden in terms of public health systems and beyond, to include decline in the quality of life, increased risk of heart disease and stroke, worsening overall health status, and earlier mortality (Blazer 2003; Gallagher et al. 2012). The importance of studying depression rests also on its influence on health behaviours (e.g., Kuo et al. 2011) and other health measures (e.g., Moussavi et al. 2007).

The association between social support and mental health is well established in the literature (e.g., Dalgard et al. 1995; McCabe et al. 1996). It is usually hypothesised that altruistic behaviours and (balanced) intergenerational exchanges are beneficial to mental health (Fujiwara/Lee 2008; Hayslip/Kaminski 2005). Yet, grandchild care can also be stressful and might limit participation in other activities. This, in turn, might negatively impact on health (Jendrek 1993; Szinovacz et al. 1999).

Our contribution is threefold. First, we investigate the effect of grandparenthood on depression by accounting for the multidimensionality of the concept of grandparenthood. In doing so, we test whether such an effect is driven by becoming a grandparent (i.e., grandparenthood *per se*), an increase in the number of grandchildren, and provision of grandchild care. Moreover, we add to previous literature (e.g., Brunello/Rocco 2019; Di Gessa et al. 2016) by considering more waves of the same dataset, and investigating gender differences. To the best of our knowledge, only one study so far examined the effect of the transition to grandparenthood on grandparents' depression (Condon et al. 2018), based however on one single country (Australia) and a small sample (262 female and 168 male grandparents). Second, we explore the role of context in the association between grandparenthood and depression. As the grandparental role varies across countries (Bordone et al. 2017; Hank/Buber 2009), the effect of grandparenthood on depression may also vary. This heterogeneity could be related to the broader cultural context (i.e., norms and values), as well as to the institutional setting (i.e., policies and, more in general, welfare regimes) in which grandparents and grandchildren are embedded. Previous studies on this topic have mostly relied on a single country (e.g., Condon et al. 2018; Grundy et al. 2012) or pooled together data from different countries (e.g., Di Gessa et al. 2016). Third, from a methodological point of view, we examine the effect of grandparenthood on depression using fixed-effects models. Previous studies in the related literature have often employed cross-sectional data, with a few exceptions that investigated the effect of grandchild care on health outcomes drawing on longitudinal data (Chung/Park 2018; Di Gessa et al. 2016; Grundy et al. 2012). To our knowledge, only Ates (2017) relied on fixed-effects models to study whether grandchild care affects self-reported health. By using fixed-effects models we can exploit the longitudinal dimension of SHARE data and additionally account for time-invariant unobserved confounders.

Background

An increasing number of studies have been investigating the impact of grandparenthood on grandparents' health and wellbeing. Despite mainly and consistently focusing on grandchild care as the central activity linked to the grandparental role, such literature has shown mixed results. Scholars have emphasised positive consequences of caring for grandchildren on grandparents' lifestyle (Waldrop/Weber 2001), physical health and healthy behaviours (Di Gessa et al. 2016; Hughes et al. 2007), and better cognitive functioning (Arpino/Bordone 2014). Yet, also negative consequences of grandchild care have been found for grandparents' physical health (Grinstead et al. 2003; Minkler/Fuller-Thomson 1999). These heterogeneous effects might depend on the variety of outcomes under study, but also on the degree of involvement of grandparents in grandchild care (Coall/Hertwig 2011) and on the cultural context (Neuberger/Haberkern 2014). Furthermore, the multidimensionality of the concept of grandparenthood has rarely been considered. An exception is the work by Bordone and Arpino (2016) on the association of grandparenthood *per se* and of grandchild care with subjective age.

Grandparenthood and depression

A wide array of studies within the literature on grandparents have investigated mental health consequences of grandchild care on grandparents. Studies from the USA showed that grandparents (and grandmothers in particular) raising grandchildren tend to report a higher likelihood to elevated depressive symptomatology when compared with grandparents who live apart from grandchildren or grandparents living in multigenerational households (Blustein et al. 2004; Fuller-Thomson/Minkler 2001; Musil et al. 2009; Musil et al. 2013). Similarly, custodial grandmothers experience depressive symptoms at a higher rate than the general population of women of the same age (Whitley et al. 2016). However, the stress associated with day-to-day efforts of raising grandchildren coupled with the family situations that require grandparents to take on primary care to grandchildren might explain such elevated depression risk compared to non-custodial/non-caregiver grandparents.

By contrast indeed, grandmothers who co-reside in a multigenerational home with grandchildren and the grandchildren's parents typically report different stresses than non-caregivers or those raising grandchildren, for example because of the parents' personal situation (e.g., job loss, financial problems, divorce, single or teen parenthood). Yet, grandmothers in multigenerational homes usually receive more instrumental support, and may also be less likely to experience depressive symptoms (Musil et al. 2009).

Research on supplementary grandchild care in the USA has mainly found a positive association between looking after grandchildren and grandparents' mental health. In particular, cross-sectional investigations provided evidence of less depressive symptoms for grandparents engaged in grandchild care (Blustein et al. 2004; Minkler et al. 1997). Also, studies that considered changes in the provision of grandchild care found that grandparents who recently started providing grandchild care or continued to provide non-intensive care reported fewer depressive symptoms, compared with grandparents who were not providing such care (Hughes et al. 2007). Similar evidence was found for Taiwan (Ku et

al. 2013) and for Chile (Grundy et al. 2012), with the latter study using longitudinal data but not focussing on changes in childcare provision.

These results would suggest us to hypothesise that looking after grandchildren reduces depressive symptoms. Yet, by considering a shorter panel of the same dataset that we are using and adjusting for baseline depression, Di Gessa et al. (2016) found a non-significant association between the provision of any grandchild care and subsequent depressive symptomatology in Europe as a whole. A non-significant effect was also recently found by Ates (2017) who investigated whether supplementary grandchild care influences grandparents' self-rated health (SRH) in Germany. Although focusing on a different outcome, he has used the same methodology as in our study (i.e., fixed-effects approach). While his results showed a positive (albeit small) association between supplementary grandchild care and SRH in random effects models, the fixed-effects model showed that the intrapersonal change in grandchild care was not associated with a change in grandparents' SRH. This suggests that studies using a between-variation approach might overestimate the influence of grandchild care on grandparents' health because they do not control for unobserved (time-constant) heterogeneity.

Finally, Brunello and Rocco (2019) using two waves of the same data we employ found that provision of grandchild care was associated with an increase in grandparents' depression.

Despite the mixed results from previous literature, empirical evidence so far mainly suggests not to expect negative effects of grandparental childcare on depressive symptoms of grandparents.

Only a few studies have considered the consequences of being a grandparent *per se* as compared to the effect of taking an active caregiving role. As mentioned above, Condon et al. (2018) is the only study that did so while investigating depression. They found that the transition to grandparenthood was not associated with depression, while contacts with and provision of care to grandchildren reduced depressive symptoms. Yet, other studies considered related outcomes. For example, Danielsbacka and Tanskanen (2016) showed that being a grandparent is not associated with either higher or lower happiness among older Finns. Arpino et al. (2018) reached similar conclusions for life satisfaction, using data on several European countries. Christiansen (2014) found a higher mortality risk for grandfathers (but not grandmothers) as compared to their grandchildless counterparts in Norway.

Drawing on this evidence, we could therefore expect a null effect of the transition to grandparenthood and of an increase in the number of grandchildren on depressive symptoms. This might be a compound outcome of positive experiences coming with grandparenthood, including emotional closeness and strengthened generational ties (Silverstein et al. 1998), as well as of negative perceptions, such as an older feeling (Barak/Gould 1985) and an overwhelming role (Kaufman/Elder 2003) corresponding, for example, to a higher number of grandchildren.

The heterogeneous findings of the literature so far might be due to the need to account for the degree of involvement in grandchild care (Coall/Hertwig 2011), and for the cultural context (Neuberger/Haberkern 2014). Furthermore, as one could notice in our literature review, most of the studies mentioned focused on grandmothers or did not distinguish between grandmotherhood and grandfatherhood. According to Hank and colleagues (2018),

who recently discussed the promising avenues that research on intergenerational relationships might take in the future, there is a need to analyse grandparenthood and grandchild care by taking a gender perspective. We therefore carry out our analyses on becoming a grandparent, increasing number of grandchildren, and grandchild care separately for women and for men, and by country.

The role of context

Previous studies have analysed how contextual factors shape the role of grandparents as providers of grandchild care. Two broad factors have been so far examined: policies and culture. With respect to the policy-related country context, it has been found that in countries where formal childcare coverage is minimal, such as Mediterranean countries and Poland, the family bears the main care responsibilities (Saraceno/Keck 2010). There, grandchild care provision is usually on a daily basis. Bordone and colleagues (2017) identified other two context-specific models of grandchild care in Europe. In Nordic countries and France, where public childcare services and parental leave are generous, grandparents take on a secondary role in childcare, helping when needed. An intermediate model is represented by most of the Western European countries and the Czech Republic, characterised by a lower offer of childcare services or parental leave than in Nordic countries, and by grandparents engaging in grandchild care with a lower frequency than in the first model but higher than in the second, i.e. usually on a weekly basis.

With respect to culture, other studies have focused on family norms. For example, using data from the European Social Survey, Jappens and Van Bavel (2012) showed that mothers in contexts characterised by more conservative family norms tend to rely on grandparents as the main source of childcare rather than on formal services.

Despite these studies on contextual effects on grandchild care use (from the parents' perspective) or provision (from the grandparents' one), there is a scarcity of studies analysing the moderating role of the country context in the relationship between provision of grandchild care and health or wellbeing of grandparents. In particular, to the best of our knowledge, no previous study has analysed whether the effect of grandchild care on health is moderated by country policies. However, Neuberger and Haberkern (2014) argued that the role of grandparents as providers of grandchild care may or may not be socially expected, depending on the context. They use the concept of structural ambivalence as the contradiction between behaviour and cultural norms, to suggest that in countries in which grandparents are normatively expected to provide grandchild care, not looking after grandchildren may favour negative feelings and therefore, in the case of our paper, contribute to grandparents' depressive symptoms. Conversely, in countries with low social expectations towards grandparenting, grandparents who provide grandchild care may answer a need in face of a particular situation and, in turn, experience more depressive symptoms.

Yet, structural and cultural factors may also vary within countries across the different regions (see e.g., Jappens/Van Bavel 2012 on family norms). Furthermore, the role of the context in moderating the effect of grandparenthood *per se* has also not been studied so far. Therefore, we take an exploratory approach in assessing whether the effects of grand-

parenthood and of grandchild care on depression vary across countries but we refrain from formulating specific hypotheses in this respect.

The gendered dimensions of grandparenthood

The literature has largely shown a different engagement in the grandparental role between men and women. In particular, grandmothers on average provide more grandchild care than grandfathers. Although little has been done to explain such a gender gap (an exception is the work by Leopold and Skopek 2014), as highlighted by Arpino et al. (2018), it is more and more relevant to shed light on the grandparent-related gender gap in view of the increasing grandmothers' participation in the workforce that will make women more likely than men to experience competing roles in later life.

Economic theories of family labour, stressing the importance of time availability and specialization of tasks into market and non-market work, would suggest a convergence of grandfathers' and grandmothers' contributions to childcare in later life (after retirement) and little cross-national variation in the gender gap. Empirical evidence on the persistent higher engagement of grandmothers in grandchild care, however, tends to support sociological theories suggesting that gender roles go beyond the rational allocation of tasks. The socialisation/ideology hypothesis first (Coverman 1985) and the doing gender hypothesis later (West/Zimmerman 1987) posit that gender-related ideologies, internalised through socialisation and routinized within the institution of marriage, are at the base of the gendered division of labour.

The gendered division of the grandparenthood role is therefore likely to derive from the gendered tasks, responsibilities, and expectations traditionally associated with grandparenthood (Kaufman/Elder 2003; Stelle et al. 2010; Winefield/Air 2010), with some differences across Europe along the well-known North–South geographical divide of family–state division in caring responsibilities and corresponding to the societal framing of gender roles.

In turn, different effects of grandparenthood might be expected for grandmothers' and for grandfathers' health. For women, but not for men, grandparenthood may be perceived as prescriptive (Reitzes/Mutran 2004). Moreover, the increase of contact with adult children in the presence of grandchildren (e.g., Bordone 2009) is usually a reinforcement of the mother-daughter relationship and might also work as a mechanism of reduction of depressive symptoms especially for grandmothers, who traditionally hold the responsibilities as kin keepers. Indeed, Winefield and Air (2010) suggested that grandmothers, and in particular those belonging to older generations, view their grandparental role as an extension of their maternal role. We might therefore expect that becoming a grandmother, but not a grandfather, might positively affect mental health.

Although no striking differences by gender were found in the association between grandparenthood *per se* and life satisfaction, Arpino et al. (2018) noted a gender discrepancy with grandmothers often more satisfied when they provide grandchild care. Most of the empirical evidence on the gendered effects of grandparenthood on health has only considered grandchild care, showing for example better self-reported health and fewer functional limitations only among grandmothers in the USA (Hughes et al. 2007). Similarly, Grundy et al. (2012) found that Chilean grandmothers, but not grandfathers, who provided grandchild

care had a lower risk of depression. However, other studies did not find substantial differences by gender (e.g. Arpino/Bordone (2014) on cognitive functioning).

Following Price et al.'s (2015) argument on wellbeing, we maintain that gender-specific marital and work lifecourse characteristics as well as gender differences in life expectancy (i.e., women generally live longer than men), socio-economic status (i.e., men have better financial resources than women), and socialization levels (i.e., men have more social exposure than women) are also likely to contribute to the gender gap in the association between grandchild care and depression, explaining the mixed results. We therefore stratify the analyses by gender and explore possible gender differences in such an association.

Data and methods

Data

We use panel data modelling on data from the Survey of Health, Ageing and Retirement in Europe (SHARE), which is a cross-national panel survey collecting micro-data on health, socio-economic status, and social and family networks of the non-institutionalised population aged 50 and older in Europe (Börsch-Supan et al. 2013; Börsch-Supan 2017a; Börsch-Supan 2017b; Börsch-Supan 2017c; Börsch-Supan 2017d). We pooled data from all regular waves of SHARE (waves 1, 2, 4, 5, and 6). Wave 3 (SHARELIFE) only collected retrospective information. We considered Israel and 17 European countries that participated in at least two waves of SHARE (Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Greece, Italy, Luxemburg, the Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, and Switzerland).

We selected respondents aged 50-84 years old at the time of interview. The number of observations and relevant transitions outside this age range was extremely limited. We only considered respondents with at least one child. In this way, we avoid selection effects for grandchildless people (i.e., grandchildless respondents in our sample do not have grandchildren as a consequence of their children's behaviour and not of their own, as it would be for childless respondents). The overall working sample is composed of 35,442 women and 28,256 men (giving a total of 100,275 and 78,837 observations, respectively). The sample sizes for different analyses on the explanatory variables differ from these figures because of the different sample selection criterion described below and are detailed in Table 2. For example, for the transition to grandparenthood, where we selected only individuals who enter the sample being grandchildless, the sample sizes count 10,488 women and 10,060 men (16,262 and 15,609 observations, respectively).

Table 1: Descriptive statistics on all variables on the full sample (mean or percentage, standard deviation – sd–, minimum and maximum)

Variables	Women				Men			
	mean	sd	min	max	mean	sd	min	max
Outocome								
Depressive symptoms (Euro-D)	2.73	2.33	0	12	1.87	1.96	0	12
Explanatory:								
Grandparent (%)	25.00					24.18		
Additional grandchildren (%)	28.55					30.96		
Grandchild care (%)								
No care (ref.)	48.09					51.42		
Not intensive care	22.89					24.34		
Intensive care	29.02					24.23		
Controls:								
Age	65.55	8.73	50	84	66.05	8.47	50	84
Income rank	0.48	0.29	0	1	0.55	0.28	0	1
Partnership status (%)								
Living with partner (ref.)	69.31				86.14	0.35		
Never married	2.05				1.66	0.13		
Divorced	9.83				6.92	0.25		
Widowed	18.81				5.28	0.22		
Working status (%)								
Retired (ref.)	50.54				61.93	0.49		
Working	24.49				30.42	0.46		
Other	24.98				7.65	0.27		
Diagnosed conditions (%)	51.98				48.90	0.50		
GALI[1] (%)	46.48				41.29	0.49		
Number of grandchildren	3.08	3.15	0	20	2.75	3.00	0	20
N individuals	35,442				28,256			
N individuals x waves	100,275				78,837			

Note: For numerical variables, we report mean, standard deviation (sd), minimum, and maximum. For categorical variables, we report the percentage (%) (in the column "mean") for each category and we specify the reference (ref.) category used in the regression models. Summary statistics are calculated on the total initial sample with the exception of explanatory variables that are calculated on the relevant sample instead. The sample sizes for the explanatory variables are reported in Table 2. 1. GALI = Global Activity Limitation Indicator.

Our dependent variable is the number of depressive symptoms, measured using the EURO-D scale, which is composed of 12 items, each measuring the presence of a specific depressive symptom. We used this variable as cardinal, ranging from 0 to 12, as done by e.g., Arpino and Solé-Auró (2019). We also carried out the analyses by dichotomizing the EURO-D scale in a way that considered the presence of depression with scores higher than 4 (Crimmins et al. 2011; Prince et al. 1999) and results (available on request) were qualitatively similar to those presented here.

Table 2: Descriptive statistics on some transitions observed for the explanatory variables

Transitions between two waves	Women		Men	
	%	N	%	N
Became a grandparent	23,8	2,496	23,1	2,324
N individuals		10,488		10,060
N individuals x waves		16,262		15,609
Had additional grandchildren	82,5	20,111	85,2	15,074
N individuals		24,378		17,693
N individuals x waves		37,994		28,297
Grandchild care				
Started doing not intensive care	10,8	1,470	10,5	1026,0
Started doing intensive care	8,7	1,180	8,9	834,0
N individuals		22,077		14,941
N individuals x waves		53,474		32,924

Note: *Became a grandparent*: percentage and number of grandchildless individuals who became a grandparent over the observed period. *Had an additional grandchild*: percentage and number of grandparents that increased the number of grandchildren over the observed period. *Grandchild care*: percentage and number of grandparents that were not doing grandchild care at a given time point and started doing it either not intensively or intensively over the observed period. Other transitions are possible (e.g., from not intensive to intensive care) and data are available upon request.

Methodological approach

We use linear fixed-effects models to estimate the effect of various dimensions of grandparenthood on depressive symptoms. The key advantage of fixed-effects models over standard OLS regressions or random-effects models is that with fixed-effects we are able to eliminate all time-invariant factors that may confound the relationship of interest (e.g., personality traits, values, etc.). Fixed-effects models focus on within-individual variation in both the dependent and all independent variables. Therefore, the estimated effect can be interpreted as the effect of a change in the independent variable on a change in the dependent variable.

First, we focus on estimating the effect of the transition to grandparenthood (Model 1). For this analysis we keep only the subsample of individuals who are grandchildless at baseline, that is in the wave at which they first enter the survey. Our explanatory variable "*grandparenthood*" is a dummy variable indicating whether the respondent is a grandparent (=1) or not (=0). The fixed-effects estimate of the coefficient of this variable informs us about the effect of the transition to grandparenthood on the change in depressive symptoms. It is possible that more than one grandchild was born between two interviews. Therefore, as a robustness check, we dropped these cases (and subsequent observations) to be able to estimate the pure effect of becoming a grandparent rather than of an increase in the number of grandchildren.

Second, we estimate the effect of having an additional grandchild (Model 2). In this case, we select only individuals who were already grandparents at baseline. In this analysis, our explanatory variable "*additional grandchildren*" takes value 1 if there was an increase in the number of grandchildren over the observation period and 0 otherwise.

Again, because it is possible that more than 1 grandchild was born between two waves, a robustness check was carried out on the subsample without individuals for which the increase in the number of grandchildren between two waves was higher than 1.

Third, we estimate the effect of grandchild care provision (Model 3). As for Model 2, we select individuals who entered the survey as grandparents. Drawing on the respondents' answers to the questions on provision of grandchild care (yes or no) and its frequency (almost daily, almost every week, almost every month, less often), we distinguish between engagement in *intensive grandchild care* (at least on a weekly basis), engagement in *not-intensive grandchild care* (less often than weekly), and *no provision of grandchild care* (reference category). Because it is possible that the transition from no care to provision of grandchild care is due to the birth of a(n additional) grandchild during the observation period, this model controls for the number of grandchildren in order to disentangle the effects of increasing the number of grandchildren and of providing grandchild care. Nonetheless, a robustness check keeps only grandparents for whom the number of grandchildren did not change over the observation period to avoid mixing these two effects.

In order to explore whether the effects of the grandparenthood-related variables change by country, we estimate a second set of models adding the interactions between the country dummies and the explanatory variables. In these models we could not consider Luxembourg and Portugal because of their very small sample sizes. Therefore, these models are based on 16 countries.

All multivariate analyses control for a set of variables that previous studies have found to be associated with older people's health and/or our explanatory variables of interest (e.g., Bordone/Arpino 2016; Di Gessa et al. 2016). Socio-demographic control variables include: age and its square; total net household income (a relative measure obtained transforming the information on net household income in ranks occupied within the country); marital status (living with partner (married or not) – reference –, never married, divorced, widowed); employment status (working, retired – reference –, other). We also control for two measures of health. First, we consider information on diagnosed conditions reported in response to the question "Has a doctor ever told you that you had any of the following conditions: Hypertension, diabetes, cancer, lung disease, heart disease, stroke and arthritis?" Our analyses include a dummy variable indicating whether the respondent reported at least one of these conditions. Second, we include a binary variable measuring global activity limitations (GALI), that takes value 1 for respondents who declared to be "limited, but not severely" or "severely limited" because of health problems in the activities people usually do (= 0 for respondents reporting not to be limited). In Model 3, where we estimate the effect of grandchild care provision, we also control for number of grandchildren. Given that fixed-effects models exploit only within-individual variations, we do not adjust for education, number of children, type of area of residence, and other variables that are (almost perfectly) time-invariant in our sample. These variables would be dropped from fixed-effects models. All analyses are run separately by gender.

Results

Descriptives

Table 1 shows descriptive statistics on the full sample by gender. These, in line with existing knowledge, confirm that, on average, women report a higher number of depressive symptoms (2.73) than men (1.87). Women also report a higher number of diagnosed conditions and are more likely to report activity limitations than men. The percentage of widows is higher than that of widowers.

The summary statistics of the explanatory variables are calculated on the relevant sample, as selected for each analysis. For these variables we also report descriptive statistics on transitions occurring during the observation period. These transitions are the key source of variability used in the fixed-effects models. Table 2 shows that among respondents joining our sample as grandchildless, 23.8% of women and 23.1% of men experienced the transition to grandparenthood over the observation period. Among those who, instead, entered the sample already as grandparents, 82.5% of women and 85.2% of men faced an increase in their grandchildren's number. With respect to the provision of grandchild care, we calculated the percentage of grandparents that started providing grandchild care. Among both grandmothers and grandfathers who at a given point in time where not doing grandchild care, about 11% faced the transition to not intensive grandchild care and 9% to intensive caregiving over the observation period.

Fixed-effects models estimates

Table 3 presents the estimates for the models described above, that differ in the explanatory variable and sample of interest. These models are run on the pooled sample of countries, separately for women and men. Results from Model 1 show that women who become grandmothers benefit from a significant reduction in depressive symptoms. The results are similar for men, but the coefficient is much smaller and not statistically significant. As mentioned above, the effect estimated in Model 1 might not be, strictly speaking, the effect of having the first grandchild as more grandchildren could be born between two interviews. As a robustness check, Model A1 in Table A1 in the appendix reports the results from the same model estimated on the sample where those individuals who became grandparents to more than one grandchild during the observation period are excluded. Coefficients and standard errors remained virtually unchanged.

Model 2 in Table 3 reports the estimated effect of an increase in the number of grandchildren on depression for those individuals who entered the survey already as grandparents. In this case, the effect is not statistically significant for gender. The robustness check in Table A1, excluding individuals who experienced the birth of more grandchildren between two waves, gave the same results (Model A2).

Model 3 in Table 3 is run, as Model 2, on the subsample of individuals who were grandparents at the baseline wave, but here we also exclude missing observations on the grandchild care variable. The effects of intensive and not intensive grandchild care are reported in reference to no care. The estimated coefficients are very small and not statisti-

cally significant for both women and men, indicating that changes in grandchild care provision do not influence changes in depression symptoms. The results are very similar to those of Model A3 in Table A1, where only grandparents for whom the number of grandchildren did not change over the observation period were retained (i.e., where we aimed at excluding an effect due to a change in the number of grandchildren).

Table 3: Fixed-effects models for the effect of becoming a grandparent (Model 1), having additional grandchildren (Model 2), and providing grandchild care (Model 3) on depressive symptoms, by gender

Independent variables	Model 1		Model 2		Model 3	
	Women	Men	Women	Men	Women	Men
Becoming a grandparent	-0.15**	-0.03				
	(0.07)	(0.06)				
Additional grandchildren			-0.03	-0.04		
			(0.03)	(0.03)		
Grandchild care (Ref.: No care)						
Not intensive care					0.04	0.04
					(0.03)	(0.03)
Intensive care					0.02	0.01
					(0.03)	(0.04)
Age	-0.13	-0.30***	-0.22***	-0.26***	-0.22***	-0.22***
	(0.08)	(0.07)	(0.04)	(0.05)	(0.03)	(0.04)
Age squared	0.00*	0.00***	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Income rank	0.02	-0.07	-0.07	-0.01	-0.04	0.02
	(0.10)	(0.09)	(0.07)	(0.07)	(0.05)	(0.05)
Marital status (Ref.: Living with partner)						
Never married	0.03	0.27	0.02	-0.52	0.70*	-0.46
	(0.69)	(0.52)	(0.48)	(0.38)	(0.41)	(0.43)
Divorced	0.11	0.48*	0.20	-0.22	0.36**	-0.18
	(0.32)	(0.26)	(0.23)	(0.23)	(0.17)	(0.19)
Widowed	0.76***	0.66***	0.74***	0.88***	0.65***	0.79***
	(0.20)	(0.25)	(0.10)	(0.13)	(0.06)	(0.09)
Working status (Ref.: Retired)						
Working	-0.10	0.13*	0.00	0.02	-0.04	0.02
	(0.09)	(0.07)	(0.07)	(0.06)	(0.05)	(0.05)
Other	0.04	0.32***	0.19***	0.20***	0.11***	0.18***
	(0.09)	(0.10)	(0.06)	(0.07)	(0.04)	(0.06)
Diagnosed conditions	0.20***	0.24***	0.38***	0.26***	0.27***	0.16***
	(0.06)	(0.05)	(0.04)	(0.04)	(0.03)	(0.03)
GALI[1]	0.57***	0.39***	0.50***	0.45***	0.41***	0.45***
	(0.06)	(0.05)	(0.04)	(0.04)	(0.03)	(0.03)
N. grandchildren					0.01	-0.00
					(0.01)	(0.01)
Constant	5.95**	9.74***	9.29***	9.31***	9.52***	8.39***
	(2.48)	(2.12)	(1.45)	(1.62)	(0.98)	(1.23)
N individuals	10,488	10,060	24,378	17,693	22,077	14,941
N individuals x waves	16,262	15,609	37,994	28,297	53,474	32,924

Note: Estimated coefficients and standard errors (in parentheses) are reported. 1. GALI = Global Activity Limitation Indicator. Significance level: *** p<0.01; ** p<0.05; * p<0.1.

The previous findings seem to indicate null effects of grandparenthood-related variables on depression for both genders. The only exception is found for the transition to grandparenthood for women that is significantly associated with a reduction in depressive

symptoms. The magnitude of the effect in this case (-0.15) is also not negligible, considering the mean and standard deviation of the outcome variable (Table 1) and also the effect of other variables such as diagnosed conditions (-0.20). We have also re-estimated the previous models (including the robustness checks) pooling the samples of women and men and adding interactions with gender. These models (available on request) confirmed the statistically significant difference in the effect of the transition to grandparenthood for women and men ($p < 0.01$) and the absence of statistically significant differences by gender in the effect of number of grandchildren and grandchild care (null for both genders).

It is however important to note that the previous findings are overall average findings obtained on the whole sample of countries and they can mask important country variation that we explore in the following section.

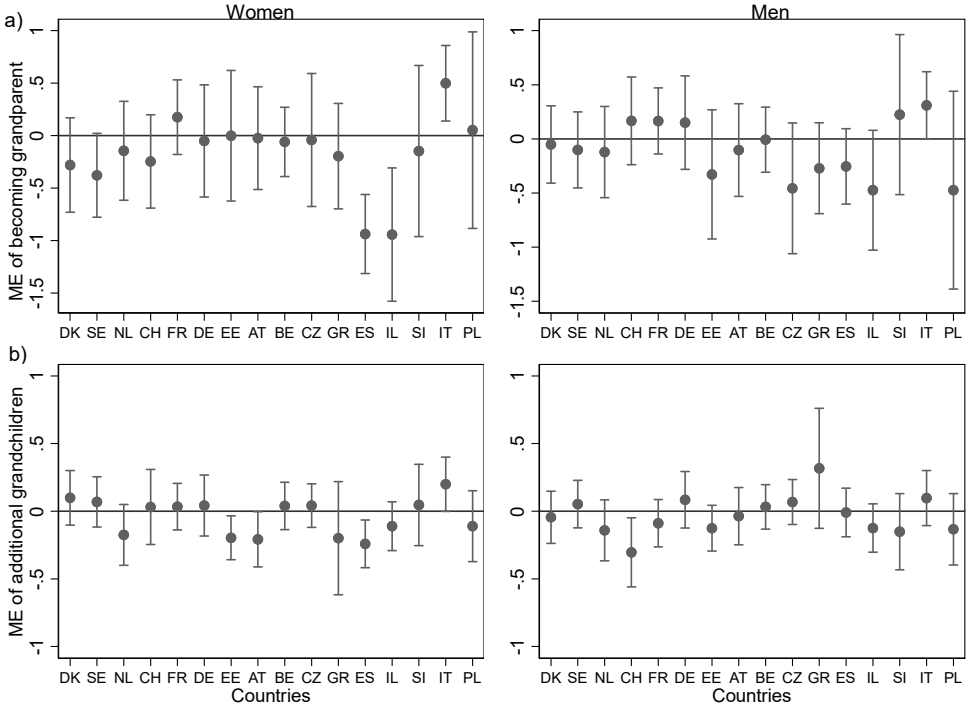
Cross-country variability

Country variation in the effect of grandparenthood was examined by re-running previous analyses with the addition of interactions between country dummies and the explanatory variables. As noticed above, in this set of analyses we had to drop Luxembourg and Portugal because of small sample sizes. As the number of countries and of the corresponding interactions (16) is too large to be interpreted directly in the regression results, we ease their interpretation by plotting the relevant marginal effect for each model by gender and country. That is, we plot the predicted change in depressive symptoms that corresponds to a change in the explanatory variables.

The marginal effects shown in the top panels of Figure 1 (Figure 1a) refer to the transition to grandparenthood (Model 1); while those in the bottom panels (Figure 1b) refer to the transition to additional grandchildren (Model 2). Countries are displayed in ascending order of the percentage of intensive grandchild care (descriptives on this variable are reported in Table A.2 in the appendix). As the variation in the explanatory variables in the country samples is not too large, we interpret the results that are statistically significant at 5% (i.e., $p < 0.05$), but we also mention those significant at 10% (i.e., $p < 0.10$).

Figure 1a shows that the effect of the transition to grandmotherhood found in Model 1 of Table 3 on the pooled sample does not apply to all countries. The estimated marginal effect is not statistically significant in most countries. The marginal effect shows statistically significantly lower depression symptoms associated with grandmotherhood in Spain and Israel (at the 5%) as well as in Sweden and Denmark (at 10%). Thus, women who became grandmothers over the observation period in these countries experienced, on average, a reduction in depressive symptoms. The contrary holds for Italy, which is the only country where the transition to grandmotherhood increased, on average, women's depressive symptoms. No marginal effects are statistically significant at 5% level in the analysis of grandfatherhood. Yet, consistently with what found for women, also Italian men who made the transition to grandparenthood experienced, on average, a statistically significant increase in depressive symptoms (at 10%).

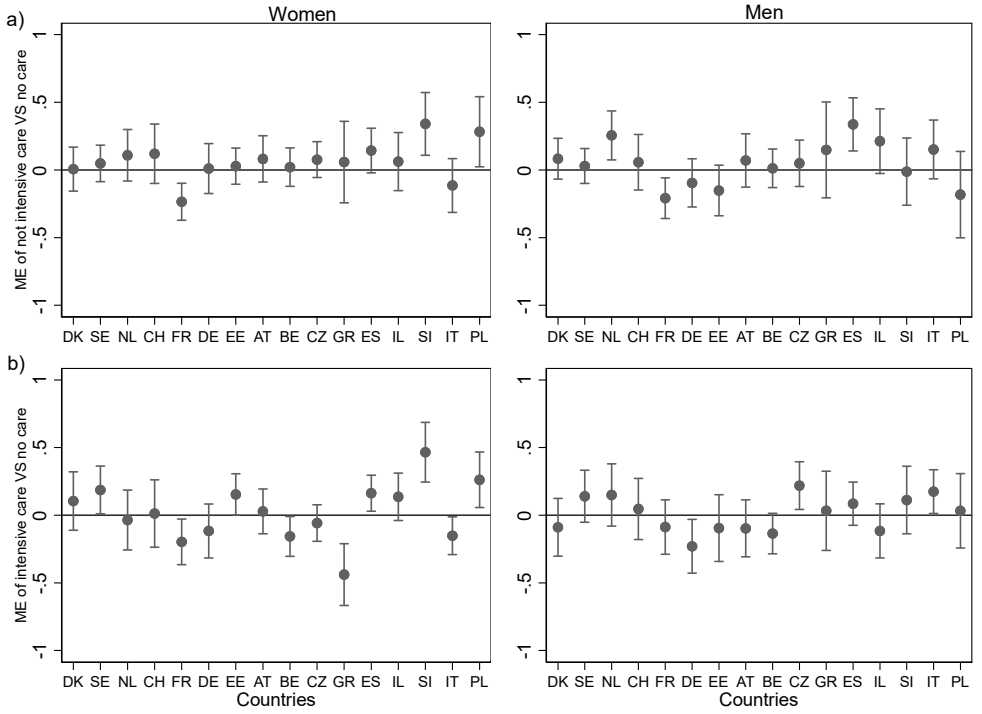
Figure 1: Marginal effects (ME) from fixed-effects models for the effect of a) becoming a grandparent and b) having additional grandchildren on depressive symptoms, by gender and country.



Note: Countries are in ascending order by the proportion of grandparents involved in intensive grandchild care. Marginal effects and 95% confidence intervals are obtained from models similar to Models 1 and 2 in Table 2 with the addition of interactions between the explanatory variables and the country dummies. All control variables are included as in Table 2.

Figure 1b shows that the marginal effects of having additional grandchildren tend to be even smaller than those for the transition to grandparenthood, for all countries and both genders. Having additional grandchildren significantly reduces the symptoms of depression in Spain, Estonia (at 5%) and Austria (at 10%) for women and in Switzerland (at 5%) for men. The only country where a statistically significant (at 10%) effect points to an increase in depressive symptoms for an increase in number of grandchildren is again Italy, where grandmothers who experience the transition to additional grandchildren face increasing depressive symptoms.

Figure 2: Marginal effects (ME) from fixed-effects models for the effect of a) providing not intensive or b) intensive grandchild care compared to not providing grandchild care on depressive symptoms, by gender and country.



Note: Countries are in ascending order by the proportion of grandparents involved in intensive grandchild care. Marginal effects and 95% confidence intervals are obtained from models similar to Model 3 in Table 2 with the addition of interactions between the explanatory variable and the country dummies. All control variables are included as in Table 2.

Figure 2 presents, by country, the effect on changes in depressive symptoms of provision of not intensive grandchild care (top panels, Figure 1a) and of intensive grandchild care (bottom panels, Figure 1b), compared to having grandchildren but not providing care to any of them (Model 3). While not intensive grandchild care is associated with a reduction in depressive symptoms for both women and men in France (at 5%), it has an opposite effect in several other countries (for women, in Slovenia and Poland, both at 5% and in Spain, at 10%; for men, in the Netherlands, Spain, Israel, and Italy, at 10% in the two latter cases). The marginal effect of intensive grandchild care is the one that most frequently results in being statistically significant, especially for women. In several countries we found that increasing provision of grandchild care to intensive level increases depression among women (in Poland, Slovenia, Israel, Spain, Estonia, and Sweden). Yet, the opposite is true in Italy, Greece, Belgium, and France. Intensive provision of grandchild care on the side of grandfathers reduces their depression in Belgium and Germany and increases it in Italy and Czech Republic (all at 5%).

Discussion

In times of increasing longevity and decreasing fertility, research on how to maintain mental health in later life becomes central. This study focused on the increasing opportunity that demographic change has created for the grandparental role and, drawing on previous literature suggesting mixed results on its effects for grandparents, we investigated the impact of grandparenthood on older people's depressive symptoms. In doing so, we added to the literature in at least three ways: by accounting for the multidimensionality of the concept of grandparenthood, by exploring the contextual variation, and, from a methodological point of view, by using fixed-effects panel models that allowed us to study within-individual variation while accounting for observed and unobserved time-constant variables. Furthermore, we considered possible gender differences.

The findings from our fixed-effects analyses showed that, in general, grandparenthood does not affect grandparents' depressive symptoms. This holds especially for its components of having additional grandchildren and provision of (intensive or not intensive) grandchild care. While this seems to contradict earlier literature from the USA, it is in line with recent European studies (e.g., Di Gessa et al. 2016). One explanation for this finding may refer to the methodological approach that we use, i.e., fixed-effects models. Indeed, Ates (2017) showed that a positive effect of grandchild care on self-rated health found using a random effects model, turned to be not statistically significant in fixed-effects models. This suggests that studies that did not focus on within-person variations, but rather on between-person variations, might have overestimated the effect of grandchild care. The fact that fixed-effects models show non-significant results may be due to the presence of some time-invariant unobserved factors, such as family values or personality traits that may be positively associated with both health and the likelihood of providing care.

There is an interesting gender difference in the effect of grandparenthood *per se* in which becoming a grandmother brings together a reduction in depressive symptoms. As mentioned above, this might be due to the gendered tasks, responsibilities, and expectations traditionally associated with grandparenthood (Kaufman/Elder 2003; Stelle et al. 2010; Winefield/Air 2010). However, it should be noted that such gender gap in the division of labour varies across Europe (Leopold/Skopek 2014). Indeed, once we explored the effects of grandparenthood *per se* on depressive symptoms in a cross-country comparative way, we found contrasting results. This holds also for the effect of having additional grandchildren, which, however, tends to be smaller than that of the transition to grandparenthood, most likely because becoming a grandparent is a much more salient transition in a person's life course than the birth of the second or third grandchild.

We did not find a clear grandparenthood-related country pattern of depression in later life. However, we identified important differences across countries and our results point to the importance of considering contextual influences on the consequences of grandparenthood. An interesting avenue for future studies is to examine how specific policy and cultural contextual factors at the country (but also at the regional) level may moderate the effect of grandparenthood and grandchild care.

In line with the findings of Arpino et al. (2018) of higher subjective wellbeing in Europe for grandparents in Scandinavian countries, we found lower depression symptoms

associated with the transition to grandmotherhood in Sweden and Denmark. Yet, our study points to the need of further investigating and comparing different countries and childcare provision in future research with a higher degree of details to explain surprising findings. For example, our results on two (apparently) similar countries in terms of grandchild care provision as well as in welfare systems, such as Italy and Spain, showed opposite effects of the transition to grandparenthood of either first or higher orders. While becoming a grandmother and having additional grandchildren in Spain is associated with a decrease in depressive symptoms, becoming a grandparent to the first or to additional grandchildren in Italy tends to increase depressive symptoms.

Our findings about differences between Italy and Spain, two countries that are commonly considered as very similar to each other, call for deeper comparative analyses on these contexts. Using data from the European Values Study, Arpino and Tavares (2013) found substantial differences between Italy and Spain in a bunch of attitudinal items, with Spaniards reporting less often "traditional" attitudes than Italians. Our findings vis-à-vis Arpino and Tavares' (2013) results suggest that similarities and differences between countries that are usually grouped together in the same cluster would need to be further investigated.

The effects found for not intensive and intensive grandchild care hint to the need to collect information on whether the caregiving role of grandparents is wished and therefore a voluntary engagement or somehow imposed either by the needs of childcare not satisfied by scarce/expensive public services or by peculiar (negative) events experienced for example by the grandchild's parents. In fact, grandparents engaging in grandchild care face a decrease in depressive symptoms in France, where the welfare system is quite family oriented and intensive grandchild care provision is not much common. There, the ambivalence theory would suggest an increase of depression for grandparents engaging in grandchild care. Yet, we may think that doing grandchild care in a context where grandparents are one of the many available childcare options might be a matter of choice (of parents and grandparents). On the contrary, we find that grandmothers' engagement in grandchild care increases depression symptomatology in Eastern European countries, where public childcare is less available while female labour market participation tends to be relatively high (see also Bordone et al. 2017). This suggests that grandparental childcare as an answer to (unsatisfied) needs might have detrimental effects. These considerations further hint to the importance of accounting for both cultural and policy-related contextual influences when analysing the effect of caregiving on caregivers' health.

We recognise that there still is a need to add knowledge on how exactly context matters in moderating the effect of grandparenthood on grandparents' mental health, especially in respect to apparently contradictory results, but we believe that this study allowed us to go further in this direction.

We also acknowledge some limitations of our study. First, once looking at country-specific analyses, the variation in the explanatory variables might be limited and this might also hide possible significant effects. Second, we should bear in mind the inability of fixed-effects analysis to account for reverse causality, i.e. the possibility that the estimated associations are biased because of changes in the outcome influencing changes in the independent variables. This issue may be particularly relevant for the estimated association between grandchild care and depression because grandparents who experience an increase of depressive symptoms may be less likely to (be asked to) look after their grandchildren.

We can however gain from this research by considering it as the base for future studies. In particular, our results highlight that the heterogeneity across countries within Europe is a relevant factor in shaping the effects of becoming a grandparent, having additional grandchildren, and engaging in grandchild care on older people's mental health, partly depending on the context where grandparents are embedded, including norms, values, needs, and opportunities for older people as well as for their children and grandchildren. Unfortunately, often the country-specific samples of surveys on older people are not big enough to carry out country comparative analyses and researchers cope with this issue by clustering countries in macro regions similar in e.g., welfare provisions. Future studies might be able to explore specific country comparisons by relying on bigger and richer data. As mentioned by Hank and colleagues (2018) while reviewing what has been achieved so far and which lessons we can learn for the future of research on intergenerational relationships, additional struggles of this field of research relate to the need to ask more refined substantive questions about the subjective aspects of grandparenthood and of grandparent identity; but also to give grandparenthood and grandchild care adequate attention in the sample design of surveys on older populations in order to allow quantitative approaches to the study of specific (smaller) subpopulations, such as those facing transitions to grandparenthood or changing the intensity of grandchild care. Finally, other than a better understanding of the heterogeneity of grandparenthood/grandchild care effects across countries, more research should be also devoted to analyse the possible moderating role of individual characteristics such as education (Arpino et al. 2018).

Important steps forward in the study of grandparenthood and its effects were done in this work by exploring separately the effects of multiple dimensions of grandparenthood on older people's depressive symptoms and, methodologically, by using longitudinal methods of analyses that rely on within-person variation. This latter is important because it allowed us to rule out the influence of time-invariant unobserved factors.

The positive message that can be taken from our study is that in general there is no negative effect of grandparenthood and related activities on grandparents' depression and when a statistically significant effect was found (transition to grandparenthood for women) it actually implied a reduction in depressive symptoms. These results are important in the light of a growing number of older people involved in grandchild care activities. Overall, this involvement does not seem to negatively impact on grandparents' mental health. Given that other studies have found positive effects of grandchild care on other dimensions of health and healthy behaviours, our findings would reinforce the idea of considering grandchild care as an activity that may help older people to remain physically and cognitively engaged without being detrimental for their mental wellbeing.

References

Arpino, B. & Bordone, V. (2014). Does grandparenting pay off? The effect of child care on grandparents' cognitive functioning. *Journal of Marriage and Family, 76, 2*, pp. 337-351. doi:10.1111/jomf.12096.

Arpino, B., Bordone, V. & Balbo, N. (2018). Grandparenting, education and subjective well-being of older Europeans. *European Journal of Ageing, 15, 3*, pp. 251-263. doi:10.1007/s10433-018-0467-2.

Arpino, B., & Tavares, L. P. (2013). Fertility and values in Italy and Spain: A look at regional differences within the European context. *Population Review, 52, 1*, pp. 62-86. doi:10.1353/prv.2013.0004.

Arpino, B. & Solé-Auró, A. (2019). Education inequalities in health among older European men and women: The role of active aging. *Journal of Aging and Health, 31, 1*, pp. 185-208. doi:10.1177/0898264317726390.

Ates, M. (2017). Does grandchild care influence grandparents' self-rated health? Evidence from a fixed effects approach. *Social Science & Medicine, 190*, pp. 67-74. doi:10.1016/j.socscimed.2017.08.021.

Barak, B. & Gould, S. (1985). Alternative age measures: A research agenda. In: Hirschman, E. C. & Holbrook, M. B. (Eds.), *NA – Advances in Consumer Research*. Provo, UT: Association for Consumer Research, pp. 53-58.

Blazer, D. G. (2003). Depression in later life: review and commentary. *The Journals of Gerontology: Series A, 58, 3*, pp. M249-M265. doi:10.1093/gerona/58.3.M249.

Blustein, J., Chan, S. & Guanais, F. C. (2004). Elevated depressive symptoms among caregiving grandparents. *Health Services Research, 39, 6pt1*, pp. 1671-1690. doi:10.1111/j.1475-6773.2004.00312.x.

Bordone, V. (2009). Contact and proximity of older people to their adult children: A comparison between Italy and Sweden. *Population, Space and Place, 15, 4*, pp. 359-380. doi:10.1002/psp.559

Bordone, V. & Arpino, B. (2016). Do grandchildren influence how old you feel? *Journal of Aging and Health, 28, 6*, pp. 1055-1072. doi:10.1177/0898264315618920.

Bordone, V., Arpino, B. & Aassve, A. (2017). Patterns of grandparental child care across Europe: the role of the policy context and working mothers' need. *Ageing & Society, 37, 4*, pp. 845-873. doi:10.1017/S0144686X1600009X.

Börsch-Supan, A. (2017a). Survey of Health, Ageing and Retirement in Europe (SHARE) Wave 2. Release version: 6.0.0. SHARE-ERIC. Data set.

Börsch-Supan, A. (2017b). Survey of Health, Ageing and Retirement in Europe (SHARE) Wave 4. Release version: 6.0.0. SHARE-ERIC. Data set.

Börsch-Supan, A. (2017c). Survey of Health, Ageing and Retirement in Europe (SHARE) Wave 5. Release version: 6.0.0. SHARE-ERIC. Data set.

Börsch-Supan, A. (2017d). Survey of Health, Ageing and Retirement in Europe (SHARE) Wave 6. Release version: 6.0.0. SHARE-ERIC. Data set.

Börsch-Supan, A., Brandt, M., Hunkler, C., Kneip, T., Korbmacher, J., Malter, F., Schaan, B., Stuck, S. & Zuber, S. (2013). Data resource profile: The Survey of Health, Ageing and Retirement in Europe (SHARE). *International Journal of Epidemiology, 42, 4*, pp. 992-1001. doi:10.1093/ije/dyt088.

Brunello, G., & Rocco, L. (2019). Grandparents in the blues. The effect of childcare on grandparents' depression. *Review of Economics of the Household, 17, 2*, pp. 587-613. doi:10.1007/s11150-018-9432-2.

Christiansen, S. G. (2014). The association between grandparenthood and mortality. *Social Science & Medicine, 118*, pp. 89-96. doi:10.1016/j.socscimed.2014.07.061

Chung, S. & Park, A. (2018). The longitudinal effects of grandchild care on depressive symptoms and physical health of grandmothers in South Korea: a latent growth approach. *Aging & Mental Health, 22, 12*, pp. 1556-1563. doi:10.1080/13607863.2017.1376312.

Coall, D. A. & Hertwig, R. (2011). Grandparental investment: A relic of the past or a resource for the future? *Current Directions in Psychological Science, 20, 2*, pp. 93-98. doi:10.1177/0963721411403269.

Condon, J., Luszcz, M. & McKee, I. (2018). The transition to grandparenthood: a prospective study of mental health implications. *Aging & Mental Health, 22, 3*, pp. 336-343. doi:10.1080/13607863.2016.1248897.

Crimmins, E. M., Kim, J. K. & Solé-Auró, A. (2011). Gender differences in health: results from SHARE, ELSA and HRS. *The European Journal of Public Health, 21, 1*, pp. 81-91. doi:10.1093/eurpub/ckq022.

Dalgard, O. S., Bjork, S. & Tambs, K. (1995). Social support, negative life events and mental health. *The British Journal of Psychiatry, 166, 1*, pp. 29-34. doi:10.1192/bjp.166.1.29.

Danielsbacka, M. & Tanskanen, A. O. (2016). The association between grandparental investment and grandparents' happiness in Finland. *Personal Relationships, 23, 4*, pp. 787-800. doi:10.1111/pere.12160.

Di Gessa, G., Glaser, K. & Tinker, A. (2016). The health impact of intensive and nonintensive grandchild care in Europe: New evidence from SHARE. *The Journals of Gerontology: Series B, 71, 5*, pp. 867-879. doi:10.1093/geronb/gbv055.

Ferrari, A. J., Charlson, F. J., Norman, R. E., Patten, S. B., Freedman, G., Murray, C. J. L., Vos, T. & Whiteford, H. A. (2013). Burden of depressive disorders by country, sex, age, and year: findings from the global burden of disease study 2010. *PLoS Medicine, 10, 11*, pp. e1001547. doi:10.1371/journal.pmed.1001547.

Fujiwara, T. & Lee, C. K. (2008). The impact of altruistic behaviours for children and grandchildren on major depression among parents and grandparents in the United States: A prospective study. *Journal of Affective Disorders, 107*, pp. 29-36. doi:/10.1016/j.jad.2007.08.016.

Fuller-Thomson, E. & Minkler, M. (2001). American grandparents providing extensive child care to their grandchildren: Prevalence and profile. *The Gerontologist, 41, 2*, pp. 201-209. doi:10.1093/geront/41.2.201.

Gallagher D., Savva G., Kenny R. & Lawlor B. A. (2012). What predicts persistent depression in older adults across Europe? Utility of clinical and neuropsychological predictors from the SHARE study. *Journal of Affective Disorders, 147, 1*, pp. 192-197. doi:10.1016/j.jad.2012.10.037.

Grinstead, L. N., Leder, S., Jensen, S. & Bond, L. (2003). Review of research on the health of caregiving grandparents. *Journal of Advanced Nursing, 44, 3*, pp. 318-326. doi:10.1046/j.1365-2648.2003.02807.x.

Grundy, E. M., Albala, C., Allen, E., Dangour, A. D., Elbourne, D. & Uauy, R. (2012). Grandparenting and psychosocial health among older Chileans: A longitudinal analysis. *Aging & Mental Health, 16, 8*, pp. 1047-1057. doi:10.1080/13607863.2012.692766.

Hank, K. & Buber, I. (2009). Grandparents caring for their grandchildren: Findings from the 2004 Survey of Health, Ageing, and Retirement in Europe. *Journal of Family Issues, 30, 1*, pp. 53-73. doi:10.1177/0192513X08322627.

Hank, K., Cavrini, G., Di Gessa, G. & Tomassini, C. (2018). What do we know about grandparents? Insights from current quantitative data and identification of future data needs. *European Journal of Ageing, 15, 3*, pp. 225-235. doi:10.1007/s10433-018-0468-1.

Hayslip, B. & Kaminski, P. L. (2005). Grandparents raising their grandchildren: A review of the literature and suggestions for practice. *Gerontologist, 45, 2*, pp. 262-269. doi:10.1093/geront/45.2.262.

Hughes, M. E., Waite, L. J., LaPierre, T. A. & Luo, Y. (2007). All in the family: the impact of caring for grandchildren on grandparents' health. *The Journals of Gerontology: Series B, 62, 2*, pp. S108-119. doi:10.1093/geronb/62.2.s108.

Jappens, M., & Van Bavel, J. (2012). Regional family norms and child care by grandparents in Europe. *Demographic research, 27, 4*, pp. 85-120. doi:10.4054/DemRes.2012.27.4.

Jendrek, M. P. (1993). Grandparents who parent their grandchildren – Effects on lifestyle. *Journal of Marriage and the Family, 55, 3*, pp. 609-621. doi:10.2307/353342.

Kaufman, G. & Elder, G. H. (2003). Grandparenting and age identity. *Journal of Aging Studies, 17, 3*, pp. 269-282. doi:10.1016/S0890-4065(03)00030-6.

Kok, R., Avendano, M., Bago d'Uva, T. & Mackenbach, J. (2012). Can reporting heterogeneity explain differences in depressive symptoms across Europe? *Social Indicators Research, 105, 2*, pp. 191-210. doi:10.1007/s11205-011-9877-7.

Ku, L.-J. E., Stearns, S. C., Houtven, V., H, C., Lee, S.-Y. D., Dilworth-Anderson, P. & Konrad, T. R. (2013). Impact of caring for grandchildren on the health of grandparents in Taiwan. *The Journals of Gerontology: Series B, 68, 6*, pp. 1009-1021. doi:10.1093/geronb/gbt090.

Kuo, S. Y., Lin, K. M., Chen, C. Y., Chuang, Y. L., & Chen, W. J. (2011). Depression trajectories and obesity among the elderly in Taiwan. *Psychological medicine, 41, 8*, pp. 1665-1676. doi:10.1017/S0033291710002473.

Leopold, T. & Skopek, J. (2014). Gender and the division of labor in older couples: How European grandparents share market work and childcare. *Social Forces, 93, 1*, pp. 63-91. doi: 10.1093/sf/sou061.

Leopold, T. & Skopek, J. (2015). The demography of grandparenthood: An international profile. *Social Forces, 94, 2*, pp. 801-832. doi: 10.1093/sf/sov066.

Margolis, R. (2016). The changing demography of grandparenthood. *Journal of Marriage and Family, 78, 3*, pp. 610-622. doi: 10.1111/jomf.12286.

McCabe, C. J., Thomas, K. J., Brazier, J. E. & Coleman, P. (1996). Measuring the mental health status of a population: a comparison of the GHQ-12 and the SF-36 (MHI-5). The *British Journal of Psychiatry, 169, 4*, pp. 517-521.

Minkler, M. & Fuller-Thomson, E. (1999). The health of grandparents raising grandchildren: results of a national study. *American Journal of Public Health, 89, 9*, pp. 1384-1389. doi: 10.2105/AJPH.89.9.1384.

Minkler, M., Fuller-Thomson, E., Miller, D. & Driver, D. (1997). Depression in grandparents raising grandchildren: results of a national longitudinal study. *Archives of Family Medicine, 6, 5*, pp. 445-452.

Moussavi, S., Chatterji, S., Verdes, E., Tandon, A., Patel, V., & Ustun, B. (2007). Depression, chronic diseases, and decrements in health: results from the World Health Surveys. *The Lancet, 370, 9590*, 851-858. doi: 10.1016/S0140-6736(07)61415-9.

Musil, C. M., Jeanblanc, A. B., Burant, C. J., Zauszniewski, J. A. & Warner, C. B. (2013). Longitudinal analysis of resourcefulness, family strain, and depressive symptoms in grandmother caregivers. *Nursing Outlook, 61, 4*, pp. 225-234.e2. doi: 10.1016/j.outlook.2013.04.009.

Musil, C., Warner, C., Zauszniewski, J., Wykle, M. & Standing, T. (2009). Grandmother caregiving, family stress and strain, and depressive symptoms. *Western Journal of Nursing Research, 31, 3*, pp. 389-408. doi: 10.1177/0193945908328262.

Neuberger, F. S. & Haberkern, K. (2014). Structured ambivalence in grandchild care and the quality of life among European grandparents. *European Journal of Ageing, 11, 2*, pp. 171-181. doi: 10.1007/s10433-013-0294-4.

Price, D., Glaser, K., Ginn, J. & Nicholls, M. (2016). How important are state transfers for reducing poverty rates in later life? *Ageing & Society, 36, 9*, pp.1794-1825. doi: 10.1017/S0144686X15000690.

Prince, M. J., Reischies, F., Beekman, A. T., Fuhrer, R., Jonker, C., Kivela, S. L., Lawlor, B. A., Lobo, A., Magnusson, H., Fichter, M., van Oyen, H., Roelands, M., Skoog, I., Turrina, C. & Copeland, J. R. (1999). Development of the EURO-D scale – a European Union initiative to compare symptoms of depression in 14 European centres. *The British Journal of Psychiatry: The Journal of Mental Science*, 174, pp. 330-338.

Reitzes, D. C. & Mutran, E. J. (2004). Grandparenthood: Factors influencing frequency of grandparent–grandchildren contact and grandparent role satisfaction. *The Journal of Gerontology, Series B: Psychological Sciences & Social Sciences, 59, 1*, pp. S9-S16. doi: 10.1093/geronb/59.1.S9.

Saraceno, C. & Keck, W. (2010). Can we identify intergenerational policy regimes in Europe? *European Societies, 12, 5*, pp. 675-696. doi: 10.1080/14616696.2010.483006.

Silverstein, M., Giarrusso, R. & Bengtson, V. L. (1998). Intergenerational solidarity and the grandparent role. In: Szinovacz, M. E. (ed), *Handbook on grandparenthood*. Westport, CT: Greenwood Press, pp. 144-158.

Stelle, C., Fruhauf, C. A., Orel, N. & Landry-Meyer, L. (2010). Grandparenting in the 21st century: issues of diversity in grandparent-grandchild relationships. *Journal of Gerontological Social Work, 53, 8*, pp. 682-701. doi: 10.1080/01634372.2010.516804.

Szinovacz, M. E., DeViney, S. & Atkinson, M. P. (1999). Effects of surrogate parenting on grandparents' well-being. *The Journals of Gerontology: Series B*, 54, 6, pp. S376-S388. doi: 10.1093/geronb/54b.6.s376.

Ustün, T. B., Ayuso-Mateos, J. L., Chatterji, S., Mathers, C. & Murray, J. L. (2004). Global burden of depressive disorders in the year 2000. *British Journal of Psychiatry*, 184, pp. 386-392.

Waldrop, D. & Weber, J. (2001). From grandparent to caregiver: The stress and satisfaction of raising grandchildren. *Families in Society: The Journal of Contemporary Social Services, 82, 5*, pp. 461-472. doi: 10.1606/1044-3894.177.

Whitley, D. M., Kelley, S. J. & Lamis, D. A. (2016). Depression, social support, and mental health: A longitudinal mediation analysis in African American custodial grandmothers. *The International Journal of Aging and Human Development, 82, 2-3*, pp. 166-187. doi: 10.1177/0091415015626550.

WHO (2002). Active ageing: a policy framework. Geneva: WHO.

Winefield, H. & Air, T. (2010). Grandparenting: diversity in grandparent experiences and needs for healthcare and support. *International Journal of Evidence-Based Healthcare, 8, 4*, pp. 277-283.

Zaidi, A., Gasior, K., Hofmarcher, M. M., Lelkes, O. et al. (2013). *Active ageing index 2012: Concept, methodology and final results*. Vienna, Austria: European Centre for Social Welfare Policy and Research.

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Appendix

Table A1: Linear fixed-effects models for the effect of becoming a grandparent (Model A1), having an additional grandchild (Model A2), and providing grandchild care (Model A3) on depressive symptoms (different specifications or selections compared to models in Table 3 in the text)

Independent variables	Model A1		Model A2		Model A3	
	Women	Men	Women	Men	Women	Men
Becoming a grandparent	-0.15**	-0.07				
	(0.08)	(0.07)				
Additional grandchild			-0.03	-0.04		
			(0.03)	(0.03)		
Grandchild care (Ref.: No care)						
Not intensive care					0.04	0.05
					(0.04)	(0.04)
Intensive care					0.01	0.02
					(0.04)	(0.04)
Age	-0.09	-0.30***	-0.22***	-0.25***	-0.20***	-0.21***
	(0.08)	(0.07)	(0.04)	(0.05)	(0.03)	(0.04)
Age squared	0.00	0.00***	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Income rank	-0.00	-0.09	-0.06	0.00	-0.00	0.00
	(0.10)	(0.09)	(0.07)	(0.07)	(0.05)	(0.06)
Marital status (Ref.: Living with partner)						
Never married	0.02	0.44	0.20	-0.51	0.44	-0.73
	(0.68)	(0.54)	(0.47)	(0.38)	(0.47)	(0.56)
Divorced	0.15	0.53*	0.21	-0.20	0.46**	-0.33
	(0.32)	(0.27)	(0.23)	(0.23)	(0.21)	(0.25)
Widowed	0.61***	0.50*	0.75***	0.87***	0.64***	0.68***
	(0.20)	(0.26)	(0.10)	(0.13)	(0.07)	(0.10)
Working status (Ref.: Retired)						
Working	-0.07	0.10	0.00	0.02	-0.06	0.02
	(0.10)	(0.08)	(0.07)	(0.06)	(0.06)	(0.06)
Other	0.01	0.31***	0.19***	0.20***	0.08*	0.20***
	(0.10)	(0.10)	(0.06)	(0.07)	(0.04)	(0.07)
Diagnosed conditions	0.17***	0.22***	0.38***	0.27***	0.24***	0.15***
	(0.06)	(0.06)	(0.04)	(0.04)	(0.03)	(0.04)
GALI[1]	0.54***	0.37***	0.50***	0.45***	0.39***	0.48***
	(0.06)	(0.06)	(0.04)	(0.04)	(0.03)	(0.04)
Constant	4.95*	9.71***	9.19***	9.12***	9.06***	7.99***
	(2.58)	(2.22)	(1.44)	(1.61)	(1.10)	(1.45)
N individuals	9125	8775	18033	13095	20720	13047
N individuals x waves	14601	14064	37871	26091	45584	27398

Note: Estimated coefficients and standard errors (in parentheses) are reported. 1. GALI = Global Activity Limitation Indicator. Significance level: *** p<0.01; ** p<0.05; * p<0.1.

Table A2: Percentage of respondents providing grandchild care on a (almost) daily basis, by country.

Country	% daily grandchild care
Denmark	0.9
Sweden	1.2
Netherlands	1.5
Switzerland	2.0
France	4.2
Germany	4.5
Estonia	5.2
Austria	5.4
Belgium	6.9
Czech Republic	7.6
Greece	9.1
Spain	9.3
Israel	9.8
Slovenia	11.6
Italy	13.8
Poland	16.8

Titles, abstracts and key words in German

Titel, Zusammenfassungen und Schlagwörter in deutscher Sprache

S.138-154

Johannes Stauder, Ingmar Rapp & Thomas Klein

Couple relationships and health: The role of the individual's and the partner's education

Paarbeziehungen und Gesundheit: Die Rolle der Bildung des Individuums und seines Partners

Zusammenfassung:
Ein positiver Zusammenhang zwischen Partnerschaft und Gesundheit ist lange bekannt. Neuere Studien zeigen jedoch, dass die Gesundheitseffekte von Paarbeziehungen von den Eigenschaften der Beziehung und den Eigenschaften der Partner abhängen. Der Beitrag untersucht, ob und inwieweit die Einflüsse einer Paarbeziehung auf die physische und die mentale Gesundheit vom Bildungsniveau des Individuums, dem seines Partners und von der Bildungshomogamie abhängen. Mithilfe von Fixed-Effects-Modellen werden Daten des Sozioökonomischen Panels (SOEP, Wellen 2002-2016) analysiert. Die Ergebnisse zeigen, dass ein Partner mit hoher Bildung der mentalen und physischen Gesundheit förderlicher ist als ein Partner mit niedriger Bildung. Die Gesundheitseffekte von Paarbeziehungen sind jedoch unabhängig vom Ausmaß der Bildungshomogamie bzw. -heterogamie. Die Ergebnisse weisen darauf hin, dass die Gesundheitseffekte einer Partnerschaft von den Chancen abhängen, einen hoch gebildeten Partner zu finden. Die bildungsabhängigen Partnerschaftseffekte auf die mentale Gesundheit sind stärker bei Frauen ausgeprägt, bildungsabhängige Partnerschaftseffekte auf die physische Gesundheit finden sich dagegen eher bei Männern.

Schlagwörter: mentale Gesundheit, physische Gesundheit, Paarbeziehung, Partnerschaft, nicht-eheliche Lebensgemeinschaft, Ehe, Bildung, Bildung des Partners, Homogamie, Bildungshomogamie

S. 155-179

Katharina Loter, Oliver Arránz Becker, Małgorzata Mikucka & Christof Wolf

Mental health dynamics around marital dissolution. Moderating effects of parenthood and children's age

Dynamiken mentaler Gesundheit um die eheliche Trennung herum. Der moderierende Einfluss von Elternschaft und Alter der Kinder

Zusammenfassung:
Unsere Studie ist die erste mit dem Ziel, den intraindividuellen Effekt der ehelichen Trennung auf die mentale Gesundheit zu untersuchen, abhängig vom Elternschaftsstatus und dem Alter des jüngsten biologischen Kindes. Wir stützen uns auf die Set-Point-Theorie, die einen nichtlinearen, homöostatischen Selbstregulierungsprozess mit einer Antizipations- und einer anschließenden Erholungsphase prognostiziert. Unter der Annahme von Effektheterogenität erwarten wir, dass sowohl der Elternschaftsstatus als auch das Alter des jüngsten biologischen Kindes – eingeteilt in fünf distinkte Kategorien – die Intensität des Einflusses von ehelicher Trennung auf mentale Gesundheit moderiert. Wir verwenden SOEP-Daten und beschränken unsere Stichprobe auf Frauen und Männer, bei denen innerhalb des Beobachtungszeitraums 2002 bis 2016 das Risiko einer ersten ehelichen Trennung bestand. Die abhängige Variable ist die mentale Gesundheitskomponente des SF-12-Erhebungsinstruments. Wir schätzen Fixed-Effects-Panelregressionsmodelle (mit dummy impact functions), die den Zeitraum von drei (oder mehr) Jahren vor der Trennung bis zu sechs (oder mehr) Jahren danach umfassen. Im Vergleich zur Referenzkategorie (baseline) weisen kinderlose Frauen nach der Trennung eine erhebliche Beeinträchtigung der mentalen Gesundheit auf und erleben eine langsamere Erholung auf das Ausgangsniveau als kinderlose Männer. Unser eindeutigstes Ergebnis ist die negative Antizipation und die darauffolgende nachhaltige Abwärtsentwicklung der mentalen Gesundheit bei Müttern von Säuglingen und Kleinkindern, während wir in der entsprechenden Gruppe von Vätern keine Veränderung im Zeitablauf beobachten. In allen anderen Elterngruppen erfolgt eine Reaktion der mentalen Gesundheit meist kurzfristig um die Trennung herum, mit Ausnahme der Väter von Vor- und Grundschülern, deren mentale Gesundheit unverändert bleibt. Unsere Studie liefert neue Hinweise auf Dynamiken mentaler Gesundheit um die eheliche Trennung herum und schärft das Bewusstsein für psychische Notlagen, Einsamkeit und potenzielle soziale Ausgrenzung von betroffenen Kinderlosen und Eltern, insbesondere von alleinerziehenden Müttern von kleinen Kindern.

Schlagwörter: Dynamiken mentaler Gesundheit; eheliche Trennung; Elternschaft; distributed fixed-effects, SOEP

S. 180-198

Aïda Solé-Auró & Clara Cortina

Exploring the role of family ties on life satisfaction in later life in Europe

Die Rolle familiärer Beziehungen für die Lebenszufriedenheit im Alter in Europa

Zusammenfassung:
Wir analysieren den Zusammenhang von familiären Bindungen und der Lebenszufriedenheit von Menschen im Alter von 50 bis 85 Jahren in 13 europäischen Ländern. Ziel ist die Erforschung der Auswir-

kung von Partnerschaft (derzeit in einer Partnerschaft) und Elternschaft (kinderlos geblieben). Wir verwenden Daten auf individueller Ebene aus der sechsten Welle des Survey of Health, Ageing and Retirement in Europe (SHARE). Die Analysen sind auf Befragte beschränkt, die in einer Partnerschaft leben oder schon einmal verheiratet waren. Wir verwenden eine multivariate Analyse, um den Zusammenhang zwischen Lebenszufriedenheit und familiären Bindungen für Männer und Frauen zu untersuchen. Wir fügen Kontrollvariablen für Altersgruppen und Bildungsgrad hinzu, und wir sind besonders an der Rolle, die die Größe des Netzwerkes spielt, interessiert. Unsere Ergebnisse zeigen, dass Partnerlosigkeit in allen Ländern einen starken negativen Zusammenhang zur Lebenszufriedenheit aufweist. Zwischen Kinderlosigkeit und Lebenszufriedenheit gibt es dagegen im Ländervergleich keinen eindeutigen Zusammenhang. Man kann erkennen, dass auch einige protektive Merkmale, wie z.B. ein starkes Netzwerk, in den meisten Ländern eine wichtige Rolle für die Erhöhung der Lebenszufriedenheit spielen. Wir stellen fest, dass es einen Zusammenhang gibt zwischen der individuellen familiären Situation und der Lebenszufriedenheit, der sich jedoch weitgehend auf das Leben in einer Partnerschaft beschränkt. Der Schutzfaktor Partnerschaft steigert die Lebenszufriedenheit im hohen Lebensalter deutlich mehr als der Schutz durch das Vorhandensein von Kindern. Diese Erkenntnis kann die Sorge um die langfristigen Auswirkungen der zunehmenden Kinderlosigkeit in jüngeren Kohorten verringern, da diese nicht unbedingt mit einem höheren Risiko einer geringen Lebenszufriedenheit verbunden ist.

Schlagwörter: Alter, Lebenszufriedenheit, Partnerschaft, Kinderlosigkeit, Netzwerk, SHARE

S. 199-215

Thijs van den Broek, Marco Tosi & Emily Grundy

Offspring and later-life loneliness in Eastern and Western Europe

Nachkommenschaft und Einsamkeit im Alter in Ost- und Westeuropa

Zusammenfassung:
Einsamkeit im Alter wird zunehmend als ein wichtiges Thema der öffentlichen Gesundheit anerkannt. In dieser Studie untersuchen wir anhand einer Gruppe von ost- und westeuropäischen Ländern, ob das Vorhandensein von mehr Kindern und Enkelkindern vor Einsamkeit im späteren Leben schützt. Anhand von Daten aus dem Generation and Gender Survey schätzen wir logistische Regressionsmodelle zur Wahrscheinlichkeit von Einsamkeit bei Männern und Frauen ab 65 Jahren. Sowohl in ost- als auch in westeuropäischen Ländern zeigen die Ergebnisse einen negativen Zusammenhang zwischen der Anzahl der Kinder und der Einsamkeit von Männern und Frauen. Eine Mediatoranalyse nach der KHB-Methode ergibt, dass der Status der Großelternschaft teilweise Unterschiede in den Einsamkeitsrisiken von kinderlosen Frauen, Müttern mit einem Kind und solchen mit zwei oder mehr Kindern erklärt. Bei den Männern ist die mediierende Rolle der Großelternschaft in Osteuropa signifikant und in den westlichen Ländern marginal signifikant. Angesichts des relativ großen Vertrauens älterer Menschen in die Familie in Osteuropa erwarten wir, dass Protektionseffekte von Nachkommen auf die Einsamkeit in den osteuropäischen Ländern stärker ist als in den westeuropäischen Ländern. Diese Hypothese wird nur teilweise durch unsere Ergebnisse bestätigt. Der Protektionseffekt von vier oder mehr Kindern ist im Osten größer als im Westen. Insgesamt deuten unsere Ergebnisse darauf hin, dass enge Familienmitglieder, darunter mehrere Kinder und mindestens ein Enkelkind, eine protektive Wirkung hinsichtlich Einsamkeit im Alter in beiden untersuchten Ländergruppen haben.

Schlagwörter: Einsamkeit, ältere Bevölkerung, (Enkel-)Kinder, Europa, Gender and Generation Survey

S. 215-239

Valeria Bordone & Bruno Arpino

Grandparenthood, grandchild care and depression among older people in 18 countries

Großelternschaft, Enkelkinderbetreuung und Depression bei älteren Menschen in 18 Ländern

Zusammenfassung:
Aufgrund der zunehmend zentralen Rolle von Großelternschaft im späteren Leben wird fundiertes Wissen zu deren Auswirkungen auf die Gesundheit älterer Menschen immer wichtiger. Dieses Papier untersucht die Auswirkungen des Übergangs in die Großelternschaft der Geburt weiterer Enkelkinder sowie des Engagements in der Enkelkinderbetreuung auf depressive Symptome. Überdies erwarten wir auf der Grundlage der Theorie der strukturellen Ambivalenz, dass sich die Stärke dieser Effekte zwischen verschiedenen Kontexten unterscheidet, da die (Enkel-)Kinderbetreuung innerhalb Europas unterschiedlich organisiert ist. Unter Nutzung der Längsschnittstruktur des Survey of Health, Ageing and Retirement in Europe (SHARE) schätzen wir Fixed-Effects-Modelle. Unsere Ergebnisse zeigen, dass Frauen einen Rückgang der depressiven Symptome erleben, wenn sie erstmals Großmütter werden, aber weder eine Erhöhung der Anzahl der Enkelkinder noch Veränderungen in der Enkelkinderbetreuung sind mit Veränderungen der depressiven Symptomatik verbunden. Die Analysen nach Ländern zeigen Unterschiede innerhalb Europas auf, ohne dass jedoch ein klares Muster zu erkennen ist. Unsere Ergebnisse zeigen, dass die depressionsbezogenen Folgen einer Großelternschaft auch zwischen Ländern variieren, in denen die Rollen der Großeltern ähnlich geprägt sind. Dies legt nahe, dass in Umfragen unter älteren Menschen die Fragen zur Großelternschaft weiterentwickelt werden müssen.

Schlagwörter: Großelternschaft, Enkelkinderbetreuung, Depression, Europa, SHARE

Elke Reichmann u.a. (Hrsg.)

Professionalität in der Kindheitspädagogik

Aktuelle Diskurse und professionelle Entwicklungsperspektiven

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Nach den Entwicklungen der letzten Jahre im Feld der Kindheitspädagogik, mit dem quantitativen Ausbau der institutionellen Betreuungsplätze sowie dem Ausbau der Studiengänge der Kindheitspädagogik, wird es Zeit, einen Blick auf unterschiedliche Diskussionen zu wagen. Das Buch zeigt durch die multiprofessionelle Perspektive auf, welche aktuellen Diskurse das Feld bewegen und welche zukünftigen Herausforderungen zu erwarten und zu gestalten sind.

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