Revisiting The Paradox of Well-Being: The Importance of National Context

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Abstract

Objectives: Despite age related changes or declines in circumstances, health or income, many older people are able to maintain subjective well-being (SWB) in later life. This is known as the paradox of well-being. To date, much research has focused on both individual (e.g. age, health and income) and country-level (e.g. national wealth, inequality) differences in SWB. Yet little is known about how these differences combine to affect people's ability to maintain SWB in later life.

Methods: This research uses the 2008-2009 European Social Survey to test the multilevel hypothesis that economic circumstances, reflected by a country's Gross Domestic Product (GDP) affect the paradox of well-being, i.e. the relationship between age and SWB, even after accounting for other relevant psychological, individual, and country differences. Possible avenues by which GDP affects SWB are also explored.

Results: The multilevel analysis revealed that GDP disproportionally affects the SWB of older people relative to younger people and that the paradox of well-being is only observed in countries with higher GDP.

Discussion: The findings clarify the relationship between age and SWB by demonstrating that the paradox of well-being is conditional on the economic context. Implications for individual and country-level strategies for successful aging are discussed.

Keywords: Old age, Subjective well-being, GDP, paradox of well-being, Multilevel analysis

Revisiting The Paradox of Well-Being: The Importance of National Context

The economic, health, practical and social challenges posed by aging populations present pressing policy concerns for both developed and under-developed nations (Borsch-Supan, 2008). Many contend that a key policy objective should be to maintain, promote and improve well-being (Layard, 2010; Seaford, 2011). This is partly due to increasing recognition that people's health and longevity are affected substantially by their subjective well-being (SWB). In economically developed nations differences in SWB can account for as much as 10 years difference in life expectancy (Diener and Chan, 2011). SWB is associated with individual differences, such as age, income and health (see Diener, Suh, Lucas & Smith, 1999), and differences between countries, such as economic development, defined by Gross Domestic Product (GDP; see Diener, Diener & Diener, 1995). Yet, typically these differences have been analyzed separately. This paper addresses this gap in the literature by testing whether the paradox of well-being (i.e. the absence of a negative relationship between age and SWB) varies according to GDP.

Age Differences in SWB

Circumstances, such as income or health that decline with age are negatively related to SWB. However, SWB does not necessarily decrease with age (Diener & Suh, 1998), until approximately 3 to 5 years prior to the end of life (Gestorf, et al., 2010). This phenomenon is known as the 'paradox of well-being' (e.g. Hansen & Slagsvold, 2012; Krauss-Whitbourne & Sneed, 2002; Mroczek & Kolarz, 1998). To date, no research has systematically investigated whether this paradox exists across different countries, and whether or why differences between countries might influence age differences in SWB.

SWB comprises of cognitive and affective components. The cognitive component is

usually measured as a global evaluation of life satisfaction (Diener, et al., 1999). Despite real age related declines in health, income and physical or cognitive abilities, people may remain satisfied because they make an accommodative shift that aligns their aims and goals with what is achievable (Brandstadter & Greve, 1994, Krauss-Whitbourne & Sneed, 2002).

The affective component, or emotional well-being, is usually assessed by evaluations of happiness (see Kunzmann, Little & Smith, 2000, Diener et al., 1999). Older people's ability to maintain happiness in later life (Mroczek & Kolarz, 1998) is thought to be due to their improved ability to regulate emotions (Lawton, Kleban, Rajagopal & Dean, 1992) and the development of a mature set of coping strategies and defense mechanisms that enable them to deal more effectively with emotional challenges (Krauss-Whitbourne & Sneed, 2002). Related to this notion, socioemotional selectivity theory proposes that with life experience older adults have found ways to successfully control and avoid potentially negative experiences, by selecting social partners (e.g. family, friends) who provide positive emotional feedback and support (Carstensen, 1995; Carstensen, Isaacowitz & Charles, 1999).

However, research using data from 43 nations in the World Values Survey II contradicts the conclusion that happiness is maintained in later life, revealing that positive affect was lower in older respondents, while life satisfaction did not differ across age groups (Diener & Suh, 1998). Moreover, Inglehart's (1990) analysis of the Eurobarometer (surveys from 1980 to 1986) and World Values Survey I, revealed that those aged 65 years and over only had higher levels of life satisfaction and happiness compared to younger age groups, only once individual differences in objective circumstances in income, education and marital status were controlled for.

These different findings may reflect which indicators of SWB are measured, and which explanatory variables, if any, are included in the analysis. More interestingly they may depend

on the country or continents in which the data were collected. These studies only report the overall (i.e., average) association between age and SWB across all countries, therefore possible variations in the relationship between age and SWB may have been obscured. For instance, Lucas and Gohm (2000) showed that age was positively related to life satisfaction in some countries but negatively in others. Blanchflower and Oswald's (2008) curvilinear analysis of the relationship between age and SWB showed that the lowest level of happiness, among an American sample, and life satisfaction, among a European sample, occurred at different ages. However, it is unclear the extent to which underlying differences between countries influence variation in the relationship between age and SWB.

Cross-Country Differences in SWB in Later Life

Happiness and averaged measures of SWB are higher in more economically developed countries indicated by higher GDP per capita (Diener, et al., 1995), which reflects the total value of goods and services produced in a country in a given year (European Commission, 2011a). Economic development can improve SWB by increasing a country's capacity to go beyond provision of basic needs such as, food, water, health and sanitation (Diener et al., 1995). Individuals within wealthier nations are likely to have better standards of living that allow a higher level of needs and goals to be achieved. Therefore, it follows that wealthier nations should be better equipped to deal with the needs of aging populations, reducing the need for accommodative shifts in expectations and reducing situational challenges that imped happiness.

Indeed, a study by Deaton (2008) using the Gallup World Poll, revealed that life satisfaction declined linearly with age in most countries but the decline was largest for countries with lower GDP and smallest in countries with mid-levels of GDP (mostly eastern European countries). Moreover, there was a curvilinear U-shape in countries with the highest GDP, such as

the US, Canada, UK, Australia and New Zealand. These findings support the notion that the wider economic context may buffer against some of the adverse effects of age on well-being, but the research has several limitations.

First, ordinary least squares regression was used for clustered data, (i.e. individuals within countries), increasing the risk of Type I errors, and potentially overestimating the relationship between age and SWB. Second, the analysis did not adjust for (covary) other variables that have previously been shown to influence the relationship between age and SWB. Lastly, the study did not test possible explanations as to why GDP may have more or less impact on older people's SWB. The present research addresses these limitations by applying a multi-level approach to explore cross-country differences in the paradox of well-being. Multilevel modeling can be applied to data that is 'nested' (e.g. individuals within countries) and allows for the simultaneous testing of differences between countries (i.e. at the country-level) and differences between individuals within countries (i.e. at the individual-level).

GDP should have a positive influence on SWB but we expect that GDP should also moderate the effect of age on SWB. We address whether the paradox of well-being holds across poorer and wealthier countries by examining the cross-level interaction between age (an individual-level variable) and GDP (a country-level variable). First we hypothesize that countries with higher GDP should be better able to provide as a whole for their entire population so that older adults may not be adversely affected in their SWB (i.e. little to no age differences in SWB). However, in countries with lower GDP the relative paucity of resources may be more consequential for older people and therefore old-age seems more likely to be associated with lower levels of SWB (i.e. older people's SWB significantly lower than younger people's SWB). Second, we hypothesize that the effect of GDP on SWB should be greatest among older people.

Why would GDP affect older people's SWB?

Health policies. Government expenditure depends on GDP and estimates of economic growth (e.g. Disney, 2000). Therefore, GDP influences policy strategies to deal with challenges of aging populations, such as those related to health care provisions (European Commission, 2011b). Countries with higher GDP per capita are better able to provide a wider range of, and more substantial, support for older people, including better health-care systems, better services and better infrastructure for older people (Lucas & Gohm, 2000). Government investment in health care services could have a greater effect on older people's SWB because they make greater use of health care services.

Societal attitudes. Ageism adversely affects SWB (Garstka, Schmitt, Branscombe & Hummert, 2004). Some theories of prejudice contend that negative attitudes towards social groups are associated with the perception that these groups pose various types of threat (Riek, Ania, & Gaertner. 2006). Older people are perceived to pose greater threats to the economy (Abrams, Russell, Vauclair & Swift, 2011) and this is perception is stronger in countries with lower GDP (Abrams, Vauclair & Swift, 2011), potentially due to increased competition and conflict over resources. Therefore, the level of prejudice against older people within a society should adversely affect SWB in later life and contribute to cross-country differences in the relationship between age and SWB.

Additional Bases of Individual and Country Differences in SWB

As well as age and GDP, various other individual and country-level variables are likely to account for differences in SWB. At the individual-level various studies have indicated that being married, employed, religious, having better health, higher income, more social support and higher educational attainment can each be positively related to aspects of well-being (Diener,

2000; Ellison, 1991; Diener et al., 1999; Kunzmann et al., 2000; Rentfrow et al., 2009; Warr, Butcher, Robertson, & Callinan, 2004). At the country-level, stronger political rights and civil liberties, greater individualism, less inequality, higher mean retirement age, and longer life expectancy should may be positively related to SWB (Diener, et al. 1995; Diener & Chan, 2011; Litwin & Shiovitz-Ezra, 2006; Kim & Moen, 2002). Religiosity, within religions that promote conformity and individuality may also help maintain SWB in later life (Argue, Johnson, & White, 1999; McFadden, 1995). For further information on how these variables related to SWB see supplementary materials. These variables will be included in the analyses to see whether controlling for relevant differences in individuals' circumstances and contextual differences between countries impact upon the relationship between age, GDP and SWB.

Method

Data were from 53,773 respondents in 27 countries in the 2008/ 2009 European Social Survey (ESS) (Norwegian Social Science Data Services, 2008). The ESS draws random (probability) samples from the eligible residential populations aged 15 to 105 (M_{age} = 47.53 *SD* = 18.52) in 29 countries across the European region. Consistent with relevant prior research investigating the relationship between age and SWB (see Diener & Suh, 1998; Mroczek & Kolarz, 1998; Deaton, 2008; Blanchflower & Oswald, 2008; Stone et al. 2010) we use data from the whole age range available because the paradox of well-being involves a comparison between older and younger respondents' SWB. To gain additional insight in to older people's SWB we also analyze a subsample aged 60 and over.

The ESS offers an ideal evidence base because the data span a diverse set of countries but with rigorously validated cross-national measurement. It also includes the standard measures of life satisfaction, 'All things considered, how satisfied are you with your life as a whole

nowadays?' and happiness, 'Taking all things together, how happy would you say you are?' Responses were scored from 0 to 10, with higher scores indicating greater satisfaction and happiness. These were combined into a mean score because they were sufficiently related to infer they reflect the higher order construct of SWB (see Diener 1994); $r = .65$, $p < .001$ at the individual-level (within countries), $r = .97$, $p < .001$ at the country-level. Analyses on separate SWB items are available from the corresponding author. The intraclass correlation coefficient (ICC) of .196, revealed that 19.6% of variance in SWB was associated with differences between countries, sufficient to employ a multilevel approach. See Figure 1 for unadjusted confidence intervals for SWB.

Individual-level variables were gender (recoded as '0' = male, '1' = female), education level ('0' = not complete primary education to '6' = completed second stage of tertiary), marital status (recoded as '0' = no partner, '1' = marital status with partner), religiosity ('0' = not religious at all' to '10' = very religious), employment status (recoded as '0' reflects that respondents' main activity in the last seven days involved no paid employment, '1' their activities involved some paid employment), subjective poverty ('1' = living comfortably on present income to '4' = finding it very difficult on present income), subjective health ('1' = very good to '5' = very bad) and social contact ('1' = never meets socially with friends to '7' = meets socially with friends every day).

Country-level variables were GDP (higher numbers indicating a higher gross domestic product), inequality indicated by GINI Index (higher numbers indicating more inequality of the income distribution within a country), life expectancy at birth, cultural individualism (higher numbers reflect endorsement of autonomy values and lower numbers reflect more endorsement of embeddedness values), political rights and civil liberties (higher numbers representing less

political and civil freedom), health care expenditure, religiosity (country's mean level of the individual's religiosity within that country), statutory retirement age for men, and prejudice towards people over 70 (computed from the individual-level variable, with '0' = feeling extremely negative, to '10' = feeling extremely positive). Table 1 provides a summary of sample characteristics see Table S1 and S2 for full sample characteristics. For more information about individual and country-level variables see the supplementary materials.

Analytic Strategy

We first tested a simple model (Model 1a) in which respondent's age, GDP and the hypothesized age x GDP interaction were used as predictors of SWB. We then added a set of individual-level variables that have been shown to significantly relate to SWB (Model 2a) to see whether controlling for these impacted upon the relationship between age, GDP and SWB. Additional analyses test whether the relationship between age and SWB maybe curvilinear in nature as suggested by Blanchflower and Oswald (2008).

We unpacked effects of GDP by examining more specific country-level differences that theoretically relate to SWB (GINI, cultural individualism, political rights and civil liberties, religiosity, statutory retirement age), to GDP (health care expenditure, prejudice) or to age (life expectancy). We tested the robustness of the hypothesized age x GDP interaction by testing whether these alternative country-level variables interacted with age. This allowed us to understand whether other differences between countries influenced the relationship between age and SWB. This was done in separate analyses to maintain maximum degrees of freedom at the country-level. Any variables with significant cross-level interactions with age included in subsequent models alongside the age x GDP interaction in order to see whether the interactions account for unique variance. If the age x GDP interaction remained significant despite the

inclusion of alternative predictors, we might cautiously conclude that GDP accounted for other cross-level interactions.

Finally, because the paradox of well-being relates to well-being in later life we re-tested Models 1a and 2a within a subset of respondents aged 60 and over to see whether the hypothesized age x GDP interaction still arises (Models 1b and 2b). All analyses used HLM 6.0 (Raudenbush, Bryk, & Congdon, 2004), all variables were grand mean centred and the ESS design weight was applied.

Results

The Relationship between Age, GDP and SWB

Model 1a revealed a significant negative effect of age and a significant positive effect of GDP. The hypothesized cross-level interaction was also significant demonstrating that the effect of age on SWB varied depending on GDP, see Table 2. A Bayesian multilevel analysis confirmed the robustness of the cross-level interaction, see supplementary results.

Model 2a re-tested these effects while controlling for the set of individual-level variables -- being married, employed, religious, health, subjective income, social contact and educational attainment. The negative effect of age, the positive effect of GDP, and the age x GDP cross-level interaction remained significant (see Table 2). As expected, respondents in countries with higher GDP, such as Switzerland, Nordic countries and other northern European countries, such as Great Britain, Belgium and Germany, reported higher SWB. Importantly, however, simple slopes analyses revealed the relationship between age and SWB in countries with higher GDP was positive (B = 0.003, SE <0.001, p <.001), while the relationship between age and SWB in countries with lower GDP, which include Eastern European countries, was negative (B = -0.011, SE <0.001, p <.001). This supports the hypothesis that the paradox of wellbeing is more likely in

countries with higher GDP. The interaction also shows that the effect of GDP is greater for older respondents ($B_{70years}$ = 11.873, *SE* = 1.097, p <.001; $B_{30years}$ = 8.983, *SE* = 1.035, p <.001) demonstrating that the gap in well-being between poorer and wealthier countries is larger among older people (see Figure 2, this interaction pattern is similar to that found for Model 1a).

Consistent with previous findings the model revealed that having better subjective health, being female, married, religious, feeling comfortable with one's income, and having more social contact were independently related to higher levels of SWB. Inconsistent with previous findings, not having worked within the last 7 days was negatively related to SWB and education was not significantly related to SWB.

Curvilinear Effect of Age

Previous evidence has indicated that the relationship between age and SWB is curvilinear, with lower levels of SWB during middle-age than in youth or old age (Blanchflower & Oswald, 2008). We extended Model 2a by adding the curvilinear (quadratic) effect of age on SWB at level-one. The linear and curvilinear effects of age were significant (B_{linear} = -.07, p < .001; $B_{curvilinear}$ = .001, p < .001). In this model we substituted the linear age x GDP interaction for a curvilinear age x GDP interaction, which was significant (*B* = .001, p <.001). The linear age x GDP interaction was then re-entered into the model. The linear age x GDP interaction was marginally significant (*B* = .13, p = .065), but the curvilinear age x GDP interaction was not (p = .282). This suggests that although the data can fit a curvilinear age x GDP interaction, it is more parsimonious to fit the linear age x GDP interaction.

Other Country-level Differences Affecting the Relationship between Age and SWB

In separate variations of Model 2a, inequality (GINI), cultural individualism, political and civil freedom, life expectancy, government expenditure on health care, statutory retirement age,

the level of old-age prejudice and religiosity were tested as level-two effects and in a cross-level interactions with age. GDP and the age x GDP interaction were then added to see whether any significant effects remained.

These separate analyses revealed that significant, positive effects of individualism, life expectancy, health care expenditure, retirement age and negative effect of religiosity on SWB all became non-significant once the GDP was accounted for. In addition, all significant cross-level interactions with age (age x inequality, cultural individualism, political and civil freedom, life expectancy, health care expenditure, retirement age and religiosity) became non-significant when GDP, and the age x GDP interaction, were included into each separate model (see supplementary materials for full results and Table S3). Importantly the effect of GDP and the age x GDP interaction remained significant in all models, demonstrating the robustness of the age x GDP interaction effect. An additional analysis revealed that the effects of GDP and the age x GDP interaction remained significant when all level-two variables are entered simultaneously as covariates, although this reduced level-two degrees of freedom to 16, see supplementary materials Table S4 for results.

The Relationship between Age, GDP and SWB for those Aged 60 and Over

We examined the effects of age and GDP among respondents aged 60 and over (n = 15,837, M_{age} = 70.52, *SD* = 7.66) because it is between these pre and post retirement years that one might expect the largest differences effects of GDP on SWB. Consistent with this idea the ICC in this subsample revealed more country-level variance in SWB (26.56%). We re-ran Model 1a and 2a on this subsample, see Table 2. The first model (Model 1b) corroborated previous results, with a significant negative effect of age, a positive effect of GDP and a significant cross-level interaction, that revealed a similar pattern shown in Figure 2.

In contrast, once covariates were accounted for (Model 2b) the effect of age became positive, and the effects of gender and paid work were not significant. The effect of GDP remained positive and the interaction remained significant. The relationship between age and SWB was positive in countries with higher GDP (B = 0.018, SE = 0.003, p <.001), however, the relationship between age and SWB was marginally significant (and positive) in countries with lower GDP (B = 0.002, SE = 0.004, p = .059). This demonstrates the paradox of wellbeing is present for those aged 60 and over in countries that are high and low in GDP once covariates that are related to SWB are controlled for. Consistent with previous models the effect of GDP on SWB is greatest for the relatively older respondents, see Figure 3.

Discussion

The present research sheds new light on the relationship between age, GDP and SWB. Comparing people from 15 to 105 years, older people have lower SWB. However, this relationship is qualified by GDP, and only holds in countries with lower GDP. This interaction was not attributable to other individual factors that are known to affect SWB, such as being married, feeling healthy and feeling more satisfied with income.

In line with previous research, people who felt healthier, were married or in a partnership, more religious, felt comfortable living on their income and had more social contact reported higher levels of SWB. However, in contrast with previous research we found no evidence for an effect of education and, indeed, found that those classified as not working had higher SWB. This latter finding may be due to the coding of the item used to measure employment status, which confounds those who are retired and those who have caring responsibilities with those who are unemployed. Indeed, there was no effect of employment status when the subsample aged 60 and over were analyzed.

Moreover, when these individual circumstances are accounted for on the subsample of those aged 60 and over, SWB actually increases with age. In line with Inglehart (1990) this shows older people have the highest level of adjusted SWB. Adjusting for these individual factors extenuated the age differences in SWB in countries with higher GDP, with older adults reporting higher levels of SWB, while the effect of age became (marginally) positive in countries with lower GDP. Regardless of these adjustments it remains the case that GDP has a greater effect on those who are relatively older.

A number of mechanisms that we could not assess have been proposed to explain how individual's SWB can be maintained in later life. These include the ability to cope with negative life events, manage problems and psychologically adapt to changes in circumstance (Krauss-Whitbourne & Sneed, 2002). As circumstances change with age, older people may adjust their aspirations and adjust personal goals in relation to reduced resources and competencies (Brandstadter & Greve, 1994; Rapkin & Fisher, 1992) and use social comparison mechanisms to bolster subjective evaluations (Heidrich & Ryff, 1993). It seems then that there are two pathways to maintaining SWB in later life. The first would be to minimize age related declines in personal circumstances; the second would be to change expectations and comparisons that provide the subjective context for well-being. However, regardless of such individual strategies, the present study also suggests that the wealth of one's country has greater implications of the SWB of older than younger people.

Why does GDP affect older people's well-being more strongly? Our analyses suggest that this may be a general effect, rather than being attributable to any single other characteristic that differs between countries, such as either health care expenditure or statutory retirement age. None of the other country-level differences tested provide any additional explanatory power once

GDP was accounted for. This may not be surprising given that the GDP and the cross-level interaction account for a very large percentage of the between country variance in SWB (81.9 per cent), which increased to 88.9 per cent among those aged 60 and over. It is plausible that higher GDP sustains older people's well-being in a variety of ways through multiple characteristics and policies, and that combinations of these may differ in different countries. However, maintaining sufficient avenues of support for older people may depend on having sufficiently high GDP, while the well-being of aging populations in low GDP countries may be more difficult to maintain owing to the economic challenge of providing for their needs.

The evidence provides clearer conclusions than previous research in two ways. First, the evidence shows that the 'paradox' of sustained well-being is not universal. In countries with higher GDP, age differences in SWB were minimal, corroborating findings by Deaton (2008) until individual factors were controlled for in the subsample aged 60 and over, corroborating findings by Inglehart (1990). However, in countries with lower GDP where the relationship between age and well-being has been less well studied, older people reported significantly lower SWB compared to younger people. This relationship only changes once individual factors are controlled for on the subsample aged 60 and over. Despite this, all analyses show older people report lower SWB in countries with lower GDP, than older people in countries with higher GDP. Second, extending Deaton's and Inglehart's findings our multilevel analysis shows that controlling for individual circumstances only adjusts results when considering a those aged 60 and over, demonstrating their greater influence on this subsample. A further extension of Deaton (2008) is that our analyses also showed that other characteristics of countries impact on SWB, but that these are likely to be subsidiary to an overarching effect of GDP. For the first time, we tested for potential avenues by which greater economic productivity may differently affect older

people's SWB. This disambiguates previous research because it accounts for both individual and country-level sources of variability in SWB. It demonstrates the importance of GDP but also rules out the potential impact of a number of other plausible variables, such as levels of prejudice.

Both wealthy and less wealthy countries face challenges posed by aging populations, yet much of the research demonstrating the paradox of well-being has been conducted predominantly in wealthier countries. Accounting for country-level differences is important because the extent to which populations are aging varies considerably; the global population aged 60 and over is expected to reach nearly 2 billion by 2050, when 32 countries will have more than 10 million people over 60 (United Nations, 2010). The extent to which countries can accommodate demographic changes will also vary considerably (Lee, et al., 2010; United Nations, 2010) as will their existing political landscape and policy structure. Our analyses suggest these factors have implications for the well-being of older people, and suggest important considerations for policy makers. For instance, currently the challenge of sustaining older people's well-being may greater in the context of significant austerity measures in many countries that also face rising costs of sustaining an increasing aging population (Lee et al., 2010).

Limitations and Future Directions

The present evidence is drawn from the ESS, therefore the results are of particular relevance to the European region and may not generalize. It is important that the ESS has an extremely rigorous common measurement framework across all of the participating countries, ensuring that the data are consistent and high quality. By using a multilevel modelling framework, we assume that our clusters can be regarded as a random sample from a wider

population allowing us theoretically and statistically to infer that the conclusions should also hold beyond the countries that were used in the analysis as long as they fall within the same range in terms of GDP and age (Raudenbush & Bryk, 2002). Given that other countries in other continents are facing challenges posed by population aging the present evidence is relevant to their future circumstances.

Across all countries as life expectancy increases, so too does the prevalence of many diseases (e.g. dementia) that are likely to reduce the participation of the elderly population in survey-based research and bias SWB upwards. However, the additional analyses included country-level life expectancy to ensure the age x GDP interaction was not an artefact of possible survey bias arising from country differences in mortality. Cross-country longitudinal research would be the only way to explore how GDP might influence how mortality and morbidity related changes in later life impact on SWB.

The effect of age should be considered in a broader context of variables that determine SWB. Just over 80 per cent of variance in SWB was associated with differences between individuals, within countries, and only 19 per cent of this variance was accounted for by individual-level variables. This is not surprising given that both momentary fluctuations and other individual differences can affect SWB. For example, personality and genetic factors are strong and consistent predictors of SWB (Bartels, & Boomsma, 2009; Weiss, Bates & Luciano, 2008). However, in the present research we were restricted by the scope of the ESS data and conceptual parsimony to only include variables that may influence the relationship of interest, that between age and SWB. Thus we examined primarily demographic and relatively sociological variables, other variables of course remain interesting avenues for future research.

Many mechanisms may allow GDP to influence older people's SWB disproportionately. Future research could consider the extent to which isolation, social or political engagement or exclusion trust in politics or political systems, political unrest, uncertainty or national crime rates could impact on older people's SWB.

Conclusion

This study provides a new and more complete picture of the relationship between age and SWB by combining both individual and country-level effects in one analysis. GDP has a stronger impact on older compared to younger individuals. Given the now widely accepted impact of well-being on a host of other important outcomes such as health, productivity and longevity (Diener, 2000; Diener & Chan, 2011), it is of concern if the well-being of any section of a population is disproportionately affected by economic prosperity and decline. The combination of economic austerity, stagnation or depression and an aging population implies potentially greater harm to the well-being of large numbers of older people. This is important because, if not addressed, it could create a spiral of even greater national burdens of health and social care, which may itself further impede economic growth, an further attenuation of older people's SWB.

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Table 1.

Summary of Sample Characteristics

	N	Subjective Well-being		Age		GDP
		Mean	*SD*	Mean	*SD*	
Belgium	1760	7.46	1.60	46.46	18.73	0.98
Bulgaria	2230	4.75	2.42	51.84	17.66	0.79
Switzerland	1819	7.93	1.52	48.59	18.34	1.00
Cyprus	1215	7.24	1.54	44.81	17.79	0.92
Czech Republic	2018	6.71	1.85	47.10	17.34	0.92
Germany	2751	7.01	1.91	48.96	17.43	0.98
Denmark	1610	8.44	1.25	49.26	18.07	0.98
Estonia	1661	6.44	1.91	47.78	19.24	0.89
Spain	2576	7.44	1.58	46.83	19.16	0.96
Finland	2195	7.98	1.37	47.97	18.76	0.98
France	2073	6.68	1.92	48.65	18.72	0.97
Great Britain	2352	7.23	1.87	49.15	18.57	0.98
Greece	2072	6.33	1.90	45.04	16.75	0.94
Croatia	1484	6.61	2.04	47.31	18.26	0.85
Hungary	1544	5.63	2.26	47.78	19.07	0.87
Israel	2490	7.46	1.97	45.42	19.10	0.93
Latvia	1980	6.15	2.06	48.32	18.57	0.85
Netherlands	1778	7.67	1.34	49.31	17.78	0.99
Norway	1549	7.93	1.48	45.76	17.85	1.00
Poland	1619	7.00	2.00	44.64	18.96	0.85
Portugal	2367	6.02	1.95	52.75	19.96	0.91
Romania	2146	6.04	2.17	46.08	17.67	0.8
Russian Federation	2512	5.68	2.16	47.21	19.00	0.83
Sweden	1830	7.84	1.56	47.60	19.27	0.99
Slovenia	1286	7.08	1.85	46.56	18.91	0.93
Slovakia	1810	6.50	1.90	50.09	17.15	0.89

Table 1.

Cont.

		Subjective Well-being		Age		GDP
		Mean	*SD*	Mean	*SD*	
Turkey	2416	5.52	2.41	39.61	16.49	0.81
Ukraine	1845	4.68	2.27	48.84	18.68	0.71

Table 2.

Multilevel Regression Models Predicting Subjective Well-Being

			Sub-sample aged 60 and over	
	Model 1a	Model 2a	Model 1b	Model 2b
Intercept	6.80*** (0.08)	6.75*** (0.07)	6.55*** (0.09)	6.48*** (0.07)
Individual-level effects				
Age	-0.02*** (0.001)	-0.003** (0.001)	-0.01* (0.004)	0.01** (0.004)
Subjective income (lower)		-0.38*** (0.04)		-0.45*** (0.04)
Marital status (partnership)		0.37*** (0.04)		0.47*** (0.04)
Education		0.02 (0.01)		0.02 (0.02)
Gender (female)		-0.11** (0.02)		-0.05 (0.04)
Paid work		-0.11*** (0.02)		0.08 (0.06)
Religiosity		0.05*** (0.01)		0.07*** (0.01)
Subjective health (poorer)		-0.59*** (0.03)		-0.59*** (0.04)
Social contact		0.16*** (0.01)		0.11*** (0.01)
Country-level effects				
GDP	10.75*** (0.96)	6.79*** (0.88)	13.99*** (1.12)	7.99*** (0.89)
Cross-level interaction				
GDP x Age	0.14*** (0.02)	0.07*** (0.01)	0.14* (0.05)	0.10* (0.05)
Per cent of variance explained				
Within countries	3.94	19.50	0.67	19.00
Between countries	76.72	81.91	83.60	88.95
Degrees of freedom				
Within countries	25	50263	25/15506	14551
Between countries	25	24	25	24

Note: All entries are unstandardized regression coefficients. Bold coefficients are significant effects at $p < .05$ with standard errors in parentheses. All predictors are grand-mean centred. Data source: ESS 2009. Total N = 53773 respondents, 27 countries. Individual-level data are weighted by the ESS design weights. Significance levels indicated by *** = $p < .001$, ** = $p < .01$, * = $p < .05$.

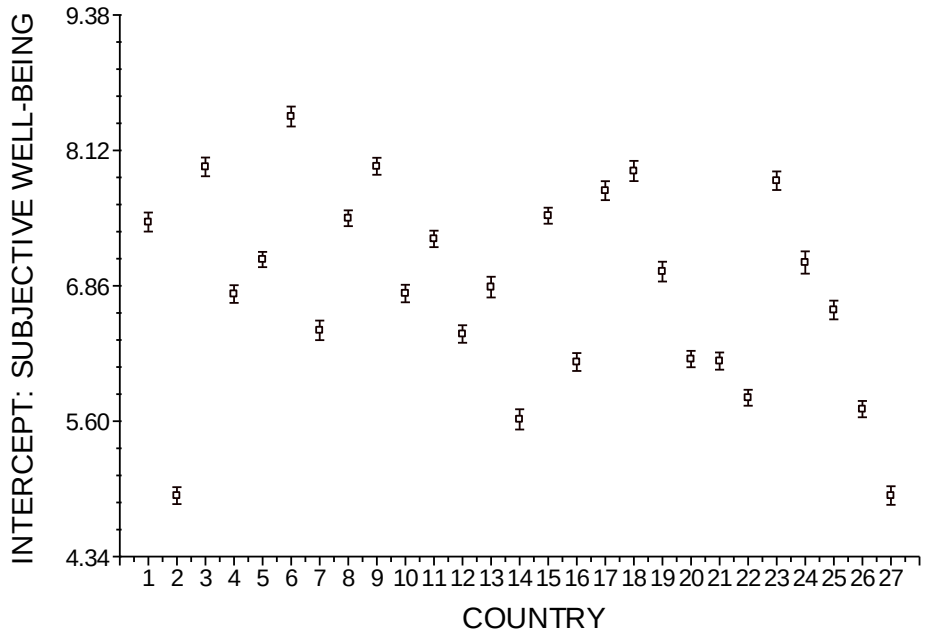

Figure 1. Unadjusted Confidence Intervals for Subjective Well-Being, valued at mean age (47.53)

Note: Countries are, 1. Belgium, 2. Bulgaria, 3.Switzerland, 4. Czech Republic, 5. Germany, 6. Denmark, 7. Estonia, 8. Spain, 9. Finland, 10. France, 11. Great Britian, 12. Greece, 13. Croatia, 14. Hungary, 15. Israel, 16. Latvia, 17. Netherlands, 18. Norway, 19. Poland, 20. Portugual, 21.Romania, 22. Russain Federation, 23. Sweden, 24. Slovenia, 25. Slovakia, 26. Turkey, 27. Ukraine.

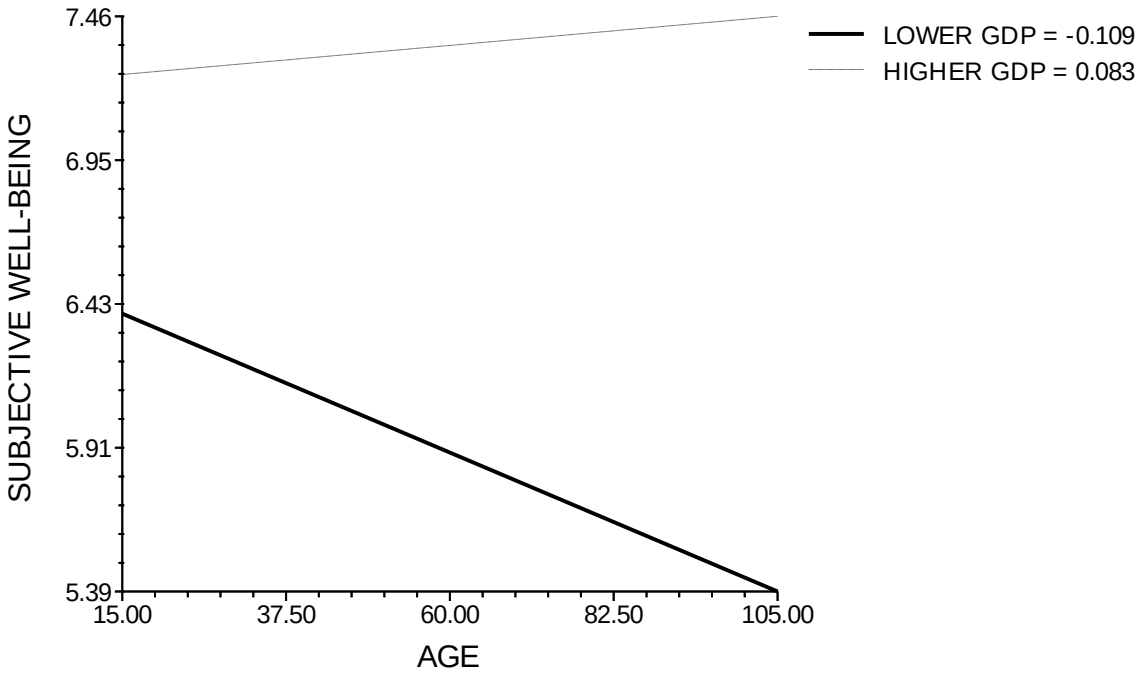

Figure 2: The relationship between respondents' age and subjective well-being as a function of their country's GDP, after controlling for other individual differences (gender, marital status, employment status, subjective health, subjective income, social contact and religiosity).

Note: GDP has been averaged at the upper and lower quartiles.

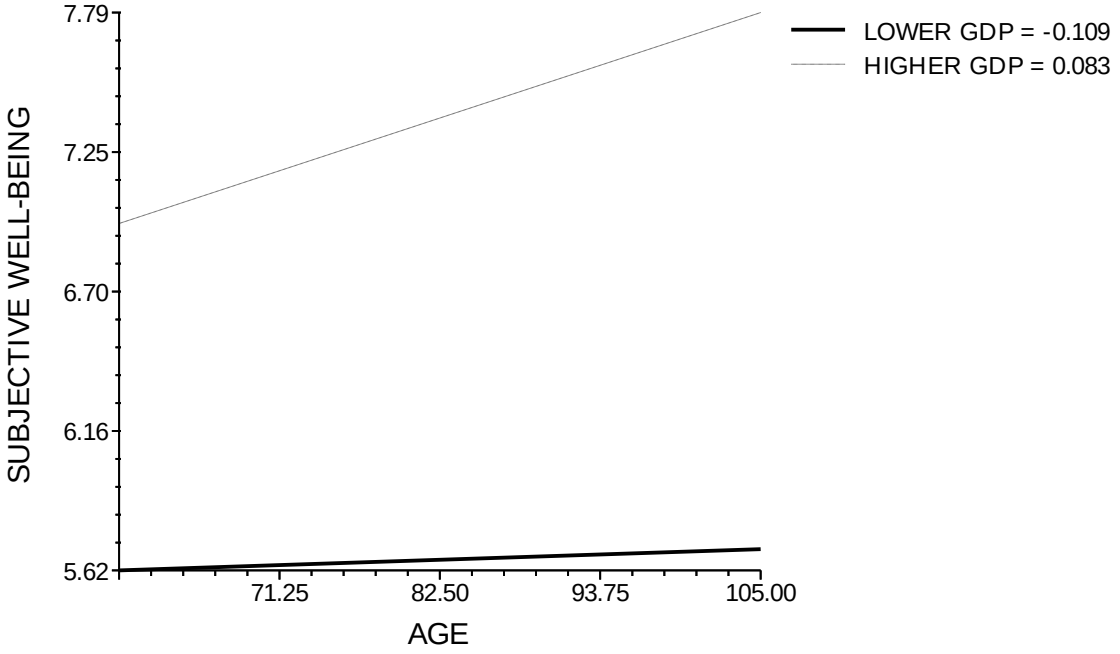

Figure 3: The relationship between respondent' age and subjective well-being as a function of their country's GDP on a subsample aged 60 and over, after controlling for other individual differences (gender, marital status, employment status, subjective health, subjective income, social contact and religiosity).

Note: GDP has been averaged at the upper and lower quartiles.