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## SUBJECTIVE WELL-BEING DURING THE LIFESPAN IN THE MEDITERRANEAN: U-SHAPED, DECLINING OR NO CHANGE?

### Abstract

This study aimed to examine the relationship between age and subjective well-being in Mediterranean countries with and without controlling for relevant covariates and to compare these relationships in Mediterranean and non-Mediterranean Europe. The data from the European Quality of Life Survey — EQLS (round 4) were used for the analysis. The survey was conducted during 2016 and 2017 on representative samples of the adult population within 28 EU countries including Albania, FYR of Macedonia, Montenegro, Serbia and Turkey. The sample included 15,791 respondents living in 11 Mediterranean countries and 18,505 respondents from 22 non-Mediterranean countries. The respondents were equally distributed by gender (51.6% women), with the age range between 18 and 95 years ( $M = 48.14$ ,  $SD = 18.08$ ). For the lifespan comparison, we used five age groups (18-24, 25-34, 35-49, 50-64 and 65+). Cross-national population weights were applied to ensure representativeness of group comparisons. The results showed that happiness and life satisfaction are generally lower in the Mediterranean in comparison to non-Mediterranean countries and that it generally declines by age, showing a slight increase in the non-Mediterranean countries in the older age groups. After controlling for income and financial deprivation, no systematic decline in wellbeing by age in Mediterranean countries was observed.

Keywords: *quality of life, subjective well-being, Mediterranean, age, lifespan*

In the EU context of rapidly ageing societies, the well-being of different age groups becomes an important topic of public policies. In the past few decades, there is an ongoing debate in the literature about the relationship between age and subjective well-being (SWB). While several researchers have identified a U-shaped relationship between age and SWB, where young generations feel the most satisfied and happy, middle-aged individuals feel the least satisfied, and the level rises again in later life (Blanchflower & Oswald, 2004, 2008, 2009, 2019), there is also a body of research showing different patterns of this relationship. Surveys are showing no relationships bet-

ween age and well-being, the decline in well-being with age (Deaton, 2008) or a mixture of stability up to late adulthood and a sharp decline afterwards (Hansen & Slagsvold, 2012). It was also found that the relationship between age and SWB vary according to the wealth of the country. Several studies showed that the decline in SWB with age is the greatest in the middle-income (Deaton, 2008) and transition countries (Guriev & Zhuravskaya, 2009; Kaliterna & Burušić, 2014), while in richer countries a U-shaped relationship was found. Knowing that household incomes in Mediterranean countries are significantly lower than in northern Europe, the primary focus of this survey is to examine the effect that age has on SWB in the Mediterranean countries.

The recent Eurofound (2019) research on SWB in Europe delivered two important findings related to the age differences in SWB measures. Firstly, there are substantial differences in quality of life across age groups in Europe. An east-west and a north-south divide are apparent in these differences. The older generations, in general, enjoy a better quality of life than younger age groups in Western Europe, while the younger generations are better off in Eastern Europe. Secondly, life satisfaction markedly and significantly declined for older people in the Mediterranean, Central and Eastern, Baltic and Balkan clusters between 2011 and 2016. The traditional U-shape curve over the life course — which indicates falling life satisfaction until middle age, when it rises again — flattened at older ages.

Another debate about the patterns of the relationship between age and SWB is going on regarding whether researchers should use confounding factors in their analyses. The U-shape relationship was mainly found after controlling for many confounding factors such as income, marriage, job status, commonly employed in analyses. Glenn (2009) criticizes such methodology and argues that the appearance of this U-shape is the result of the use of inappropriate and questionable control variables. Most authors consider that certain controls are required, such as income, education and a series of other personal characteristics (Lelkes 2006). Blanchflower and Oswald (2019) and Stone et al. (2010) showed that the usual sets of control variables neither create nor eliminate the prevalence of a U-shape in their data samples. The use of controls can be justified following the arguments by Lelkes (2008) “It is not ageing as such, which results in declining happiness, but rather the circumstances associated with ageing.” Following this argument, Helliwell and Wang (2018) demonstrated that the social context matters in estimating the age effect on SWB. They have found that a U-shape relationship between age and SWB is significantly shallower, and raises more in the older age groups for those with the most supportive workplaces, families, neighbourhoods, and cities. Taking into account that Mediterranean EU countries differ from non-Mediterranean countries mostly by GDP, personal income, and the functioning of public services, controlling for such covariates could flatten out the expected U-shape curve, especially in Mediterranean countries.

## THE AIM OF THE STUDY

The study has two particular aims. The first was to examine the effect that age has on SWB in Mediterranean countries with and without controlling for relevant covariates. The second was to compare the effects of age on SWB in the Mediterranean and non-Mediterranean Europe.

## METHODOLOGY

The data from the European Quality of Life Survey — EQLS (round 4) were used in this research<sup>1</sup>. The EQLS is a survey of the adult population (18+) living in private households, based on a statistical sample and covering a cross-section of society. Depending on the country size and national arrangements, the round 4 samples ranged from 1,000 to 2,000 people per country. The EQLS was carried out as face-to-face interviews in people's homes using computer-assisted personal interviewing (CAPI) and covered a comprehensive list of questions regarding their quality of life. The EQLS round 4 was carried out from September 2016 to March 2017 in all EU Member States and the five candidate countries (Albania, the Former Yugoslav Republic of Macedonia, Montenegro, Serbia and Turkey). High standards of quality assurance were applied to all stages of the survey's implementation (Eurofound, 2017).

## PARTICIPANTS

The representative samples of the adult population within the countries were used. For this study, the cross-national population weights were applied for combining two specific country subgroupings (the Mediterranean vs. non-Mediterranean countries). After the weighting procedure, the total final sample included 34,296 participants, from which 18,505 participants were from Non-Mediterranean countries and 15,791 respondents were from Mediterranean countries. Non-Mediterranean countries included: Austria, Belgium, Bulgaria, Czech Republic, Germany, Denmark, Estonia, Finland, Hungary, Ireland, Lithuania, Luxembourg, Latvia, Netherlands, Poland, Portugal, Romania, Sweden, Slovakia, United Kingdom, FYR of Macedonia and Serbia. Mediterranean countries included: Cyprus, Greece, Spain, France, Croatia, Italy, Malta, Slovenia, Albania, Montenegro, and Turkey. The age of respondents vary from 18 to 95 with an average of 48 years ( $M = 48.14$ ,  $SD = 18.08$ ). The respondents were equally distributed by gender (51.6% female).

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<sup>1</sup> European Foundation for the Improvement of Living and Working Conditions, EQLS Integrated Trend Data File, 2003-2016 [SPSS file: EQLS trend dataset — 4 waves — all countries]. Colchester, Essex: UK Data Archive [distributor], March 2018. SN: 7348.

## MEASURES

'Subjective well-being' was measured by two single-item scales. Single items scales asked people to rate their global life satisfaction ("All things considered, how satisfied would you say you are with your life these days?"), and general happiness ("Taking all things into account, how happy would you say you are?"), on 10-point end-defined response scales, ranging from 1 (very dissatisfied/very unhappy) to 10 (very satisfied/very happy).

The age of participants was operationalized by age grouping over the lifespan comparison. We used five age groups (18-24, 25-34, 35-49, 50-64 and 65+ years of age).

## COVARIATES

The deprivation index measures the average number of items a household cannot afford. This index is calculated as the average number of items that a respondent's household cannot afford if they wanted to buy them, from the following list: a) keeping your home adequately warm; b) paying for a week's annual holiday away from home (not staying with relatives); c) replacing any worn-out furniture; d) a meal with meat, chicken, fish every second day if wanted; e) buying new, rather than second-hand, clothes; and f) having friends or family for a drink or meal at least once a month. The index value can range from zero to six, where a larger number indicates higher material deprivation of the household.

The Public Services Index is the overall measure of satisfaction with public services within the country. It covers six types of public services: education, healthcare, public transport, childcare, cares for the elderly and the pension systems. Respondents rate these types of public services on a 10-point scale, with 1 denoting the lowest rating and 10 the highest. The Public Service Index is calculated as an average rating given by a respondent on these six items. Both of the indices were proved to be valid and reliable measures of financial deprivation and satisfaction with public services, which is reported in other studies based on EQLS results (e.g. Rose & Newton, 2010; Eurofound, 2014).

Equalised monthly household income in PPP euros was used as a comparable relative measure of available monthly economic resources of respondents in this study. The equalised household income is an indicator of the economic resources available to each member of a household. It is the total income of a household, after tax and other deductions, which is available for spending or saving, divided by the number of household members converted into equalised adults. The household members are equalised or made equivalent by weighting each according to their age, using the OECD equivalence scale. For comparisons across geographical areas in the same period, income data should also be adjusted by the differences in price levels by country. Thus, purchasing power parities (PPPs) is a measure of the relative prices of goods and

services that are likely to be purchased for consumption. PPPs are regularly compiled by OECD and Eurostat statistics.

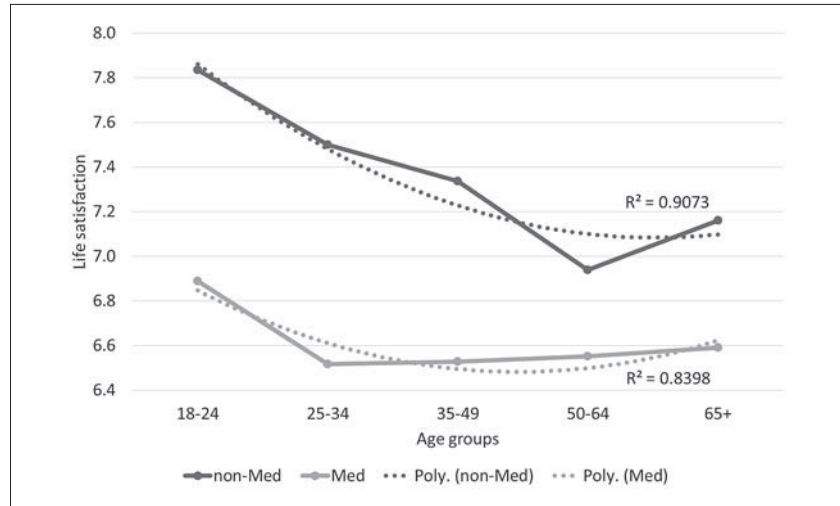
## STATISTICAL PROCEDURES

The participants that had missing results in particular variables were excluded from analysis using listwise deletion. To illustrate the relationship between age and SWB, we graphically presented the mean scores of life satisfaction and happiness scales by five age groups and interpolated the second-order polynomial trendline that should correspond to the expected U-shaped curve. To examine the fit of the second-order polynomial curve to actual data, we calculated the  $R^2$  value. This procedure was performed separately for the raw data of life satisfaction and happiness, and life satisfaction and happiness data residuals after controlling for covariates. The calculations and figures were done using Excel.

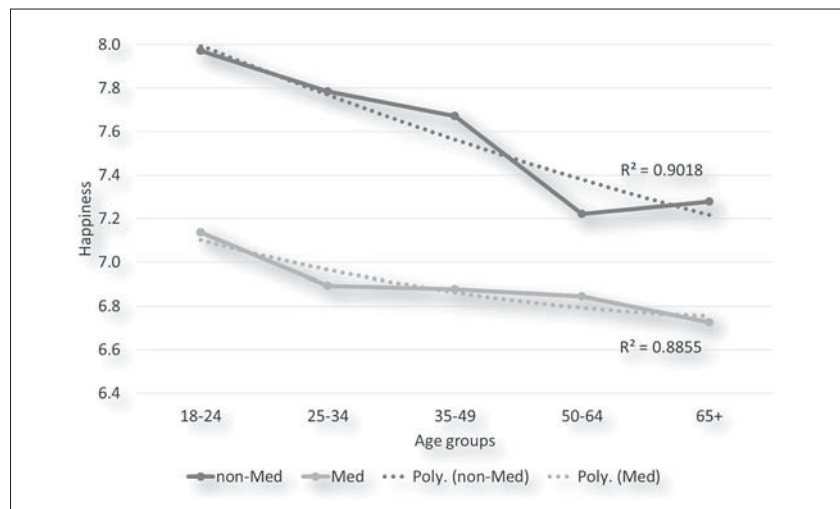
The two-way ANOVA and ANCOVA procedures were used to determine the exact difference in the quality of life between the different age groups of respondents and the respondents living in Mediterranean and non-Mediterranean countries, before and after the control for covariates, respectively. Furthermore, we have also tested the interaction effect of age and region of residence in ANOVA/ANCOVA models to examine the possible regional difference in age-SWB relation. Before running the analysis the assumptions for ANOVA/ANCOVA were checked. There were no significant outliers, the distributions of the dependent variables in respected groups were approximately normal and the conditions of homogeneity of variances between the groups were met. We applied the significance level of .01 to test each hypothesis due to the large sample size. Statistical software SPSS v23 was used for this data analysis.

## RESULTS

Figures 1 and 2 represent the variations in life satisfaction and happiness by age in the Mediterranean and non-Mediterranean countries. Firstly, the presented data revealed that there is a noticeable difference in SWB between Mediterranean and non-Mediterranean countries, where the citizens of non-Mediterranean countries are more satisfied with life and happier than those from the Mediterranean. Moreover, these differences are stable by age indicating that citizens living in non-Mediterranean countries have higher SWB than those from the Mediterranean in all age cohorts. Further, as it can be seen from the figures, the SWB generally falls by age (with some rise in the oldest cohort in non-Mediterranean countries), and could be well fitted by the U shaped curve.  $R^2$  values that capture the fit of the second-order polynomial curve to raw SWB data are all high ( $R^2 > .83$ ). However, these U shape curves fit the data better in non-Mediterranean than Mediterranean countries, mostly because of the increase of SWB in the oldest cohort of respondents in non-Mediterranean countries which is not the case in



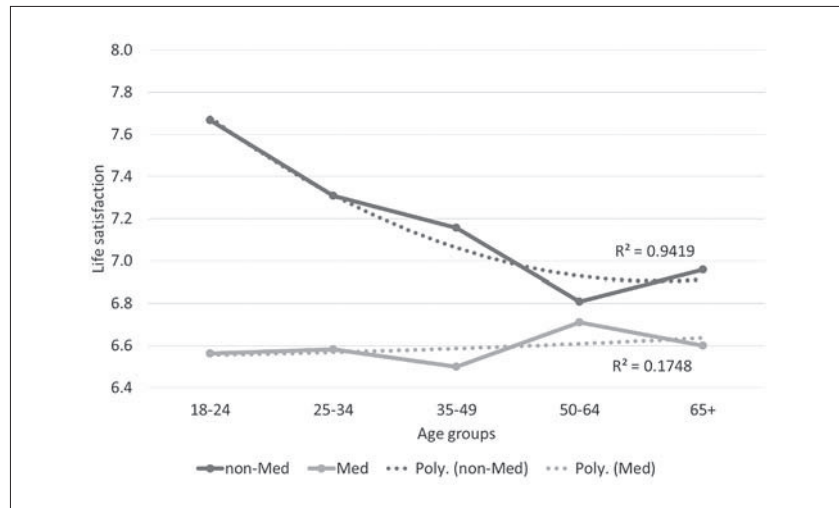
**Figure 1** — Life Satisfaction by Age in Mediterranean and Non-Mediterranean Countries



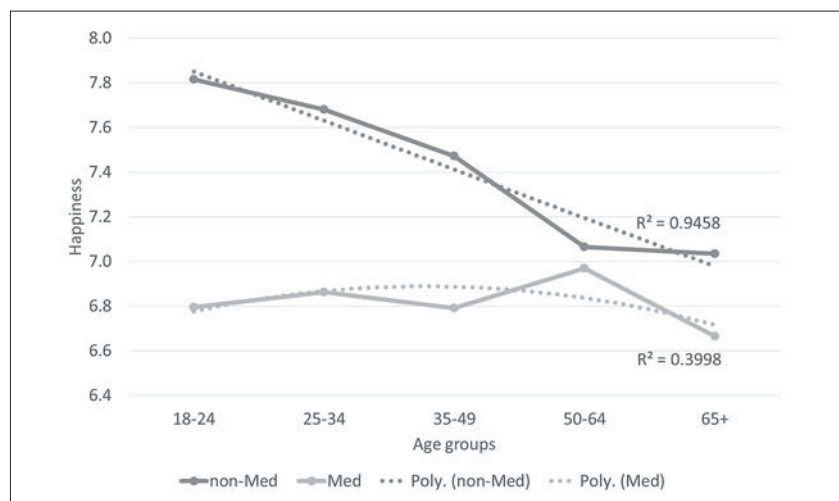
**Figure 2** — Happiness by Age in Mediterranean And Non-Mediterranean Countries

the Mediterranean. Moreover, it was found that the change in SWB in Mediterranean countries is not that much affected by age, comparing to non-Mediterranean countries. The trend-lines in Mediterranean countries flatten indicating less change in SWB by age.

Figures 3 and 4 represent the age variations in life satisfaction and happiness in Mediterranean and non-Mediterranean countries after controlling the effect of covariates on SWB measures. The controlled variables were: Deprivation Index (the average number of items a household cannot afford), Public Services Index (the overall measu-



**Figure 3** — Life Satisfaction by Age in Mediterranean and Non-Mediterranean Countries After Controlling for Covariates



**Figure 4** — Happiness by Age in Mediterranean and Non-Mediterranean Countries After Controlling for Covariates

re of satisfaction with public services within the country) and House income (equalised monthly household income in PPP euros). As it can be seen from the figures, the controlling for these covariates affected much more the age-SWB relation in Mediterranean than non-Mediterranean countries. The U curve shape of this relationship was no longer presented in Mediterranean countries either for Life satisfaction ( $R^2 = .17$ ) or for Happiness ( $R^2 = .17$ ). The change of SWB by age in Mediterranean countries after controlling for covariates becomes smaller and unsystematic. In non-Mediterranean coun-



tries the U-shaped curve of these relationships is still present regardless of covariates control — the SWB falls by age until the age of 50-64 years and then rises (life satisfaction) or stagnate (happiness). An additional interesting feature of age-SWB relation in Mediterranean and non-Mediterranean countries is the closure of the gap in SWB between the Mediterranean and non-Mediterranean countries in the age group 50-64 years. It seems that, after controlling for socioeconomic variables, the lowest age point of SWB in non-Mediterranean countries is the highest age point in the Mediterranean (age group 50-64 years).

The results of another statistical approach examining age effects on SWB in Mediterranean and non-Mediterranean countries are presented in Table 1. By the two-way ANOVA, we tested the age and regional difference in SWB measures (raw data) and by ANCOVA, the same differences after controlling for covariates. In both analyses, all effects were statistically significant ( $p > .001$ ) — mostly due to the large sample size. However, the effects sizes were small: Age explains less than 1% of SWB differences, Region explains up to 3% of SWB differences, Age-Region interaction — the differences in age effects on SWB by region (differences in curves) are smaller than 1%. It could be also observed that the main effects of age and region are somewhat smaller after controlling for covariates (smaller  $F$ s and  $\eta^2$ s), indicating that socioeconomic variables partially explain some of the age and regional differences in SWB. Contrary, the interaction effects — the differences in age effects on SWB by region (differences in curves) — are somewhat bigger after controlling for covariates. This corresponds with the previous conclusion derived from graphical representations that in Mediterranean countries the curve becomes flattened after controlling for covariates. It seems that controlling for socioeconomic variables reduce age and regional differences in SWB, mostly by reducing age differences in SWB in Mediterranean countries.

Table 1 — Testing for Age and Region Effects on SWB Without and With Controlling for Covariates

	Raw data						Controlling for covariates					
	Life satisfaction			Happiness			Life satisfaction			Happiness		
	F	p	$\eta^2$	F	p	$\eta^2$	F	p	$\eta^2$	F	p	$\eta^2$
Age	63.47	.00	.007	79.61	.00	.009	14.36	.00	.003	31.87	.00	.007
Region (Med. vs. non-Med.)	1037.58	.00	.029	1024.24	.00	.029	369.76	.00	.021	410.03	.00	.024
Age x Region	26.09	.00	.003	22.97	.00	.003	29.66	.00	.007	32.19	.00	.008

## DISCUSSION

Several researchers have found that SWB is generally higher in the North of Europe and lower in the South (Clark et al., 2020; Eurofound, 2019) as also our previous (Babaro-*vić* et al., 2019) and present study. In this study, we were interested primarily in the age differences in SWB between Mediterranean and non-Mediterranean European

countries and showed that these differences are stable by age indicating that citizens living in non-Mediterranean countries have higher SWB than those from the Mediterranean in all age cohorts.

Concerning the pattern of relationships between age and SWB, our results showed that the U-shape relationship fit the data better in non-Mediterranean than Mediterranean countries (Figures 1 and 2). In non-Mediterranean countries, there is a decrease in both measures of SWB (life satisfaction and happiness) between the years 18 and 50, with 50-64 olds having the lowest SWB, followed by an increase in older age. However, this is not the case in Mediterranean countries. The trend lines in Mediterranean countries are flattening indicating less pronounced changes in SWB by age.

After controlling the covariates, that is, variables mostly indicating the relative wealth of citizens (deprivation index, household income, quality of public services), the relationship between age and SWB changed more in Mediterranean than non-Mediterranean countries (Figures 3 and 4). In non-Mediterranean countries, the U-shaped relationship was still present regardless of covariates control, that is, the SWB falls by age until the age of 50-64 years and then rises (life satisfaction) or stagnates (happiness). However, in Mediterranean countries, the change of SWB by age after controlling for covariates becomes smaller and unsystematic with almost no change in SWB by age. It seems that controlling for covariates affected mostly the youngest age cohort (18-24 years) in Mediterranean countries which showed no decrease in SWB in comparison to a pronounced fall in SWB without control for covariates. This absence of a decrease in SWB from young to middle age flattened the expected trend-line of the U-shape relationship.

Besides the fact that the U-shaped relationship between SWB and age remains controversial, some authors argue also about its significance, that is, the size of the age effect on SWB. Our analyses showed that the effects sizes were small: age explains less than 1% of SWB differences, region (Mediterranean, non-Mediterranean) up to 3% and age-region interaction — the differences in age effects on SWB by region are lower than 1%. Jebb et al. (2019) argue that even if the differences across age are statistically significant, the effect sizes are so small that it is truly trivial and lacks practical significance and that in terms of the scale 1-10 (as was in our study), the differences below 1.00 should be considered quite small. Our results showed that in Mediterranean countries the differences between the highest and lowest SWB in the particular age group is about 0.5 and about 0.8 in non-Mediterranean countries. However, some researchers argue the opposite, that even if the size of the dip is statistically tiny, it is not trivial (Blanchflower & Oswald, 2019). According to them, the size of the drop in well-being from the highest (youth) to the lowest point (mid-life) is equivalent in magnitude to the influence of a major life event like unemployment or marital separation and could be highly consequential.

Without going deeper into discussions and controversies regarding the practical importance and shape of the relationship between age and SWB, we can conclude that our study showed that the citizens of non-Mediterranean countries showed higher levels of SWB in terms of life satisfaction and happiness than those in Mediterranean in all age groups. Also, we demonstrated that age differences in SWB are more pronounced in non-Mediterranean than in Mediterranean European countries, especially after controlling for socioeconomic variables.

## References

- Babarović, T., Kaliterna Lipovčan, Lj., Brajša-Žganec, A., & Zekan, J. (2019). Life satisfaction in the Mediterranean: The cradle of European civilization with unhappy new generations. In K. Jurčević, Lj. Kaliterna Lipovčan, & O. Ramljak (Eds.). *Reflections on the Mediterranean*. Institute of Social Sciences Ivo Pilar & VERN Group, 197-206.
- Blanchflower D.G., & Oswald A.J. (2019). Do modern humans suffer a psychological low in midlife? Two approaches (with and without controls) in seven data sets. In Mariano Rojas (Ed.). *The economics of happiness. How the Easterlin paradox transformed our understanding of well-being and progress*. Springer. 439-453.
- Blanchflower, D. G., & Oswald, A. J. (2004). Well-being over time in Britain and the USA. *Journal of Public Economics*, 88(7-8), 1359-1386.
- Blanchflower, D. G., & Oswald, A. J. (2008). Is well-being U-shaped over the life cycle? *Social Science and Medicine*, 66, 1733-1749.
- Blanchflower, D. G., & Oswald, A. J. (2009). The U-shape without controls: A response to Glenn. *Social Science and Medicine*, 69, 486-488.
- Clark, A.E., D'Albis, H., & Greulich, A. (2020). The Age U-shape in Europe: The Protective Role of Partnership. HAL halshs-02872212. 1-28.
- Deaton, A. (2008). Income, health, and well-being around the world: evidence from the Gallup World Poll. *Journal of Economic Perspectives*, 2008, 1-20.
- Eurofound. (2014). *Trends in quality of life — Croatia: 2007—2012*. Publications Office of the European Union.
- Eurofound. (2017). *European quality of life survey 2016: Quality of life, quality of public services, and quality of society*, Publications Office of the European Union.
- Eurofound. (2019). *Age and quality of life: Who are the winners and losers?* Publications Office of the European Union.
- European Centre. *Policy Brief March*. [http://www.euro.centre.org/data/1207216181\\_14636.pdf](http://www.euro.centre.org/data/1207216181_14636.pdf)
- Glenn, N. (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, 1733-1749). *Social Science & Medicine*, 69(4), 481-485.
- Guriev, S., & Zhuravskaya, E. (2009). (Un)Happiness in transition. *Journal of Economic Progress*, 23(2), 143-168.
- Hansen, T., & Slagsvold, B. (2012). The age and subjective well-being paradox revisited: A multidimensional perspective. *Norsk Epidemiologi*, 22(2), 187-195.
- Kaliterna-Lipovčan, Lj., & Burušić, J. (2014). Age and gender differences in well-being in Croatia. In Eckermann, Elizabeth (Ed.). *Gender, Lifespan and Quality Of Life: An International Perspective*. Springer, 199-219.

Lelkes, O. (2006). Tasting freedom: Happiness, religion and economic transition. *Journal of Economic Behavior & Organization*, 59(2), 173-194.

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