Healthy, wealthy, wise, and happy? An exploratory analysis of the interplay between aging and subjective well-being in low and middle income countries

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1. Introduction

Aging is commonly seen as a process of decline (Nelson, 2004). Deteriorating physical health, declining cognitive function, lower levels of economic resources, weakening social networks or the loss of loved ones are but a few examples of adverse events that are often associated with older ages. These often drastic life changes suggest that aging may be associated with lower levels of psychological well-being, especially during later life.

Contrary to the view of old age as an unhappy time of physical, mental, economic and social decline, Stone et al. (2010) show that older persons in the United States report higher levels of both evaluative and experienced well-being than their middle-aged counterparts. The age differences in emotional well-being during later life are thereby mainly due to a lower prevalence of negative affects such as stress or worry among older persons. The findings of Stone et al. (2010) also appear robust after controlling for additional demographic controls that might covary with age and well-being. Older persons may thus not be as disadvantaged in terms of health, economic and social status as is commonly thought and/or have certain coping strategies that protect and even increase their psychological well-being during later life.

Whether different dimensions of psychological well-being also show a positive age gradient during later life in less developed countries is still an

open question. Blanchflower and Oswald (2008) analyze data on global life satisfaction in several countries, including a large number of developing countries. Based on data from the World Values Surveys of 1981- 2004 and the Latinobarometers and Asianbarometers of 1997-2005, they find that conditional on other sociodemographic controls age shows a positive partial association with life satisfaction in some, but not all developing countries. Their study is, however, limited to the partial association of age with evaluative well-being only, and the corresponding evidence for low- and middle-income countries appears somewhat mixed.

Indeed, the notion of psychological well-being comprises a range of concepts from evaluative well-being such as general life satisfaction, which focuses on cognitive judgments concerning life in general or specific aspects of it, to emotional or hedonic (experienced) well-being, which capture momentary affective experiences such as joy or anger. Reflecting this multifaceted nature of psychological well-being, comprehensive assessments of well-being require separate analyses of multiple well-being measures that may capture different points in the spectrum from evaluative to experienced well-being. Conducting such comprehensive assessments seems especially important since the association between psychological well-being and specific sociodemographic characteristics often varies across different aspects of well-being (Kahneman and Deaton, 2010, Knabe et al., 2010, Stone et al., 2010).

Our study provides a detailed analysis of the relationship between age and different aspects of psychological well-being among persons aged 50 and older from five low- and middle-income countries (China, Ghana, India, the Russian Federation and South Africa). Our data stem from the first wave of the WHO Study on Global Aging and Adult Health (SAGE) of 2007-2010. The SAGE study collects individual and household level data on several life domains, including socio-demographic information, information on household finance, social networks, health and health-care use, and psychological well-being.

In order to draw a comprehensive picture of the relationship between age and well-being among older persons in developing countries, we analyze four distinct measures of psychological well-being, which cover different points in the spectrum from evaluative to emotional well-being. First, our most evaluative measure of well-being is based on the survey item: "Taking all things together, how satisfied are you with your life as a whole these days," to which respondents provided answers ranging from 1 ("very satisfied") to 5 ("very dissatisfied"), which we label *general life satisfaction*. Our second, somewhat more specific well-being measure corresponds to the *WHO quality of life* index (WHOQoL-8). WHOQoL-8 was constructed based on 5-point scale ratings of eight life domains, i.e., individuals satisfaction with (1) their quality of life, (2) health, (3) energy for everyday life, (4) ability to perform activities of daily living, (5) themselves, (6) personal relation-

ships, (7) ability to make personal needs, and (8) conditions of their living place, which were added up into a single composite well-being measure, the WHO quality of life index. Moving further toward the concept of emotional well-being, our third well-being measure is an *emotion index* that aggregates self-reports on the prevalence of three positive and eleven negative emotions for much of the day preceding the interview. Finally, our measure most closely related to the concept of experienced well-being is based on an abbreviated version of the Day Reconstruction Method (DRM) (Kahneman et al., 2004b) that combines information on time-use with measures of affective experiences. For up to ten subsequent activities performed by the respondent during the previous day, respondents provide information on the prevalence, duration and intensity of two positive and five negative emotions. We use these self-reports to construct a duration-weighted index of emotional experiences during the performed activities of the previous day, which we label *experienced well-being*.

Our first set of regression models explores the unconditional relationship between age and the four measures of psychological well-being during later life, using only sex as an additional control variable. These regressions provide evidence that general life satisfaction is statistically significantly decreasing with age both in the pooled as well as in all five country samples. A similar pattern also emerges for the WHO quality of life, which is also statistically significantly decreasing with age in all samples. Moving

to more hedonic measures of well-being results to a somewhat different picture: For the emotion index, we find no clear evidence of any systematic relationship with age, which is sometimes even associated with higher levels of the emotion index. For the experienced well-being, the evidence is also mixed, though experienced well-being appears to more often increase than decrease with age. Thus, relative to middle-aged individuals, older persons in developing countries seem to be at a disadvantage in terms of evaluative well-being, but not in terms of hedonic experiences. We then use conditional models that also include controls for individual demographics and life circumstances such as their family, health and economic status as well as social conditions to further explore the partial associations of age with psychological well-being keeping individual life circumstances fixed. Performing such regressions we find mostly positive partial associations between age and well-being. Hence, it appears that keeping individual life circumstances fixed, older persons tend to have higher levels of well-being than their middle-aged counterparts.

We finally conduct a series of Oaxaca-Blinder decompositions of the unconditional disadvantage of older relative to middle-aged persons in terms of their psychological well-being using the same set of controls as in the conditional models. These decompositions highlight that most of the unconditional well-being disadvantage of older persons relative to their middle-aged counterparts can be attributed to lower levels of health and economic

resources. To a lesser extent, more limited community ties also appear to play some role in explaining the lower levels of psychological well-being toward later-life.

We proceed as follows. The next section gives an overview of the relevant literature. Then, we describe the data and the measures used in our analysis. Section 5 describes the methodology. Section 6 contains the empirical results of the conditional analyses and the decomposition analysis. The last section discusses the main implications and limitations and concludes.

2. Literature

Recent literature on the association between age and happiness/life satisfaction provides cross-sectional and panel data evidence for a U-shaped pattern. Gerdtham and Johannesson (2001) find a U-shaped age-profile with a minimum of happiness for the age-group 45-64 years. Blanchflower and Oswald (2004) find a U-shape both for happiness and life satisfaction using the General Social Survey and the Eurobarometer. Di Tella et al. (2001) find further evidence for a U-shaped age-profile in life satisfaction using the Eurobarometer Survey Series. Powdthavee (2005) and Lelkes (2008) provide further cross-sectional evidence for a U-shaped age profile. Blanchflower and Oswald (2008) analyze data on global life satisfaction from many countries around the world, including a large number of developing countries. Based on data from the World Values Surveys of 1981-2004 and the Latinobarometers and Asianbarometers of 1997-2005, they find that conditional on other

sociodemographic controls age shows a positive partial association with life satisfaction in some, but not all countries. Their study is, however, limited to the partial association of age with evaluative well-being only, and the corresponding evidence for low- and middle-income countries appears somewhat mixed. In contrast, Frijters and Beatton (2012) find a decreasing age profile in raw life satisfaction using German and British survey data.[1]

Cross-sectional studies on the relation between age and life satisfaction cannot distinguish between age, time and cohort effects. More recent studies based on large scale panel data allow to control for cohort and time effects and allow to identify pure age effects. Clark (2007) finds evidence for a U-shaped age pattern in life satisfaction controlling for fixed cohort effects in the British Household Panel Survey (BHPS). Using data from the German Socio-Economic Panel (GSOEP), Landeghem (2008) also find a convex relationship between age and well-being. In contrast, Kunzmann et al. (2000) finds a rather flat age-pattern. Schilling (2006) finds that mean life satisfaction decreases over age using data from the GSOEP. The results, however, are based on an unconditional analysis and thus might be confounded by omitted variables that are both related to age and life satisfaction. Wunder et al. (2009) find evidence for a U-shaped age pattern until the age of 70 followed by a decrease in life satisfaction for the oldest old. De Ree and Alessie (2011) provide a more general discussion of the identification prob-

[1] A comprehensive survey on the association between age and well-being is provided by Diener et al. (1999) and Frijters and Beatton (2012).

lem of age, time and cohort effects in the context of the association between age and life satisfaction. They claim that the data does not bear any useful information to support any age-profile but that results depend on imposed assumptions, for instance imposed parameter restrictions and identifying assumptions.

Most studies on the association of subjective well-being with age use measures of evaluative well-being, i.e. general life satisfaction or happiness. When asked to assess their general life satisfaction (or happiness), respondents have to create a reference framework of what constitutes a satisfied life (Diener et al., 1985). This requires a comparison of their own life circumstances with those of other people at the same time and with their own life at other points in time (Dolan and Kahneman, 2008). This comparative characteristic plays a smaller role for experienced well-being — the emotional quality of an individual's everyday experience (e.g., the frequency and intensity of experiences of joy, fascination, anxiety, sadness, anger, and affection that make one's life pleasant or unpleasant). Kahneman and Krueger (2006) and Schwarz et al. (2009) suggest that measures of experienced well-being may have different predictors compared to global satisfaction. Income and health tend to get the primary attention in most evaluations of human well-being (Deaton, 2008, Krueger and Schkade, 2008) while experienced well-being is primarily predicted by personality and the

context in which activities are performed.[2]

On the other hand, aging is amongst others associated with changes in cognitive processing of emotions (Mroczek and Kolarz, 1998, Carstensen et al., 1999, Charles et al., 2001, Carstensen et al., 2003). Older persons remember relatively more positive information resulting in higher levels of reported well-being (e.g., Carstensen, 1995, Carstensen et al., 2003). Charles et al. (2001) analyze the change in affects over time for different age groups. They find that negative affects decrease over time for all age groups while positive affects remain rather stable except for individuals aged 60 and older, for which they observe a small decline. The changes in affects cannot be attributed to changes in other age-related factors such as health. Ehrlich and Isaacowitz (2002) find similar evidence on the association between age and emotional well-being. They find a relatively stable age-profile for positive affects while negative affects significantly decline over age. Stone et al. (2010) provide a more comprehensive analysis of the age-distribution of psychological well-being in the U.S. They find that positive experienced well-being has a U-shaped age profile while negative experienced well-being substantially decreases with age. The combined effects result in a non-decreasing age profile of experienced well-being. They find similar results when controlling for measures that potentially covary with age and affects.

[2]See Krueger and Schkade (2008) for a discussion of the reliability of subjective well-being measures.

Our paper is closely related to the main ideas of Chen (2001), Hansen and Slagsvold (2012), and more generally Blanchflower and Oswald (2008). Chen (2001) provides an analysis of the association of age and age-related life circumstances with life satisfaction. This study finds a negative association between age and life satisfaction in the raw data. In contrast, controlling for demographics and other age-related life circumstances, Chen (2001) finds a significant increase in life satisfaction elder persons. Hansen and Slagsvold (2012) analyze the association between age and several dimensions of subjective well-being using Norwegian data. They find a rather stable association between age and subjective well-being until the age 70 and a small decrease in advanced age both using cross-sectional and longitudinal data. This stable age-profile from age 40-70 exists both for evaluative and experienced well-being. Hansen and Slagsvold (2012) further analyze the effects of age-related life circumstances and find only small differences in the age-profile once controlled for changes in health, partnership, social factors etc.

3. Data

Data are from the WHO Study on Global AGEing and Adult Health (SAGE) conducted by the World Health Organization (WHO). This survey is a multi-country study collecting data on respondents aged 18+, with a strong emphasis on populations aged 50+, from nationally representative samples. A baseline cohort was created during the World Health Survey (WHS) in 2002-2004 collecting data on more 65.000 adults aged 18 years

and older. The present analysis is based on data of wave 1 (2007-2010), which implements the full SAGE in six low and middle-income countries: China, Ghana, India, Mexico, Russian Federation and South Africa. The SAGE project collects individual- and household level data on several life domains, for instance socio-demographic information, information on household finance, social networks, health and healthcare.[3]

The data further includes a comprehensive subjective well-being and quality of life module. In particular, it collects information about general and domain specific satisfaction, emotional well-being and daily life experiences. The latter is based on the the Day Reconstruction Method (Kahneman et al., 2004b), a method that combines a time-use study with the measurement of affective experiences.

We focus on individuals aged 50 years and older. We select our sample by choosing the variables of interest both on the household and the individual level. Merging individual with household level data results in loss of observations as not all individuals can be uniquely attributed to a household. We drop all observations with missing values in at least one of the variables used in the analysis. In this step, information on the DRM suffers from a lot of missing information (nearly 3700 observations). In total, around 13.000 observations are lost in the original sample.[4] Our final sample is based on

[3]A detailed description of the SAGE can be found in WHO (2006)

[4]It is also worth noting that we drop Mexico from our analysis because of a large

N=19.926 observations. Table 1 presents descriptive statistics of our final sample. Results are comparable with other SAGE publications (e.g., He et al., 2012).

Table 1: Descriptive Statistics by country

	Pooled	Ghana	India	China	South Africa	Russia
Age	62.33	63.99	61.29	62.46	61.73	63.27
Male	48.00%	52.48%	51.51%	49.42%	38.43%	43.39%
Married	73.43%	58.89%	76.05%	85.16%	48.40%	61.17%
Urban	47.17%	41.78%	25.04%	44.54%	60.33%	72.20%
Years of education	6.76	4.30	3.78	5.39	6.23	11.39
Working	44.02%	70.76%	43.52%	44.90%	29.40%	43.59%
Observations	19926	2904	4620	8229	1824	2349

Source: SAGE
NOTE: The entries in each column are country-specific averages using population weights.

Average age is around 62 years and does not vary much across countries. In Ghana, India and China the samples consist of an equal distribution of males and females while South Africa and Russia consist of a larger fraction of females. In Russia, this is mainly explained by the low life expectancy of Russian males: 63 years at birth compared to 75 years for women (Bank, 2013)). In South Africa, the small fraction of males results from the sampling (43% in the original sample) and dropping observations with missing values. However, the results are comparable with other SAGE publications (e.g., He et al., 2012). The fraction of individuals being married varies substantially across countries ranging from 47% in South Africa to 85% in China. In India, only a quarter of the respondents live in an urban

amount of missing values due to incomplete interviews.

area. Figures are much higher in Ghana and China (41%-46%). South Africa and Russia show the highest urbanization. Years of education are around 4 to 6 years except for Russia with an average of eleven years of education. The fraction of individuals working ranges from 31% in South Africa to 68% in Ghana.

4. Measures of Subjective Well-being

The subjective well-being and quality of life module offers comprehensive information on individual well-being. In our analysis, we compare different measures of subjective well-being with each other. We use general life satisfaction and the WHO quality of life index as measures of evaluated well-being. Measures of experienced (hedonic) well-being are an emotion score and an index based on the DRM method (Kahneman et al., 2004b). All well-being measures are standardized at the country level to have a mean of zero and a standard deviation of one. This improves the comparability of our results across countries and across measures, in particular due to differences in response scales. The four measures are defined as follows.

General Life Satisfaction.

Individuals are asked to answer the following question on a 5-point scale from 1 (Very satisfied) to 5 (Very dissatisfied): "Taking all things together, how satisfied are you with your life as a whole these days?".

WHO Quality of Life Index.

The WHO quality of life index is based on Power (2003). It is a composite

measure of satisfaction in several life domains, including (1) their quality of life, (2) health, (3) energy for everyday life, (4) ability to perform activities of daily living, (5) themselves, (6) personal relationships, (7) ability to make personal needs, and (8) conditions of their living place. Each item is measured on a 5-point scale from 1 (Very satisfied) to 5 (Very dissatisfied). Based on these eight domains we construct the WHOQoL-8 index adding up all single item responses. The exact question wordings are given in Table A.7.

Emotion Score.

The emotion score is based on a set of questions that asks respondents to report whether or not they experienced specific affects during much of the day preceding the interview. These affects consist of feeling worried, rushed, stressed, calm etc. The set consists of eleven negative and three positive affects. The emotion index equals the sum of positive affects minus the sum of negative affects. Table A.7 provides more information about the individual components of the measure.

Experienced Well-being.

Experienced well-being is based on the DRM developed by Kahneman et al. (2004b). The DRM is a combination of a time-use study and the measurement of affective experiences. Respondents are asked to produce a diary of all activities they engaged in the day preceding the interview. For the sake of simplicity and interview duration, the SAGE study randomly assigns respondents to one of three groups: morning, afternoon and evening. First,

respondents were guided through that period of the day starting with the first thing they did. Respondents were asked to report what activities they were doing, for how long they were doing each activity, and whether they were interacting with other people during that activity. Finally, they are given a list of positive and negative affects and are asked to evaluate how strongly they were feeling this emotion during each specific activity on a three-point scale from 1 (Not at all), 2 (A little) to 3 (Very much). Positive affects are feeling calm or relaxed and enjoying. Negative affects are feeling worried, rushed, irritated or angry, depressed, and tense or stressed.

We define experienced well-being based on the definition of *net affect* following Kahneman and Krueger (2006).[5] Individuals' net affect u_{ia} during activity a is defined as

$$u_{ia} = \sum_{l} PA_{ia}^{l} - \sum_{k} NA_{ia}^{k} \tag{1}$$

where PA_{ia}^{l} is the l-th positive affect that person i reports for activity a, and NA_{ia}^{l} is the k-th negative affect (see also Knabe et al., 2010). We take the time-weighted average of positive and negative affect scores in order to control for multiple mentions of the same activity. Following Edgeworth

[5]Kahneman and Krueger (2006) propose the *U-index* as a appropriate measure of subjective well-being based on the DRM. The U-index is defined as the proportion of time in which the highest-rated feeling was a negative one. This measure has the advantage that it does not require a cardinal concept of individual's feelings. However, the limited scale of the intensity of feelings during each activity in our data does not produce enough variation in the U-index across individuals to allow for a statistical analysis.

(1881 [1961]) and Kahneman et al. (2004a), experienced well-being is defined as "the integral of the stream of pleasures and pains associated with events over time". In discrete time, we obtain

$$U_i = \sum_a t_{ia} u_{ia} \tag{2}$$

where t_{ia} is the fraction of non-sleeping time individual i spends on activity a. Note that we use time shares instead of duration as a weighting factor since the DRM module in the SAGE data is limited to ten activities and the sample is split into morning, afternoon and evening groups. This results in an unequal distribution of (non-sleeping) time across these three groups and using time shares ensures comparability across the groups. It is worth emphasizing that the construction of the measure as presented above requires some common assumptions. Notably, the aggregation of the activity-specific net affects to a global measure involves that net affects are cardinal measures, that the utility function is time-separable and that net affect is a meaningful representation of the utility derived from an experience.[6] Regarding the latter, Kahneman et al. (2004a) provide evidence of the correlation between net affect and objective circumstances that suggests that the measure adds useful information to our understanding of well-being.[7]

[6] See also Knabe et al. (2010) on a discussion of these assumptions

[7] See also Kahneman and Krueger (2006) and Krueger and Schkade (2008) for a more detailed discussion of different measures of subjective well-being.

Control variables.

In our study, we aim to identify and quantify the role of life circumstances on the association between age and subjective well-being. We therefore further extract information on respondents' age, gender, marital/partnership status, household composition, ethnic status, level of urbanity, level of education, household permanent income, individual employment status, disability and self-assessed pain, their level of community involvement, trust in other people, and their perceived safety of their environment.[8]

We use the 12-item version of the WHO Disability Assessment Schedule 2.0 to measure disability (Üstün et al., 2010). It is a composite measure that captures different aspects of disability based on six domains following the definition of the International Classification of Functioning. Disability and Health (WHO, 2001). The domains are cognition, mobility, self-care, getting along, life activities, and participation. Self-assessed pain measures the degree of pain or bodily discomfort the respondent was experiencing during the last month, and whether this pain caused difficulties in the daily life. Community involvement, trust in other people and perceived safety are measures of social cohesion. The variable community involvement measures the degree of participation in social activities such as attending clubs or public meetings, or socializing with co-workers. Trust measures the degree

[8]Kahneman and Krueger (2006) observe that socio-demographic variables predict life satisfaction more strongly than net affects. Personality variables, including sleep, depression and religiosity, predict both types of well-being equally well.

of trust in different groups of people, in particular neighbors, co-workers or strangers. The third measure of social cohesion, safety, asks for an assessment of the safety in the neighborhood. A detailed description of all control variables in our analysis is given in Table A.8.

5. Methodology

Recent literature has provided some cross-sectional evidence for a U-shaped age-pattern in well-being both in the raw data and conditional on control variables (Blanchflower and Oswald, 2008, 2009). In contrast, in some countries, for instance in the US, there is a difference between the unconditional and conditional association of age with well-being (e.g., Glenn, 2009). For example, Blanchflower (2009) find that well-being in the US does not have a U-shape in age in the raw data while the conditional analysis often reveals a U-shape.

The first goal of our analysis is to compare the age-pattern in the raw data with the age-pattern conditional on control variables and describe potential discrepancies. More specifically, we aim at identifying factors (i.e. objective life circumstances) that are associated with potential differences in the unconditional and the conditional age-pattern and quantify their influence. It is worth emphasizing that we do not aim at identifying a causal effect of age but focus on comparing subjective well-being across age-groups.[9] Second, we compare the association of age with different di-

[9]Note that cross-sectional data does not allow for a separate analysis of age, cohort

mensions of subjective well-being. In particular, we examine differences in the association between age and evaluative and experienced well-being. On the one hand, evaluative measures are based on a cognitive evaluation of one's life while experienced measures refer to the emotional experiences. On the other hand, cognitive functioning and emotions are likely to depend on age (Mroczek and Kolarz, 1998, Carstensen et al., 1999, Charles et al., 2001, Carstensen et al., 2003) hence we expect differences in the association of age with these two dimensions of subjective well-being.

We start our analysis with the estimation of country-specific linear regression models to compute the unconditional and conditional association between age and each well-being measure. Each analysis is done on the country level because subjective well-being measures strongly depend on the cultural background (Diener et al., 2003). Cultural differences can result in unobserved heterogeneity yielding inconsistent estimators if not adequately controlled for. The cross-sectional nature of our data prevents us from appropriately controlling for unobserved heterogeneity not associated to country differences. The country-specific analysis allows us to examine the hypothesis in a multi-country setting and therefore strengthen our results. Indeed, the coefficients measure associations in terms of within country standard deviations.

and period effects (e.g. Rodgers, 1982). In this context, the coefficient on age might also reflect a selection effect as one might claim that individuals that are "happier" tend to live longer. We are aware of these sources of bias when interpreting the association between age and subjective well-being.

In the unconditional model, our dependent variable is regressed on age-groups controlling for gender.[10] Psychological literature provides some evidence for gender differences in well-being (e.g. Wood et al., 1989, Fujita et al., 1991, Lee et al., 1991, Nolen-Hoeksema and Rusting, 2003). Work by Robinson and Johnson (1997), Robinson et al. (1998) find evidence for gender-related differences in the reporting of emotions. In particular, women are more likely to report negative emotions than men. We construct 10-years age bands to allow for a flexible age structure. We choose 10-years age bands based on a trade-off between flexibility and group size. We perform our analysis using different age-bands and an age-polynomial of order two as robustness analyses and find similar results.[11] These models aim at highlighting how evaluative and experienced well-being differ across age, allowing for potential differences in the reported levels of well-being by gender.

In the conditional model, we control for age-related life circumstances such as health, income and other socio-demographic and health characteristics of the respondent. This allows us to assess the partial associations between age and well-being keeping socio-demographic and health charac-

[10]It is worth to note that this approach involves the risk of omitted variable bias if the model is not correctly specified. However, we do not interpret the coefficients on age-groups as causal effects but compare unconditional averages of subjective well-being across age-groups. The latter differences include all differences caused by confounding factors such as income and health which are both related to age and well-being.

[11]Results are available from the authors upon request

teristics of the respondent fixed. This is of particular interest as aging is usually associated with decreasing health, financial means and social ties (Nelson, 2004). The resulting estimated partial associations between age and well-being thus aim at highlighting how age itself (rather than potentially correlated socio-demographic and health characteristics) is associated with the respondents' average reported well-being. The estimated partial associations of the control variables give additional information about the relation of well-being and various life domains. To summarize, we consider the following linear regression models:

Unconditional:

$$SWB_i = \alpha + \beta_1 \mathbb{I}_{60-69} + \beta_2 \mathbb{I}_{70-79} + \beta_3 \mathbb{I}_{80+} + \beta_4 Male_i + \epsilon_i \tag{3}$$

Conditional:

$$SWB_i = \alpha + \beta_1 \mathbb{I}_{60-69} + \beta_2 \mathbb{I}_{70-79} + \beta_3 \mathbb{I}_{80+} + \beta_4 Male_i + X_i\gamma + \epsilon_i \tag{4}$$

where X_i is the vector of control variables. Age 50–59 represents the baseline age-group and coefficients on the respective age dummies $\mathbb{I}_{60-69}$, $\mathbb{I}_{70-79}$ and $\mathbb{I}_{80+}$ are interpreted as difference in subjective well-being with respect to age 50–59.

We assume the same set of regressors in the conditional analysis of all four measures of psychological well-being.This is motivated along the fol-

lowing arguments. First, ee aim at controlling for potentially confounding factors that are correlated with both aging and well-being, in particular health, socio-economic status and social cohesion. This assumption allows us to analyze and compare the *ceteris paribus* association between age and well-being. Second, we provide a decomposition in order to identify and quantify the factors driving potential age-related differences in the different measures of well-being. Again, we aim at checking the observed results against each other.

We estimate all models using OLS in order to make results comparable across measures. Ferrer-i Carbonell and Frijters (2004) provide evidence that assuming ordinality or cardinality of scores such as general life satisfaction or happiness makes little difference. In our analysis, this issue mainly applies to general life satisfaction. We run an ordered logit regression on general life satisfaction as a robustness check and find qualitatively similar results.[12]

In the second part of the paper, we use a decomposition analysis based on Neumark (1988) in order to analyze the unconditional disadvantage of older relative to middle-aged persons in terms of their subjective well-being. The decomposition analysis allows us to explore the role of age-specific differences in the prevalence of respondents' socio-demographic and health

[12]Results of the ordered logit regression are provided in Table B.10.

characteristics for unconditional age differences in subjective well-being. We divide our sample into two age groups, middle-aged persons (respondents aged 50-59) and older persons (aged 60 and older). The decomposition is based on estimating separate linear models for each age group as well as a pooled model. Following Neumark (1988), the difference in unconditional well-being can be expressed as follows:

$$\begin{aligned}\Delta &= \overline{SWB}^{old} - \overline{SWB}^{middle} \\ &= \overline{X}'^{old}\beta^{old} - \overline{X}'^{middle}\beta^{middle} \\ &= \underbrace{\left(\overline{X}^{old} - \overline{X}^{middle}\right)'\beta^{p}}_{Explained} + \underbrace{\left[\overline{X}'^{old}\left(\beta^{old} - \beta^{p}\right) + \overline{X}'^{middle}\left(\beta^{p} - \beta^{middle}\right)\right]}_{Unexplained} \quad (5)\end{aligned}$$

where β^p is the vector of coefficients from the pooled model, and $\overline{Y}$ refers to the sample average of variable Y. The "explained" part of the decomposition refers to the difference in endowments, i.e. characteristics, between the two groups. The "unexplained" part consists of the difference in coefficients and the interaction between coefficients and endowments. Neumark (1988) describes this part the effect of discrimination. This part consists of a group membership component, measured as the difference in intercepts, and a part attributed to the difference in coefficients. If explanatory variables would have the same partial effects for the old and the middle-aged, i.e. coefficients in the two models are the same and differences in subjective well-being would therefore be due only to differences in characteristics,

then the unexplained part can be interpreted as the part of differences in subjective well-being due to discrimination. It is important to mention that the unexplained part also captures all potential effects of differences in unobserved variables through omitted variable bias in the coefficients. Jones and Kelley (1984) and Jann (2008) further argue that the unexplained part has a meaningful interpretation only for variables that have a natural zero point. In our analysis we focus on the explained part. Results of the unexplained part will be reported in Appendix B.3 for the sake of completeness.

6. Results

In this section we present results of the empirical analysis. We start with the unconditional analysis to describe the raw association between age and subjective well-being controlling for gender. We then discuss the conditional analysis of the association between age and subjective well-being. The results will provide information about the *ceteris paribus* association of age with subjective well-being keeping potentially confounding factors constant. The analysis will also give insights about what factors explain subjective well-being. We present the main story about the association between age and subjective well-being using figures. The regression outputs of the conditional analysis are presented in Appendix B. The partial effects of other control variables such as socio-economic status and health will be discussed at the end of section 6.2.

6.1. Unconditional Analysis

Figures 1 and 2 show the association between age and evaluative well-being for the unconditional and the conditional analysis.[13] Consider first the results of the unconditional analysis (dark grey). We observe a decreasing age profile in general life satisfaction in all countries but South Africa (Figure 1). The association of age with general life satisfaction is largest in Ghana with a decrease of around 0.6 standard deviations in the oldest age group compared to middle-aged individuals (50–59 years). A similar pattern emerges for the quality of life (Figure 2). The difference in quality of life associated with age is largest in Ghana with a difference of one standard deviation between the youngest and the oldest age group in our sample. Similar to the analysis of general life satisfaction, South Africa shows the smallest difference of around 0.25 standard deviations for the oldest age group.

[13]Regression results on the unconditional association between age and well-being are shown in Panel A of Tables B.9, B.11, B.12 and B.13

Figure 1: Average change in general life satisfaction relative to age 50–59

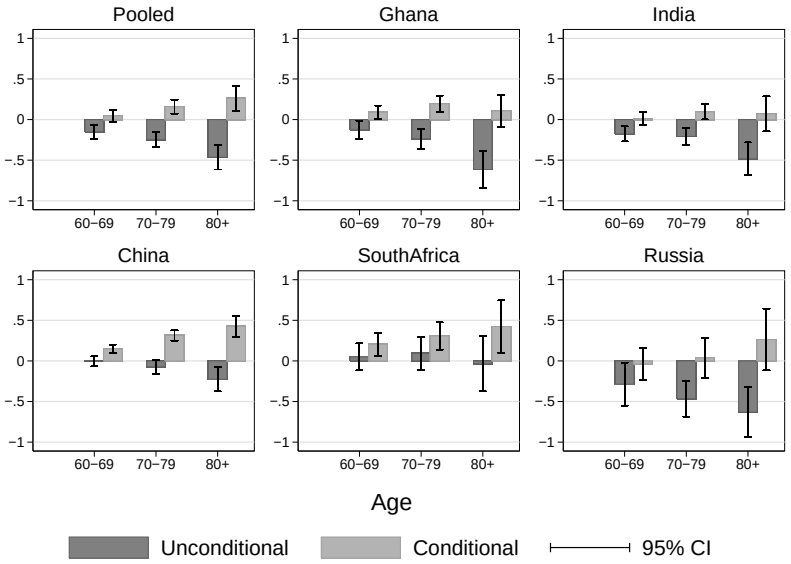
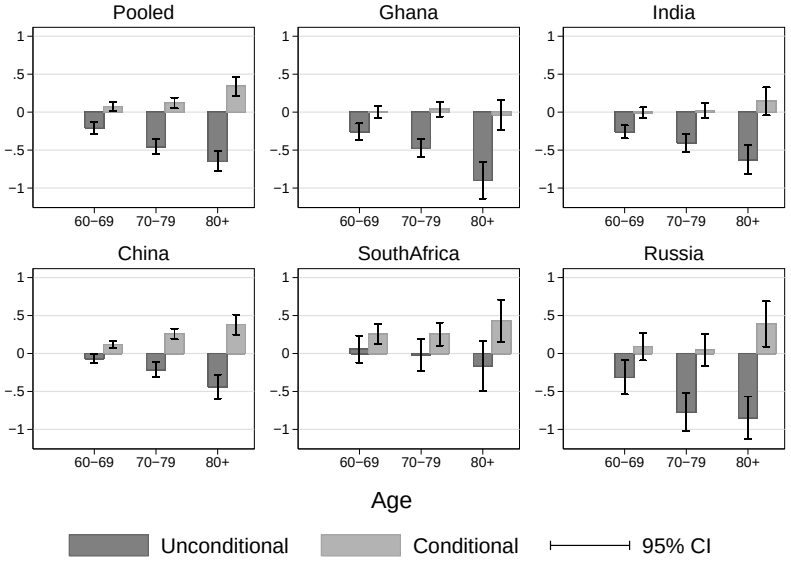


Figure 2: Average change in WHO quality of life relative to age 50–59



Moving to the experienced well-being measures (Figures 3 and 4), we find different results. For the emotion score, we find no clear evidence of any systematic relationship with age. We find a negative association for Ghana and Russia with differences up to 0.2 standard deviations. In India and China we do not find any differences while in South Africa age is associated with higher levels of the emotion score up to 0.4 standard deviations. For experienced well-being, evidence is also mixed but points towards an increasing age profile. Differences are smallest in India (around 0.2 standard deviations) and largest in South Africa (up to 0.5 standard deviations).

Figure 3: Average change in emotional well-being relative to age 50–59

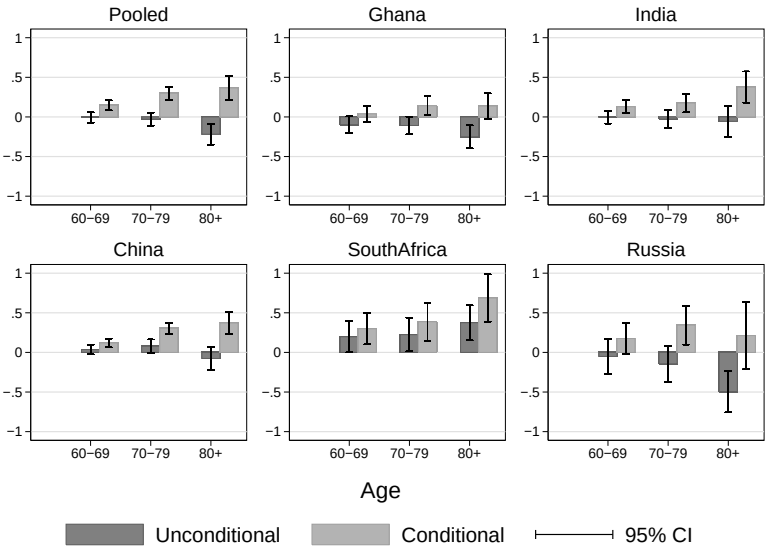
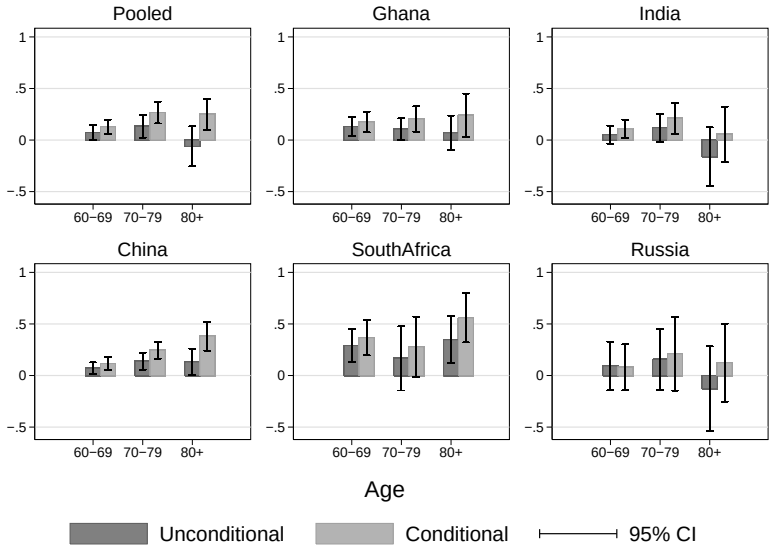


Figure 4: Average change in experienced well-being relative to age 50–59



In summary, relative to middle-aged individuals, older persons in developing countries seem to be at a disadvantage in terms of evaluative well-being, but not in terms of experienced well-being. Our results on evaluative utility are in line with those of Blanchflower and Oswald (2009) in which a decreasing age profile in raw life satisfaction is obtained using data from 8 European countries. Blanchflower and Oswald (2008) and Blanchflower and Oswald (2009) find contrasting results using Eurobarometer Surveys and the General Social Surveys in the U.S. There is only little evidence on the association in developing countries. On the other hand, Stone et al. (2010) provide an analysis of the age-distribution of psychological well-being in the U.S. that is in line with our results on experienced well-being. They find that positive experienced well-being has a U-shaped age profile while

negative experienced well-being substantially decreases with age. The combined effects result in a non-decreasing age profile of experienced well-being.

The psychological literature provides some explanations for the differences in raw age profiles between evaluative and experienced well-being. When asked to assess their general satisfaction with life, respondents have to create a reference framework of what constitutes a satisfied life (Diener et al., 1985). This requires a comparison their own life circumstances with those of other people at the same time and with their own life at other points in time (Dolan and Kahneman, 2008). A decrease in financial resources, health and social inclusion commonly associated with age is likely to be reflected in evaluative well-being. This comparative characteristic plays a much smaller role for momentary experienced well-being. Kahneman and Krueger (2006) argue that socio-demographic factors only weakly predict experienced well-being. The reporting of affects and emotional well-being rather depends on personality (Mroczek and Kolarz, 1998, Kahneman and Krueger, 2006). Hence, we suspect that potentially confounding factors such as life circumstances might explain the negative association found for evaluative well-being but are less predictive for experienced well-being.

Differences in response scales underlying the evaluative and experienced well-being measures can also result in the observed differences in the association between age and subjective well-being. The evaluative measures

strongly rely on a cognitive component and the creation of a reference framework while the experienced measures rather depend on personality (Mroczek and Kolarz, 1998, Kahneman and Krueger, 2006). Individuals tend to interpret response categories differently, depending on the cognitive evaluation of one's situation and the reference group. This response scale bias is less distinct for experienced well-being measures (Diener et al., 2009).

6.2. Conditional Analysis

We conduct a conditional analysis in order to control for such confounding factors. The light grey bars in Figures 1 – 4 show the association between age and well-being controlling for individual demographics and life circumstances such as standard demographics, household composition, health, economic status as well as social conditions.

The conditional analysis shows a completely altered age profile for evaluative well-being compared to the unconditional analysis. Conditioning on life circumstances, we find a positive association between age and general life satisfaction and the WHO quality of life for three out of five countries. The partial effect of age is highest in China and South Africa with an age-related increase up to 0.4 standard deviations for individuals aged 80 and older. The pattern is unclear for Ghana and India where partial effects are close to zero. Results for the WHO quality of life are similar. Ghana and India do not show any association with age. In China, South Africa and

Russia, well-being is increasing with age showing partial effects around 0.5 standard deviations for the oldest age group.

Results on experienced well-being are less altered by the use of control variables. The emotion score shows some small changes in age-related changes in well-being compared to the unconditional analysis. We observe a positive age profile in all countries. Ghana and Russia show an inversion of the age profile compared to the results above. Partial effects of age range from 0–0.2 standard deviations in Ghana to 0.2–0.8 standard deviations in South Africa. Results on experienced well-being (Figure 4) only change in magnitude but do not differ qualitatively from the unconditional analysis. Partial effects of age are positive and increasing in most countries except in India and South Africa and range from around 0.2 standard deviations (Ghana, India and Russia) to 0.5 standard deviations in South Africa.

In summary, we find a reversal of the association of age with evaluative well-being once controlling for life circumstances while experienced well-being is less altered. Our results on evaluative well-being such as general life satisfaction and quality of life are in line with most cross-sectional evidence of a U-shaped association[14] with the minimum well-being around the age of 40 to 50 (Kunzmann et al., 2000, Blanchflower and Oswald, 2008, 2009). Age *per se* is not a cause of decline in subjective well-being. The

[14]More recent literature provides evidence for a U-shaped age-profile but finds a decline in well-being for the oldest old (e.g., Wunder et al., 2009)

negative association between age and general life satisfaction and quality of life observed in the unconditional analysis is mainly associated with changes in life circumstances. Once we control for socio-demographic factors usually accompanied by aging we find a positive association between age and evaluative well-being. The conditioning on life circumstances reduces the comparative component inherent to evaluative measures. This might result in a change of the age-pattern because the negative influence of a decline in socio-economic situation and health is not captured in the age coefficient.

Our results on experienced well-being reinforce previous findings of a positive relationship with age (Stone et al., 2010) and are in line with the theory of socio-emotional selectivity. Aging is amongst others associated with changes in cognitive processing of emotions (Mroczek and Kolarz, 1998, Carstensen et al., 1999, Charles et al., 2001, Carstensen et al., 2003). Older persons remember relatively more positive information resulting in higher levels of reported well-being (Carstensen et al., 2003). The results also show that the association between age and experienced well-being is less affected by objective life circumstances (Kahneman and Krueger, 2006). In addition, we do not find evidence for differences in the association between age and well-being across countries. Results do not seem to differ according to development status, as it is represented in our sample of low- and middle-income countries.

Tables B.9, B.11, B.12 and B.13 show the regression results of the conditional analysis. Our results are in line with previous literature on the determinants of well-being (Fernández-Ballesteros et al., 2001, Gerdtham and Johannesson, 2001, Peiró, 2006). We observe smaller partial effects for experienced well-being. This result confirms that life circumstances play a minor role in explaining experienced measures (Kahneman and Krueger, 2006). All measures of well-being are strongly related to economic resources and health.

Notably, disability and pain decrease general life satisfaction and WHO quality of life by around 0.3 standard deviations. The effect on experienced well-being is smaller but remains significant. Disability is a strong limitation in a person's every day life and is associated with worse socio-economic outcomes and social exclusion. These effects are exacerbated in less developed countries as these countries often lack effective mechanisms for the protection of disadvantaged individuals. Such outcomes associated with disability might play a larger role for evaluative well-being through the comparative characteristic of these measures. A disabled person might rate overall satisfaction of life worse if comparing herself to a non-disabled person at the same age while the experienced momentary utility, e.g. watching TV, might not differ much between disabled and non-disabled persons. In addition, an increasing body of literature provides evidence for emotional adaptation to life-threatening events (e.g. Frederick and Loewenstein, 1999). This could

further explain why we observe a smaller effect of disability on experienced well-being in our data.

Working is associated with a significant increase in evaluative well-being (WHO quality of life) while the relation is negative for more experienced measures. Employment is seen as a desirable aspect of life because it attributes a meaning to life, and it is associated with the availability of resources and social status (Clark, 2003). In contrast, working is associated with higher stress levels, being worried and rushed, which results in lower experienced well-being (Knabe et al., 2010). Income is positively associated with well-being with a larger effect on evaluative well-being. Social ties such as community involvement, trust or safety significantly increase general life satisfaction and the WHO quality of life Index but has no substantial effect on experienced well-being.

6.3. Decomposition Analysis

In this section, we decompose the unconditional age-related difference in well-being in order to identify individual-specific life circumstances associated with the negative unconditional relation between age and evaluative well-being and to quantify their importance. Regarding experienced well-being, we aim at analyzing potential mediating mechanisms that might explain why we do not observe any unconditional relation between age and experienced well-being.

We split the sample into two age-groups based on the age of the household head: 1) middle-aged individuals between age 50 and 59, and 2) older individuals with an age 60+. The choice of the partition results in equal sample sizes for both age-groups. We perform the decomposition with different cut-offs and results remain qualitatively stable.

Table 2 shows descriptive statistics by age group and associated differences for all countries. We find that older persons are significantly less educated. This might capture a cohort effect as the years of schooling shows a positive time trend (e.g. Bank, 2013). Older persons are significantly less likely to work as the majority of them are in retirement age and have significantly lower income. We observe a significantly higher prevalence of disability and self-assessed pain among the older individuals. These variables also appeared to have the strongest predictive power in the conditional analysis above. Older persons show a lower participation in the community as well as slightly trust and perceived safety. Older persons are less likely to be married in all countries but South Africa. We observe a smaller proportion of male among the older persons but the difference is significant only in China and the pooled sample. These differences in gender and marital status reflect a potential selection effect as females in general have a higher life expectancy. We find only minor differences in household compositions

and ethnicity.[15]

[15]Regression tables by age-group are reported in Appendix B.2.

Table 2: Descriptive statistics of explanatory variables by age-group and country

	Pooled				Ghana			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	48.00	46.02	50.20	−4.18**	52.48	51.67	53.64	−1.97
Married	73.43	64.14	83.79	−19.65***	58.89	52.44	68.14	−15.69***
# Adults in HH	3.20	3.06	3.35	−0.30***	3.60	3.52	3.70	−0.18*
# Children in HH	0.81	0.84	0.77	0.08	1.89	1.79	2.04	−0.24***
Urban	47.17	47.98	46.28	1.71	41.78	40.11	44.18	−4.07
Ethnic minority	0.10	0.10	0.11	−0.01	0.51	0.50	0.51	−0.01
Education years	6.76	5.99	7.63	−1.64***	4.30	3.14	5.96	−2.83***
Working	44.02	26.76	63.24	−36.48***	70.76	60.52	85.45	−24.94***
HH Permanent Income	0.56	0.44	0.69	−0.25***	−0.01	−0.07	0.08	−0.15***
WHO Disability Index	0.96	1.21	0.68	0.53***	1.18	1.45	0.79	0.67***
Self-Assessed Pain	1.08	1.25	0.89	0.37***	1.41	1.58	1.17	0.41***
Community Involvement	0.00	−0.17	0.19	−0.37***	0.00	−0.10	0.15	−0.25***
Trust	−0.00	−0.06	0.07	−0.13***	−0.00	0.03	−0.04	0.07
Safety	−0.00	−0.05	0.05	−0.10**	0.00	−0.02	0.04	−0.06
	China				India			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	49.42	48.24	50.86	−2.62**	51.51	50.39	52.64	−2.25
Married	85.16	78.74	92.96	−14.22***	76.05	64.70	87.58	−22.88***
# Adults in HH	2.48	2.38	2.60	−0.22***	4.86	4.93	4.78	0.15
# Children in HH	0.22	0.22	0.23	−0.01	1.93	2.17	1.67	0.50***
Urban	44.54	48.81	39.34	9.47***	25.04	26.58	23.47	3.11*
Ethnic minority	0.01	0.01	0.01	−0.00	0.14	0.14	0.14	−0.01
Education years	5.39	4.69	6.23	−1.54***	3.78	3.16	4.42	−1.26***
Working	44.90	31.95	60.67	−28.72***	43.52	30.93	56.31	−25.39***
HH Permanent Income	−0.00	−0.15	0.18	−0.34***	−0.00	−0.04	0.04	−0.08
WHO Disability Index	0.45	0.59	0.28	0.31***	1.44	1.70	1.18	0.52***
Self-Assessed Pain	0.70	0.78	0.61	0.17***	1.41	1.60	1.21	0.39***
Community Involvement	0.00	−0.09	0.11	−0.20***	0.00	−0.15	0.15	−0.30***
Trust	−0.00	0.01	−0.01	0.01	0.00	−0.07	0.07	−0.13***
Safety	−0.00	−0.06	0.06	−0.12***	−0.00	−0.00	0.00	−0.01
	South Africa				Russia			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	38.43	37.27	39.64	−2.38	43.39	39.67	47.54	−7.87
Married	48.40	47.31	49.54	−2.22	61.17	49.85	73.79	−23.94***
# Adults in HH	3.10	3.06	3.14	−0.09	2.19	1.88	2.52	−0.64***
# Children in HH	0.97	0.94	0.99	−0.05	0.18	0.13	0.23	−0.10
Urban	60.33	58.52	62.23	−3.71	72.20	68.07	76.80	−8.73
Ethnic minority	0.25	0.27	0.23	0.04	0.13	0.13	0.14	−0.00
Education years	6.23	5.64	6.86	−1.22***	11.39	10.32	12.58	−2.27***
Working	29.40	14.71	44.76	−30.05***	43.59	16.44	73.84	−57.40***
HH Permanent Income	−0.01	0.04	−0.07	0.11	0.00	−0.23	0.26	−0.50***
WHO Disability Index	1.13	1.43	0.83	0.60***	0.96	1.37	0.51	0.85***
Self-Assessed Pain	1.17	1.28	1.05	0.22***	1.10	1.38	0.78	0.61***
Community Involvement	0.01	−0.13	0.15	−0.28***	−0.00	−0.29	0.32	−0.61***
Trust	−0.01	−0.00	−0.01	0.01	−0.00	−0.14	0.15	−0.29***
Safety	0.00	0.00	0.00	−0.00	−0.00	−0.09	0.10	−0.19*

* ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)

Note: We compute the differences by age-group by running a regression of the respective explanatory variable on the age-dummy. The reported significance of the difference between age-groups is based on a t-test. The entries in each column are country-specific averages by age-group and the associated difference in sample averages. HH permanent income, WHO Disability Index, Self-assessed pain, community involvement, Trust and Safety are standardized measures hence differences are measured in standard deviations.

Regression results for the pooled sample and by age-group are reported in Appendix B.2. In general, we do not find a lot of significant differences in coefficients between the two age-groups. Regarding general life satisfaction (Table B.14), we find some evidence for significant differences in the partial effects of being married and the number of children in the household. We find significant differences in the partial effects of the number of adults in the household and to a lesser extent social inclusion variables for WHO quality of life (Table B.15). Moving to the experienced well-being measures, we find evidence for different partial effects of disability and self-assessed pain (Tables B.16 and B.17). In particular, the effect of disability is quantitatively larger for the middle-aged group.

Table 3 shows the results of the decomposition of general life satisfaction. We find significantly lower general life satisfaction for the older age-group in all countries but South Africa. Differences range from 0.04 standard deviations in South Africa to 0.36 standard deviations in Russia with most of the difference being explained by differences in endowments (explained part). Disadvantages in health explain most of the observed explained difference followed by differences in economic resources and social ties. The combination of a positive partial effect of those variables on WHO quality of life with a higher prevalence of disability, lower income and social ties associated with age result in the observed disadvantage in well-being for the older persons. In contrast, the large differences in years of education

and the fraction of individuals working between the two age-groups do not explain the observed explained difference in general life satisfaction. This mainly results from small and non-significant coefficients on working and education in the pooled regression (Table B.14).

The differences due to the unexplained part of the decomposition favor older persons and result in a partial mediation of the disadvantage caused by differences in endowments in Ghana, China and South Africa. This partial mediation cannot be attributed to specific partial effects but is rather a result of the overall effect of differences in partial effects (Table B.14). This mainly results from non-significant differences in partial effects between the two age-groups which translate into a non-significant individual contribution to the unexplained part. The quantitatively rather small contribution of the unexplained part, in particular the insignificance of the constant term, is also a sign for a well-specified model as misspecification would be reflected in the contribution of the constant term. As we explain before, other issues should be considered when interpreting results of the unexplained part (Jones and Kelley, 1984, Jann, 2008).

Table 3: Decomposition of general life satisfaction by country

	Pooled	Ghana	India	China	South Africa	Russia
Age 60 +	-0.10^{**}	-0.11^{**}	-0.10^{**}	-0.03	0.00	-0.16
Age 50-59	0.12^{***}	0.16^{***}	0.11^{**}	0.03	-0.04	0.20^{*}
Difference	-0.21^{***}	-0.27^{***}	-0.21^{***}	-0.06^{*}	0.04	-0.36^{***}
Explained	-0.28^{***}	-0.36^{***}	-0.24^{***}	-0.21^{***}	-0.15^{**}	-0.36^{***}
Unexplained	0.07^{**}	0.09^{**}	0.04	0.16^{***}	0.19^{***}	0.00
Explained Differences						
Male	0.000	0.003	0.004	0.001	0.004	-0.003
Married	0.008	-0.022^{*}	0.007	-0.003	-0.004	0.009
# Adults in HH	0.002	0.002	0.001	0.009^{*}	0.000	0.051
# Children in HH	-0.000	0.004	-0.000	0.000	0.000	-0.000
Urban	-0.000	-0.002	-0.002	0.003	-0.000	-0.009
Ethnic minority	0.001	-0.000	0.001		0.011	
Education years	0.013	0.004	-0.005	0.012^{*}	0.018	0.055
Working	0.007	-0.018	-0.003	-0.018	-0.015	0.021
HH Permanent Income	-0.042^{***}	-0.025^{**}	-0.011	-0.061^{***}	0.020	-0.064^{*}
WHO Disability Index	-0.176^{***}	-0.258^{***}	-0.177^{***}	-0.098^{***}	-0.167^{***}	-0.277^{***}
Self-Assessed Pain	-0.040^{***}	-0.044^{***}	-0.025^{**}	-0.037^{***}	-0.026^{*}	-0.056
Community Involvement	-0.026^{***}	-0.009	-0.028^{***}	-0.011^{**}	0.009	-0.062
Trust	-0.008^{*}	0.005	-0.007	0.001	-0.000	-0.008
Safety	-0.008	-0.002	-0.001	-0.013^{**}	-0.002	-0.019
Country	*Yes*	*No*	*No*	*No*	*No*	*No*

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific decomposition results. Reported changes are measured in standard deviation. Standard errors are calculated using 500 bootstrap replications.

We observe similar results for the decomposition of quality of life (Table 4). Results indicate that persons aged 60 and older report a significantly lower quality of life in most countries in our sample. The difference ranges from 0.02 standard deviations in South Africa to 0.53 standard deviations in Russia. Differences in endowments explain a large part of the overall difference with the exception of South Africa. Health, economic resources and social ties appear to be the strongest predictors of disadvantages in well-being associated with age. In contrast to general life satisfaction, the difference in the fraction of working individuals does contribute to the explained difference in quality of life. This results from the combination of a positive partial effect of working on quality of life with a lower prevalence of working among older individuals.

Table 4: Decomposition of WHO quality of life by country

	Pooled	Ghana	India	China	South Africa	Russia
Age 60 +	−0.15***	−0.19***	−0.17***	−0.07	−0.03	−0.24**
Age 50-59	0.18***	0.27***	0.17***	0.09*	−0.01	0.29***
Difference	−0.33***	−0.46***	−0.34***	−0.16***	−0.02	−0.53***
Explained	−0.41***	−0.47***	−0.34***	−0.29***	−0.22***	−0.58***
Unexplained	0.07***	0.01	0.01	0.13***	0.20***	0.05
Explained Differences						
Male	0.001	0.001	0.005	0.001	0.003	−0.003
Married	−0.005	−0.006	−0.011	−0.003	−0.005	−0.031
# Adults in HH	0.003	0.002	0.001	0.011*	−0.000	0.072**
# Children in HH	0.001	0.004	0.007	−0.000	0.000	0.006
Urban	−0.000	−0.003	−0.000	0.010	−0.001	0.008
Ethnic minority	0.002	−0.000	0.001		0.013	
Education years	−0.002	−0.019	−0.011*	0.008	0.007	0.032
Working	−0.025	−0.046**	−0.025**	−0.034**	−0.041	−0.088
HH Permanent Income	−0.054***	−0.031**	−0.016	−0.071***	0.023	−0.068*
WHO Disability Index	−0.214***	−0.297***	−0.207***	−0.140***	−0.159***	−0.339***
Self-Assessed Pain	−0.065***	−0.056***	−0.038***	−0.048***	−0.044**	−0.120**
Community Involvement	−0.020**	−0.020**	−0.036***	−0.012**	−0.019	−0.013
Trust	−0.010**	0.006	−0.011*	0.001	−0.000	−0.017
Safety	−0.010	−0.003	−0.001	−0.014**	−0.002	−0.018
Country	*Yes*	*No*	*No*	*No*	*No*	*No*

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific decomposition results. Reported changes are measured in standard deviation. Standard errors are calculated using 500 bootstrap replications.

To summarize, we find that the unconditional disadvantages in evaluative well-being associated with age are mostly explained by differences in socio-economic characteristics and health. In particular, disability, decreasing economic resources and social ties explain the lower general life satisfaction and quality of life. This finding confirms our results from the previous section that the raw age profile in evaluative well-being is mainly driven by differences in life circumstances, i.e. confounding factors that are both correlated with age and well-being. Our results further show that unconditional differences in evaluative well-being are mainly explained by objective factors such life circumstances (Kahneman and Krueger, 2006). Hence, controlling for these confounding factors results in a change in the

association between age and evaluative well-being compared to the unconditional analysis.

Tables 5 and 6 show results for the emotion score and experienced well-being. The unconditional analysis does not provide a lot of evidence for a significant association between age and experienced well-being. The conditional analysis further does not find a reversal in the association between age and the emotion score and experienced well-being that could be attributed to confounding factors. The decomposition analysis can therefore be seen as a counterfactual analysis. This analysis allows us to examine whether the qualitative stability of the association between age and experienced well-being between the unconditional and the conditional analysis results from potential mediating mechanisms or whether the explanatory factors do not contribute to a difference at all.

Consider first the decomposition of the emotion score shown in Table 5. We find a significantly lower emotion score for older persons in Ghana while in South Africa older persons report significantly higher scores. We observe no age-related differences in the other countries in our sample. This finding reflects the unclear age pattern we observe in the unconditional analysis above. Differences in endowments, in particular health and economic resources, result in a disadvantage of older persons in terms of emotion scores similar to the analysis on evaluative well-being. The effect of working in-

creases well-being of the older persons. This is a result of a negative effect of working on emotional well-being combined with a lower prevalence of working among older individuals. In other words, older people do not suffer from negative consequences of working such as stress etc. which increases their emotion score relative to middle-aged individuals. The unexplained part of the decomposition is in favor of older person and partially mediates the explained difference in well-being in favor of middle-aged persons (Tables B.20 and B.21). This partial mediation cannot be attributed to specific partial effects, except maybe for India with disability, but is rather a result of the overall effect of differences in partial effects and the constant.

Table 5: Decomposition of emotion score by country

	Pooled	Ghana	India	China	South Africa	Russia
Age 60 +	−0.01	−0.05	−0.01	0.01	0.09	−0.04
Age 50-59	0.02	0.08*	0.00	−0.01	−0.11	0.11
Difference	−0.03	−0.14**	−0.01	0.02	0.20*	−0.15
Explained	−0.17***	−0.20***	−0.15***	−0.12***	−0.08	−0.25***
Unexplained	0.15***	0.07	0.14***	0.14***	0.28***	0.11*
Explained Differences						
Male	−0.004	−0.001	−0.006	−0.002	−0.004	−0.006
Married	0.012	−0.009	0.027*	−0.008	−0.004	0.002
# Adults in HH	−0.003	0.002	0.002	0.004	−0.000	0.014
# Children in HH	−0.000	−0.002	0.002	0.000	0.001	0.012
Urban	0.000	−0.001	0.001	0.016*	−0.006	0.006
Ethnic minority	0.002	0.000	−0.000		−0.003	
Education years	0.008	0.022	0.004	0.015**	0.003	0.040
Working	0.036**	−0.076***	0.043***	0.024	0.031	−0.008
HH Permanent Income	−0.031***	−0.015*	−0.010	−0.033***	0.007	−0.052*
WHO Disability Index	−0.126***	0.003	−0.143***	−0.067***	−0.024	−0.167*
Self-Assessed Pain	−0.063***	−0.075***	−0.066***	−0.044***	−0.044*	−0.087*
Community Involvement	−0.004	−0.033***	−0.003	−0.009*	−0.036*	0.010
Trust	−0.003	−0.009	−0.000	0.000	−0.001	−0.017
Safety	−0.003	−0.006	−0.000	−0.012**	−0.000	−0.002
Country	*Yes*	*No*	*No*	*No*	*No*	*No*

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific decomposition results. Reported changes are measured in standard deviation. Standard errors are calculated using 500 bootstrap replications.

Last, we examine the decomposition of experienced well-being (Table 6). Results indicate a significantly higher experienced well-being among older persons in three out of five countries. Differences in endowments are in favor of older persons but play only a small role in determining the overall difference. A higher prevalence of disability and self-assessed pain and, to a lesser extent, decreasing financial means (Tables 2) attribute to decreasing well-being over age. However, the effect of working partially mediates this disadvantage of older persons in terms of health similar to what we observe for the emotion score.

Differences stemming from the unexplained part significantly favor older persons (Table B.21). Part of this effect is attributed to the effect of disability, in particular for the Indian and Russian subsample. However, a large fraction of the unexplained difference is in the constant, i.e. the choice of regressors in our analysis is not appropriate to fully explain differences in experienced well-being. Kahneman and Krueger (2006) argue that experienced well-being is rather explained by personality factors for which we do not control for due to the lack of information in our data.

Table 6: Decomposition of experienced well-being by country

	Pooled	Ghana	India	China	South Africa	Russia
Age 60 +	0.05	0.04	0.04	0.06	0.11*	0.05
Age 50-59	−0.04	−0.05	−0.04	−0.03	−0.13	−0.04
Difference	0.09*	0.09*	0.07	0.09**	0.23**	0.09
Explained	−0.04	−0.05*	−0.06**	−0.04	−0.05	0.05
Unexplained	0.13***	0.15***	0.13***	0.13***	0.28***	0.05
			Explained Differences			
Male	−0.004	−0.002	−0.003	−0.001	−0.003	−0.005
Married	0.021*	0.003	0.031**	−0.004	−0.005	0.044
# Adults in HH	0.002	0.004	0.002	0.011*	−0.000	−0.004
# Children in HH	0.001	−0.001	0.005	0.000	−0.001	0.009
Urban	0.000	−0.003	0.002	0.027*	−0.003	−0.005
Ethnic minority	0.000	0.000	0.001		−0.009	
Education years	−0.000	0.025*	−0.005	0.004	−0.003	0.015
Working	0.076***	−0.007	0.033**	0.021	0.053*	0.196***
HH Permanent Income	−0.025**	−0.011	−0.006	−0.039***	0.009	−0.048
WHO Disability Index	−0.099***	−0.049*	−0.119***	−0.020	−0.064*	−0.171*
Self-Assessed Pain	−0.016	0.010	−0.015	−0.014**	−0.031*	−0.016
Community Involvement	0.010	−0.023**	0.014	−0.007	0.008	0.029
Trust	0.002	0.001	−0.000	0.000	−0.001	0.015
Safety	−0.009	−0.002	−0.002	−0.018***	0.000	−0.013
Country	*Yes*	*No*	*No*	*No*	*No*	*No*

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific decomposition results. Reported changes are measured in standard deviation. Standard errors are calculated using 500 bootstrap replications.

The mixed results on the decomposition of the unconditional difference in experienced well-being is a result of two factors. First, the influence of the explained part is quantitatively smaller than what we observe for evaluative well-being. This results from quantitatively smaller partial effects in the regressions of experienced well-being (Tables B.9 – B.13). This translates into a smaller influence of differences in endowments despite significant age-related differences in life circumstances. Second, we find some evidence for mediating factors, in particular through the effect of working. Working results in an increase of experienced well-being among the older persons as they suffer less from negative consequences of working such as stress. This positive effect partially offsets the negative effects of deteriorating health and income associated with aging that results in a decrease of

experienced well-being over age. Third, the fraction of the unconditional difference in experienced well-being attributed to the unexplained part is larger in comparison to evaluative well-being. We find some more differences in partial effects between middle-aged and older persons fore the experienced well-being measures, for instance with respect to disability. However, a large proportion of the unexplained part is attributed to the constant term. This reflects the effect of (age-)group membership and unobserved factors that are both associated with age and well-being (Jann, 2008). However, the unexplained part captures model misspecification, in particular omitted variable bias (Jones and Kelley, 1984, Jann, 2008). Kahneman and Krueger (2006) observe that socio-demographic variables predict life satisfaction more strongly than net affects. Personality variables, including sleep, depression and religiosity, predict both types of well-being equally well. The observed increase in the contribution of the unexplained part for the experienced utility measures might therefore result from a misspecified model through omitted variables.

7. Conclusion

This study provides a detailed analysis of the relationship between age and different aspects of psychological well-being among persons aged 50 and older from five low- and middle-income countries (China, Ghana, India, the Russian Federation and South Africa). The first goal of this study was to analyze the differences in well-being associated with age and the role of po-

tentially confounding factors associated with aging. The second goal was to compare the effect of aging on evaluative well-being with emotional and experienced well-being.

We find substantial differences in unconditional age-profiles between evaluative and more experienced well-being. Age is associated with decreasing evaluative well-being while we observe a rather positive association moving towards experienced well-being. Our finding regarding evaluative well-being is in contrast to recent literature that finds a U–shaped age profile with a minimum appearing between age 40-50 (Blanchflower and Oswald, 2008) in the raw data. Results on the association between age and experienced well-being confirm previous findings (Stone et al., 2010).

The conditional analysis shows that age per se is not a cause of a decline in evaluative well-being. The negative age profile is mainly associated with changes in life circumstances. Age is a process of decline associated with decreasing health, financial means and social ties (Nelson, 2004). Controlling for these factors, age has a positive effect on evaluative well-being. In contrast, the results on experienced well-being are not substantially altered by the inclusion of socio-demographic factors. Experienced well-being measures are rather a result of personality traits and depend less on life circumstances (Mroczek and Kolarz, 1998, Kahneman and Krueger, 2006). Aging is associated with changes in cognitive processing of emotions (Mroczek and

Kolarz, 1998, Carstensen et al., 1999, Charles et al., 2001, Carstensen et al., 2003). Older persons remember relatively more positive information resulting in higher levels of reported well-being. This effect is not captured in our explanatory variables.

Regarding the decomposition of the unconditional differences in well-being associated with age, results confirm our previous findings that age-related differences in evaluative well-being are mainly a result of changing life circumstances. The disadvantages in terms of health, financial means, and social ties that older persons face explain most of the observed difference in well-being. This does not hold for the experienced well-being. First, changes in life circumstances have a much smaller effect on experienced well-being. Disadvantages in health etc. experienced by older persons result in smaller differences in well-being. Second, the lower prevalence of working among older persons partially compensates for differences in well-being caused by other factors because working is related to lower emotional well-being.

8. Bibliography

Bank, T. W., 2013. World development indicators. `http://data.worldbank.org/indicator/SE.SEC.NENR/countries/1W?page=6&display=default`, online; accessed 18.02.2013.

Blanchflower, D., Oswald, A., 2004. Well-being over time in britain and the usa. Journal of Public Economics 88 (7), 1359–1386.

Blanchflower, D. G., 2009. International evidence on well-being. In: Measuring the Subjective Well-Being of Nations: National Accounts of Time Use and Well-Being. University of Chicago Press, pp. 155–226.

Blanchflower, D. G., Oswald, A. J., Apr. 2008. Is well-being u-shaped over the life cycle? Social Science & Medicine 66 (8), 1733–1749.

Blanchflower, D. G., Oswald, A. J., Aug. 2009. The u-shape without controls: A response to glenn. Social Science & Medicine 69 (4), 486–488.

Carstensen, L., 1995. Evidence for a life-span theory of socioemotional selectivity. Current directions in psychological science 4 (5), 151–156.

Carstensen, L. L., Fung, H. H., Charles, S. T., 2003. Socioemotional selectivity theory and the regulation of emotion in the second half of life. Motivation and Emotion 27 (2), 103–123.

Carstensen, L. L., Isaacowitz, D. M., Charles, S. T., 1999. Taking time seriously: A theory of socioemotional selectivity. American Psychologist 54 (3), 165–181.

Charles, S., Reynolds, C., Gatz, M., 2001. Age-related differences and change in positive and negative affect over 23 years. Journal of personality and social psychology 80 (1), 136.

Chen, C., 2001. Aging and life satisfaction. Social Indicators Research 54 (1), 57–79.

Clark, A., 2003. Unemployment as a social norm: Psychological evidence from panel data. Journal of Labor Economics 21 (2), 323–351.

Clark, A., 2007. Born to be mild? cohort effects don't (fully) explain why well-being is u-shaped in age.

De Ree, J., Alessie, R., 2011. Life satisfaction and age: Dealing with underidentification in age-period-cohort models. Social Science & Medicine 73 (1), 177–182.

Deaton, A., Spring 2008. Income, aging, health and well-being around the world: Evidence from the gallup world poll. Journal of Economic Perspectives 22 (2), 53–72.

Di Tella, R., MacCulloch, R., Oswald, A., 2001. Preferences over inflation and unemployment: Evidence from surveys of happiness. The American Economic Review 91 (1), 335–341.

Diener, E., Emmons, R., Larsen, R., Griffin, S., 1985. The satisfaction with life scale. Journal of personality assessment 49 (1), 71–75.

Diener, E., Oishi, S., Lucas, R. E., 2003. Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. Annual Review of Psychology 54 (1), 403–425.

Diener, E., Sandvik, E., Pavot, W., 2009. Happiness is the frequency, not the intensity, of positive versus negative affect. Assessing well-being, 213–231.

Diener, E., Suh, E., Lucas, R., Smith, H., 1999. Subjective well-being: Three decades of progress. Psychological bulletin 125 (2), 276.

Dolan, P., Kahneman, D., 2008. Interpretations of utility and their implications for the valuation of health*. The Economic Journal 118 (525), 215–234.

Edgeworth, F., 1881 [1961]. Mathematical physics; an essay on the application of mathematics to the moral sciences. New York.

Ehrlich, B. S., Isaacowitz, D. M., 2002. Does subjective well-being increase with age. Perspectives in Psychology 5, 2026.

Fernández-Ballesteros, R., Dolores Zamarrón, M., Angel Ruíz, M., 2001. The contribution of socio-demographic and psychosocial factors to life satisfaction. Ageing & Society 21 (01), 25–43.

Ferrer-i Carbonell, A., Frijters, P., 2004. How important is methodology for the estimates of the determinants of happiness?*. The Economic Journal 114 (497), 641–659.

Frederick, S., Loewenstein, G., 1999. Hedonic adaptation. In: Kahneman, D., Diener, E.,

Schwarz, N. (Eds.), Well-being: The foundations of hedonic psychology. Russell Sage Foundation, New York, NY, US, pp. 302–329.

Frijters, P., Beatton, T., May 2012. The mystery of the u-shaped relationship between happiness and age. Journal of Economic Behavior & Organization 82 (23), 525–542.

Fujita, F., Diener, E., Sandvik, E., 1991. Gender differences in negative affect and well-being: the case for emotional intensity. Journal of personality and social psychology 61 (3), 427.

Gerdtham, U.-G., Johannesson, M., Nov. 2001. The relationship between happiness, health, and socio-economic factors: results based on swedish microdata. Journal of Socio-Economics 30 (6), 553–557.

Glenn, N., Aug. 2009. Is the apparent u-shape of well-being over the life course a result of inappropriate use of control variables? a commentary on blanchflower and oswald (66: 8, 2008, 17331749). Social Science & Medicine 69 (4), 481–485.

Hansen, T., Slagsvold, B., 2012. The age and subjective well-being paradox revisited: A multidimensional perspective. Norsk epidemiologi 22 (2).

He, W., Muenchrath, M. N., Kowal, P., 2012. Shades of gray: A cross-country study of health and well-being of the older population in sage countries, 2007-2010. Tech. rep., U.S. Census Bureau, Washington, D.C., u.S. Government Printing Office.

Jann, B., 2008. The blinder-oaxaca decomposition for linear regression models. The Stata Journal 8 (4), 453–479.

Jones, F. L., Kelley, J., 1984. Decomposing differences between groups a cautionary note on measuring discrimination. Sociological Methods & Research 12 (3), 323–343.

Kahneman, D., Deaton, A., 2010. High income improves evaluation of life but not emotional well-being. Proceedings of the National Academy of Sciences 107 (38), 16489–16493.

Kahneman, D., Krueger, A. B., 2006. Developments in the measurement of subjective well-being. The Journal of Economic Perspectives 20 (1), 3–24.

Kahneman, D., Krueger, A. B., Schkade, D., Schwarz, N., Stone, A., 2004a. Toward

national well-being accounts. The American Economic Review 94 (2), 429–434, papers and Proceedings of the One Hundred Sixteenth Annual Meeting of the American Economic Association San Diego, CA.

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., Stone, A. A., 2004b. A survey method for characterizing daily life experience: The day reconstruction method. Science 306 (5702), 1776–1780.

Knabe, A., Rtzel, S., Schb, R., Weimann, J., 2010. Dissatisfied with life but having a good day: Time-use and well-being of the unemployed*. The Economic Journal 120 (547), 867889.

Krueger, A. B., Schkade, D. A., 2008. The reliability of subjective well-being measures. Journal of Public Economics 92 (8), 1833–1845.

Kunzmann, U., Little, T. D., Smith, J., 2000. Is age-related stability of subjective well-being a paradox? cross-sectional and longitudinal evidence from the berlin aging study. Psychology and Aging 15 (3), 511–526.

Landeghem, B. V., Sep. 2008. Human well-being over the life cycle: Longitudinal evidence from a 20-year panel. SSRN eLibrary.

Lee, G. R., Seccombe, K., Shehan, C. L., 1991. Marital status and personal happiness: An analysis of trend data. Journal of Marriage and the Family, 839–844.

Lelkes, O., 2008. Happiness across the life cycle: Exploring age-specific preferences. Policy Brief (2).

Mroczek, D., Kolarz, C., 1998. The effect of age on positive and negative affect: a developmental perspective on happiness. Journal of personality and social psychology 75 (5), 1333.

Nelson, T., 2004. Ageism: Stereotyping and prejudice against older persons. MIT Press.

Neumark, D., 1988. Employers' discriminatory behavior and the estimation of wage discrimination. The Journal of Human Resources 23 (3), 279–295.

Nolen-Hoeksema, S., Rusting, C. L., 2003. Gender differences in well-being. In: Kahneman, D., Diener, E., Schwarz, N. (Eds.), Well-being: The foundations of hedonic

psychology. Russell Sage Foundation Publications, New York, Ch. 17, pp. 330–350.

Peiró, A., Apr. 2006. Happiness, satisfaction and socio-economic conditions: Some international evidence. Journal of Socio-Economics 35 (2), 348–365.

Powdthavee, N., 2005. Unhappiness and crime: evidence from south africa. Economica 72 (287), 531–547.

Power, M., 2003. Development of a common instrument for quality of life. In: Nosikov, A., Gudex, C. (Eds.), EUROHIS - Developing common instruments for health surveys. Vol. 57. IOS Press, Amsterdam, Ch. 10, pp. 145–164.

Robinson, M. D., Johnson, J. T., 1997. Is it emotion or is it stress? gender stereotypes and the perception of subjective experience. Sex Roles 36 (3), 235–258.

Robinson, M. D., Johnson, J. T., Shields, S. A., 1998. The gender heuristic and the database: Factors affecting the perception of gender-related differences in the experience and display of emotions. Basic and Applied Social Psychology 20 (3), 206–219.

Rodgers, W. L., 1982. Estimable functions of age, period, and cohort effects. American Sociological Review, 774–787.

Schilling, O., 2006. Development of life satisfaction in old age: another view on the" paradox". Social Indicators Research 75 (2), 241–271.

Schwarz, N., Kahneman, D., Xu, J., Belli, R., Stafford, F., Alwin, D., 2009. Global and episodic reports of hedonic experience. Using calendar and diary methods in life events research, 157–174.

Stone, A. A., Schwartz, J. E., Broderick, J. E., Deaton, A., Jun. 2010. A snapshot of the age distribution of psychological well-being in the united states. Proceedings of the National Academy of Sciences 107 (22), 9985–9990.

Üstün, T. B., Kostanjsek, N., Chatterji, S., Apr. 2010. Measuring Health and Disability: Manual for WHO Disability Assessment Schedule WHODAS 2.0. World Health Organization.

WHO, 2001. The International Classification of Functioning. Disability and Health. World Health Organization, Geneva.

WHO, 2006. WHO SAGE Survey Manual: The WHO Study on Global AGEing and Adult Health (SAGE). World Health Organization, Geneva.

Wood, W., Rhodes, N., Whelan, M., 1989. Sex differences in positive well-being: A consideration of emotional style and marital status. Psychological Bulletin; Psychological Bulletin 106 (2), 249.

Wunder, C., Wiencierz, A., Schwarze, J., Küchenhoff, H., 2009. Well-being over the life span: semiparametric evidence from british and german longitudinal data. The Review of Economics and Statistics (0).

Appendix A. List of variables

Table A.7: Description of measures of subjective well-being

Variable	Description
General Life Satisfaction	"Taking all things together, how satisfied are you with your life as a whole these days?" (1 "Very satisfied" to 5 "Very dissatisfied")
WHOQoL-8 Score	"Do you have enough energy for every day life?"; "Do you have enough money to meet your needs?"; "How satisfied are you with your health?"; How satisfied are you with yourself?"; "How satisfied are you with your ability to perform your daily living activities?"; "How satisfied are you with your personal relationship?"; "How satisfied are you with the conditions of your living place?"; All components are coded from 1 "Very dissatisfied" to 5 "Very satisfied".
Emotion Score	Score over the following emotion questions

continued on next page

Table A.7: (continued)

Variable	Description
	Positive emotions include: "Did you feel ... calm or relaxed ...?"; "Were you enjoying what you were doing for much of the day yesterday?"; "Did you smile or laugh a lot yesterday?" Negative emotions include: "Did you feel ... worried ... for much of the day yesterday?"; "Did you feel ...rushed... for much of the day yesterday?"; "Did you feel ...irritated or angry... for much of the day yesterday?"; "Did you feel ...depressed...?"; "Did you feel ...tense or stressed... for much of the day yesterday?"; "Did you feel ...lonely... for much of the day yesterday?; "Did you feel ...bored...?"; "Did you feel ...physical pain... for much of the day yesterday?"; "Did you feel ...sleepiness...?"; "Did you have stomach ache at any time yesterday?"; "Did you have a headache at any time yesterday?" All components are coded 1 "Yes" , 0 "No"

continued on next page

Table A.7: (continued)

Variable	Description
Experienced Utility Score	Positive affects include: "How calm or relaxed were you feeling?"; "How much were you enjoying what you were doing?" (0 "Not at all", 1 "A little", 2 "A lot") Negative affects include: "How worried were you feeling?"; "How rushed were you feeling?"; "How irritated or angry were you feeling?"; "How depressed were you feeling?"; "How tense or stressed were you feeling?"; (0 "Not at all" -1 "A little" -2 "A lot")

Table A.8: Description of measures of subjective well-being

Variable	Description
Demographics	
Age	Age of respondent
Male	1 Male, 0 Female
Married	1 Married or partnered, 0 Single, Divorced, Separated
Ethnic minority	1 Belongs to ethnic minority, 0 Does not belong to ethnic minority
# children in HH	# children (Age$<$ 15) living in the household
# adults in HH	# adults (Age $\geq$ 15) living in the household
Urban area	1 urban area, 0 rural area or village
SES	
Education years	Years of education
HH Permanent Income	Total household permanent income.
Currently working	Respondent currently working
Health	
WHODAS-12[16]	"Over the last 30 days, how much difficulties did you have in ...":

continued on next page

[16]See Üstün et al. (2010)

Table A.8: (continued)

Variable	Description
	learning a new task; making new friendships or maintaining current friendships; dealing with strangers; standing for a long period; taking care of your hh responsibilities; joining community activities (...) in the same way as anyone else can; emotionally affected by health conditions; concentrating on doing sth. for 10 minutes; walking a long distance such as one kilometer; bathing/washing your whole body; getting dressed; in your day to day work Item scale from 1 (None) to 5 (Extreme/Cannot do)
Self-Assessed Pain	"Overall in the last 30 days, ...": how much of bodily aches or pains did you have; how much bodily discomfort did you have; how much difficulty did you have in your daily life because of your pain

continued on next page

Table A.8: (continued)

Variable	Description
	Item scale from 1 (None) to 5 (Extreme/Cannot do)

continued on next page

Table A.8: (continued)

Variable	Description
Social Cohesion	
Community Involvement	"How often in the last 12 months have you": attended any public meeting in which there was discussion of local or school affairs; met personally with someone you consider to be a community leader; attended any group, club, society, union or organizational meeting; worked with other people in your neighborhood to fix or improve something; had friends over to your home; been in the home of someone who lives in a different neighborhood than you do or had them in your home; socialized with co-workers outside work; attended religious services (not including weddings and funerals); gotten out of the house/your dwelling to attend social meetings, activities, programs or events or to visit friends or relatives? Item scale from 1 (Never) to 5 (Daily)

continued on next page

Table A.8: (continued)

Variable	Description
Trust	First, think about people in your neighborhood. Generally speaking, would you say that you can trust them?; Now, think about people whom you work with. Generally speaking, would you say that you can trust them?; And how about strangers? Generally speaking, would you say that you can trust them? Item scale from 1 (To a very great extent) to 5 (To a very small extent)
Safety	In general, how safe from crime and violence do you feel when you are alone at home?; How safe do you feel when walking down your street alone after dark?; In the last 12 months, have you or anyone in your household been the victim of a violent crime, such as assault or mugging? (1 Yes, 0 No) Item scale from 1 (Completely safe) to 5 (Not safe at all)

Appendix B. Tables

Appendix B.1. Conditional Analysis

Table B.9: Regression Estimates of General Life Satisfaction

	Pooled	Ghana	India	China	South Africa	Russia
Panel A. Unconditional Regression						
60-69	-0.15^{***}	-0.13^{**}	-0.18^{***}	-0.01	0.05	-0.29^{**}
70-79	-0.25^{***}	-0.24^{***}	-0.21^{***}	-0.07	0.09	-0.47^{***}
80+	-0.46^{***}	-0.61^{***}	-0.48^{***}	-0.23^{***}	-0.04	-0.63^{***}
Male	0.15^{***}	0.16^{***}	0.17^{***}	0.06^{**}	0.12^{*}	0.20^{**}
Constant	0.10^{***}	0.06	0.02	-0.00	-0.09	0.12
Country	*Yes*	*No*	*No*	*No*	*No*	*No*
Panel B. Conditional Regression						
60-69	0.04	0.09^{**}	0.01	0.15^{***}	0.20^{***}	-0.04
70-79	0.16^{***}	0.19^{***}	0.09^{**}	0.31^{***}	0.31^{***}	0.04
80+	0.25^{***}	0.11	0.07	0.42^{***}	0.42^{***}	0.26
Male	-0.04	-0.13^{***}	-0.15^{***}	-0.07^{***}	-0.09	0.05
Married	0.02	0.17^{***}	-0.02	0.08^{**}	0.15^{**}	0.02
Ethnic minority	-0.08	0.05	-0.11^{*}		0.21^{***}	
Urban	-0.03	0.04	-0.14^{**}	0.01	0.03	0.06
# Adults in HH	-0.01	-0.01	0.01	-0.04^{***}	0.01	-0.07
# Children in HH	-0.00	-0.02^{*}	-0.01	-0.02	-0.01	0.01
Education years	-0.00	0.00	0.00	-0.00	-0.02^{**}	-0.01
Working	0.03	0.11^{*}	0.01	0.14^{***}	0.13^{*}	-0.04
HH Permanent Income	0.21^{***}	0.16^{***}	0.15^{***}	0.20^{***}	0.24^{***}	0.16^{***}
WHO Disability Index	-0.35^{***}	-0.38^{***}	-0.36^{***}	-0.36^{***}	-0.33^{***}	-0.36^{***}
Self-Assessed Pain	-0.10^{***}	-0.10^{***}	-0.06^{***}	-0.20^{***}	-0.10^{***}	-0.06
Community Involvement	0.07^{***}	0.02	0.09^{***}	0.05^{**}	-0.04	0.10^{*}
Trust	0.06^{***}	0.05^{**}	0.04^{**}	0.09^{***}	-0.03	0.05
Safety	0.10^{***}	0.04	0.03	0.10^{***}	0.11^{***}	0.17^{***}
Constant	0.27^{***}	0.44^{***}	0.67^{***}	0.18^{***}	0.27^{**}	0.62^{***}
Country	*Yes*	*No*	*No*	*No*	*No*	*No*

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific partial effects. Reported changes are measured in standard deviation. The pooled regression includes country fixed effects.

Table B.10: Ordered Logit Estimates of General Life Satisfaction. Partial effects for $Prob$(Very Satisfied)

	Pooled	Ghana	India	China	South Africa	Russia
Panel A. Unconditional Regression						
60-69	-0.02^{***}	-0.01^{**}	-0.03^{***}	-0.00	0.01	-0.01
70-79	-0.03^{***}	-0.02^{***}	-0.04^{***}	-0.01	0.02	-0.02^{**}
80+	-0.06^{***}	-0.06^{***}	-0.09^{***}	-0.02^{***}	0.00	-0.03^{**}
Male	0.02^{***}	0.02^{***}	0.03^{***}	0.01^{**}	0.02^{*}	0.01^{**}
Country	*Yes*	*No*	*No*	*No*	*No*	*No*
Panel B. Conditional Regression						
60-69	0.01	0.01^{*}	0.00	0.02^{***}	0.04^{***}	-0.00
70-79	0.02^{***}	0.02^{***}	0.02^{**}	0.04^{***}	0.05^{***}	-0.00
80+	0.04^{***}	0.02^{*}	0.02	0.05^{***}	0.08^{***}	0.01
Male	-0.01	-0.01^{**}	-0.03^{***}	-0.01^{**}	-0.01	0.00
Married	0.00	0.02^{**}	-0.00	0.01^{**}	0.03^{**}	0.00
Ethnic minority	-0.01	0.01	-0.02^{*}		0.05^{***}	
Urban	-0.00	0.00	-0.03^{**}	0.00	0.00	0.00
# Adults in HH	-0.00	-0.00	0.00	-0.01^{***}	0.00	-0.00
# Children in HH	-0.00	-0.00^{*}	-0.00	-0.00	-0.00	-0.00
Education years	-0.00	0.00	0.00	-0.00	-0.00^{*}	-0.00
Working	0.01	0.01	0.00	0.02^{***}	0.02	-0.00
HH Permanent Income	0.03^{***}	0.02^{***}	0.03^{***}	0.03^{***}	0.04^{***}	0.01^{**}
WHO Disability Index	-0.04^{***}	-0.05^{***}	-0.07^{***}	-0.04^{***}	-0.05^{***}	-0.02^{**}
Self-Assessed Pain	-0.01^{***}	-0.01^{***}	-0.01^{***}	-0.03^{***}	-0.02^{**}	-0.00
Community Involvement	0.01^{***}	0.00	0.02^{***}	0.01^{**}	-0.01	0.00^{*}
Trust	0.01^{***}	0.01^{*}	0.01^{*}	0.01^{***}	-0.01	0.00
Safety	0.01^{***}	0.01^{*}	0.01^{*}	0.01^{***}	0.02^{**}	0.01^{*}
Country	*Yes*	*No*	*No*	*No*	*No*	*No*

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific partial effects. The pooled regression includes country fixed effects.

Table B.11: Regression Estimates of WHO Quality of Life

	Pooled	Ghana	India	China	South Africa	Russia
Panel A. Unconditional Regression						
60-69	-0.21^{***}	-0.26^{***}	-0.26^{***}	-0.07^{**}	0.05	-0.31^{***}
70-79	-0.45^{***}	-0.48^{***}	-0.40^{***}	-0.21^{***}	-0.02	-0.77^{***}
80+	-0.65^{***}	-0.90^{***}	-0.62^{***}	-0.44^{***}	-0.16	-0.85^{***}
Male	0.23^{***}	0.25^{***}	0.32^{***}	0.09^{***}	0.17^{**}	0.28^{***}
Constant	0.22^{***}	0.12^{**}	0.01	0.03	-0.09	0.18
Country	*Yes*	*No*	*No*	*No*	*No*	*No*
Panel B. Conditional Regression						
60-69	0.07^{**}	0.00	-0.01	0.12^{***}	0.25^{***}	0.09
70-79	0.12^{***}	0.04	0.02	0.26^{***}	0.26^{***}	0.05
80+	0.33^{***}	-0.04	0.14	0.38^{***}	0.43^{***}	0.39^{**}
Male	-0.05^{*}	-0.02	-0.18^{***}	-0.05^{**}	-0.10	0.03
Married	0.09^{***}	0.02	0.07	0.07^{**}	0.19^{***}	0.17^{***}
Ethnic minority	-0.10^{**}	0.06	-0.18^{***}		0.28^{***}	
Urban	-0.03	0.05	-0.04	0.09^{*}	0.02	-0.09
# Adults in HH	-0.02^{**}	-0.01^{*}	0.00	-0.05^{***}	-0.01	-0.11^{***}
# Children in HH	0.01	-0.02^{***}	0.01^{*}	0.01	-0.02	-0.02
Education years	0.00	0.01	0.01^{*}	0.00	-0.01	-0.01
Working	0.12^{***}	0.20^{***}	0.09^{**}	0.19^{***}	0.23^{***}	0.21^{**}
HH Permanent Income	0.27^{***}	0.23^{***}	0.22^{***}	0.22^{***}	0.29^{***}	0.17^{***}
WHO Disability Index	-0.43^{***}	-0.43^{***}	-0.42^{***}	-0.49^{***}	-0.31^{***}	-0.46^{***}
Self-Assessed Pain	-0.17^{***}	-0.12^{***}	-0.09^{***}	-0.26^{***}	-0.18^{***}	-0.18^{***}
Community Involvement	0.05^{***}	0.07^{***}	0.12^{***}	0.05^{**}	0.06^{**}	0.02
Trust	0.08^{***}	0.07^{***}	0.08^{***}	0.12^{***}	-0.03	0.04
Safety	0.11^{***}	0.05^{**}	0.07^{***}	0.11^{***}	0.11^{***}	0.17^{***}
Constant	0.33^{***}	0.54^{***}	0.69^{***}	0.27^{***}	0.30^{***}	0.78^{***}
Country	*Yes*	*No*	*No*	*No*	*No*	*No*

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific partial effects. Reported changes are measured in standard deviation. The pooled regression includes country fixed effects.

Table B.12: Regression Estimates of Emotion Score

	Pooled	Ghana	India	China	South Africa	Russia
Panel A. Unconditional Regression						
60-69	−0.01	−0.10*	−0.00	0.04	0.20**	−0.05
70-79	−0.03	−0.11*	−0.03	0.08*	0.22**	−0.14
80+	−0.22***	−0.25***	−0.06	−0.08	0.38***	−0.49***
Male	0.22***	0.15***	0.34***	0.10***	0.21***	0.22**
Constant	0.23***	−0.01	−0.17***	−0.07*	−0.20**	−0.01
Country	*Yes*	*No*	*No*	*No*	*No*	*No*
Panel B. Conditional Regression						
60-69	0.15***	0.04	0.13***	0.12***	0.30***	0.18*
70-79	0.30***	0.14**	0.18***	0.30***	0.39***	0.34***
80+	0.36***	0.14*	0.38***	0.37***	0.69***	0.21
Male	0.07**	−0.00	0.17***	0.02	0.04	0.06
Married	0.04	0.12**	−0.05	0.14***	0.22***	0.11
Ethnic minority	−0.13**	−0.09*	0.00		−0.05	
Urban	0.02	0.04	0.07	0.16***	0.08	−0.08
# Adults in HH	0.01	−0.02	0.01	−0.02	−0.02	−0.03
# Children in HH	−0.01	0.01	0.00	−0.01	−0.02	−0.13
Education years	−0.00	−0.00	−0.00	−0.00	0.00	−0.01
Working	−0.03	0.29***	−0.14***	−0.02	0.06	0.10
HH Permanent Income	0.15***	0.09***	0.13***	0.11***	0.07	0.14**
WHO Disability Index	−0.29***	−0.01	−0.30***	−0.25***	−0.11*	−0.31***
Self-Assessed Pain	−0.15***	−0.19***	−0.17***	−0.24***	−0.12**	−0.10**
Community Involvement	0.01	0.13***	0.01	0.04**	0.10**	−0.03
Trust	0.03**	−0.11***	0.01	0.04**	−0.01	0.07
Safety	0.04***	0.10***	0.01	0.10***	−0.01	0.03
Constant	0.37***	0.04	0.53***	0.04	−0.05	0.46*
Country	*Yes*	*No*	*No*	*No*	*No*	*No*

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific partial effects. Reported changes are measured in standard deviation. The pooled regression includes country fixed effects.

Table B.13: Regression Estimates of Experienced Well-being

	Pooled	Ghana	India	China	South Africa	Russia
Panel A. Unconditional Regression						
60-69	0.07*	0.13***	0.05	0.07**	0.29***	0.09
70-79	0.13**	0.11**	0.12*	0.14***	0.17	0.16
80+	−0.06	0.07	−0.16	0.13**	0.35***	−0.13
Male	0.13***	0.10**	0.17***	0.06***	0.15**	0.16
Constant	0.27***	−0.12**	−0.12**	−0.06	−0.20**	−0.13
Country	*Yes*	*No*	*No*	*No*	*No*	*No*
Panel B. Conditional Regression						
60-69	0.13***	0.17***	0.11**	0.12***	0.37***	0.08
70-79	0.26***	0.20***	0.21***	0.24***	0.28*	0.21
80+	0.24***	0.24**	0.05	0.38***	0.56***	0.12
Male	0.07*	0.06	0.09	0.01	0.02	0.09
Married	−0.02	0.02	−0.09*	0.09**	0.24***	−0.09
# Adults in HH	−0.01	−0.03**	0.01	−0.05**	−0.08*	0.00
# Children in HH	0.01	0.00	0.01	−0.01	0.04	−0.12
Urban	0.06	0.06	0.08	0.29***	0.01	0.02
Ethnic minority	−0.04	−0.19***	−0.11		−0.20	
Education years	0.00	−0.00	0.01	0.00	0.01	−0.01
Working	−0.15***	0.03	−0.11**	−0.02	−0.04	−0.31***
HH Permanent Income	0.12***	0.07**	0.07**	0.12***	0.09**	0.15**
WHO Disability Index	−0.22***	−0.10***	−0.24***	−0.10***	−0.16***	−0.28***
Self-Assessed Pain	−0.03	0.02	−0.04	−0.07***	−0.08*	0.00
Community Involvement	−0.02	0.08***	−0.05*	0.05**	−0.04	−0.04
Trust	−0.01	0.02	0.01	0.02	−0.02	−0.06
Safety	0.10***	0.04*	0.10***	0.14***	−0.03	0.09*
Constant	0.41***	0.11	0.31***	−0.09	0.18	0.45*
Country	*Yes*	*No*	*No*	*No*	*No*	*No*

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific partial effects. Reported changes are measured in standard deviation. The pooled regression includes country fixed effects.

Appendix B.2. Conditional Analysis by age-group

Table B.14: Regression Estimates of General Life Satisfaction by age-group

	Pooled				Ghana			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	−0.02	−0.02	−0.05	0.02	−0.11	−0.09	−0.19	0.10
Married	−0.02	−0.08	0.11	−0.19**	0.14	0.15	0.16	−0.00
# Adults in HH	−0.00	−0.00	−0.00	−0.00	−0.01	−0.02	−0.00	−0.02
# Children in HH	−0.00	0.00	−0.01	0.01	−0.02	−0.04	0.02	−0.05***
Urban	−0.03	−0.01	−0.06	0.05	0.03	0.04	0.02	0.02
Ethnic minority	−0.08	−0.03	−0.12	0.09	0.04	0.06	0.02	0.04
Education years	−0.01	−0.00	−0.00	−0.00	−0.00	−0.00	0.01	−0.01
Working	−0.02	−0.04	0.06	−0.10	0.08	0.08	0.17	−0.09
HH Permanent Income	0.17***	0.17	0.17	0.00	0.17***	0.18	0.14	0.04
WHO Disability Index	−0.33***	−0.32	−0.37	0.05	−0.37***	−0.39	−0.35	−0.04
Self-Assessed Pain	−0.10***	−0.10	−0.09	−0.02	−0.10***	−0.07	−0.15	0.09*
Community Involvement	0.06***	0.09	0.04	0.05	0.02***	0.01	0.04	−0.03
Trust	0.06***	0.07	0.05	0.01	0.06***	0.07	0.03	0.04
Safety	0.10***	0.10	0.10	−0.00	0.04***	0.05	0.02	0.02
Constant	0.37***	0.47	0.14	0.33***	0.55***	0.60	0.35	0.25
Country Dummies	*Yes*	*Yes*	*Yes*	*Yes*				

	China				India			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	−0.04	−0.03	−0.09	0.06	−0.13	−0.10	−0.17	0.07
Married	0.01	0.01	0.12	−0.11	−0.05	−0.08	0.03	−0.11
# Adults in HH	−0.05	−0.04	−0.03	−0.01	0.01	0.00	0.01	−0.01
# Children in HH	−0.02	−0.08	0.04	−0.12**	−0.00	0.00	−0.01	0.02
Urban	0.05	0.04	−0.00	0.05	−0.13	−0.13	−0.14	0.00
Ethnic minority					−0.11	−0.07	−0.14	0.07
Education years	−0.01	−0.01	0.01	−0.01*	0.00	0.01	0.00	0.00
Working	0.08	0.12	0.14	−0.03	−0.00	0.03	0.00	0.02
HH Permanent Income	0.18	0.19	0.20	−0.01	0.16***	0.17	0.14	0.02
WHO Disability Index	−0.31	−0.33***	−0.36	0.03	−0.36***	−0.34	−0.39	0.06
Self-Assessed Pain	−0.21	−0.21***	−0.20	−0.00	−0.05***	−0.08	−0.02	−0.06
Community Involvement	0.05	0.06***	0.02	0.04	0.09***	0.07	0.10	−0.03
Trust	0.10	0.09***	0.11	−0.02	0.04***	0.07	0.02	0.05
Safety	0.10	0.07***	0.14	−0.07**	0.03***	0.04	0.02	0.01
Constant	0.39	0.46***	0.10	0.37***	0.69***	0.71	0.65	0.06

	South Africa				Russia			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	−0.07	−0.11	−0.05	−0.06	0.05	0.04	0.12	−0.07
Married	0.15	0.05	0.25	−0.21*	0.01	−0.13	0.22	−0.35**
# Adults in HH	0.01	0.02	0.02	0.01	−0.07	−0.03	−0.12	0.08
# Children in HH	−0.01	−0.01	0.00	−0.01	0.00	−0.03	0.05	−0.08
Urban	0.01	0.06	−0.01	0.07	0.06	0.05	0.03	0.02
Ethnic minority	0.21	0.21	0.21	−0.00				
Education years	−0.02	−0.01	−0.02	0.01	−0.02	−0.01	−0.02	0.01
Working	0.05	0.01	0.17	−0.16	−0.04	−0.32	0.15	−0.47**
HH Permanent Income	0.26***	0.26	0.21	0.05	0.16	0.18	0.15	0.03
WHO Disability Index	−0.30***	−0.31	−0.38	0.07	−0.33***	−0.31	−0.41	0.10
Self-Assessed Pain	−0.13***	−0.10	−0.10	0.00	−0.07***	−0.05	−0.11	0.06
Community Involvement	−0.05***	−0.04	−0.04	−0.01	0.09***	0.15	0.02	0.14
Trust	−0.02***	−0.01	−0.03	0.02	0.04***	0.04	0.05	−0.01
Safety	0.10***	0.13	0.07	0.05	0.18***	0.18	0.16	0.01
Constant	0.46***	0.50	0.26	0.25	0.67***	0.66	0.64	0.02

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific partial effects. Reported changes are measured in standard deviation.

Table B.15: Regression Estimates of WHO Quality of Life by age-group

	Pooled				Ghana			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	−0.03	−0.05	−0.05	0.00	−0.02	−0.05	0.02	−0.07
Married	0.04	0.03	0.12	−0.09	0.02	0.09	−0.08	0.17
# Adults in HH	−0.01	0.00	−0.02	0.02*	−0.01	−0.03	0.01	−0.04**
# Children in HH	0.01	0.01	0.01	−0.00	−0.02	−0.03	−0.01	−0.02
Urban	−0.03	0.00	−0.06	0.06	0.05	0.04	0.06	−0.02
Ethnic minority	−0.10**	−0.08	−0.11	0.03	0.06**	0.08	0.03	0.05
Education years	0.00	0.00	0.00	−0.00	0.01	0.00	0.01	−0.00
Working	0.08**	0.06	0.16	−0.10	0.20**	0.16	0.34	−0.17
HH Permanent Income	0.21***	0.18	0.24	−0.06*	0.23***	0.25	0.19	0.06
WHO Disability Index	−0.40***	−0.40	−0.44	0.03	−0.43***	−0.44	−0.41	−0.03
Self-Assessed Pain	−0.17***	−0.18	−0.16	−0.02	−0.12***	−0.12	−0.13	0.02
Community Involvement	0.05***	0.07	0.03	0.05	0.07***	0.08	0.05	0.02
Trust	0.07***	0.07	0.08	−0.00	0.07***	0.07	0.05	0.02
Safety	0.11***	0.10	0.12	−0.02	0.05***	0.07	0.03	0.03
Constant	0.43***	0.48	0.27	0.22*	0.55***	0.62	0.38	0.24
Country Dummies	*Yes*	*Yes*	*Yes*	*Yes*				

	China				India			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	−0.03	−0.03	−0.07	0.04	−0.17	−0.17	−0.15	−0.02
Married	0.01	0.01	0.10	−0.09	0.05	−0.01	0.12	−0.13
# Adults in HH	−0.06	−0.03	−0.07	0.04*	0.00	0.01	−0.01	0.02
# Children in HH	0.01	−0.04	0.06	−0.10*	0.01	0.01	0.02	−0.00
Urban	0.12	0.16	0.02	0.14**	−0.04	−0.03	−0.05	0.02
Ethnic minority					−0.18**	−0.18	−0.18	0.01
Education years	−0.01	−0.01**	0.01	−0.01**	0.01	0.01	0.01	−0.00
Working	0.13	0.17	0.17	−0.00	0.09**	0.11	0.06	0.05
HH Permanent Income	0.21	0.21**	0.23	−0.03	0.22***	0.20	0.24	−0.04
WHO Disability Index	−0.45	−0.46***	−0.55	0.10	−0.41***	−0.41	−0.41	0.00
Self-Assessed Pain	−0.26	−0.25***	−0.27	0.03	−0.10***	−0.10	−0.08	−0.02
Community Involvement	0.05	0.06***	0.02	0.04*	0.12***	0.15	0.09	0.07**
Trust	0.13	0.12***	0.13	−0.02	0.08***	0.09	0.08	0.01
Safety	0.10	0.08***	0.13	−0.05**	0.07***	0.10	0.05	0.04
Constant	0.45	0.43***	0.29	0.13	0.70***	0.71	0.67	0.04

	South Africa				Russia			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	−0.08	−0.13	−0.05	−0.09	0.03	−0.02	0.11	−0.14
Married	0.18	0.18	0.18	0.00	0.17	0.16	0.20	−0.04
# Adults in HH	−0.01	−0.01	0.01	−0.02	−0.12	−0.10	−0.15	0.05
# Children in HH	−0.03	−0.00	−0.04	0.04	−0.04	−0.09	0.04	−0.13
Urban	0.01	0.09	−0.04	0.13	−0.10	−0.11	−0.12	0.02
Ethnic minority	0.27**	0.20	0.38	−0.18				
Education years	−0.01	−0.00	−0.01	0.01	−0.01**	−0.00	−0.02	0.01
Working	0.15**	0.15	0.22	−0.07	0.18	−0.02	0.37	−0.39**
HH Permanent Income	0.31***	0.30	0.25	0.04	0.17**	0.12	0.22	−0.11
WHO Disability Index	−0.27***	−0.26	−0.41	0.15**	−0.42***	−0.39	−0.59	0.20
Self-Assessed Pain	−0.20***	−0.18	−0.16	−0.02	−0.19***	−0.22	−0.17	−0.05
Community Involvement	0.05***	0.04	0.07	−0.03	0.01***	0.05	−0.01	0.06
Trust	−0.02***	−0.01	−0.03	0.02	0.04***	0.04	0.03	0.01
Safety	0.11***	0.16	0.05	0.11*	0.16***	0.13	0.19	−0.06
Constant	0.48***	0.48	0.36	0.11	0.91***	0.86	0.86	0.01

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
NOTE: The entries in each column are country-specific partial effects. Reported changes are measured in standard deviation.

Table B.16: Regression Estimates of Emotion Score by age-group

	Pooled				Ghana			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	0.11***	0.09	0.07	0.02	0.02***	−0.01	0.03	−0.04
Married	−0.03	−0.05	0.11	−0.16**	0.10	0.10	0.14	−0.05
# Adults in HH	0.01	0.02	−0.00	0.03	−0.02	−0.01	−0.03	0.02
# Children in HH	−0.00	−0.01	−0.01	0.01	0.01	0.01	0.00	0.01
Urban	0.03	0.01	0.04	−0.03	0.04	0.01	0.10	−0.10
Ethnic minority	−0.13**	−0.21	−0.02	−0.19	−0.10**	−0.08	−0.11	0.03
Education years	−0.00	0.00	−0.01	0.01	−0.01	−0.00	−0.01	0.01
Working	−0.11***	−0.05	−0.05	−0.00	0.27***	0.27	0.30	−0.03
HH Permanent Income	0.12***	0.09	0.15	−0.05	0.10***	0.07	0.11	−0.04
WHO Disability Index	−0.26***	−0.23	−0.39	0.16***	0.01***	0.02	−0.07	0.09
Self-Assessed Pain	−0.15***	−0.18	−0.11	−0.07**	−0.19***	−0.18	−0.19	0.00
Community Involvement	0.00	0.01	0.02	−0.01	0.13	0.14	0.09	0.05
Trust	0.03*	0.04	0.01	0.03	−0.11*	−0.11	−0.10	−0.01
Safety	0.04***	0.00	0.08	−0.08***	0.10***	0.12	0.06	0.06
Constant	0.56***	0.57	0.38	0.19**	0.12***	0.07	0.14	−0.07
Country Dummies	*Yes*	*Yes*	*Yes*	*Yes*				

	China				India			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	0.05	0.06***	−0.00	0.07	0.22***	0.23	0.13	0.10
Married	0.07	0.03	0.28	−0.24**	−0.11	−0.10	0.01	−0.11
# Adults in HH	−0.02	−0.01	−0.02	0.01	0.01	0.02	0.01	0.01
# Children in HH	−0.01	−0.04	0.02	−0.06	0.01	0.00	−0.00	0.01
Urban	0.20	0.19	0.16	0.03	0.08	0.11	0.01	0.10
Ethnic minority					0.01**	−0.07	0.07	−0.14
Education years	−0.01	−0.01**	0.01	−0.02**	−0.00	0.00	−0.01	0.01
Working	−0.08	−0.06	−0.02	−0.05	−0.18***	−0.15	−0.14	−0.02
HH Permanent Income	0.10	0.12***	0.09	0.03	0.13***	0.12	0.14	−0.01
WHO Disability Index	−0.21	−0.26***	−0.14	−0.12	−0.29***	−0.24	−0.39	0.15***
Self-Assessed Pain	−0.24	−0.21***	−0.29	0.08	−0.17***	−0.19	−0.13	−0.06
Community Involvement	0.04	0.06***	0.02	0.03	0.01	−0.02	0.04	−0.06
Trust	0.05	0.05	0.03	0.02	0.00*	0.03	−0.02	0.05
Safety	0.10	0.06*	0.15	−0.09***	0.02***	−0.01	0.04	−0.04
Constant	0.23	0.33***	−0.14	0.47***	0.61***	0.57	0.62	−0.05

	South Africa				Russia			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	0.07***	0.05	0.06	−0.01	0.07***	0.08	0.08	0.01
Married	0.21	0.06	0.38	−0.32**	0.08	−0.01	0.16	−0.17
# Adults in HH	−0.03	−0.01	−0.02	0.01	−0.05	0.04	−0.07	0.11*
# Children in HH	−0.03	0.03	−0.07	0.10*	−0.13	−0.17	−0.13	−0.04
Urban	0.06	0.06	0.11	−0.06	−0.09	−0.21	0.03	−0.24
Ethnic minority	−0.06**	−0.10	0.00	−0.10				
Education years	0.00	0.01	−0.00	0.02	−0.02**	0.01	−0.05	0.05
Working	−0.05***	−0.19	0.16	−0.35**	−0.02	0.16	0.02	0.13
HH Permanent Income	0.09***	0.10	0.01	0.09	0.15***	0.01	0.24	−0.23***
WHO Disability Index	−0.05***	−0.03	−0.23	0.20	−0.28***	−0.24	−0.42	0.19
Self-Assessed Pain	−0.15***	−0.21	0.01	−0.21**	−0.09***	−0.19	−0.00	−0.18**
Community Involvement	0.09	0.03	0.15	−0.12*	−0.04***	−0.01	0.00	−0.01
Trust	0.00*	0.01	0.01	0.00	0.06	0.06	0.04	0.02
Safety	−0.02***	0.04	−0.07	0.11	0.03*	−0.04	0.10	−0.14**
Constant	0.21***	0.31	−0.16	0.47	0.69***	0.49	0.83	−0.34

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific partial effects. Reported changes are measured in standard deviation.

Table B.17: Regression Estimates of Experienced Well-being by age-group

	Pooled				Ghana			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	0.10***	0.15	−0.02	0.17**	0.10***	0.10	−0.00	0.10
Married	−0.07	−0.03	−0.07	0.04	−0.01	0.01	0.06	−0.05
# Adults in HH	−0.01	0.00	−0.02	0.02	−0.03	−0.02	−0.05	0.02
# Children in HH	0.01	0.01	0.01	−0.00	−0.00	−0.00	0.01	−0.01
Urban	0.06	0.15	−0.03	0.17*	0.05	−0.00	0.15	−0.16*
Ethnic minority	−0.03	−0.01	−0.06	0.05	−0.19	−0.21	−0.16	−0.04
Education years	0.00	−0.01	0.01	−0.02*	−0.01	0.00	−0.01	0.01*
Working	−0.22***	−0.21	−0.11	−0.09	−0.01***	−0.01	0.15	−0.16
HH Permanent Income	0.10***	0.12	0.09	0.03	0.08***	0.04	0.10	−0.06
WHO Disability Index	−0.20***	−0.18	−0.32	0.14***	−0.08***	−0.06	−0.21	0.16*
Self-Assessed Pain	−0.03	−0.04	−0.01	−0.03	0.02	0.01	0.05	−0.04
Community Involvement	−0.02	−0.01	−0.02	0.01	0.08	0.05	0.13	−0.08
Trust	−0.01	−0.00	−0.02	0.01	0.03	0.03	0.00	0.03
Safety	0.10***	0.11	0.09	0.02	0.04***	0.01	0.08	−0.07
Constant	0.58***	0.53	0.53	−0.01	0.27***	0.26	0.10	0.16
Country Dummies	*Yes*	*Yes*	*Yes*	*Yes*				

	China				India			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	0.03	0.05***	−0.03	0.08*	0.14***	0.12	0.07	0.05
Married	0.03	0.05	0.07	−0.02	−0.14	−0.08	−0.11	0.03
# Adults in HH	−0.05	−0.03	−0.06	0.03	0.01	0.01	0.01	−0.00
# Children in HH	−0.02	−0.08	0.07	−0.15***	0.01	0.01	0.01	−0.00
Urban	0.33	0.26	0.36	−0.11	0.09	0.12	0.04	0.08
Ethnic minority					−0.11	−0.10	−0.14	0.04
Education years	−0.00	−0.00	0.01	−0.01**	0.00	0.01	−0.00	0.01
Working	−0.08	−0.11	0.05	−0.15**	−0.15***	−0.11	−0.11	0.00
HH Permanent Income	0.11	0.12***	0.12	−0.00	0.08***	0.09	0.06	0.03
WHO Disability Index	−0.06	−0.09***	−0.08	−0.01	−0.24***	−0.20	−0.32	0.12**
Self-Assessed Pain	−0.07	−0.08***	−0.06	−0.02	−0.03	−0.05	−0.02	−0.03
Community Involvement	0.05	0.05	0.05	−0.00	−0.05	−0.09	−0.01	−0.08*
Trust	0.03	0.03	0.02	0.01	0.00	0.02	−0.01	0.03
Safety	0.14	0.14	0.15	−0.02	0.10***	0.10	0.10	0.00
Constant	0.09	0.17***	−0.14	0.31***	0.39***	0.33	0.44	−0.10

	South Africa				Russia			
	Pooled	Age 60+	Age < 60	Difference	Pooled	Age 60+	Age < 60	Difference
Male	0.05***	−0.15	0.20	−0.35*	0.10***	0.30	−0.09	0.39*
Married	0.23	0.08	0.37	−0.29*	−0.11	−0.15	−0.13	−0.03
# Adults in HH	−0.09	−0.00	−0.14	0.13**	−0.01	0.07	−0.04	0.11
# Children in HH	0.03	0.04	0.04	0.00	−0.12	−0.01	−0.23	0.22
Urban	0.00	0.06	−0.04	0.10	0.01	0.20	−0.28	0.48**
Ethnic minority	−0.21	−0.33	−0.06	−0.27				
Education years	0.01	0.01	0.01	−0.00	−0.01	−0.02	0.01	−0.03
Working	−0.15***	0.01	−0.11	0.12	−0.38	−0.48	−0.30	−0.18
HH Permanent Income	0.11***	0.08	0.07	0.01	0.15***	0.17	0.12	0.04
WHO Disability Index	−0.11***	−0.17	−0.15	−0.02	−0.26***	−0.21	−0.54	0.33**
Self-Assessed Pain	−0.11	−0.08	−0.09	0.01	0.00***	0.00	0.08	−0.07
Community Involvement	−0.05	−0.11	0.05	−0.16	−0.04	0.03	−0.10	0.12
Trust	−0.02	0.04	−0.06	0.10	−0.06	−0.07	−0.02	−0.05
Safety	−0.03***	0.03	−0.06	0.09	0.09	0.11	0.02	0.09
Constant	0.42***	0.43	0.21	0.22	0.58***	0.31	0.81	−0.50

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific partial effects. Reported changes are measured in standard deviation.

Appendix B.3. Decomposition Analysis

Table B.18: Decomposition of General Life Satisfaction by country

	Ghana	India	China	South Africa	Russia
Age 60 +	−0.11**	−0.10**	−0.03	0.00	−0.16
Age 50-59	0.16***	0.11**	0.03	−0.04	0.20*
difference	−0.27***	−0.21***	−0.06*	0.04	−0.36***
explained	−0.36***	−0.24***	−0.21***	−0.15**	−0.36***
unexplained	0.09**	0.04	0.16***	0.19***	0.00
Explained Differences					
Male	0.003	0.004	0.001	0.004	−0.003
Married	−0.022*	0.007	−0.003	−0.004	0.009
# Adults in HH	0.002	0.001	0.009*	0.000	0.051
# Children in HH	0.004	−0.000	0.000	0.000	−0.000
Urban	−0.002	−0.002	0.003	−0.000	−0.009
Ethnic minority	−0.000	0.001		0.011	
Education years	0.004	−0.005	0.012*	0.018	0.055
Working	−0.018	−0.003	−0.018	−0.015	0.021
HH Permanent Income	−0.025**	−0.011	−0.061***	0.020	−0.064*
WHO Disability Index	−0.258***	−0.177***	−0.098***	−0.167***	−0.277***
Self-Assessed Pain	−0.044***	−0.025**	−0.037***	−0.026*	−0.056
Community Involvement	−0.009	−0.028***	−0.011**	0.009	−0.062
Trust	0.005	−0.007	0.001	−0.000	−0.008
Safety	−0.002	−0.001	−0.013**	−0.002	−0.019
Unexplained Differences					
Male	0.036	0.043	0.018	−0.015	−0.003
Married	0.020	−0.091	−0.099	−0.081	−0.247*
# Adults in HH	−0.060	−0.087	−0.018	−0.007	0.145
# Children in HH	−0.099**	0.040	−0.029*	−0.000	0.001
Urban	0.026	−0.005	0.024	0.046	0.003
Ethnic minority	0.012	0.008		−0.008	
Education years	−0.049	0.018	−0.078	0.014	0.027
Working	−0.100	0.013	−0.015	−0.062	−0.126
HH Permanent Income	0.002	−0.000	−0.002	−0.005	0.002
WHO Disability Index	−0.038	0.081	0.008	0.010	0.115
Self-Assessed Pain	0.091	−0.074	−0.003	0.051	−0.033
Community Involvement	−0.035	−0.100	0.061	−0.185	0.695
Trust	−0.001	0.000	−0.000	−0.000	−0.003
Safety	0.000	−0.000	−0.001	0.000	0.001
Constant	0.284	0.192	0.288	0.435	−0.572

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific decomposition results. Reported changes are measured in standard deviation. Standard errors are calculated using 500 bootstrap replications.

Table B.19: Decomposition of WHO Quality of Life by country

	Ghana	India	China	South Africa	Russia
Age 60 +	−0.19***	−0.17***	−0.07	−0.03	−0.24**
Age 50-59	0.27***	0.17***	0.09*	−0.01	0.29***
difference	−0.46***	−0.34***	−0.16***	−0.02	−0.53***
explained	−0.47***	−0.34***	−0.29***	−0.22***	−0.58***
unexplained	0.01	0.01	0.13***	0.20***	0.05
Explained Differences					
Male	0.001	0.005	0.001	0.003	−0.003
Married	−0.006	−0.011	−0.003	−0.005	−0.031
# Adults in HH	0.002	0.001	0.011*	−0.000	0.072**
# Children in HH	0.004	0.007	−0.000	0.000	0.006
Urban	−0.003	−0.000	0.010	−0.001	0.008
Ethnic minority	−0.000	0.001		0.013	
Education years	−0.019	−0.011*	0.008	0.007	0.032
Working	−0.046**	−0.025**	−0.034**	−0.041	−0.088
HH Permanent Income	−0.031**	−0.016	−0.071***	0.023	−0.068*
WHO Disability Index	−0.297***	−0.207***	−0.140***	−0.159***	−0.339***
Self-Assessed Pain	−0.056***	−0.038***	−0.048***	−0.044**	−0.120**
Community Involvement	−0.020**	−0.036***	−0.012**	−0.019	−0.013
Trust	0.006	−0.011*	0.001	−0.000	−0.017
Safety	−0.003	−0.001	−0.014**	−0.002	−0.018
Unexplained Differences					
Male	−0.047	−0.007	0.012	−0.021	−0.050
Married	0.131*	−0.112	−0.083	0.011	−0.086
# Adults in HH	−0.135**	0.082	0.077	−0.082	0.159
# Children in HH	−0.032	−0.010	−0.025*	0.044	−0.020
Urban	0.012	−0.002	0.050*	0.103	0.029
Ethnic minority	0.008	−0.002		−0.050	
Education years	−0.012	−0.003	−0.081*	0.039	0.187
Working	−0.177*	0.027	−0.010	−0.030	−0.155*
HH Permanent Income	0.001	0.000	−0.002	−0.004	−0.002
WHO Disability Index	−0.023	0.017	0.031	0.118	0.137
Self-Assessed Pain	0.010	−0.033	0.012	−0.000	−0.088
Community Involvement	0.113	0.224*	0.090	−0.192	0.327
Trust	−0.001	0.000	−0.000	−0.000	0.001
Safety	0.001	0.000	−0.001	−0.000	−0.000
Constant	0.162	−0.176	0.057	0.267	−0.389

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific decomposition results. Reported changes are measured in standard deviation. Standard errors are calculated using 500 bootstrap replications.

Table B.20: Decomposition of Emotion Score by country

	Ghana	India	China	South Africa	Russia
Age 60 +	−0.05	−0.01	0.01	0.09	−0.04
Age 50-59	0.08*	0.00	−0.01	−0.11	0.11
difference	−0.14**	−0.01	0.02	0.20*	−0.15
explained	−0.20***	−0.15***	−0.12***	−0.08	−0.25***
unexplained	0.07	0.14***	0.14***	0.28***	0.11*
Explained Differences					
Male	−0.001	−0.006	−0.002	−0.004	−0.006
Married	−0.009	0.027*	−0.008	−0.004	0.002
# Adults in HH	0.002	0.002	0.004	−0.000	0.014
# Children in HH	−0.002	0.002	0.000	0.001	0.012
Urban	−0.001	0.001	0.016*	−0.006	0.006
Ethnic minority	0.000	−0.000		−0.003	
Education years	0.022	0.004	0.015**	0.003	0.040
Working	−0.076***	0.043***	0.024	0.031	−0.008
HH Permanent Income	−0.015*	−0.010	−0.033***	0.007	−0.052*
WHO Disability Index	0.003	−0.143***	−0.067***	−0.024	−0.167*
Self-Assessed Pain	−0.075***	−0.066***	−0.044***	−0.044*	−0.087*
Community Involvement	−0.033***	−0.003	−0.009*	−0.036*	0.010
Trust	−0.009	−0.000	0.000	−0.001	−0.017
Safety	−0.006	−0.000	−0.012**	−0.000	−0.002
Unexplained Differences					
Male	−0.003	0.065	0.028	−0.014	−0.009
Married	−0.044	−0.089	−0.209*	−0.105	−0.094
# Adults in HH	0.091	0.066	0.020	0.024	0.280*
# Children in HH	0.017	0.011	−0.018	0.074	−0.007
Urban	−0.032	0.026	0.003	−0.074	−0.158
Ethnic minority	0.009	−0.023		−0.043	
Education years	0.052	0.032	−0.113*	0.076	0.644
Working	−0.014	−0.022	−0.027	−0.090*	−0.000
HH Permanent Income	−0.000	0.000	−0.001	−0.007	−0.006
WHO Disability Index	0.086	0.224**	−0.029	0.134	0.169
Self-Assessed Pain	0.019	−0.076	0.046	−0.144	−0.240*
Community Involvement	0.176	−0.186	0.106	−0.637*	0.019
Trust	−0.000	0.000	−0.000	−0.000	0.001
Safety	0.001	0.000	−0.001	−0.000	−0.002
Constant	−0.291	0.107	0.335*	1.088*	−0.488

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific decomposition results. Reported changes are measured in standard deviation. Standard errors are calculated using 500 bootstrap replications.

Table B.21: Decomposition of Experienced Well-being by country

	Ghana	India	China	South Africa	Russia
Age 60 +	0.04	0.04	0.06	0.11*	0.05
Age 50-59	−0.05	−0.04	−0.03	−0.13	−0.04
difference	0.09*	0.07	0.09**	0.23**	0.09
explained	−0.05*	−0.06**	−0.04	−0.05	0.05
unexplained	0.15***	0.13***	0.13***	0.28***	0.05
Explained Differences					
Male	−0.002	−0.003	−0.001	−0.003	−0.005
Married	0.003	0.031**	−0.004	−0.005	0.044
# Adults in HH	0.004	0.002	0.011*	−0.000	−0.004
# Children in HH	−0.001	0.005	0.000	−0.001	0.009
Urban	−0.003	0.002	0.027*	−0.003	−0.005
Ethnic minority	0.000	0.001		−0.009	
Education years	0.025*	−0.005	0.004	−0.003	0.015
Working	−0.007	0.033**	0.021	0.053*	0.196***
HH Permanent Income	−0.011	−0.006	−0.039***	0.009	−0.048
WHO Disability Index	−0.049*	−0.119***	−0.020	−0.064*	−0.171*
Self-Assessed Pain	0.010	−0.015	−0.014**	−0.031*	−0.016
Community Involvement	−0.023**	0.014	−0.007	0.008	0.029
Trust	0.001	−0.000	0.000	−0.001	0.015
Safety	−0.002	−0.002	−0.018***	0.000	−0.013
Unexplained Differences					
Male	0.047	0.044	0.044*	−0.142	0.190*
Married	−0.010	0.024	−0.006	−0.105	−0.031
# Adults in HH	0.097	−0.014	0.072	0.418*	0.251
# Children in HH	−0.019	−0.005	−0.035**	0.002	0.036
Urban	−0.042	0.028	−0.037	0.058	0.261
Ethnic minority	−0.034	0.005		−0.063	
Education years	0.048	0.043	−0.082*	−0.017	−0.147
Working	−0.150	−0.017	−0.074*	0.017	−0.030
HH Permanent Income	0.000	0.000	−0.003*	−0.002	−0.002
WHO Disability Index	0.149*	0.172*	0.004	−0.108	0.234*
Self-Assessed Pain	−0.038	−0.011	−0.004	0.106	−0.103
Community Involvement	−0.255	−0.229	−0.079	−0.707	0.336
Trust	−0.001	−0.000	−0.000	−0.001	−0.005
Safety	−0.001	0.000	−0.000	−0.000	0.004
Constant	0.356	0.093	0.326*	0.826	−0.949

NOTE: * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$)
The entries in each column are country-specific decomposition results. Reported changes are measured in standard deviation. Standard errors are calculated using 500 bootstrap replications.