I Can't Forget about U: Lifetime Unemployment and Retirement Well-Being

Andrew E. Clark
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Andrew E. Clark
CNRS and IZA

Anthony Lepinteur
University of Luxembourg and IZA

ABSTRACT

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It is well-known that unemployment leaves scars after re-employment, but does this scarring effect persist even after retirement? We analyse European data on retirees from the SHARE panel, and show that the well-being of the retired continues to reflect the unemployment that they experienced over their working life. These scarring effects are somewhat smaller for older retirees, but larger for those who arguably had higher expectations regarding the labour market when they were active. Despite the substantial variation in culture and labour-market institutions over the 29 countries in our sample, there are no significant country differences. This long-run scarring for those who have left the labour market underlines that contemporaneous correlations significantly under-estimate the well-being cost of unemployment.

Corresponding author:
Anthony Lepinteur
University of Luxembourg
2 Av. de l'Universite
4365 Esch-sur-Alzette
Luxembourg

E-mail: Anthony.lepinteur@uni.lu

1. Introduction

Does unemployment leave indelible marks? A large body of literature has underscored that unemployment is associated with contemporaneously lower well-being (Clark and Oswald, 1994, Winkelmann and Winkelmann, 1998, Dolan *et al.*, 2008, and Stutzer and Frey, 2010, are some of only many examples). In addition to lower well-being during unemployment, there is also evidence of scarring on the labour market after the unemployment spell is over. Initially analysed with respect to earnings in the post-unemployment job (Arulampalam, 2001), scarring has more-recently been investigated with respect to post-unemployment subjective well-being (Clark *et al.*, 2001, Bell and Blanchflower, 2011, Knabe and Rätzel, 2011, Clark *et al.*, 2018, Clark and Lepinteur, 2019, and Hetschko *et al.*, 2019). This well-being scarring has been found when holding the earnings in the new job constant, so that the negative consequences of past unemployment are not only pecuniary.

The existing work on scarring has most often considered relatively-recent unemployment (often over the past few years), finding only partial recovery from past unemployment. We here expand the temporal scope of the analysis to its maximum, and consider the relationship between well-being during retirement (which is an absorbing state for most individuals) and their lifetime experience of unemployment. By doing so, we hope to establish the extent to which unemployment, over a period of many decades, may continue to leave a mark on individuals' well-being even after they have left the labour market.

Our empirical analysis uses SHARE data, which records all of the labour-market experiences of over 45z,000 individuals from 29 different European countries, as well as their current level of well-being as measured via the CASP index. We first find that any past unemployment experience is associated with a significantly-lower well-being post-retirement. This association does not

qualitatively depend on the estimation technique (OLS, median regression or ordered probit) and cannot plausibly be reversed in sign. We use an instrumental variable approach to deal with endogeneity issues, and confirm that past unemployment experience causally reduces well-being post-retirement.

As such, the retired do not forget the unemployment that they have experienced. We consider three potential mediators of this lifetime-scarring effect: income, family and health. All of these have appeared as consequences of unemployment in the shorter-run analysis of scarring: see Arulampalam (2001) for earnings, Lester (1996) and Tumin and Qian (2017) for the family, and Stauder (2019) for health. Unemployment may also have a direct effect on well-being that is plausibly of a psychological nature (such as lower self-confidence, or social stigma). In our analysis below we will show that the direct effect of past unemployment is stronger than the indirect effect that passes via these three mediators.

If the memory of unemployment fades over time, then the most-recent unemployment experiences will be the most salient. This is not what we find, with the estimated coefficient on prime-age unemployment (between the ages of 30 and 50) being more negative than that at older or younger ages. The smaller effect of unemployment after age 50 may partly mask early retirement or that labour-market earnings in later life are less important for the building-up of capital.

The well-being of the retired thus continues to reflect the unemployment that they have experienced: as such, unemployment has permanent effects throughout life. These effects are, however, somewhat moderated by age, being smaller for older retirees. On the contrary, this scarring is greater for those who arguably had higher expectations from the labour market when they were active: men and the better-educated. Last, we take advantage of the cross-country dimension of SHARE and estimate well-being scarring separately by country. Despite the

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substantial variation in culture and labour-market institutions over the 29 countries, we do not uncover any significant country differences.

The remainder of the paper is organised as follows. Section 2 presents the data, and Section 3 the estimation sample and empirical strategy. The main results, robustness checks and heterogeneity analyses appear in Section 4. Last, Section 5 concludes.

2. Data

Our empirical analysis is based on data from the Survey of Health, Ageing and Retirement in Europe (SHARE: https://share-eric.eu/). This is an almost biennial panel survey that started in 2004 and has covered 29 European countries and Israel.[1] At the time of writing, there are nine SHARE waves (the last of which was collected between 2021 and 2022). The target population of SHARE is individuals aged 50 or above at the time of the survey with a regular domicile in one of the SHARE countries. Refreshment samples have been included in every wave (apart from Wave 3), and the partners of SHARE respondents are also interviewed, irrespective of their age.

The SHARE questionnaire covers various topics such as demographics, social networks, health, employment and pensions, childhood background and expectations. Waves 3 and 7 focus on respondents' life histories, with a special module on the working life. Brugiavini *et al.* (2019) have combined the retrospective information from these two waves to create the SHARE Job Episode Panel. This describes the various labour-force statuses (working, unemployed, in education, out of the labour force or retired) that SHARE respondents experienced throughout their life. The data in this job-episode panel indicates the respondents' main labour-force status at each age. SHARE respondents were asked to report the beginning and end year of each employment spell, and the

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[1] Not all countries appear in all waves: see https://share-eric.eu/data/data-documentation/waves-overview.

unemployment spells of six months or more that they experienced (i) between the end of full-time education and the first employment spell and (ii) between two employment spells. As such, we do not know the exact length of any reported unemployment spell (whereas this information is available in the British Cohort Study data analysed in Clark and Lepinteur, 2019, for example), and unemployment spells of under six months do not appear. We discuss in Section 3 below how we expect this to affect our results.

The SHARE survey includes questions that are used to calculate the CASP-12 score (Control, Autonomy, Self-realisation and Pleasure scale), which is one of the most-common international measures of quality of life and well-being at older ages. The 12 CASP questions are listed in Appendix Table A1 (for example, "I look forward to each day" and "I feel left out of things"), with the responses to each being "Often", "Sometimes', "Rarely" or "Never". Assigning values of one, two, three and four respectively to these responses (reverse coding for the negative questions) and summing over the 12 questions yields the CASP-12 score. This score ranges from 12 to 48, with higher scores corresponding to a better quality of life. Oliver *et al.* (2021) provide an extensive discussion of the validity and reliability of the CASP-12 score.

3. Estimation Sample and Empirical Strategy

To understand how unemployment during the working life affects well-being after retirement, we consider an estimation sample of retirees who are aged over 65, with valid working-life history and CASP-12 information, who have spent at least one year active in the labour market, and for whom retirement is an absorbing state (*i.e.* they are not observed to return to the labour market). This yields an estimation sample of 141,084 observations on 47,795 individuals. Our analysis will cover the 29 SHARE countries.

The descriptive statistics for this estimation sample appear in Table 1. Average age is around 74 and the sample is almost perfectly gender-balanced.[2] About 6% of our sample observations refer to individuals who experienced at least one episode of unemployment during their active life. The average CASP-12 score (on a scale from 12 to 48) is just over 37, with a standard deviation of 6.2; the median value is at 38. Figure 1 plots the sample distribution of CASP-12. This is somewhat left-skewed, but not drastically so (with a skewness figure of -0.52).

Figure 2 depicts the age distribution of employment and unemployment. Unemployment is more prevalent at younger ages, with its incidence steadily decreasing thereafter. The employment percentage is on the contrary hump-shaped, rising from age 15 to roughly 30, then plateauing up to age 50 and finally dropping towards zero due to retirement. Note that our sample also includes respondents above age 80 (who are not shown in Figure 2), but the percentages of individuals working or unemployed at these ages are close to zero. Very few respondents in our estimation sample retired after age 80; excluding these late retirees from our analysis does not change the results. Last, Figure 3 plots the distribution of individuals in our estimation sample by the number of experiences of unemployment they reported, conditional on having reported at least one unemployment spell.[3] One third of those who report past unemployment experienced only one spell. A non-negligible proportion of individuals report ten or more such spells: all of our empirical results are robust to excluding this group.

We evaluate scarring from unemployment for retirees by estimating the following regression:

$$CASP_{ict} = \beta_1 Unemp_i + \beta_2 Childhood_{it} + \beta_3 Adulthood_{it} + \beta_4 Duration_i + \mu_c + \lambda_t + \epsilon_{ict}.$$

$$(1)$$

Here $CASP_{ict}$ is the CASP-12 score of individual i living in country c in year t. In our main model, $Unemp_i$ is a dummy for the individual reporting at least one six-months or longer unemployment spell in the Job Spell Panel of SHARE. Shorter unemployment spells are not recorded in the data, but this may not be a major drawback. First, unemployment spells that are short in duration may not be particularly damaging in terms of lost income, worse health or lower well-being. Second, while we potentially undercount the unemployment exposure of those with $Unemp_i$ equal to one, we also undercount the exposure of those with $Unemp_i$ equal to zero: some of our control group will have experienced unemployment as well, so that our estimate of β_1 in Equation (1) above will be biased downwards. For simplicity, we will refer henceforth to the effect of past unemployment when discussing the estimates of β_1, although this actually refers to unemployment spells of over six months. Note that in Equation (1) above, $Unemp_i$ is time-invariant as we only model the $CASP_{ict}$ scores of those who are retired.

Although unemployment is arguably involuntary in most cases, it does not occur randomly. Clark and Lepinteur (2019) use British birth-cohort data to show that unemployment up to age 30 depends on childhood characteristics that also affect well-being directly. We address this issue by controlling for $Childhood_{it}$, a vector of exogenous characteristics (gender, age and age-squared, and a cohort fixed-effect) and variables that pre-date entry into the labour market (years of education, childhood health, childhood Maths ability, and a dummy for high parental SES – proxied by the occupational position of the parents during childhood). We last include country (μ_c) and year (λ_t) dummies.

It is a mainstay in the literature that the contemporaneous correlation between subjective well-being and unemployment is negative. The scarring literature to date has considered only relatively short periods after the end of the unemployment spell. What is not known is whether this scarring eventually fades away. We here present a lifetime analysis of this question, and ask whether unemployment during the whole active life continues to be correlated with well-being even during retirement. If retirement protects the individual from their past unemployment, then we should find that β_1 is zero; with a continued detrimental effect of lifetime unemployment even after retirement, β_1 will be negative.

There are a number of reasons why unemployment spells may continue to reduce well-being even after they have ended (both in the short- and longer-run). First, unemployment has a persistent effect on a number of objective individual characteristics. It is well-known that past unemployment casts a shadow over earnings once the individual returns to work (Arulampalam, 2001, among others), and this unemployment wage penalty may continue to affect retirement income. Unemployment also reduces the probability of having a partner (Lester, 1996, and Tumin and Qian, 2017) and of good health (Stauder, 2019), both of which may well persist over many years. The second pathway is more psychological: unemployment may enduringly reduce well-being via its effect on self-esteem or the social stigma that the individual may suffer. Winkelmann and Winkelmann (1998) distinguish the material and psychological effects of unemployment on well-being (with both being measured simultaneously), and conclude that the latter is much larger. We here follow this approach by including the vector $Adulthood_{it}$ in Equation (1). This contains a number of variables that are measured contemporaneously with $CASP_{ict}$: a dummy for having a partner in the household, household size, the individual's number of chronic diseases, and household annual net income (in logs). Although we cannot claim that $Adulthood_{it}$ covers all of

the objective mediators of past unemployment, it does include a number of the most-prominent candidates. As such, the estimated coefficient on β_1 holding these variables constant will provide a rough measure of the psychological consequences of past unemployment. In order to distinguish the total and mediated effect of past unemployment, we will estimate Equation (1) first without and then with the $Adulthood_{it}$ variables.

We also control for $Duration_i$, the duration of the working life in years, as this might thought to be mechanically correlated with unemployment experience, and with subjective well-being. Although we have multiple observations per individual, we cannot introduce individual fixed effects as lifetime unemployment experience is time-invariant for retirees. All standard errors in our analysis will be clustered at the individual level.

The robustness checks will consider alternative estimators (quantile regressions and ordered probit estimation) and a variety of different measures of unemployment exposure. We will also estimate a Two-Stage Least Squares version of Equation (1) in order to address the potential endogeneity of $Unemp_i$.

4. Results
4.1. Main Results

Table 2 answers the question of whether unemployment during the working life is reflected in well-being during retirement. All of the continuous variables in the regressions are standardised, to allow for the simple comparison of the estimated coefficients.

The first column of Table 2 includes only the dummy variable for having had at least one unemployment spell, the duration of the working life, and country and year of interview dummy variables. Lifetime unemployment seems to throw a shadow over retirement well-being, in that the estimated coefficient on unemployment experience is negative and significant. Adding the

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exogenous variables and childhood-background variables in column (2) has little material effect on the estimated coefficient. The unmediated effect of having ever been unemployed on retirement well-being is around 16% of a standard deviation (as the dependent variable is standardised).

Column (3) of Table 2 introduces the potential objective mediator variables: household size, the presence of a partner in the household, the number of chronic diseases and household net annual income (in logs). We find only marginal mediation, with the estimated coefficient being reduced from -0.16 to -0.14. As we have controlled for a number of the main objective consequences of unemployment, this only slightly-smaller coefficient suggests that the scarring effect of lifetime unemployment is mostly psychological. In column (3) of Table 2, having been unemployed at least once when active in the labour market is associated with a drop in well-being that is of the same size as not having a spouse in the household at the time of the interview.

4.2. Robustness Checks and Additional Results

This section presents a series of robustness tests, the results of which appear in Table 3 and Appendix Table A3. The first column of these two Tables reproduces the coefficient on unemployment experience in the mediated specification in column (3) of Table 2 for comparison purposes.

We first address the linearity of the dependent variable. The summary CASP-12 score is on a range from 12 to 48, and it might be thought that non-linear estimation might be more appropriate (given the ordered nature of the replies to each of the 12 questions). The ordered probit results appear in column (2) of Table 3. The estimated coefficient on unemployment experience during working life remains negative and significant (ordered logit estimation produces the same conclusion).

The critique of Schröder and Yitzhaki (2017) and Bond and Lang (2019) about sign-reversal in regressions with ordered dependent variables applies to the total CASP-12 score, as each component item is measured on a four-point Likert scale. We have carried out two tests to consider this issue. We first adopt the approach proposed by Chen *et al.* (2022) and re-estimate our model via median regression. This produces results that are similar to those from OLS. Second, we check the non-reversal condition in Kaiser and Vendrik (2023), and find that under some conditions an exponential transformation of the CASP-12 scale can reverse the effect of unemployment experience. However, the necessary transformation of the scale is too extreme to be plausible. This is in line with the results in Kaiser and Lepinteur (2024), where the coefficients that are the most difficult to reverse plausibly from linear well-being regressions are those on exogenous variables (e.g. age, sex, or those resulting from policy changes) and those that are defined well before the date at which well-being is measured (such as past poverty).

The SHARE surveys contain other evaluative measures, such as the EURO-D depression scale and self-assessed health. Although these variables do not measure well-being *per se* (as they each focus on one particular aspect of life), we can consider them as dependent variables (although EURO-D does not appear in SHARE Wave 3) as a test of convergent validity. The results in Appendix Table A3 are in line with the CASP analysis: past unemployment experience is associated with lower well-being post-retirement.

We introduced a vector of exogenous characteristics (gender, age and age-squared, cohort fixed-effect) and variables that pre-date entry into the labour market (years of education, childhood health, childhood Maths ability, and a dummy for high parental SES – proxied by the occupational position of the parents during childhood) in our baseline specification to hold constant the influence of what we believe are the most-plausible confounders of the relationship between

unemployment experience and well-being post-retirement. However, there still may be some unmeasured confounders that prevent us from drawing causal inferences.

Column (4) of Table 3 features a 2SLS version of our main specification. In this regression, we instrument individual unemployment experience by the average unemployment experience of all of the other individuals who were born in the same country up to two years before or after the respondent, are of the same gender, and have the same level of education. In this specification, we cluster the standard errors at country*cohort*gender*education level (clustering at the individual level produces standard errors of similar value). The Kleibergen-Paap rk Wald F-statistic of over 1000 reveals that the instrument is not weak. In this instrumented regression, the individual's past unemployment continues to reduce their post-retirement well-being. By appealing to the average unemployment experience of peers as an instrument, the 2SLS estimate relies on changes in unemployment resulting from exogenous macroeconomic conditions. On the contrary, the unemployment that appears in OLS estimation may mix both involuntary and voluntary unemployment. If, as seems likely, involuntary unemployment has a greater effect on subjective well-being, then the OLS estimate will be smaller in absolute size than the 2SLS estimate.

We have so far reduced an individual's past unemployment experience to a dummy variable for having had at least one unemployment spell of over six months. Although we do not have information on shorter-duration unemployment spells, we do know how many episodes of long-term unemployment SHARE respondents experienced. In column (5) of Table 3, we replace the ever-experienced unemployment dummy by a categorical variable for (i) no experience of unemployment (the reference category), (ii) one spell, (iii) two spells, and (iv) three or more spells. All of the estimated coefficients are negative, with the scarring effects of three or more unemployment spells being statistically the largest.

Column (6) of Table 3 asks whether events that are farther in the past are less salient, and splits unemployment up by the age at which it was experienced (inspired by Figure 2, we split age up into under 30, 30 to 50, and after 50). Column (6) carries out this exercise for the "ever unemployed" dummy. The estimated coefficients on all three unemployment dummies are negative: retirement does not erase the detrimental effect of past unemployment. There is in addition no evidence of the slope consistent with more-distant events being increasingly forgotten. We can carry out the same exercise considering the categorical variable for number of unemployment spells that we used in column (5), now defined as the number of spells experienced within each age category. We find that unemployment in prime age is equally harmful, independent of the number of spells, whereas more-frequent unemployment has a notably larger effect at the beginning or end of the career. These results are available upon request.

While our results show that unemployment is not forgotten during retirement, this is an average effect over all retirees. One obvious factor is how long the individual has been retired, and we know the individual's retirement date from the SHARE Job Spell Panel. The last column of Table 3 tests whether time spent in retirement attenuates the effect of past unemployment, with an interaction between the dummy for ever having been unemployed and a dummy for having been retired for over five years (as well as the main effect of the latter). The estimated coefficient on this interaction variable is positive, and suggests that the scarring effect of lifetime unemployment is about 44% (0.089/0.204) lower after at least five years of retirement. An alternative interaction between ever having been unemployed and a continuous years of retirement variable did not produce significant estimates, so that the attenuation of retirement duration seems to be more like a step function.

4.3. Heterogeneity Analyses

As well as retirement duration, the scarring effect of unemployment may differ by socio-demographic characteristics. We here consider potential moderation from purely-exogenous variables (age and gender) and those that pre-date labour market entry (education and the SES of the main family breadwinner). We split the sample in two and estimate separate regressions for each heterogeneity variable, splitting at the country median of the continuous variables.[4]

Columns (1) and (2) in Table 4 list the results for retirees below and above the national median age (in our sample) respectively. The negative effects of past unemployment are stronger for younger respondents, consistent with the retirement-duration analysis in Table 3. Columns (3) and (4) refer to gender as a moderator of the effect of past unemployment. Our sample median birth year is 1942, and we might expect respondents' gender norms to be fairly traditional, with unemployment mattering more for men: this is indeed what we find (although the difference between the two estimation coefficients is only small). In the next two columns, the effect of past unemployment is larger for the more-educated, which is consistent with both the educated having higher labour market aspirations. Last, we find no evidence of any heterogeneity with respect to the SES of the respondent's parents in the last two columns of Table 4.

Despite these various differences across groups, it should be underlined that lifetime unemployment experience is (conditional on all of the control variables) associated with lower post-retirement well-being for all of the eight separate groups in Table 4.

Last, as SHARE is multi-country we can estimate a separate effect of past unemployment in each sample country. The results are depicted in Figure 4. The black dots refer to the estimated

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[4] Using interaction terms rather than separate samples produces qualitatively-similar results.

coefficient in the given country, and the solid and dotted grey lines in the background to the overall estimate and confidence intervals from the pooled analysis of all countries. Our sample countries differ in many ways, such as their labour-market institutions (e.g. employment protection legislation and unemployment benefits) and culture. Even so, the differences between countries in Figure 4 are not particularly striking. Most estimated coefficients are negative, and the relatively-small country samples (see Table A4 in the Appendix) produce fairly-wide confidence intervals so that the country-effect of past unemployment experience is never significantly different from either the average effect in the whole sample or that in any other country. While larger samples may produce some significant differences in this respect, the visual inspection of Figure 4 suggests that post-retirement scarring from lifetime unemployment is a general phenomenon across Europe.

5. Conclusion

Using cross-European data from SHARE, we find that unemployment during the working life has a long-run negative effect on individual well-being even after retirement. Past unemployment is detrimental at all ages, but seems to be somewhat more so during the peak working ages of 30-50. In terms of individual characteristics, the scarring effect of past unemployment on post-retirement well-being is smaller for older individuals, women, and those who have been retired longer. There is on the contrary only little evidence of substantial cross-country heterogeneity. A mediation analysis concluded that only little of this effect of lifetime unemployment worked via the income, health and family formation of the retired.

These results have a number of implications. First, as the shadow of unemployment continues to be felt even after labour-market exit, the total cost of unemployment should be calculated over the whole of life (including life during retirement). Second, although we find only few cross-country differences, it would seem likely that certain policies and institutions will help protect older

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individuals against persistent effects of past unemployment, and the identification of these via cross-country research with potentially larger samples would seem to be an important goal for continuing research in this area.

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Figure 1: The Distribution of CASP
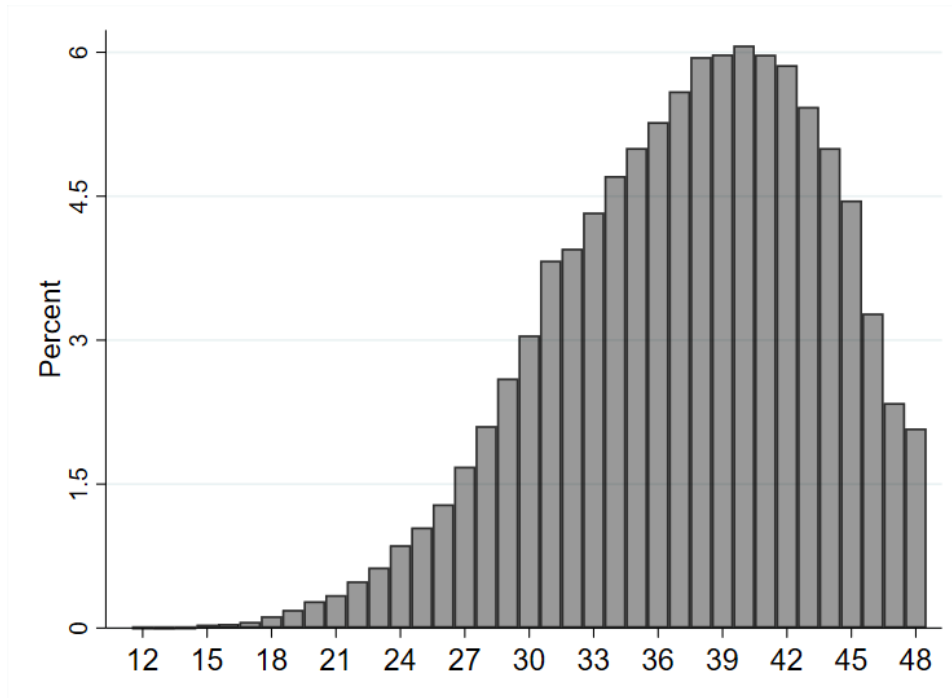
Notes: This figure refers to the estimation sample of 141,084 observations from SHARE. The CASP index ranges from 12 to 48.

Figure 2: The percentages of unemployed and working over the life cycle
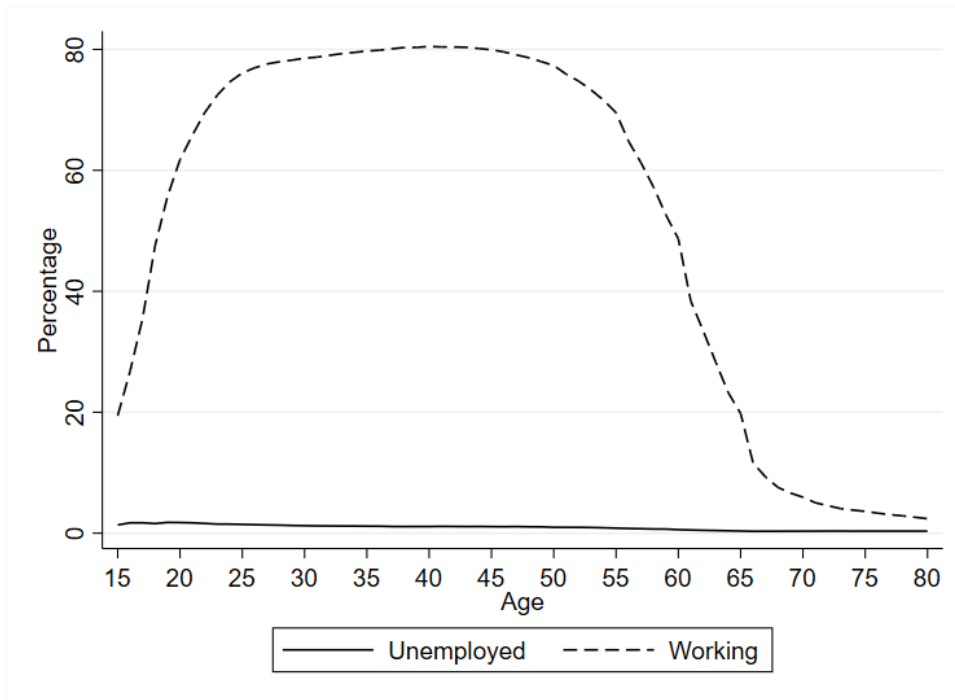
Note: This figure refers to the estimation sample of 141,084 observations from SHARE.

Figure 3: The distribution of the number of episodes of unemployment
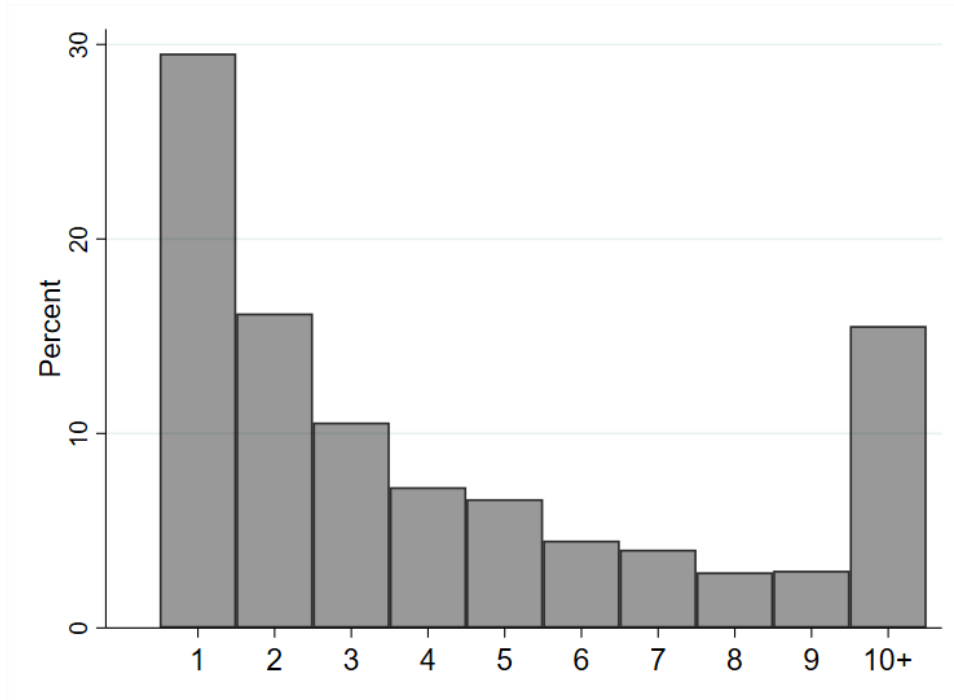
Note: This figure refers to the 3,002 observations who experienced at least one episode of unemployment in our estimation sample from SHARE.

Figure 4: The effect of being ever unemployed on CASP after retirement – Results by country
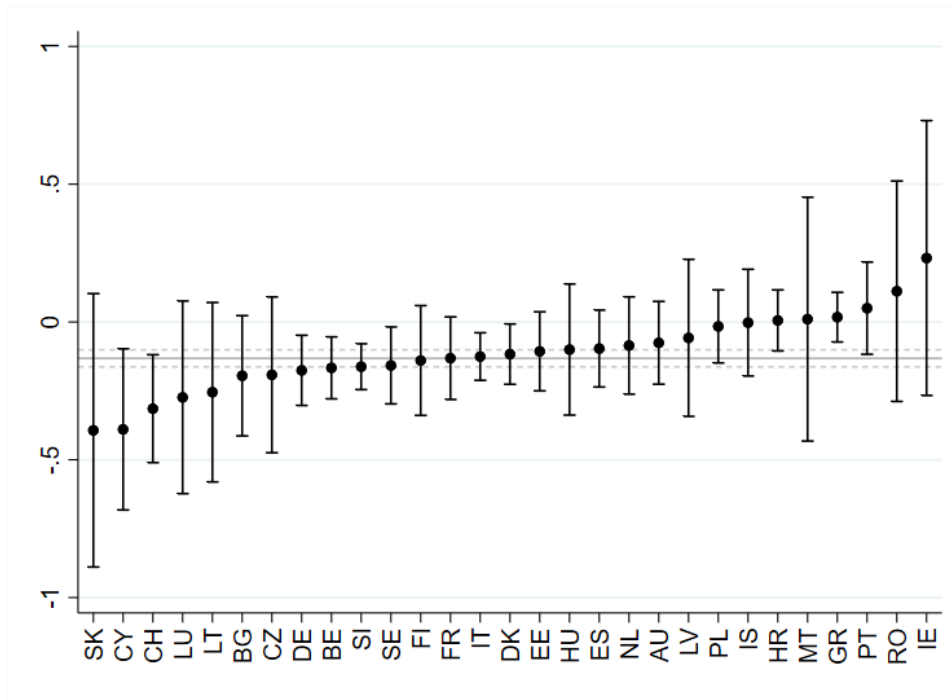
Notes: Each dot corresponds to an estimated coefficient on the ever-unemployed dummy in a linear regression in the given country, where the dependent variable is the standardised CASP index. All regressions control for age, age-squared, gender, years of education, childhood characteristics (health during childhood, relative level in Maths at age 10, and a dummy for high parental SES), contemporaneous adult characteristics (household size, a dummy for having a partner in the household, number of chronic diseases and household annual net income in logs), cohort and interview-year dummies, and the length of the active life (in years). The vertical black bars are 95% confidence intervals. The solid and dashed grey lines are respectively the effect of unemployment experience and the 95% confidence intervals from the estimation using the whole sample.

Table 1: Descriptive statistics

	Mean	SD	Min	Max
CASP Index	37.27	6.21	12	48
Ever unemployed	0.06		0	1
Ever unemployed before age 30	0.04		0	1
Ever unemployed between age 30 and 50	0.03		0	1
Ever unemployed after age 50	0.01		0	1
Total no. episodes of unemployment: one	0.02		0	1
Total no. episodes of unemployment: two	0.01		0	1
Total no. episodes of unemployment: three or more	0.03		0	1
Age	74.32	6.50	65	104.5
Female	0.52		0	1
Years of education	10.87	4.15	0	35
Length of active life (in years)	37.84	10.48	1	86
Health in childhood: Excellent	0.25		0	1
Health in childhood: Very good	0.30		0	1
Health in childhood: Good	0.30		0	1
Health in childhood: Fair	0.10		0	1
Health in childhood: Poor	0.04		0	1
Health in childhood: Health varied a great deal	0.01		0	1
Relative level in maths at age 10: Much better	0.09		0	1
Relative level in maths at age 10: Better	0.23		0	1
Relative level in maths at age 10: About the same	0.54		0	1
Relative level in maths at age 10: Worse	0.12		0	1
Relative level in maths at age 10: Much worse	0.02		0	1
Household size	1.89	0.82	1	12
Partner in household	0.67		0	1
No. chronic diseases	1.49	1.29	0	10
Household Annual Net Income (log)	9.95	0.80	0.07	15.73

Note: This table refers to the estimation sample of 141,084 observations from SHARE.

Table 2: Ever having been unemployed and CASP after retirement – Linear regressions

	CASP (std)		
	(1)	(2)	(3)
Ever unemployed (dummy)	-0.198***	-0.157***	-0.136***
	(0.016)	(0.016)	(0.015)
Age		0.059***	0.083***
		(0.014)	(0.014)
Age-squared (/100)		-0.066***	-0.079***
		(0.006)	(0.006)
Female		-0.047***	-0.024***
		(0.008)	(0.008)
Years of education		0.088***	0.065***
		(0.004)	(0.004)
Health in childhood (Ref: Excellent)			
Very good		-0.059***	-0.053***
		(0.010)	(0.009)
Good		-0.153***	-0.131***
		(0.010)	(0.010)
Fair		-0.275***	-0.231***
		(0.015)	(0.014)
Poor		-0.364***	-0.295***
		(0.024)	(0.022)
Health varied a great deal		-0.224***	-0.182***
		(0.054)	(0.052)
Relative level in Maths at age 10 (Ref: Much better)			
Better		-0.036**	-0.039***
		(0.015)	(0.014)
About the same		-0.081***	-0.080***
		(0.014)	(0.013)
Worse		-0.200***	-0.183***
		(0.017)	(0.016)
Much worse		-0.308***	-0.276***
		(0.031)	(0.030)
High parental SES		0.034***	0.024***
		(0.009)	(0.009)
Household size			-0.033***
			(0.004)
Partner in household			0.124***
			(0.010)
No. chronic diseases			-0.172***
			(0.003)
Household annual net income (log)			0.069***
			(0.003)
Observations	141084	141084	141084
Adjusted R^2	0.200	0.225	0.260

Notes: These are linear regressions. All continuous variables are standardised. All regressions control for country, cohort and interview-year dummies and the length of the active life (in years). Standard errors in parentheses are clustered at the individual level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Past unemployment experience and CASP after retirement – Additional Specifications

	CASP (std)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ever unemployed (dummy)	-0.136***	-0.160***	-0.151***	-0.294***			-0.204***
	(0.015)	(0.017)	(0.012)	(0.054)			(0.044)
Total no. episodes of unemployment: one					-0.064**		
					(0.027)		
Total no. episodes of unemployment: two					-0.096**		
					(0.037)		
Total no. episodes of unemployment: three or more					-0.189***		
					(0.020)		
Ever unemployed before age 30 (dummy)						-0.101***	
						(0.019)	
Ever unemployed between age 30 and 50 (dummy)						-0.121***	
						(0.025)	
Ever unemployed after age 50 (dummy)						-0.081**	
						(0.034)	
Ever unemployed (dummy)*Retired more than five years ago							0.089*
							(0.045)
Observations	141084	141084	141084	141084	141084	141084	141084
Adjusted R^2	0.260	-	-	0.259	0.260	0.260	0.260
F-statistic	-	-	-	1412.0	-	-	-

Notes: These are linear regressions, except in Columns (2) and (3) which refer to ordered probit and median regression respectively. Column (4) is a Two Stage Least Squares regression where we instrument individual unemployment experience by the average unemployment experience of all of the other individuals who were born in the same country up to two years before or after the respondent, are of the same gender, and have the same level of education. All continuous variables are standardised. All regressions control for age, age-squared, gender, years of education, childhood characteristics (health during childhood, relative level in Maths at age 10, and a dummy for high parental SES), contemporaneous adult characteristics (household size, a dummy for having a partner in the household, number of chronic diseases, and household annual net income in logs), country, cohort and interview-year dummies, and the length of the active life (in years). Column (6) also includes the main effect of Retired more than five years ago. Standard errors in parentheses are clustered at the individual level, except in Column (2) where they are bootstrapped and Column (4) where they are clustered at the country*cohort*education*gender level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: The effect of past unemployment experience on CASP after retirement – Heterogeneity analysis

	CASP (std)							
	Young	Old	Men	Women	Low education	High education	Low parental SES	High parental SES
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ever unemployed (dummy)	-0.150***	-0.112***	-0.155***	-0.114***	-0.105***	-0.173***	-0.127***	-0.152***
	(0.017)	(0.023)	(0.023)	(0.020)	(0.019)	(0.025)	(0.019)	(0.024)
Observations	71068	70016	68163	72921	82100	58984	84841	56243
Adjusted R^2	0.237	0.259	0.258	0.261	0.265	0.230	0.279	0.235

Notes: These are linear regressions. All regressions control for age, age-squared, gender, years of education, childhood characteristics (health during childhood, relative level in Maths at age 10, and a dummy for high parental SES), contemporaneous adult characteristics (household size, a dummy for having a partner in the household, number of chronic diseases and the household annual net income in logs), country, cohort and interview-year dummies, and the length of the active life (in years). Standard errors in parentheses are clustered at the individual level. "Young" and "Old" respectively refer to respondents below and above the median age per country. "Low education" and "High education" are calculated analogously using the median years of education per country, and "Low parental SES" and "High parental SES" the median parental SES (proxied by the ISCO88 of the household breadwinner at respondent age 10) per country. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Appendix

Table A1: CASP-12 questionnaire

Here is a list of statements that people have used to describe their lives or how they feel. We would like to know how often, if at all, you think this applies to you. (Please tick one box in each row)	Often	Sometimes	Rarely	Never
My age prevents me from doing the things I would like to	1	2	3	4
I feel that what happens to me is out of my control	1	2	3	4
I feel left out of things	1	2	3	4
I can do the things that I want to do	4	3	2	1
Family responsibilities prevent me from doing what I want to do	1	2	3	4
Shortage of money stops me from doing the things I want to do	1	2	3	4
I look forward to each day	4	3	2	1
I feel that my life has meaning	4	3	2	1
On balance, I look back on my life with a sense of happiness	4	3	2	1
I feel full of energy these days	4	3	2	1
I feel that life is full of opportunities	4	3	2	1
I feel that the future looks good for me	4	3	2	1

Table A2: Descriptive Statistics at the Individual Level

	Mean	SD	Min	Max
CASP Index	37.01	5.74	12	48
Ever unemployed	0.07		0	1
Ever unemployed before age 30	0.04		0	1
Ever unemployed between age 30 and 50	0.03		0	1
Ever unemployed after age 50	0.02		0	1
Total no. episodes of unemployment: one	0.02		0	1
Total no. episodes of unemployment: two	0.01		0	1
Total no. episodes of unemployment: three or more	0.04		0	1
Age	73.26	6.05	65	102.53
Female	0.52		0	1
Years of education	10.84	4.10	0	35
Length of active life (in years)	37.50	10.81	1	86
Health in childhood: Excellent	0.26		0	1
Health in childhood: Very good	0.30		0	1
Health in childhood: Good	0.30		0	1
Health in childhood: Fair	0.10		0	1
Health in childhood: Poor	0.04		0	1
Health in childhood: Health varied a great deal	0.01		0	1
Relative level in maths at age 10: Much better	0.09		0	1
Relative level in maths at age 10: Better	0.22		0	1
Relative level in maths at age 10: About the same	0.54		0	1
Relative level in maths at age 10: Worse	0.13		0	1
Relative level in maths at age 10: Much worse	0.02		0	1
Household size	1.93	0.81	1	10.67
Partner in household	0.68		0	1
No. chronic diseases	1.47	1.14	0	9
Household Annual Net Income (log)	9.96	0.66	1.68	14.63

Note: This table refers to the average characteristics of the 47,795 individuals in the SHARE estimation sample.

Table A3: The effect of past unemployment experience on different outcomes

	CASP (std)	EURO-D (std)	Self-assessed health (std)
	(1)	(2)	(3)
Ever unemployed (dummy)	-0.136***	-0.073***	-0.080***
	(0.015)	(0.016)	(0.014)
Observations	141084	117016	141062
Adjusted R^2	0.260	0.152	0.283

Notes: These are linear regressions. The EURO-D scale for depression is reversed so that higher scores indicate a lower probability of suffering from depression. All regressions control for age, age-squared, gender, years of education, childhood characteristics (health during childhood, relative level in Maths at age 10, and a dummy for high parental SES), contemporaneous adult characteristics (household size, a dummy for having a partner in the household, number of chronic diseases and the household annual net income in logs), country, cohort and interview-year dummies, and the length of the active life (in years). Standard errors in parentheses are clustered at the individual level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: Number of observations per country in the estimation sample

Country	Frequency	Percentage
Austria	7,714	5.47
Germany	9,749	6.91
Sweden	10,853	7.69
Netherlands	2,995	2.12
Spain	6,746	4.78
Italy	8,931	6.33
France	8,929	6.33
Denmark	7,977	5.65
Greece	4,531	3.21
Switzerland	6,700	4.75
Belgium	10,966	7.77
Israel	2,223	1.58
Czech Republic	12,346	8.75
Poland	5,555	3.94
Ireland	159	0.11
Luxembourg	1,685	1.19
Hungary	2,452	1.74
Portugal	1,614	1.14
Slovenia	7,658	5.43
Estonia	11,885	8.42
Croatia	2,997	2.12
Lithuania	1,104	0.78
Bulgaria	1,134	0.80
Cyprus	685	0.49
Finland	1,061	0.75
Latvia	895	0.63
Malta	259	0.18
Romania	457	0.32
Slovakia	824	0.58
Total	141,084	100.00

Note: This table refers to the estimation sample of 141,084 observations from SHARE.