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Parenthood and Quality of Life in Old Age: The Role of Individual Resources, the Welfare State and the Economy

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Abstract We analyse the relationship between parenthood and quality of life in old age. Our main rationale is that the effect of having children on the quality of life varies with individual financial well-being as well as with the societal context, e.g. the welfare state and the economy. Analyses are based on the Survey of Health, Ageing and Retirement in Europe (wave 2 and 4) and the English Longitudinal Study of Ageing (wave 6) with respondents aged 50 plus from 19 European countries in all. We find the effect of parenthood on quality of life to depend on individual resources, the economy and social service expenditures. Older persons with difficulties in making ends meet, living in less affluent countries with lower gross domestic product per capita and welfare states with higher spending on social services benefit the most from parenthood in late life. Women and men in financial ease do not benefit from parenthood in old age. We do not find substantial gender differences in the relationship of parenthood and quality of life.

Keywords Quality of life · Parenthood · Gross domestic product · Welfare state · Europe

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1 Introduction

Parenthood is a highly valued life goal in European societies. A vast majority of young adults is planning or wishing to have children (Thornton and Young-DeMarco 2001). However, the widespread wish to have children does not necessarily translate into a greater life-satisfaction, well-being or quality of life of parents upon its realisation (Hansen 2012). As a major life event, the birth of a child can have a tremendous effect on the life of their parents, their career, their partnership, their leisure time, and, as a consequence, their quality of life. Children usually are considered as an invaluable resource to older persons. They are central in their social network and provide various kinds of emotional and instrumental support to their aging parents and prevent loneliness (Brandt 2009; Hank 2007; Stoeckel and Litwin 2013). Nevertheless, parenthood may also have unfavourable consequences, e.g. less freedom, more stress, more "responsibilities, worries and financial concerns" (Hansen et al. 2009, p. 344).

Overall, research has not revealed consistent effects of parenthood on well-being, life-satisfaction, quality of life or depression in midlife and old age. However, the absence of overall effects should not be misinterpreted as children having no influence or meaning for the life of their parents. Instead, the effect of parenthood can be expected to depend on individual and social circumstances. Children may rather be more important to their parents in times when their health and financial resources are limited and when parents thus have to fall back on informal support (Haberkern and Szydlik 2010). Furthermore, older parents' quality of life might be more dependent on informal support from children in less affluent societies and in welfare states that provide only limited transfers and services to older people (Johansson et al. 2003). In short, the meaning of parenthood is likely to be moderated by individual circumstances and the societal context.

We estimate the effect of parenthood on quality of life in late adulthood by comparing older parents with their childless peers using a cross-sectional sample of respondents aged 50 and over (and their partners) from 19 European countries from the Survey of Health, Ageing and Retirement in Europe (SHARE, wave 2 and 4) and the English Longitudinal Study of Ageing (ELSA, wave 6). Cross-cultural data such as SHARE plus ELSA make it possible to link the effect of parenthood to individual resources and the societal contexts in late life.

Andersson et al. (2014) recently showed that effects of parenthood on various measures of well-being depend not only on the country, but also on survey choice and the selected cross-section. Furthermore, different well-being concepts like happiness or life satisfaction seem interchangeable, but in fact only share about 25% common variance. Addressing this concern, we only use one theoretically driven measure for quality of life in old age, the CASP indicator (Higgs et al. 2003). Following Gibney et al. (2015, p. 3), we must state that this measure is "not interchangeable and no assumptions are made as to the applicability of these specific aspects of psychological well-being to other domains such as happiness, life satisfaction and subjective well-being more broadly."

2 Parenthood and Quality of Life in Old Age: Mixed Evidence

While folk theories usually assume a positive impact of children on quality of life (qol hereafter) (Hansen 2012), empirical social research is less positive about this relation. Studies show a wide range of different influences of parenthood on different indicators for

well-being, whereby the effect of parenthood on well-being is strongly influenced by individual circumstances, e.g. life stage, partnership, gender, socio-economic status and the societal context (e.g. Gibney et al. 2015; Huijts et al. 2013). Many researchers focus on the moderators of parenthood on well-being for young or midlife mothers and fathers, and provide insights when and why parenthood is beneficial or unfavourable (Aassve et al. 2012; Koropeckyj-Cox et al. 2007; Pollmann-Schult 2014).

Others focus on the long term effect of parenthood. Margolis and Myrskylä (2011) found the association between fertility and happiness to evolve from negative to positive with age in general. Buber and Engelhardt (2008) find children to decrease the number of depressive symptoms in parents in old age. In contrast, Zhang and Hayward (2001) show that persons with and without children do not differ in the incidence of depressive symptoms. They find no evidence that parents in old age are better off than childless persons.

With regard to gender, folk theories in general assume parenthood to be more important for women than for men (Hansen 2012). Research shows that parenthood has a different imprint on life courses of women and men, whereby the transition to parenthood is, fore and most, a turning point in occupational trajectories of women (e.g. Levy et al. 2007). Some studies find parenthood or childlessness to have a different meaning for women and men, e.g. parenthood is of greater importance for well-being of women (Dykstra and Wagner 2007; Hansen et al. 2009), however, others do not. Margolis and Myrskylä (2011) do not find the effect of parenthood on qol to significantly differ between women and men.

Some, but not all cross-sectional studies suggest that the relationship between parenthood and qol in old age varies with the societal context, e.g. different welfare states or societal norms. Motel-Klingebiel et al. (2003) analyse OASIS data and use "having children" as a proxy for family support in late life. They show that the relation between parenthood and qol is "strong only in those cases where welfare state transfers are low" (ibid., p. 335). Margolis and Myrskylä (2011) use data from the World Value Survey and find the positive relation between fertility and happiness in old age to be strongest in countries where the family is the main provider of support to older populations. Moor and Komter (2012) analyse the Generation and Gender Survey and find similar relations between family ties and depressive mood in Eastern and Western Europe. Using data from the European Social Survey, Huijts et al. (2013) find the relationship between childlessness and psychological well-being to vary by social norms towards childlessness as well as by the aggregated number of social contacts per country. Hank and Wagner (2013), using SHARE waves 1 and 2, find neither differences in terms of economic, psychological or social well-being between respondents with and without children nor an influence of welfare state regimes. Gibney et al. (2015) use data from SHARE to examine the relationship between lifetime childlessness and qol or depressive symptoms in old age. They find no main effect of childlessness in any of the four European regions specified when controlling for socio-demographic, economic and health factors, but regional variations. Hence, there is strong evidence that the effect of parenthood on well-being may vary by individual characteristics as well as by context, but the why and how remains rather unclear.

3 Empirical Contribution

We focus on individual circumstances and the societal context as moderators of the effect of parenthood on qol in late life in 19 European countries. Parenthood, thereby, is perceived as major life event which can have a tremendous effect on the individual life course,

e.g. the occupational trajectory, the development of social relationships and support networks (Dykstra and Hagestad 2007). Of course, the trajectories in various realms of life are interrelated and cannot be singled out retrospectively with the data at hand. Furthermore, spotlighting specific details that might level out each other might set the reader on wrong tracks. We therefore argue in favour of parenthood as a major life-changing event that can have different meanings, depending on circumstances and context. Accordingly, we focus on two complementary mechanisms to grasp the possible imprint of parenthood on well-being in old age without narrowing our focus to specific details.

Considering the interplay between parenthood, an individual's situation and the societal context, we can assume at least two fundamental mechanisms. First, following Motel-Klingebiel et al. (2003) and Margolis and Myrskylä (2011), parenthood can be understood as a proxy for the availability of informal support. From that point of view, parenthood will increase qol. The more informal support is needed, and the less welfares states provide such support, the more children are expected to increase qol of older parents. Second, following Huijts et al. (2013) and Dykstra (2009), children are a very important resource for social contact and interaction for elderly people. In this line of thought, children increase qol, and even more so when there is no need for informal support due to sufficient individual or societal resources. Hence, we can assume two different mechanisms at work here that are contradicting, but not exclusive. We will refer to these two concepts in the following as the supportive-benefit and emotional-benefit assumption. Based on these two assumptions, we now further specify possible mechanisms and derive theoretical explanations for possible relations between parenthood and qol. To us, it is an empirical question which of them hold true.

Socio-demographic and socio-economic factors have been shown to moderate the effect of parenthood on well-being on the individual level. According to an encompassing literature review of Hansen (2012), parenthood and raising children come along with substantial financial costs which burden in particular parents from low socioeconomic groups. According to Margolis and Myrskylä (2011), parenthood has a more negative effect among the poor and in younger age cohorts. In short, young resident children increase financial costs and pressure and thereby reduce well-being among those from lower income groups. Moving to older populations, we can expect a reverse effect. Financial resources provide older people with the means to cope with health limitations and to participate in social activities (Siegrist and Wahrendorf 2009). Older persons from lower economic groups more likely depend on support from their children when health is on the decline, whereas persons with sufficient financial resources can buy expensive medical treatment and professional care services instead. Therefore, we assume that individual financial difficulties in making ends meet (or their absence) influence not only qol in old age, but also the cost and benefits of parenthood. This leads us to two possible individual explanations, based on our two mechanisms of parenthood. In line with the supportive-benefit assumption, we can argue that parenthood has a more positive effect on qol for older persons with individual difficulties in making ends meet than for those without such difficulties. This is because children are a main pillar of support. Considering the emotional-benefit approach, we can assume the opposite: parenthood has a more positive effect on qol for older persons without individual difficulties in making ends meets. Those parents usually do not depend on their children, and emotional benefits may more easily unfold without pressing support needs, obligations or dependencies.

Furthermore, we assume the societal context to moderate the effect of having or not having children on qol. In this study, we consider two aspects of the societal context: First, the national level of wealth—measured as gross domestic product in US-Dollar,

purchasing power parity (GDP)—as it is related to absolute levels of resources and infrastructure. More prosperous societies in general offer better conditions for older and oldest old citizens as well as their children, and, given the level of financial resources, suitable housing, assistive technologies and alternatives to unpaid informal support in old age are more widely available (Haberkern et al. 2011). Considering GDP, we again derive two explanations: considering the supportive-benefit, we assume respondents in more prosperous societies to be less dependent on their children. The supportive-benefit of children, therefore, is expected to diminish with increasing GDP. The opposite might hold true for the emotional-benefit: in this line of thought, higher GDP comes along with higher emotional-benefit, and hence, higher reported qol in old age.

We include public spending on social services (SSE) as percentage of the GDP of a country to measure the grade to which public alternatives to intergenerational support exist. In contrast to rather specific indicators targeting benefits for elderly people only—like net pension replacement rates or pension expenditures— the encompassing measurement SSE captures all kinds of publicly funded social services such as elderly care, childcare, parental leaves, services for persons with special needs, that is activities which may otherwise be provided within the family and between generations and, therefore, likely moderate the relationship between parenthood and qol.

Again several possible relationships between parenthood and qol may be at work here. Generous welfare states not only provide more child care facilities and better opportunities to reconcile family and career. They also provide social services for older citizens, thereby providing both, complementary and substitutes to informal intergenerational support in old age. In countries with generous public spending on social services, for instance in Denmark, older persons as well as their children have access to a wide range of social services and therefore are less dependent on intergenerational support (cf. Brandt et al. 2009). Hence, generous public spending on social services provides social security in old age and may compensate for the absence of supportive children. Following this line of thought, high social service expenditures might reduce the dependency on intergenerational support, and hence, the supportive-children benefit. Therefore, we may assume parenthood to be less important for qol in old age in more generous welfare states. On the other hand, parenthood is much more than receiving support when needed and having children might be especially delightful when neither child nor parent is in need of support due to a generous welfare state supporting both, parents and children alike. Hence, the emotional-benefit of children might also be greater in countries with higher SSE where intergenerational relationships are less loaded with obligations and dependencies.

Considering these possible mechanisms, it remains an empirical question whether and how the relation between parenthood and qol interacts with an individual's situation, the GDP and the generosity of the welfare state. In a nutshell: we examine if Schultz's (1973, p. 5) basic assumption that children are "the poor man's capital" holds true (supportive-benefit) or if children rather are the wealthy man's pleasure (emotional-benefit).

4 Data and Operationalization

We test our hypothesis using the second and the fourth wave of the Survey of Health, Ageing and Retirement in Europe (SHARE), plus wave 6 from the English Longitudinal Study of Ageing (ELSA). SHARE is a survey of people aged 50 + and their partners in European countries. The fourth wave includes 16 European countries, namely Austria (AT), Belgium (BE), the Czech Republic (CZ), Denmark (DK), Estonia (EE), France (FR),

Germany (DE), Hungary (HU), Italy (IT), the Netherlands (NL), Poland (PL), Portugal (PT), Slovenia (SI), Spain (ES), Sweden (SE), and Switzerland (CH). Data for Ireland (IE) and Greece (GR) are taken from SHARE wave 2 in 2007 as both countries did not participate in wave 4 in 2011. As ELSA and SHARE use similar designs, questions and instruments, we further are able to add England (GB) to our sample (ELSA, wave 6 with interviews carried out in 2013).

As we focus on national differences, we exclude respondents born in another country. Furthermore, we exclude cases when the interviewer reported that the interviewee never, almost never, or only now and then understood the questions. We also exclude respondents living in nursing homes, as some country samples include respondents living in private households only. We furthermore exclude the rare cases where respondents have suffered the loss of a child, who report to have grandchildren but no children or who only have step children. We justify the exclusion of these cases as step children and biological children differ in terms of legal rights and duties in some countries as well as in some dimensions of intergenerational solidarity, e.g. frequency of contacts (Steinbach 2013). Such differences are likely to translate into different effects on the qol of (step-)parents. Given the small number of observations with step children, we were not able to analyse these possibly relevant family settings separately. The final sample includes 47,620 respondents with valid information for all variables in this study. Table 1 provides information on the dependent and independent variables (mean, standard error and range).

Qol: We measure qol—the dependent variable—using the CASP indicator. CASP is designed to capture qol in old age (Wiggins et al. 2004; Hyde et al. 2003) across four dimensions: control, autonomy, self-realisation and pleasure. With its broad focus it captures possible long-term rewards and burdens of parenthood. In detail, CASP includes 12 items representing the four dimensions control, autonomy, self-realization, and pleasure (3 each). The control domain measures the abilities to plan and act. Autonomy represents the absence of (unpleasant) social, financial and health constrains. Self-realisation refers to the ability to explore life and the future whereas the domain pleasure captures the ability to enjoy company, activities and meaning in life (Higgs et al. 2003). Having children or not may increase or decrease control, autonomy, self-realisation and pleasure as measured in CASP—depending on the individual resources and societal context. The index ranges from 0 (lowest possible qol) to 36 (highest possible qol). The mean qol ranges from 20.5 in Portugal to 29.2 in Switzerland.

Parenthood: According to Motel-Klingebiel et al. (2003, p. 349), "the main effect [on qol] is parenthood (having children at all), while the number of children is of minor importance." Hence, we use a dummy indicator to differentiate biological parents and childless respondents. The share of parents in our sample ranges from 83.3% in Ireland to 95% in Poland.

Individual-Level: We operationalise within-country inequalities by a subjective measure for the financial situation. Respondents should rate on a 4-point scale whether they have/not have difficulties in making ends meet (great difficulty, some difficulty, fairly easily, and easily). To test our hypothesis, we contrast two subpopulations. First, more privileged respondents who make ends meet easily or fairly easy, and secondly, respondents with some or great difficulties in making ends meet—the latter group, on the one hand, possibly being more dependent on intergenerational support to maintain qol, and, on the other hand, being less able to support their children themselves. In the following, we will refer to those subgroups as privileged and unprivileged older populations.

Table 1 Characteristics of respondents *Source* SHARE 4, Release 1.1.1 (2011); SHARE 2 Release 2.5.0 (2007), ELSA wave 6 (2013), own calculations; 47,620 respondents, own calculations, rounded

Variables	Mean	SD	Min	Max
CASP quality of life	25.428	6.1	0.0	36.0
Age in years	65.669	9.8	29.0	101.0
Gripstrength	33.352	11.8	1.0	99.0
Dummy-variables				Percentage (%)
Gender: female				56.6
Health: poor				9.3
Health: fair				27.7
Health: good				36.5
Health: very good				18.8
Health: excellent				7.6
Fin. sit.: very hard				9.6
Fin. sit.: hard				28.2
Fin. sit.: fairly easy				32.9
Fin. sit.: easily				29.3
Education: low				40.5
Education: medium				37.7
Education: high				19.1
Unemployed				2.7
Homemaker				8.8
Early retirement				3.2
Working				29.4
Retired				55.9
Partner				73.8
Grandparenthood				52.6
Parenthood				90.8

We estimate a general model for the whole population as well as separate models for the two subgroups in order to capture the overall effect of parenthood as well as potential influences by beneficial or less beneficial financial circumstances.

Country-Level: We use GDP per capita in International Dollars (purchasing power parity) and the percentage of public social service expenditures (SSE) as macro indicators to model between-country differences. GDP data is taken from the International Monetary Fund (2013) database. The data on public social service expenditures in percentage of the GDP originates from the Organisation for Economic Co-operation and Development (2016). For all countries, we use macro indicators for the year preceding data collection.

Gender: Gender is of great importance when it comes to parenthood and qol. First, women report lower levels of qol (Gaymu and Springer 2012). Second, parenthood as a major life event impacts differently on women's and men's life trajectories (Dykstra and Hagestad 2007; Giudici and Widmer 2015; Widmer and Ritschard 2009). Third, and as a consequence, some studies reveal different relationships between parenthood and various indicators of quality of life for women and men (Huijts et al. 2013), however, others do not (Margolis and Myrskylä 2011). Therefore, we also provide a separate analysis for women and men in order to test whether the relation between parenthood and qol is moderated by gender, too.

Control Variables: Furthermore, we control for a number of factors that are known to be related to qol. In European countries numerous grandparents regularly provide childcare. Grandparenthood, thereby, directly influences everyday life (Igel and Szydlik 2011) and is closely linked to qol in old age (Neuberger and Haberkern 2014). We include a dummy variable to control for grandparenthood. We also include age and age squared in years, as qol is known to vary over the life cycle (Zaninotto et al. 2009). As health is known to be a very strong predictor of quality of life in old age, we include subjective and objective measures (grip strength) for health (Andersen-Ranberg et al. 2009). We further control for education by recoding the ISCED-97 scale (International Standard Classification of Education) into the educational levels low (1, ISCED levels 0, 1 and 2), medium (2, ISCED levels 3 and 4) and high (3, ISCED levels 5 and 6), using medium as reference category. As SHARE includes persons aged 50 and over, we include employment status. We differentiate between homemakers, employed, unemployed, early retired and retired persons (reference category). We further control for partnership, as partnership increases qol in old age (Buber and Engelhardt 2008) and may buffer for childlessness when it comes to qol, e.g. by preventing loneliness (Evenson and Simon 2005). We therefore define partnership as living with a partner or spouse. Never married, separated, divorced or widowed respondents without partners were defined as singles.

5 Method

We apply multi-level models to control for the hierarchical structure of the data, for instance, individuals in countries (Gelman and Hill 2007). Furthermore, within this frame we can trace national levels of qol and national effects on qol to the societal context, e.g. GDP and SSE. To test all our assumptions, we use a three-step research design.

In a first step, we look for individual differences in qol related to privileged ageing, parenthood, and further correlates, and for national differences in qol related to the national context factors gross domestic product (GDP) and public social service expenditures (SSE). We thereby assume parenthood to have the same effect in all countries. Doing so, we estimate a hierarchical linear model with a group specific random intercept $\alpha_{j[i]}$ and individual (i) $\beta_i x_i$ and group level (j) $\beta_j x_j$ predictors as shown in Eq. 1[1]:

$$y_i = \alpha_{j[i]} + \beta_{i1}x_{i1} + \beta_{i2}x_{i2} + \cdots + \beta_{j1}x_{j1} + \beta_{j2}x_{j2} + \cdots + \in_{ij} \quad (1)$$

In a second step (Eq. 2), we test whether and how the effect of parenthood on qol is moderated by the societal context. As our research is driven by theoretical arguments, we use the higher statistical power of cross-level (cl) interactions $\beta_{cl}x_i \times x_j$ with fixed-effects to test whether the effect of parenthood is moderated by the wealth of a country and the social service spending respectively (Snijders and Bosker 1999, p. 74 ff.).

$$y_i = \alpha_{j[i]} + \beta_{i1}x_{i1} + \cdots + \beta_{j1}x_{j1} + \beta_{j2}x_{j2} + \cdots + \beta_{cl1}x_{i1} \times x_{j1} + \beta_{cl2}x_{i1} \times x_{j2} + \in_{ij} \quad (2)$$

In a third step, we estimate these models separately for our privileged and unprivileged subgroups. We thereby test whether the effect not only depends on national wealth or the public spending on social services but also on individual economic circumstances. All steps are repeated for women and men separately.

[1] We thereby follow the notation of Gelman and Hill (2007, p. 263 ff.).

We further test the robustness of the results. As GDP and SSE correlate moderately, we include macro-variables stepwise and separately. Furthermore, we estimate the regression models with an indicator for life satisfaction to check for general robustness of our findings. We also replicate the results with the indicator number of children instead of parenthood. Finally, we test for a bias due to within-household homogeneity. As SHARE and ELSA recruitment strategy includes respondents and their partners, married couples are likely to be overrepresented. We therefore estimate models including the main household respondent only. All results are quite robust and support our findings (see online appendix).

6 Results

We start with an overview of the societal context. Figure 1 displays the GDP and SSE for the countries under study. GDP and SSE correlate moderately, but significantly ($cor = 0.57$, $p = 0.01$). As indicated by Fig. 1, the positive relations between GDP and SSE can be found mainly in countries with lower GDP. Hence, the wealth of a country partly translates into more generous public spending on social services.

In Fig. 2, we now focus on the relationship between financial circumstances (left figure), and parenthood (right figure) on the one hand, and qol on the other hand. The notches in the box plots represent 0.95 confidence intervals for the median qol. If the notches of two boxes do not overlap, this is strong evidence that the median qol differs significantly within or between countries (Chambers et al. 1983, p. 62). The countries in Fig. 2 are also ordered by GDP. Switzerland is ranked highest with GDP 41.471 US-$ and therefore placed at the top of the graph. At the other end, Estland, with a GDP of 17.696 US-$, is ranked lowest and placed at the bottom.

Figure 2 highlights three facts. First, regarding the differences between countries, we find a strong positive relation between GDP and qol ($cor = 0.76$***, $p = 0.00$). Higher GDP corresponds with higher levels of qol. Switzerland, the Netherlands, Ireland and Austria have the highest GDPs and also rank high on qol. In the countries with the lowest GDPs—Hungary, Poland, and Estonia—we also encounter below median qol. Considering SSE, we only find a moderate correlation between SSE and mean qol (cor = 0.46*, $p = 0.047$). Hence, GDP seems a better predictor for qol.

Secondly, we turn to the relationship between subjective financial situation and qol (Fig. 2, left). Within countries, the respondents in financial ease report significantly higher levels of qol. In all countries under study, the privileged respondents rank far above the respondents with some or great difficulties in making ends meet. In most countries, the difference is between 3 and 5 points on our 36-point qol scale. These results support previous research: the positive association between financial circumstance and qol at both the individual and country level.

Thirdly, when it comes to parenthood (Fig. 2, right), in most countries older parents and their childless peers report similar levels of qol, e.g. the notches of box plots overlap. Exceptions are Austria, Sweden, France, Greece and Estonia, where median qol of older parents is significantly higher. At this stage, if at all, we only find little evidence for children to increase qol in older populations, and that folk theories on parenthood hold true.

To further analyse the relationship between parenthood and qol, we estimate multilevel regression models with a wide range of covariates to trace the differences in qol to their possible causes. We assume that the difference in qol between countries can be traced to the different social structures of those countries (composition), national wealth, and social

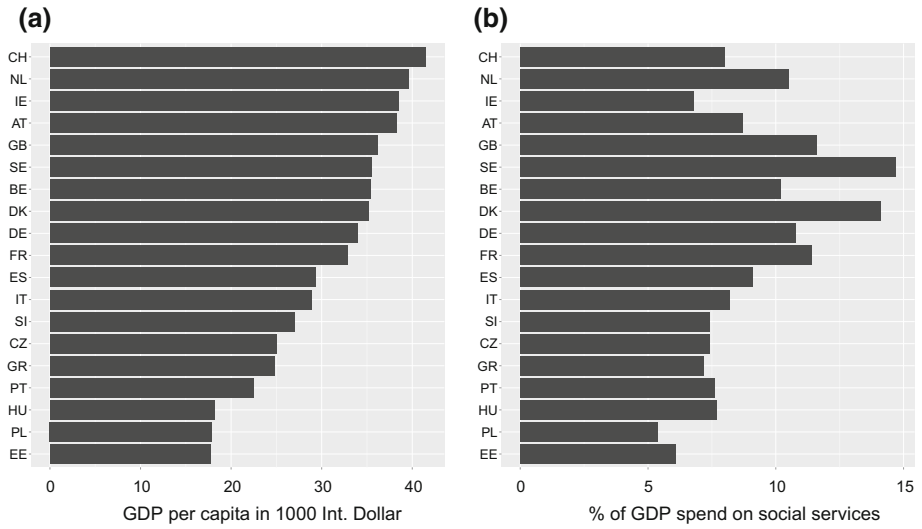

Fig. 1 GDP (*left*) and social expenditure (*right*) per country. **a** Gross domestic product in US-$ per capita (GDP), purchasing power parity, **b** public social service expenditures (SSE) in % of GDP *Source* GDP: International Monetary Fund (2013); SSE: OECD (2016); own calculations

service expenditures (Table 2, context effect). To analyse the effect of parenthood, we apply the stepwise approach as outlined above. In a first step (Table 2, Model 1), we assume parenthood to have the same effect on qol in all countries under study and in all financial circumstances, i.e., the effect of parenthood does not depend on the societal context or individual financial circumstances. In a second step, we drop the first assumption and allow the economy (GDP) and the welfare state (SSE) to moderate the effect of parenthood. As a last step, we drop the remaining assumption that the relation of parenthood with qol is not influenced by individual financial circumstances. Hence, we replicate step 2 for specific subpopulations by financial circumstances (Model 3 and 4 in Table 2).

Model 1 in Table 2 shows the results for the full sample. First, focusing on the controls, we find the expected non-linear relationship between age (centred) and qol. Women report an overall higher qol than men. Health proves to be a strong predictor. The better the subjective and objective health (grip strength), the higher respondents rate their qol—and vice versa. Low levels of health impact on qol measured via autonomy, control, pleasure, self-realisation. The individual financial situation also proves to be a strong predictor for qol as it comes along with limited resources. We find a small but negative effect for low education. Again, this finding is in line with previous research which finds higher education to increase autonomy, self-realization, control and, overall, qol (cf. Ross and van Willigen 1997; Edgerton et al. 2012). Respondents, who are unemployed, homemakers, in early retirement or employed, report a lower qol than retired respondents. Some employment status categories identified here either lack appreciation (unemployment), or lack autonomy (homemaker) or free time (employed). Retirement is the only employment status where autonomy and social status coincide, which may explain for higher qol. Respondents who have a partner report a significantly higher qol, whereas grandparenthood on average is related to lower qol in old age. Partnerships may come along with more support and

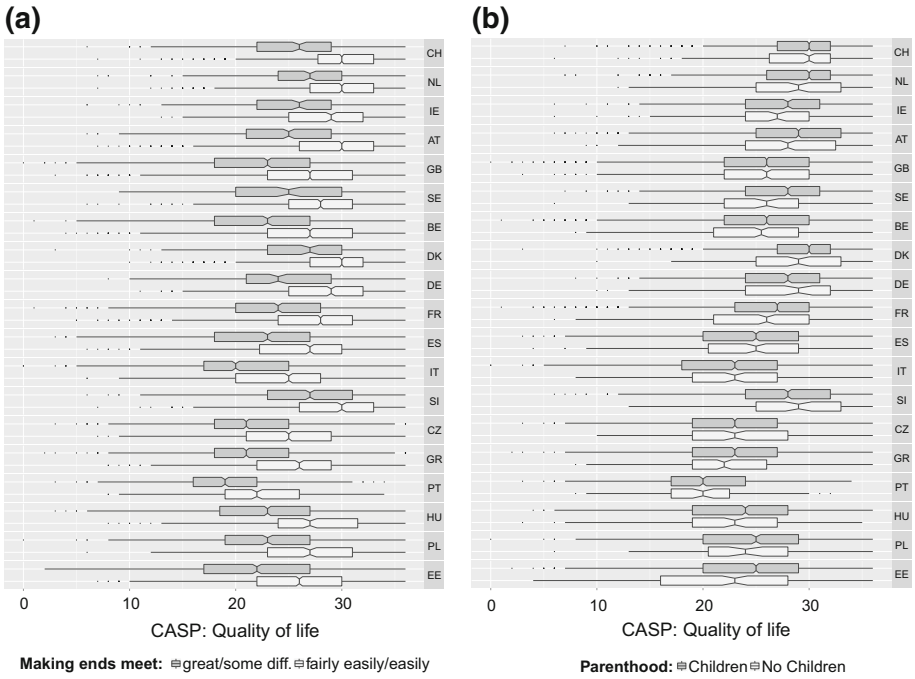

Fig. 2 Quality of life (CASP) by subjective financial situation (*left*) and by parenthood (*right*). **a** Per country box-plots of quality of life of 17,997 respondents with great or some difficulties to make ends meet, 29,623 respondents making ends meet fairly easy or easily, own calculations, **b** per country box-plots of quality of life of 4400 respondents without children, 43,220 respondents with children, own calculations *Source* SHARE 4, Release 1.1.1 (2011); SHARE 2 Release 2.5.0 (2007), ELSA wave 6 (2013), own calculations

emotional benefits than grandparent–grandchild-relationships. In general, all coefficients of the control variables point in the expected directions.

Turning now to our main research interest: For parenthood, we find a significant positive effect on qol in model 1. At the country level, we find a positive significant relationship between GDP and qol levels, but not for SSE. Hence, economic prosperity is linked to higher qol in European countries, whereas public spending on social services is not. As we had not differentiated for resources so far, we cannot say which of our two mechanisms of parenthood holds true.

In the next step (Model 2), we no longer assume parenthood to have the same effect across all countries, while we allow the effect of parenthood on qol to be moderated by the national wealth of a country and social service expenditures (cross-level interaction). We still find a general positive effect of parenthood on qol, but we do not find the effect of parenthood to be moderated by the economic and welfare state context. Furthermore, we find a significant positive effect of GDP on qol. A model comparison via ANOVA shows that the inclusion of the interaction with the context variables GDP and SSE does not significantly improve the model fit for the full sample ($Pr\ (>Chisq) = 0.2421$).

The picture gets more colourful when we relieve the second restriction and no longer assume parenthood to have the same effect across economic groups within countries. We therefore estimate separate models for both subgroups of subjective financial

Table 2 Multilevel models of quality of life on parenthood (total population (1,2) and subpopulations (3, 4) for different abilities to make ends meet)

	Model 1	Model 2	Model 3: great/some difficulty	Model 4: fairly easily/easily
Constant	8.67***	8.62***	10.46***	11.38***
	(7.78)	(7.73)	(5.76)	(8.23)
Age in years	0.25***	0.25***	0.15**	0.34***
	(8.29)	(8.31)	(3.03)	(8.90)
Age in years^2	−0.00***	−0.00***	−0.00***	−0.00***
	(−9.50)	(−9.52)	(−3.40)	(−10.18)
Gender: female = 1/male = 0	0.94***	0.94***	0.90***	0.89***
	(12.88)	(12.88)	(7.27)	(9.93)
Health: fair/poor	2.18***	2.18***	2.82***	1.45***
	(24.79)	(24.78)	(21.68)	(11.84)
Health: good/poor	3.50***	3.50***	4.45***	2.63***
	(39.70)	(39.70)	(32.99)	(21.95)
Health: very good/poor	4.11***	4.12***	5.19***	3.29***
	(41.97)	(41.99)	(32.08)	(25.61)
Health: excellent/poor	4.96***	4.96***	5.38***	4.41***
	(41.99)	(42.00)	(25.38)	(29.76)
Grip strength	0.07***	0.07***	0.07***	0.06***
	(20.59)	(20.60)	(12.98)	(15.15)
Fin. sit.: some difficulty/great difficulty	2.04***	2.04***	1.96***	
	(23.28)	(23.28)	(20.66)	
Fin. sit.: fairly easily/great difficulty	4.17***	4.18***		
	(45.95)	(45.96)		
Fin. sit.: easily/great difficulty	5.79***	5.79***		1.61***
	(59.88)	(59.87)		(27.56)
Education: low/medium	−0.49***	−0.49***	−0.53***	−0.40***
	(−8.65)	(−8.64)	(−5.64)	(−5.83)
Education: high/medium	−0.11	−0.11	0.30*	−0.18*
	(−1.67)	(−1.66)	(2.22)	(−2.38)
Status: unemployed/retired	−1.19***	−1.19***	−1.29***	−0.93***
	(−7.77)	(−7.76)	(−6.31)	(−3.61)
Status: homemaker/retired	−0.33***	−0.32***	−0.20	−0.39**
	(−3.54)	(−3.50)	(−1.32)	(−3.28)
Status: early retirement/retired	−2.51***	−2.51***	−2.16***	−2.59***
	(−17.72)	(−17.73)	(−10.87)	(−12.21)
Status: employed/retired	−0.05	−0.05	0.15	−0.13
	(−0.66)	(−0.66)	(1.14)	(−1.46)
Partner/single	0.51***	0.51***	0.65***	0.37***
	(8.73)	(8.71)	(6.81)	(5.08)
Grandparenthood	−0.19***	−0.19***	−0.36***	−0.06
	(−3.55)	(−3.58)	(−3.83)	(−0.97)
Parenthood	0.22*	0.25**	0.64***	−0.04
	(2.49)	(2.74)	(3.88)	(−0.33)

Table 2 continued

	Model 1	Model 2	Model 3: great/some difficulty	Model 4: fairly easily/easily
GDP (centered)	0.11*	0.13*	0.18**	0.09
	(2.12)	(2.46)	(2.83)	(1.62)
SSE (centered)	−0.06	−0.09	−0.25	−0.03
	(−0.39)	(−0.57)	(−1.27)	(−0.22)
Parenthood × GDP (centered)		−0.02	−0.09***	0.02
		(−1.68)	(−3.46)	(1.39)
Parenthood × SSE (centered)		0.03	0.32**	−0.02
		(0.79)	(3.27)	(−0.36)
Log-likelihood	−144,203.59	−144,202.17	−55,534.37	−88,370.45
N	47,620	47,620	17,997	29,623

Source SHARE 4, Release 1.1.1 (2011); SHARE 2 Release 2.5.0 (2007), ELSA wave 6 (2013), own calculations; Model 1: hierarchical linear model containing all control variables without interactions; Model 2: cross-level interactions between GDP, SSE and having children; Model 3 and 4: subgroups separated by the respondents ability to make ends meet: Model 3 with great or some difficulty; Model 4: fairly easily or easily; signif. codes: '***' 0.001 '**' 0.01 '*' 0.05; t-values in parentheses; own calculations

circumstances (Models 3–4). For respondents with financial difficulties (Model 3), we find the positive effect of parenthood to increase considerably. Unprivileged respondents with insufficient individual resources benefit more from having children. Furthermore, we find GDP to increase the qol of childless persons (main effect GDP). The significant interaction effect between GDP and parenthood shows that the benefit of parenthood is highest in the poorest countries and decreases with increasing GDP, providing some evidence for the supportive-benefit assumption of parenthood. The higher the GDP of a country, the smaller is the benefit in qol of parents in this subpopulation.

In contrast, SSE does not increase qol for childless older persons (main effect SSE), but—as indicated by the positive interaction between SSE and parenthood—for older parents experiencing financial hardship only. The higher the SSE of a country, the higher is the positive effect of parenthood for poor respondents. This finding provides evidence for the emotional-benefit explanation: the more intergenerational solidarity and support could be substituted by the welfare state, the higher is the qol of parents. Including the interactions with GDP and SSE (ANOVA (Pr (>$Chisq$) = 0.0012**) significantly improves the model fit. Hence, while childless respondents profit from higher GDP more than parents, we find only parents to profit from an increase in SSE.

When moving to the next subgroup (Model 4), privileged older populations without difficulties in making ends meet, we observe three important changes. Firstly, the positive effect of parenthood on qol turns negative (not significant). Secondly, individual welfare trumps national wealth. For those making ends meet (fairly) easily, GDP does not increase qol. Thirdly, in contrast to older persons in unfavourable financial circumstances, the relationship between parenthood and qol is not moderated by the societal context. Again, welfare state spending on social services is not related to qol of those without children. The effect of parenthood for privileged respondents is small and insignificant and not dependent on GDP or SSE. ANOVA (Pr (>$Chisq$) = 0.373) reveals that the inclusion of the interaction does not improve the model fit.

Overall, we find parenthood to increase qol only in less pleasant settings, e.g. respondents reporting financial pressure. And we find parenthood to be most beneficial in the less affluent countries. Vice versa, childlessness has the most negative effect on qol of older persons facing financial pressure in poor countries. Although higher public spending on social services is associated with an even more positive effect of parenthood on qol, childless respondents do not benefit from more generous welfare state spending. When focusing on older persons in good financial circumstances, neither parenthood nor the societal context is related to qol.

Furthermore, we conducted a separate analysis for women and men to identify possible gender differences. Table 3 contains the results for women and men respectively. All models presented are controlled for the same variables as the corresponding models in Table 2, except for gender.

In Model 1 in Table 3, we find parenthood to come along with higher qol for women in general. Furthermore, the relationship between parenthood and qol is linked to national wealth, but not to SSE. The higher GDP, the less positive is the relationship between parenthood and qol for women (Model 2). Hence, on average, older women benefit from having children, but the effect is smaller in countries with higher GDP. Including the cross-level interactions significantly improves the model fit (ANOVA Pr ($>Chisq$) = 0.015*). Considering the subsamples in Model 3–4, we find a similar pattern as for the respective total populations (Table 2). For women who have some or great difficulties to make ends meet, GDP and parenthood in general are associated with higher qol (Model 3). Again, the lower GDP per capita in a country, the more positive is the relation between parenthood and qol. Finally, SSE moderates the parenthood effect for unprivileged women. The higher public spending on social services, the more positive is relationship between parenthood and qol. Hence, an increase in GDP likely decreases the effect of parenthood on qol, whereas generous welfare spending is associated with a more positive effect of parenthood for "poor" women. Again, the cross-level interactions significantly improve the model fit (ANOVA Pr ($>Chisq$) = 0.0001***). Women of the privileged subpopulation (Model 4) neither benefit from parenthood nor from higher national wealth or higher public spending on social services (ANOVA Pr ($>Chisq$) = 0.914).

Moving to the male sample, results are partly in line with the results for women. We neither find a significant effect for parenthood nor a significant interaction in the general male population (Model 1, Model 2, ANOVA Pr ($>Chisq$) = 0.859). Parenthood is related to higher qol among unprivileged men only. The significant interaction between parenthood and SSE demonstrates that only fathers with difficulties making ends meet benefit from public spending on social services, whereas childless older men in this economic group do not (Model 3, ANOVA Pr ($>Chisq$) = 0.011*). National wealth is significantly related to higher levels of qol in the general population, but not in the unprivileged subsample (Model 3). Privileged men in financial ease do neither benefit (in terms of qol) from higher social service spending nor from greater national wealth (Model 4, ANOVA Pr ($>Chisq$) = 0.155). In general, we find all estimates for men and women to point in the same directions as in the overall population. If at all, the gender-sensitive analysis provides only little support for a substantially gendered relationship between parenthood and qol in late adulthood.

7 Discussion

Do children increase quality of life in old age? Our answer is: it depends on individual as well as contextual resources. In line with others studies (Huijts et al. 2013; Gibney et al. 2015), we do not find a constant effect of parenthood on qol. Focusing on subjective

Table 3 Multilevel models of quality of life on parenthood by gender (total population (1,2) and subpopulations (3, 4) for different abilities to make ends meet) *Source* SHARE 4, Release 1.1.1 (2011); SHARE 2 Release 2.5.0 (2007), ELSA wave 6 (2013), own calculations; separated calculations for women and men; Model 1: hierarchical linear model containing all control variables without interaction; Model 2: cross-level interactions between GDP, SSE and having children; Model 3 and 4: subgroups separated by the respondents ability to make ends meet: Model 3 with great or some difficulty; Model 4: fairly easily or easily; signif. codes: '***' 0.001 '**' 0.01 '*' 0.05; t-values in parentheses; own calculations

	Model 1	Model 2	Model 3: great/some difficulty	Model 4: fairly easily/easily
Women				
Parenthood	0.25*	0.31*	0.64**	0.09
	(2.00)	(2.43)	(2.96)	(0.56)
GDP (centered)	0.11*	0.16**	0.23***	0.11
	(2.08)	(2.86)	(3.29)	(1.89)
SSE (centered)	−0.03	−0.11	−0.22	−0.02
	(−0.20)	(−0.67)	(−1.01)	(−0.11)
Parenthood × GDP (centered)		−0.06**	−0.14***	0.01
		(−2.91)	(−3.94)	(0.27)
Parenthood × SSE (centered)		0.09	0.30*	−0.03
		(1.52)	(2.32)	(−0.41)
Log-likelihood	−81,984.42	−81,980.17	−31,557.78	−50,193.17
N	26,943	26,943	10,221	16,862
Men				
Parenthood	0.15	0.14	0.82**	−0.07
	(1.16)	(1.04)	(3.27)	(−0.37)
GDP (centered)	0.10*	0.09	0.12	0.05
	(2.03)	(1.74)	(1.61)	(0.96)
SSE (centered)	−0.08	−0.06	−0.34	−0.04
	(−0.56)	(−0.37)	(−1.43)	(−0.22)
Parenthood × GDP (centered)		0.01	−0.03	0.05
		(0.52)	(−0.77)	(1.81)
Parenthood × SSE (centered)		−0.03	0.41**	−0.01
		(−0.43)	(2.63)	(−0.10)
Log-likelihood	−62,142.82	−62,142.67	−24,016.94	−38,241.48
N	20,677	20,677	7776	12,761

financial circumstances as well as on the wider societal context, we demonstrate that the relationship between parenthood and qol is moderated by the financial circumstances as well as by the economy and the welfare state. We provide evidence for both, the supportive as well as the emotional-benefit assumption of parenthood—but only for those parents in less favourable financial circumstances. With regard to gender, we do not find parenthood to be of substantially greater importance for women than for men among older populations. If at all, we find only few differences in the relationship between parenthood and qol between the sexes.

Respondents with some or great difficulties to make ends meet benefit most from having children, whereas for older people in financial ease parenthood is not linked to qol. Hence, on individual level, our supportive-benefit assumption holds true. Children, thus, constitute

the "poor man's capital", as suggested by Schultz (1973). Moreover, the beneficial effects of having children for those experiencing financial strain are moderated by the economic context as well as the public spending on social services. The more prosperous a country, the less beneficial is parenthood for the "poor", hence, a parent's supportive-benefit diminishes with increasing GDP. The supportive-benefit of parenthood is highest in the lowest economic groups in the least affluent countries. Simultaneously, generous welfare state spending resulted in better qol for parents facing financial pressures, supporting the idea of an emotional-benefit of parenthood at work at the same time. While an increase in GDP simply reduces the supportive-benefit of having children, a generous welfare state can make also family life more delightful. Hence, poor parents in rich countries with huge spending on SSE also benefit from having children.

Another important finding is that public spending on social services (SSE) was not related to higher qol among childless women and men in unfavourable economic circumstances. In short, childless respondents in late adulthood do not benefit from public social expenditures. Our findings raise doubts whether welfare state programs are targeted to those most in need when older childless persons in financial unease do not benefit from social service spending. However, we found that a higher GDP is related to higher qol of unprivileged older persons. Hence economic prosperity seems to be more effective in raising qol of older populations than social service spending. Public spending on social services should be more targeted to those in need in order to unfold their potential positive effects and increase qol of older persons who cannot fall back on their children in times of need.

For the respondents who can make ends meet easily, we did not find any significant relationship between parenthood and hence, neither a supportive nor an emotional benefit from having children on qol. Considering the national context, we find that the positive relationship of GDP with qol vanishes with an increase in individual subjective wealth. Respondents who are individually better-off do not benefit further from living in a wealthier country or in a welfare state with more generous spending on social services.

While we could only observe a small overall effect for parenthood on qol in the full sample, we found the effect to be moderated by individual financial circumstances as well as the economy and the welfare state. Our findings are in line with and go beyond Huijts et al. (2013) and Gibney et al. (2015) who consider that "both positive and negative associations between childlessness and psychological well-being at the country level may lead to non-significant aggregate results."Therefore, we strongly recommend that future cross-cultural research on parenthood and qol consider not only differences between, but also within countries. According to our analyses, the linkage between parenthood and qol is moderated by both individual social-economic circumstances as well as by societal contexts. Hence, average effects within as well as across countries might falsely lead to the conclusion that parenthood is irrelevant for quality of life in old age.

In regard to the welfare state (SSE), the assumption that generous welfare states provide alternatives to intergenerational support, e.g. reduce the risk of unmet care demands and therefore increase the qol of poor childless persons, does not hold true. An argument could be made that welfare states might increase qol of both the parents and the childless in the poor population. But as social service expenditures do not increase qol of unprivileged older childless persons, we find no evidence in support of this explanation. Another argument could be that welfare state spending on social services does not target the poor and needy population in the first place. Some researchers (Dallinger 2013) argue that the middle and upper class in particular benefits from welfare state programs, for instance, from social services or co-payments. We cannot support this line of thought: while qol was

not related to public spending on social services among the more privileged respondents who make ends meet easily, older parents experiencing financial hardship reported higher levels of qol in more generous welfare states with higher public social service expenditures, speaking in favour of the emotional-benefit model of parenthood.

The result that parents with financial difficulties from countries with high SSE report a higher qol compared to parents in low SSE countries support a conclusion made by Hansen (2012). He states that paradoxically, familistic cultures go together with low fertility rates and negative emotional effects of having children, whereas fertility rates are higher and parents derive greater happiness in more individualistic cultures. We find a more positive relation between parenthood and qol in individualistic countries like Sweden, Denmark, Great Britain, France and the Netherlands that also provide more generous social services. In contrast so-called "familistic countries" such as the Mediterranean countries provide fewer and less generous social services. Hence, to quote Hansen (2012, p. 51), "the rosy views or myths about parenthood thus are the strongest in countries where they are the most likely to be false, and vice versa." While social norms regarding family care obligations are known to influence the relation of specific forms of intergenerational solidarity on qol (Neuberger and Haberkern 2014), the overall effect of children on qol may be influenced much more by economic indicators than by wishful thinking (cf. Hansen 2012). As GDP and SSE are correlated, the poorer familistic states with their low GDP and low spending on SSE and their normative pressure to rely and to provide intergenerational support might nurture strong familistic norms due to pure necessity.

Of course, our comparison of parents and childless persons has limitations. Further research is needed to investigate the effect of parenthood on qol in more detail. First, the present analysis faces the limitations of all cross-sectional analyses: we can model correlations, but not causality. With respect to the individual level, parenthood has taken place in the past, and, therefore, can be considered as a cause of qol in old age. Still, albeit parenthood increases qol in less privileged circumstances, it may also increase the likelihood to end up in lower economic status groups in old age. Recall that single-parent families face a higher poverty risk and mothers earn less over the life course than childless women (McLanahan and Percheski 2008). When it comes to the country-level, the cross-sectional design reveals correlations between the economy, the welfare state, parenthood and quality of life. Theoretically driven, this is strong support for our hypothesis, but, we have to bear in mind, this is no proof of a causal relationship—even if we measured the societal context in the year preceding the surveys.

Second, this study has the same limitation as other investigations of the long-term effect of parenthood on qol that we know of: the selection issue or endogeneity problem. We do not know for sure whether those persons in our sample who decided to have children were happier back then (and, therefore more likely to have children). Following Gibney et al. (2015), we can at least assume that health selection played only a minor role. So far, however, most research on the short-term effects of parenthood on well-being has not observed major differences between these groups prior to parenthood. Furthermore, the effect of parenthood persists when pre-parental differences are taken into account (Hansen 2012). These results support our arguments and results.

Third, the CASP measure—despite its advances—does not necessarily represent the same dimensions of well-being as different measures used in other studies (Huijts et al. 2013, p. 44; Andersson et al. 2014). Albeit we reproduced the results with an indicator for life satisfaction, we cannot deny the possibility that other measures or data may lead to different results. Future research may examine the robustness of our findings across various indicators of quality of life. Furthermore, a detailed analysis of the different underlying

dimensions of the CASP might enrich the knowledge about the many ways in which parenthood influences QoL in old age and is our suggestion for future research in this field.

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