Socioeconomic disadvantage in childhood: does it affect Self Rated Health among older adults in Europe?

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Abstract

The paper aims at assessing the relative importance of childhood socioeconomic disadvantage on the self-rated health (SRH) of older men and women in Europe while controlling for mediators and health conditions which confound other studies. The data used in the analysis come from waves 2 and 3 of the Survey of Health, Ageing and Retirement in Europe; wave 2 was carried out in 2006/07 and represents "current" information concerning the respondents whereas wave 3 includes retrospective material referring to their childhood. Considering the 20,829 persons participating at both waves of the survey, logistic regression models were run to examine effects of childhood disadvantage on late adulthood SRH. The findings show that all indicators (i.e. occupation of the main breadwinner at age 10, the number of books the respondent had access to at age 10, relative position in mathematics compared to peers at school and whether they had experienced a period of hunger when aged 0-15 years) are very significant predictors of SRH for both men and women aged 50 or higher even when controlling for childhood SRH and other 'objective' indicators pertaining to adult health. When "current" socio-economic circumstances are also controlled for in a comprehensive model, the relative importance of several childhood indicators is reduced quite substantially, signifying that their effect on SRH is mediated by adult socioeconomic status and, especially, educational attainment. Nevertheless, some childhood predictors, especially "having experienced a period of hunger", remain very significant. Further, whereas there are no substantial differences in the significance of childhood indicators between men and women, important differences can be observed regarding the importance of current socio-economic status indicators by sex.

Introduction

Self-rated health is an important and widely used summary measure, representing an individual's perspective of his own health status, based on a simple general question. As such it is considered a 'general' or 'subjective' indicator which, however, has proved a strong predictor of mortality and morbidity (Idler & Kasl, 1991; Idler & Benyamini, 1997; Van Doorslaer & Gerdtham, 2003; Verropoulou, 2014). Hence, it is recommended by the World Health Organization (WHO) and the European Commission for health monitoring and, over the past two decades, it has been consistently used to compute measures such as healthy life expectancy (Robine et al., 2003).

Numerous studies, both among the general population and older adults, have indicated a strong association of socioeconomic position (SEP) with self-rated health (SRH) (Griffin et al., 2002; Huismann et al., 2004; Jürges, 2007; Mackenbach et al., 2007; Verropoulou, 2009). Read et al. (2015), for instance, conducting a systematic review of studies about the association of SEP with subjective health among older Europeans, found that lower SEP was related to poorer health but associations varied somewhat depending on the specific measures used. Associations were weaker when social support and health-related behaviours were adjusted for, suggesting that these factors mediate the relationship between SEP and subjective health. Further, patterns were not consisted by gender while differences tended to diminish after adjusting for other indicators of health and life circumstances.

Recently, there has been a growing interest in the influence of early life conditions on various health indicators in later life. Due to the scarcity of life-course studies, researchers have taken to examining the role of childhood socioeconomic status in cohorts of middle aged and older persons using adult health surveys and retrospective material. Findings have shown significant but modest associations between experiencing a disadvantaged background in childhood and having a higher risk of obesity, smoking, drinking, cardiovascular diseases, common mental disorders, depression, worse SRH, poorer physical and psychosocial functioning, and greater all-cause mortality (Poulton et al., 2002; Mckenzie & Carter, 2009; Cohen et al., 2010; Drakopoulos et al., 2010). Evidence of the importance of early life conditions on adult health at older ages (chronic

diseases, cognition and longevity) have also been produced by several population-based and community studies in low and middle income countries (McEniry, 2013).

Though many studies examine associations of SEP with health using concurrent material and some using retrospective information, few studies have investigated the relative contribution of both earlier and later socioeconomic circumstances to the SRH of older people (Nicholson et al., 2005; Hyde et al., 2006; Havari & Peracchi, 2011; Lindström et al,. 2012). A main result emerging from most such analyses is that both SEP in earlier and later life are significant predictors of adult health. Adverse childhood circumstances have a direct negative impact on later life health and an indirect one; the latter operates often via lower educational attainment which affects employment, income and wealth in adulthood, and which, in their turn, may have an unfavourable impact on health (Case et al., 2005; Luo & Waite, 2005; Mckenzie et al., 2011).

Measures of SEP

SEP is a concept reflecting an individual's place in the social hierarchy, often built around education, occupation, income and financial resources. In fact, different measures may represent SEP in the various stages of the life cycle. In childhood it is thought of as the family socioeconomic conditions or the context that the child is born into and brought up in, including material circumstances, household income, parental occupation, education, social class or having experienced economic stress and financial hardship. Many analyses consider mainly paternal occupation, which represents material resources, (Hyde et al., 2006; Mckenzie & Carter, 2009; Mckenzie et al., 2011) and parental educational attainment (Luo & Waite, 2005). In these context, book possession may also reflect the socio-cultural background of the household where individuals grew up; the greater the number of books, the higher is the expected educational level of parents, siblings and other relatives in the household (Cavapozzi et al., 2011). Other variables, pertaining to individual skills and learning abilities during childhood, such as scores in tests or indicators of relative position to the other children at school may be seen as indices of early life cognition which, together with educational attainment, are important determinants of adult socioeconomic success (Christelis et al., 2011). Adverse

socioeconomic circumstances in childhood can also be established through having experienced hunger; this is considered as a major indicator which may affect health in adulthood directly or indirectly, through education and income (Nicolson et al., 2005; Havari & Peracchi, 2012). Finally, other analyses use composite measures expressing childhood economic stress (Lindström et al., 2012).

In adulthood, educational attainment is a crucial indicator that shapes future occupational opportunities and earning potential while it also provides knowledge and life skills that allow better-educated persons to gain more readily access to information and resources that promote health (Adler & Neuman, 2002). Income is often linked to educational attainment but also to occupation. It represents an important measure of access to material goods and services that may influence health (Cavapozzi et al., 2008; Shavers, 2007). However, it refers to a specific year and may not be representative of economic resources among retired and older persons (Grundy & Holt, 2001). Occupation is usually used by analysts to investigate psychosocial links between SEP and health since it provides a measure of environmental and working conditions and latitude in decision-making (Gundy & Holt, 2001; Shavers, 2007). It is also linked to material resources and financial wellbeing at a specific point in time but it is not as volatile as income; however, among older and retired persons it may not be of great consequence (Gundy & Holt, 2001). On the other hand, wealth (based on assets, bank accounts, stock, mutual bonds, mortgages, debts etc.) represents accumulation of resources over the life course and can be considered one of the key indicators of wellbeing among older people in Europe since it reflects also their ability to meet emergencies and to absorb economic shocks (Christelis et al., 2005). This latter measure is more strongly linked to social class than income, especially after the age of 65 (Shavers, 2007; Numela, 2008). Finally, general questions are often included in surveys asking respondents whether they face financial difficulties or hardship; for instance, a question on whether 'the household make ends meet' can be considered as a measure of the standards of living or as a subjective poverty index (Browning & Madsen 2005; Lyberaki & Tinios, 2008; Adena & Myck, 2013).

Aims of the study

The paper aims at assessing the relative importance of childhood socioeconomic disadvantage on the self-rated health (SRH) of older men and women in Europe while controlling for mediators and health conditions which confound other studies. The analysis distinguishes between men and women since it has been shown that the importance of several SEP indicators in later life differentiates between the sexes (Nicolson et al., 2005; Luo & Waite, 2005). Focusing on the mechanisms underlying health inequalities among older populations is not only informative but also essential since this group is growing at a quick rate, especially in Europe, and represents a vulnerable segment of the population both in terms of health and of being subjected to adverse socioeconomic conditions.

In the absence of complete data across the life course the aims of the study are achieved through use of retrospective material and a combination of indicators some of which reflect accumulation of life course social disadvantage. Although retrospective SEP measures have limitations such as lack of clarity about what aspect of childhood socioeconomic environment they represent, while they encompass a greater potential of bias in measurement due to misreporting and memory errors, they present a useful opportunity to empirically examine theoretical life course models when complete data across the life course are lacking (Mckenzie & Carter, 2009).

Data and Methods

Data

Data from the second wave of the Survey of Health, Ageing and Retirement in Europe (SHARE) were used in the analyses, combined with retrospective information from the third wave (SHARELIFE). SHARE is a multidisciplinary and cross-national panel database of micro data on health, socioeconomic and demographic characteristics, social and family networks etc of individuals aged 50 or higher, covering most of the European Union. SHARE generally represents the population of individuals aged 50+ in Europe

well (Börsch-Supan et al 2013). Probability samples have been drawn in each participating country and interviews have been conducted using computer-assisted personal interviewing (CAPI) to collect most of the information. To date, SHARE includes four panel waves (wave 1 in 2004, wave 2 in 2006/07, wave 4 in 2010/11, wave 5 in 2013), collecting data on current living circumstances, and one on retrospective life histories (SHARELIFE or wave 3 in 2008/09). In SHARELIFE, retrospective data were collected using a 'Life History Calendar' similar to the one used in the English Longitudinal Study of Ageing (ELSA) and, according to preliminary analysis, recall errors seem quite low (Garrouste & Paccagnella, 2011). Response rates in SHARE wave one were above average compared to other European surveys (Börsch-Supan & Jürges, 2005). Individual retention with regard to the longitudinal part of the sample was about 73% for the second wave and 77% for the third wave (Börsch-Supan et al., 2013). Details about the entire SHARE project are available at www.share-project.org. A detailed description of the methodology and of data quality is presented elsewhere (Börsch-Supan & Jürges, 2005; Börsch-Supan et al., 2008; 2013; Schröder, 2011; Malter & Börsch-Supan, 2013).

The second wave of the survey includes information on socio-demographic and health indicators among persons aged 50 or higher in 14 countries: Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, the Netherlands, Spain, Sweden, Switzerland, the Czech Republic and Poland. The third wave, SHARELIFE, includes retrospective information related to childhood SEP, health and other circumstances of all SHARE respondents in the first and/or the second wave, except for Ireland. Hence, our sample includes all respondents participating in both the second and the third waves with no missing information in the variables of interest, i.e. 20,829 individuals from 13 countries covering Northern, Central, Western, Southern and Eastern Europe.

Dependent variable

The outcome variable is SRH. Respondents were asked to evaluate their general health choosing one out of five responses: 'excellent, very good, good, fair, poor'. In the present analysis, SRH was dichotomised into two categories: excellent/very good (0: reference

category) and less than very good (=1). This categorisation was introduced in the data by the SHARE team; hence, using the abovementioned categories allows comparability with the findings of other studies based on SHARE data. Further, using a dichotomised version reduces any bias that may be introduced by country-specific differences.

Independent variables

SEP in later life. SEP in later life is represented by five variables: educational attainment, household net wealth, household net income, employment status and "making household ends meet". Educational attainment is based on the highest qualification obtained and the respondent's years of education. To facilitate comparisons, SHARE used the UNESCO 1997 International Standard Classification of Education (ISCED-97) (for details on ISCED coding, see http://www.uis.unesco.org). The ISCED-97 scale has seven different levels (0-6), ranging from pre-primary level (e.g. kindergarten) to the second stage of tertiary education (PhD). In the analyses four broad categories were used: 'None or Low level' (none/pre-primary and lower secondary education; ISCED 0-2), 'Intermediate level' (upper secondary and post-secondary non-tertiary education; ISCED 3-4), 'High level' (first and second stage of tertiary; ISCED 5-6), and 'Other' (still in education/other). Household net wealth is a summary indicator of all resources that are available to household members. To avoid loss of information and for efficacy missing data were substituted by imputed values. Imputation was carried out separately for each country by a SHARE team of specialists (for more details about the imputation methodology see Christelis, 2013). Appropriate exchange rates have been used to convert national currencies to euros where applicable. As country price levels change over time, to ensure comparability, the amounts were adjusted for differences in the purchasing power of money across countries, using the appropriate OECD purchasing power parity ratios provided in the datasets. In order to reduce the effects of extreme values and of imputation inaccuracies median values were computed for each country and period; the variable introduced in the analysis compares persons below the median to those above. Household net income is the sum of income from all sources after taxation in the year preceding the interview. Same adjustments as above have been carried out and the

variable in the models compares persons with income below the median to those above. Employment status includes four groups: retired, employed, unemployed, and other (sick/disabled/homemaker/other). This last category differentiates by sex, including mostly homemakers among females and sick and disabled among males. Finally, respondents were asked to evaluate their household financial status stating whether 'the household made ends meet' in the year preceding the survey. In the analysis the responses were combined into two groups: 'easily' (fairly easily/easily) and 'with difficulty' (some difficulty/great difficulty).

SEP in childhood. SEP in childhood is represented by four variables: occupation of the main breadwinner when the respondents were aged 10 years old, the number of books they had access to at age 10 (excluding magazines, newspapers and school books) their relative position in mathematics compared to their peers at school and whether they had experienced a period of hunger when aged 0-15 years. As main bread winner the person providing the majority of income at the household is considered; the variable introduced in the analysis includes three categories: non-manual occupation (legislator/senior official or manager/professional/technician or associate professional/clerk/services/shop or market sales worker/armed forces), manual occupation (skilled agricultural or fishery worker/craft or related trades worker/plant or machine operator or assembler/elementary occupation), and 'no main bread winner'. 'Number of books' is a three category variables: none or very few (0-10 books), enough to fill one shelf/one bookcase (11-100 books) and enough to fill two or more bookcases (101+). 'Relative position in mathematics' includes four categories: much better/better, about the same, worse/much worse and did not go to school. Finally, 'having experienced a period of hunger' is a binary variable (yes/no).

Confounders

Most of the confounders refer to current circumstances; these include demographic characteristics, social participation and trust, health indicators and risky health behaviours. More specifically, age is included in the models as a discrete variable

whereas gender compares females to males. Marital status compares partnered persons (married/living with a partner) to those living alone (separated/divorced/widowed/never married). Country of residence is included to control for cross-country differences in the reporting of SRH. Social participation is derived from respondents reporting if they had participated in organizations and activities related to voluntary or charity work, caring for sick/disabled persons, clubs or political/community/religious organizations etc in the month preceding the interview. The variable included in the analysis compares persons who did not participate to any activity to those who participated to at least one. Further, they were also asked whether 'most people can be trusted' or 'one cannot be too careful in dealing with people' rating their answer from zero to ten (zero: most distrustful, ten: most trustful). The respective variable is binary: low trust (score 0-5) is compared to high trust (score 6-10).

Health indicators represent physical, mental health and cognitive function. Physical health includes indicators of suffering from at least two diagnosed chronic diseases, out of a list of 17, and from at least two symptoms out of a list of 12. Functional limitations include an indicator of mobility difficulties, a binary variable comparing persons with no limitation to those with at least one, based on 7 tasks related to mobility, arm and fine motor function. Activity restrictions include two indicators comparing persons with no limitation to those with at least one; the first, ADLs, refer to 6 basic activities of daily living such as dressing, walking across a room, bathing or showering, eating, getting in and out of bed, using the toilet whereas IADLs refer to 7 instrumental activities of daily living such as using a map, preparing a hot meal, shopping, making telephone calls, taking medication, doing house or garden work, managing money. Mental health is measured by the EURO-D scale, formed by 12 items: depression, pessimism, suicidality, guilt, sleep, interest, irritability, appetite, fatigue, concentration, enjoyment, tearfulness. The variable in the models compares persons with at least three depressive symptoms (i.e. experiencing depression) to those with fewer. Cognitive function is measured by numeracy score; the binary variable used in the analysis compares persons with less than good to those with good skills.

Behavioural risk factors include: physical inactivity, a binary indicator comparing persons who never did any rigorous or moderate activities to those who did; smoking, a

three category variable comparing persons who never smoked and those who stopped smoking to current smokers; and body mass index in four categories: underweight persons (BMI below 18.5), normal weight (BMI 18.5-24.9), overweight (BMI 25-29.9) and obese (BMI 30+).

Finally, there are some confounders referring to childhood circumstances. These include SRH at ages 0-15 grouped into two categories (excellent/very good and less than very good), an indicator of whether during childhood the respondents' parents 'drunk heavily' and if the respondent received regularly health care from a doctor, nurse, or a health care centre.

Statistical Analysis

Binary logistic models were applied using robust standard errors assuming clustering at household level, as there are persons in the sample who reside in the same household, sharing characteristics such as household income, household wealth, making ends meet at household, etc. Three different models were run: in model 1 the association of current SEP indicators with SRH is examined, in model 2 the effects of childhood SEP on SRH are considered while model 3 includes both current and childhood SEP, to evaluate the relative importance of each set of indicators and to assess whether inclusion of current SEP affects associations of childhood SEP with SRH. All three models control for all the above mentioned confounders. Further, these models were also run separately by sex as the consequence of different current SEP indicators, for instance income and educational attainment, differentiates for men and women (Luo & Waite, 2005; Nicolson et al., 2005). Calculations have been carried out using STATA version 13.

Results

Descriptive statistics

Table 1 shows descriptive statistics (means and percentages) for the variables included in the models. The sample includes 20,829 observations, 45.0% of which are men and

55.0% are women. Sample mean age is roughly 65 years, nearly identical for both sexes. About three quarters of the sample are partnered; this proportion is substantially higher among men. With respect to current socio-economic characteristics, a high proportion (47.8%) has 'none or low' educational attainment whereas 19.2% has 'high'; 61.1% makes 'ends meet easily' at household level and 28.5% is employed as opposed to 50.6% being retired. Women tend to be more disadvantaged compared to men regarding all these indices: they have lower educational attainment, lower income, lower net wealth and tend to live in households that 'make ends meet' with greater difficulty. As regards employment, men include higher proportions of retired and employed persons whereas more women report themselves as 'other' (i.e. homemakers).

(Table 1 around here)

Concerning childhood socioeconomic circumstances, 70.9% of the sample lived at age 10 in a household where the main breadwinner was a manual worker, 43.7% had access to very few books (less than 10) as opposed to only 12.5% having access to 100 books or more, around half considered themselves equal to their peers in mathematics whereas 7.7% experienced at least one period of hunger at ages 0-15. Women, in slightly higher proportions than men, had access to more books whereas slightly fewer experienced a 'period of hunger'. On the other hand, more women than men considered themselves inferior in mathematics compared to their peers.

Regarding the remaining characteristics of the sample, about half of the respondents participate at social activities whereas 51.7% trust in others; these proportions are very similar by sex. As far as health is concerned, 43.7% of the sample reports at least two chronic diseases, 41.9% at least two symptoms, 46.0% at least one functional limitation, 8.2% at least one ADL limitation, 13.8% at least one IADL limitation, 23.3% reports depression and 80.8% scores 'less than good' at the numeracy skills test. For all health indicators women exhibit greater morbidity that men. 8.8% of the individuals in the analysis never do any rigorous or moderate activity, 20.3% are currently smokers, 43.4% are overweight and 18.4% are obese. Women report physical inactivity in greater proportions than men but fewer of them are overweight or smokers.

Regarding childhood health 69.3% report having had excellent or very good self-rated health; proportions are somewhat higher among men. 8% of the sample states that their parents drunk heavily when they were children while 93.1% had access to regular health care. These proportions are very similar for both sexes.

(Table 2 around here)

As far as the dependent variable of the analysis is concerned (Table 2) in the overall sample 28.8% of individuals report having excellent or very good SRH; that proportion is higher among men, 31.1%, compared to 26.9% among women. Quite substantial differences can be observed across countries; the Danish seem to experience the best SRH (about 54.0% having at least very good SRH), followed by the Swiss (46.1%) and the Swedish (43.6%). At the opposite end of the scale there are the Czechs (only 18.0% report at least very good SRH), the Spanish (13.5%) and the Polish (7.8%).

Regression results

The whole sample. Table 3 shows Odds Ratios (ORs) and 95% Confidence Intervals (CI) for the total sample, models 1, 2 and 3. The results of model 1 indicate that, controlling for age, gender, differences in the reporting across countries, current health status (physical, mental, functional limitations, activity restrictions, cognitive function), behavioural risk factors, social participation, childhood SRH and childhood circumstances (i.e. whether parents drunk heavily and access to regular health care) all current socioeconomic indicators are significant. More specifically, persons with higher educational attainment, those whose income or wealth are above the median, those who are still in employment and individuals who report making 'ends meet' easily at household level have significantly higher chances of reporting better SRH, independently of their demographic characteristics, current health status, risky health behaviours, country of residence, social participation and childhood circumstances. Similarly, model 2 indicates that independently of all the above mentioned confounders, childhood SEP significantly predicts SRH. Hence, if the main breadwinner of the family at age 10 was in

manual occupation (OR 1.28; sig 1%) or there was no person having that role in the household (OR 1.52; sig 1%) the respondent is more likely to report worse SRH; this also holds if the respondent had experienced a period of hunger at ages 0-15 (OR 1.35; sig 1%) and if he/she considered that his/her skills in mathematics were the same or inferior to those of his/her peers. By contrast, having access to a greater number of books has a significant protective effect. Considering all these factors in the same model (model 3), most current and childhood SEP indicators remain significant. Among current SEP indicators the significance of educational attainment is reduced somewhat while its effect on SRH diminishes, showing that it is linked to the indices that represent childhood SEP. The importance of childhood SEP indicators is also reduced slightly; the indicator that is most affected is the 'relative position in mathematics at age 10'.

(Table 3 around here)

The findings also highlight (results not shown here) the importance of demographic factors, of childhood health status, access to regular health care and having parents who drank heavily, of current health and risky health behaviours and of social participation and trust; all these factors have a significant effect on SRH independently of childhood and adult SEP. More specifically, increasing age and female sex are related to higher chances of worse SRH in later life. This also holds for worse childhood SRH (OR 1.69; sig 1% in model 3), lack of regular access to health care in childhood (OR 1.25; sig 1%), having parents who drank heavily, current morbidity (physical, mental, functional limitations, activity restrictions and poor cognitive function), smoking, being overweight and physical inactivity. Social participation and trusting others, on the other hand, have a protective effect whereas marital status is not a significant predictor.

Differences by sex. Considering the abovementioned three models by sex in Table 4 there are significant differences. More specifically, regarding current SEP in model 1, household net wealth above the median and being employed are significant predictors of better SRH only among women; educational attainment and whether household makes ends meet easily are more important among women, too. By contrast, among men income

is the most significant predictor. Employment status seems to have a different effect by sex: employed men do not differentiate significantly from the retired whereas employed women have significantly lower chances of worse SRH compared to retired women (OR 0.76; sig. 1%). 'Other' employment, including mainly sick/disabled persons among men, is associated with significantly higher chances of worse SRH (OR 1.72; sig 1%) whereas among women that category, which includes mainly housewives, is related to significantly lower chances of worse SRH (OR 0.86; sig 5%).

Considering childhood SEP (model 2) all indicators seem equally significant for both sexes. In the full model (model 3) the combination of current and childhood SEP for men renders educational attainment non-significant while the importance of 'relative position in mathematics' and of having experienced a period of hunger during childhood is reduced. Among women, the importance of educational attainment and of household net income is reduced slightly while housewives do not exhibit anymore an advantage compared to retired women. Further, 'relative position in mathematics' becomes non-significant among women while the import of the number of books at age 10 diminishes.

Regarding the confounding variables (results not shown here), there are a few differences by gender; age is not significant among women but being unpartnered is significantly advantageous. Most current health indicators are significant for both sexes, with the exception of ADLs for men and numeracy score (cognitive function) for women. Access to regular health care during childhood does not seem significant for men.

(Table 4 around here)

Discussion

The present study aims at assessing the relative effects of childhood SEP on SRH among older adults while taking into account the mediating role of current SEP, controlling at the same time for a substantial number of other mediators and health conditions which confound other analyses. Further, unlike other studies, several adult and childhood indicators of SEP are examined. The analysis is carried out separately by sex and it is

based on data from waves 2 (current information) and 3 (retrospective material) of SHARE. The findings indicate that current and past SEP, when considered separately, are both very significant predictors of SRH, while controlling for a wide range of current characteristics, i.e. demographic, physical and mental health, functional limitations and activity restrictions, cognitive function and social attributes, as well as for childhood health, access to regular health care and whether parents drank heavily. Moreover, when all factors are included in a comprehensive model most childhood and adult SEP variables retain their significance implying that both types of socioeconomic circumstances have a strong and independent effect on SRH. However, the relative effect of several childhood variables on SRH is reduced quite substantially. More specifically, the importance of 'relative position in mathematics at age 10' decreases by about 50%, of having access to 11-100 books by 29.7%, of having access to 100+ books by 27.7%, of 'non-manual occupation of the main bread winner' by 25.2% and of having experienced a period of hunger by 14.4%. Similarly, the 'effect' of educational attainment on SRH seems to diminish substantially (by 34.4%) when childhood SEP is taken into account; the magnitude of the effect of the other current SEP variables, however, is affected only slightly. This substantial decline in the relative importance of childhood SEP indicators signifies that their effect on SRH is mediated by adult SEP and, especially, educational attainment, the importance of which also declines in the comprehensive model. Still, several childhood and current SEP indicators remain strong predictors of SRH, indicating an independent and significant effect.

These results are in accordance with other research, most of which, examining concurrently the importance of current and childhood SEP on SRH, concludes that there is a strong and independent effect of both types of factors, though effects of childhood SEP are often reduced when current SEP is also considered, with the latter exhibiting the strongest association in most instances (Luo & Waite, 2005; Nicolson et al., 2005; Hyde et al., 2006; Lindström et al., 2012). Further, there are analyses suggesting, just as the present study, that educational attainment is a mediator between childhood SEP and adult SRH. For example, McKenzie et al. (2011) finds that educational attainment explains largely the association of childhood SEP with SRH. Moreover, Luo & Waite (2005) showed that a part of the effect of childhood SEP on the physical, mental and cognitive

wellbeing of US Americans aged 50 or higher, occurred through childhood health while another part through adult educational attainment. Similarly, Lindström, et al. (2012) concluded that there is a graded association between the combined effect of childhood and adulthood economic stress on adult SRH but upward social mobility in adulthood had a protective effect and vice versa. Finally, Nicholson et al. (2005) find that SRH among Russians aged 50 or higher reflects social exposures accumulated over the life course, that childhood SEP is significant and the observed differentials in SRH were only partially explained by current socioeconomic conditions.

One of the strongest childhood predictors of adult SRH emerging from the present study is hunger in childhood. 'Going to bed hungry' was also found to be the strongest childhood SEP predictor of adult SRH among Russians aged 50 or higher (Nicholson *et al* 2005). Hunger has important negative effects on educational attainment but also on health outcomes both in childhood and adulthood (Kirkpatrick et al., 2010; Havari & Peracchi, 2011; Halmdienst & Winter-Ebmer, 2013). The fact that in the present study the relative importance of 'hunger' decreased by 14.4% in the comprehensive model suggests that current SEP factors (and especially educational attainment) have a mediating effect; however, a substantial part of the effect of hunger on SRH involves other mechanisms directly affecting early and late adult health.

The findings of the present analysis also imply that the importance of SEP indicators differentiates by sex. Among current indicators only household net income and whether household makes ends meet predict significantly SRH for men; by contrast, for women all current indicators are significant. On the other hand, childhood SEP seems more important among men than among women. Hyde et al. (2006) also suggest that there are differences by sex in the association of childhood and adulthood SEP with SRH. Further, both Nicolson et al. (2005) and Luo & Waite (2005) conclude that adult income is very significant among men in predicting SRH whereas educational attainment is important among women, a finding very similar to the results of the present study.

Limitations of the study

There are some limitations associated with the nature and the reporting of the data and some methodological aspects of the analysis. First, reporting of self-rated health is known to be affected by cultural perceptions and may differentiate across countries and population sub-groups (Zimmer et al., 2000; Vuorisalmi et al., 2008). However, harmonisation of the questionnaires of SHARE, inclusion of appropriate controls in the models (i.e. country, sex, age etc.), as well as use of a binary version of SRH as outcome are likely to have eliminated this problem to a large extent. Further, although there is some controversy on the use of self-assessed measures, they are important tools for evaluating population health as they are available in most population surveys and extensive research has shown that they predict objective health status and mortality, capturing additional aspects of health (Idler & Banyamini, 1997; Verropoulou, 2014).

Second, a further bias could be introduced by the self-reported nature of the data. Absence of bio-markers such as blood pressure measurements etc. in waves 2 and 3 of SHARE means that the robustness of the analysis relies upon accurate reporting on the part of the respondents. Use of indicator variables in many instances (e.g. ADLs, IADLs, chronic conditions, mobility, symptoms, depression, income, wealth, etc.) and of broad categories (e.g. employment status, educational attainment etc.), however, are likely to minimise such effects. Third, memory bias may also constitute a serious problem in the analysis of retrospective data. However, the well-structured questionnaire of SHARELIFE and the use of a 'Life History Calendar' are likely to have reduced recall bias. In fact, preliminary analysis has shown that SHARELIFE data are strongly consistent (Garrouste & Paccagnella, 2011).

Fourth, though use of a large multinational dataset has several advantages, due to large numbers, such as it facilitates identification of important associations, allows analysis to be carried out for different subgroups of the study population and allows use of a great number of confounders in the models, it may also conceal important differentiations across countries. However, preliminary analysis involving inclusion of interactions of all socioeconomic indicators by country in the comprehensive model showed that such interactions are non-significant. Hence, it seems justified to conclude that the various SEP indicators have roughly a uniform effect across countries. Further, there is research showing that even between countries with very different socioeconomic

level (i.e. Russia as compared to Western Europe) social conditions throughout life influence SRH among persons aged 50 or higher in a similar way (Nicholson *et al.*, 2005).

Fifth, though a large number of confounders has been included in the analysis there have been a few important ones that have been omitted due to their unavailability in the dataset. For instance, there is no information on environmental exposures which may take a direct toll on health (Evans & Kantrowitz, 2002). Finally, when interpreting the findings it should be kept in mind that reverse causation cannot be ruled out when using concurrent measures of SEP and health (Grundy & Holt, 2001).

Conclusion

Despite the abovementioned limitations, this study makes a contribution to the literature as it is one of the few that focus on the relative importance of childhood versus adult SEP on SRH among older adults while including in the analysis a broad range of SEP indicators for both periods and a substantial number of confounders, capturing thus more fully the influence of socioeconomic environment on SRH over the life course and generating more accurate estimates. The findings highlight the importance of childhood socioeconomic conditions and the strong and direct effect they have on SRH among older adults, independently of the effects of childhood health and of adult SEP. Moreover, the significant role of hunger during childhood emerges and the differential impact some indicators have for men and women.

Further research would benefit from the use of longitudinal data and the application of techniques such as path models to achieve a better understanding of causal mechanisms and to properly assess mediation of socioeconomic factors. Moreover, use of objectively measured biomarkers (e.g. blood pressure, waist circumference etc.) may provide more detailed and robust results.

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Table 1 Descriptive statistics: Means (standard deviations in parentheses) and percentages of the independent variables used in the models

Variables	Males	Females	Total
Demographic characteristics			
Age	65.3 (9.29)	65.2 (9.93)	65 (9.65)
Gender	45.04	54.96	
Marital status			
Partnered	82.74	66.76	73.96
Alone	17.26	33.23	26.04
Current Socioeconomic Position			
Educational attainment			
None or Low level	42.37	52.28	47.82
Intermediate level	34.67	31.17	32.75
High level	22.52	16.42	19.17
Other	0.42	0.13	0.26
Household net wealth			
Below median	46.24	51.92	49.35
Above median	53.76	48.09	50.65
Household net income			
Below median	45.22	53.17	49.59
Above median	54.77	46.83	50.41
Household make ends meet			
Easily	63.79	58.83	61.06
With difficulty	36.21	41.17	38.94
Employment status			
Retired	57.96	44.65	50.65
Employed	33.59	24.39	28.54
Unemployed	2.72	2.29	2.49
Other	5.7	28.66	18.32
Childhood Socioeconomic Position			
Occupation of main breadwinner at ten			
Non-manual	27.36	27.70	27.54
Manual	71.08	70.73	70.89
No main bread winner	1.55	1.56	1.56
Number of books at ten			
None or very few (0-10 books)	44.70	42.90	43.72
Fill one shelf/bookcase (11-100 books)	42.98	44.34	43.73
Fill two+ bookcases (101+ books)	12.31	12.75	12.55
Relative position in maths at ten			
Much better / better	38.63	30.75	34.30
About the same	47.36	51.37	49.57
Worse / much worse	12.02	15.26	13.79

Did not go to school	1.98	2.63	2.34
Experienced period of hunger (0-15 yrs)			
Yes	8.82	6.73	7.67
No	91.18	93.27	92.32
Confounders			
Current circumstances			
Social networks			
Social participation			
None	49.35	49.68	49.53
At least one activity	50.65	50.32	50.47
Trust			
No or Low trust	47.99	48.62	48.34
High trust	52.00	51.37	51.66
Physical health			
Chronic diseases			
Less than two	60.55	52.76	56.27
Two or more	39.44	47.23	43.72
Symptoms			
Less than two	65.99	51.59	58.07
Two or more	34.00	48.40	41.92
Mobility limitations			
None	63.08	46.62	54.03
One or more	36.92	53.37	45.96
ADL limitations			
No limitation	93.03	90.76	91.78
One or more limitations	6.97	9.24	8.22
IADL limitations			
No limitation	90.41	82.71	86.87
One or more limitations	9.6	17.29	13.82
Mental health and Cognitive function			
Depression (EUROD)			
No	84.95	69.99	76.73
Yes	15.04	30.00	23.26
Numeracy score			
Less than good	74.63	85.78	80.76
Good or more	25.37	14.21	19.24
Risky health behaviours			
Physical inactivity			
Other	93.16	89.52	91.16
Never rigorous nor moderate activity	6.83	10.47	8.84
Smoking			
Yes, currently smoking	24.47	16.81	20.26
Never smoked	36.62	65.29	52.40
No, I have stopped	38.89	17.90	27.36
Body mass index			

Below 18.5: underweight	0.23	1.52	0.94
18.5-24.9: normal	31.81	41.58	37.17
25-29.9: overweight	50.79	37.42	43.44
30 and above: obese	17.15	19.48	18.43
Childhood Circumstances			
Childhood SRH			
Excellent /Very good	71.73	67.38	69.34
Less than very good	28.27	32.62	30.66
Parents drunk heavily			
Yes	7.91	8.09	8.00
No	92.09	91.91	91.99
Access to regular health care			
Yes	92.58	93.51	93.09
No	7.42	6.49	6.91
N	9,384	11,445	20,829

Table 2. Percentage distribution of SRH by sex and by country of residence

Variables	SRH	
	Excellent/very good	**Less than very good**
Gender		
Male	31.14	68.86
Female	26.91	73.09
Country		
Austria	29.09	70.99
Germany	20.18	79.81
Sweden	43.58	56.42
Netherlands	28.39	71.61
Spain	13.53	86.47
Italy	19.81	80.18
France	21.15	78.85
Denmark	53.97	46.03
Greece	36.23	63.77
Switzerland	46.07	53.93
Belgium	28.58	71.41
Czech Republic	17.99	82.00
Poland	7.78	92.22
Total Sample	29.82	71.19

Table 3. Odds Ratios and 95% Confidence Intervals (in parentheses) based on logistic regression: associations of current and childhood socio-economic position with SRH for the overall sample (N=20,829)

Variables	ORs (95% CI) Model 1	ORs (95% CI) Model 2	ORs (95% CI) Model 3
Current SEP			
Education			
None or Low level (ref. cat.)	1.000		1.000
Intermediate level	0.891*		0.939
	(0.815, 0.974)		(0.855, 1.031)
High level	0.692**		0.798**
	(0. 623, 0.768)		(0.711, 0.895)
Other	0.969		0.933
	(0.513, 1.667)		(0.512, 1.702)
Household net wealth			
Below median (ref. cat.)	1.000		1.000
Above median	0.878**		0.873**
	(0.813, 0.949)		(0.807, 945)
Household net income			
Below median (ref. cat.)	1.000		1.000
Above median	0.853**		0.861**
	(0.785, 0.925)		(0.792, 0.936)
Household make ends meet			
Easily (ref. cat.)	1.000		1.000
With difficulty	1.177**		1.177**
	(1.075, 1.288)		(1.073, 1.292)
Employment status			
Retired (ref. cat.)	1.000		1.000
Employed	0.808**		0.802**
	(0.725, 0.902)		(0.718, 0.896)
Unemployed	0.905		0.926
	(0.707, 1.158)		(0.721, 1.191)
Other	1.025		1.025
	(0.909, 1.156)		(0.908, 1.158)
Childhood SEP			
Occupation of main breadwinner at ten			
Non-manual (ref. cat.)		1.000	1.000
Manual		1.282**	1.211**
		(1.180, 1.394)	(1.112, 1.319)
No main bread winner		1.518*	1.495*
		(1.090, 2.114)	(1.065, 2.097)
Number of books at ten			
None or few (0-10 books) (ref. cat.)		1.000	1.000
Enough to fill one shelf / bookcase (11-100 books)		0.825**	0.877**
		(0.757, 0.899)	(0.803, 0.957)

Enough to fill two or more bookcases (101+ books)		0.693**	0.778**
		(0.610, 0.787)	(0.682, 0.888)
Relative position to others in maths at ten			
Much better / better (ref. cat.)		1.000	1.000
About the same		1.181**	1.144**
		(1.091, 1.279)	(1.055, 1.241)
Worse / much worse		1.150*	1.073
		(1.018, 1.298)	(0.948, 1.215)
Did not go to school		1.241	1.154
		(0.883, 1.743)	(0.815, 1.628)
Period of hunger (0-15 yrs)			
No (ref. cat.)		1.000	1.000
Yes		1.346**	1.296**
		(1.140, 1.590)	(1.097, 1.531)
R^2	27.17	27.26	27.66
Wald chi^2	4203	4088	4133

**p<0.01, *p<0.05,

NOTE: Robust standard errors clustered at household level

All models adjusted for demographic characteristics, social participation, current health, risky health behaviours, childhood circumstances and country of residence (Austria (ref. cat.), Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Greece, Switzerland, Belgium, Czech Republic, Poland). Variables shown in detail in Table 1.

Table 4. Odds Ratios and 95% Confidence Intervals (in parentheses) based on logistic regression: associations of current and childhood socio-economic position with SRH by sex (Males=9,384, Females=11,445)

Variables	Males			Females		
	ORs (95% CI) Model 1	ORs (95% CI) Model 2	ORs (95% CI) Model 3	ORs (95% CI) Model 1	ORs (95% CI) Model 2	ORs (95% CI) Model 3
Current SEP						
Education						
None or Low level (ref. cat.)	1.000		1.000	1.000		1.000
Intermediate level	1.019		1.088	0.781**		0.818**
	(0.893, 1.163)		(0.947, 1.248)	(0.691, 0.883)		(0.719, 0.930)
High level	0.744**		0.866	0.642**		0.726**
	(0. 641, 0.864)		(0.735, 1.020)	(0. 552, 0.746)		(0.616, 0.857)
Other	0.969		0.980	1.016		1.084
	(0.503, 1.867)		(0.509, 1.890)	(0.291, 3.553)		(0.291, 4.028)
Household net wealth						
Below median (ref. cat.)	1.000		1.000	1.000		1.000
Above median	0.931		0.930	0.827**		0.830**
	(0.832, 1.040)		(0.830, 1.042)	(0.742, 0.920)		(0.743, 0.926)
Household net income						
Below median (ref. cat.)	1.000		1.000	1.000		1.000
Above median	0.839**		0.850**	0.855**		0.864*
	(0.745, 0.945)		(0.753, 0.959)	(0.762, 0.959)		(0.769, 0.972)
Household make ends meet						
Easily (ref. cat.)	1.000		1.000	1.000		1.000
With difficulty	1.171*		1.165*	1.198**		1.200**
	(1.002, 1.338)		(1.017, 1.334)	(1.057, 1.357)		(1.055, 1.364)
Employment status						
Retired (ref. cat.)	1.000		1.000	1.000		1.000
Employed	0.893		0.899	0.762**		0.862**
	(0.765, 1.042)		(0.768, 1.053)	(0.652, 0.891)		(0.650, 0.893)

Unemployed	0.895		0.952	0.920	0.930
	(0.630, 1.271)		(0.666, 1.362)	(0.648, 1.306)	(0.649, 1.333)
Other	1.721**		1.715**	0.860*	0.875
	(1.272, 2.330)		(1.257, 2.340)	(0.745, 0.994)	(0.755, 1.013)
Childhood SEP					
Occupation of main breadwinner at ten					
Non-manual (ref. cat.)		1.000	1.000	1.000	1.000
Manual		1.249**	1.193**	1.298**	1.203**
		(1.104, 1.414)	(1.052, 1.354)	(1.159, 1.454)	(1.070, 1.353)
No main bread winner		1.474	1.536	1.509	1.408
		(0.918, 2.368)	(0.931, 2.534)	(0.953, 2.389)	(0.881, 2.250)
Number of books at ten					
None or few (0-10 books) (ref. cat.)		1.000	1.000	1.000	1.000
Enough to fill one shelf / bookcase (11-100 books)		0.823**	0.852*	0.832**	0.909
		(0.726, 0.931)	(0.750, 0.967)	(0.739, 0.939)	(0.803, 1.028)
Enough to fill two or more bookcases (101+ books)		0.704**	0.766**	0.687**	0.812*
		(0.584, 0.849)	(0.632, 0.930)	(0.579, 0.818)	(0.676, 0.975)
Relative position to others in maths at ten					
Much better / better (ref. cat.)		1.000	1.000	1.000	1.000
About the same		1.174**	1.143*	1.180**	1.119
		(1.049, 1.314)	(1.019, 1.282)	(1.054, 1.320)	(0.996, 1.257)
Worse / much worse		1.128	1.083	1.156	1.040
		(0.941, 1.353)	(0.901, 1.303)	(0.981, 1.363)	(0.877, 1.230)
Did not go to school		1.662	1.491	0.987	0.993
		(0.959, 2.880)	(0.869, 2.559)	(0.9640, 1.524)	(0.587, 1.452)
Period of hunger (0-15 yrs)					

No (ref. cat.)		1.000	1.000		1.000	1.000
Yes		1.346**	1.262*		1.368*	1.445**
		(1.140, 1.590)	(1.003, 1.587)		(1.071, 1.748)	(1.129, 1.851)
R^2	26.04	26.44	25.88	28.56	28.24	28.93
Wald chi^2	1852	1816	1795	2370	2313	2334

**p<0.01, *p<0.05,

NOTE: Robust standard errors clustered at household level

All models adjusted for demographic characteristics, social participation, current health, risky health behaviours, childhood circumstances and country of residence (Austria (ref. cat.), Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Greece, Switzerland, Belgium, Czech Republic, Poland). Variables shown in detail in Table 1.