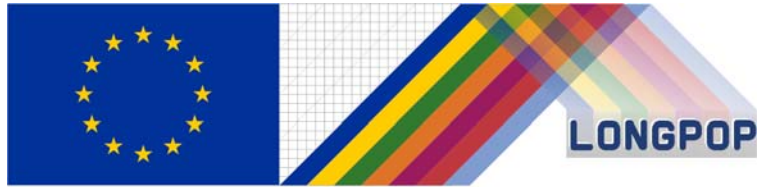




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## **Life course influences on health trajectories at older age: longitudinal modelling using the Survey of Health, Ageing, and Retirement in Europe**

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LONGPOP Expected Results 15.3 and 15.4

### **1. Introduction**

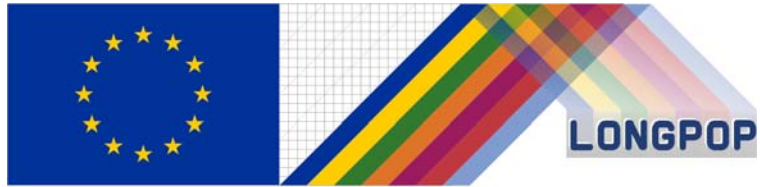
Some of the conducted research within the LONGPOP project studied the health trajectories of individuals aged 50 years and older living in Europe and, based on retrospective data from childhood and adulthood, the life course influences on these health trajectories. We examined old age vulnerability in relation to the adversity of the age-related decline in health, operationalising it as an accelerated downward health trajectory at ages after 50 years. Life course precursors that have been explored so far include (1) childhood socioeconomic conditions and (2) life course events in childhood and adulthood.

First, according to life course epidemiology, living in low socioeconomic conditions during childhood (Blane et al., 1996; Wadsworth et al., 1997) can lead to poor health conditions in later life, like chronic conditions, poor life satisfaction (Blackwell et al., 2001; Fenelon et al., 2016) and mortality (Galobardes et al., 2008; Hayward et al., 2004). The biological embedding hypothesis, or the idea that early life psychological and social development shape the body health and its development (Hertzman, 1999), is one explanation. Previous research focused on childhood (Braveman et al., 2009; Lehman et al., 2009), adolescence (Bond, 2012), middle adulthood (Holland et al., 2000; Strand et al., 2012; McDonough et al., 2015), while older age has been less studied (Bartley et al., 2009; Britton et al., 2008; Brandt et al., 2012; Luo et al., 2005). Thus, the first research question examined how childhood socioeconomic conditions are associated with downward health trajectories at older age.



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Childhood circumstances can channel individuals into life course trajectory leading to social destinations, or pathways, which can be the true source of influence of health trajectories at older age (Hertzman et al., 2003). Recent evidence suggested that part of the association between childhood circumstances and health at older age could be explained by labour market disadvantage during adulthood (Wahrendorf et al., 2015). We applied a pathways theoretical framework to explain potential moderation and mediation effects by occupational and family trajectories in adulthood and test various life course models (accumulation of risk, chain of risk, trigger effect) (Kuh et al., 2003).

The second research question focused on how family-related events and their timing are associated with health trajectories in the second half of life. Preliminary evidence suggests that parental divorce in childhood is negatively associated with later health (Amato, 1994; Angarne-Lindberg et al., 2009; Maughan et al., 1997; Schwartz et al., 1995), an effect enduring in recent cohorts where divorce became commonplace (Sigle-Rushton et al., 2005). We hypothesized that the onset of negative life course events, like parental separation, are stressful events and that poor adaptation to stress may have long-reaching consequences on individuals' lives that can be observed in an accelerated downward health trajectory after the age of 50.

## **2. Analyses**

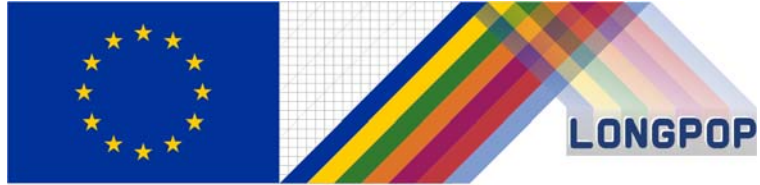
SHARE is a longitudinal cross-national study of 20 European countries with measures of well-being, health and socioeconomic situation of Europeans aged 50 years and older. In the SHARE database, life course influences were measured with the Life course module called SHARELIFE, administered during the third wave (2008/9). SHARELIFE consisted mainly in a detailed retrospective assessment of respondents using a life history calendar (Börsch-Supan et al., 2013).

To examine changes in health trajectories, we used multilevel regression models (also called random-coefficient growth curve models). These models allow for distinguishing between the individual overall level on one indicator and the rate of change. Individuals may have different overall health statuses across the follow-up period and they may also have different yearly rates of change with increasing age. Moreover, overall health status may be correlated



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with the rate of change. Consequently, we tested three different random structures, using respondent age as the indicator of time: (1) random intercept, (2) random slope of age correlated with random intercept and (3) random slope of age independent of random intercept. These random structures were tested for each health outcome, with predictors of interest (e.g. age, education, employment status, income) included as fixed effects. The best model was selected using likelihood ratio tests. Finally, we examined quadratic effect of age in the different random structures.

Several health outcomes have been studied as part of a local project, LIFETRAIL, which resulted in articles published in some of the best articles in the fields of public health and gerontology and several articles that are under review. As some details on the analyses differed for each health outcome, we would like to refer to the published articles for more specific information. Some of the published articles written as part of the LONGPOP project include 'Life Course Socioeconomic Conditions and Frailty at Older Ages' (van der Linden et al., 2019) and 'Effect of childhood socioeconomic conditions on cancer onset in later life: an ambidirectional cohort study' (van der Linden et al., 2018).

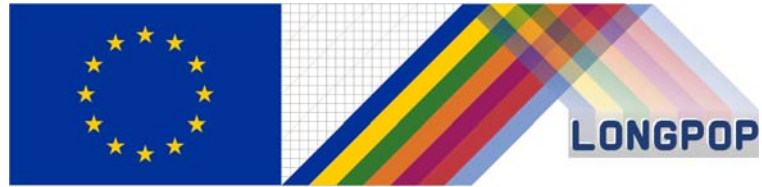
### **3. Data harmonization**

The research described has been conducted using SHARE database and includes 20 European countries and Israel, making cross-country analyses possible. Other international aging and retirement studies exist and harmonized datasets are created for these similar studies to facilitate cross-national and longitudinal studies (see <https://g2aging.org/>). Using these harmonized datasets allow for comparing previously identically defined variables across these different datasets and countries. Within the LONGPOP project, using the English Longitudinal Study of Ageing (ELSA) to make the same analyses as conducted in the above-described research would be a good possibility.



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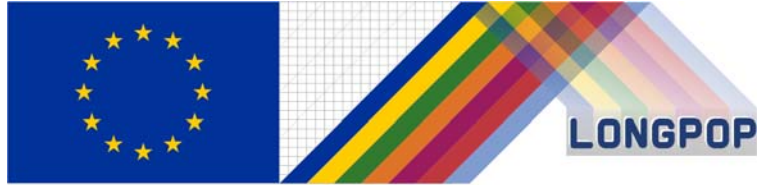
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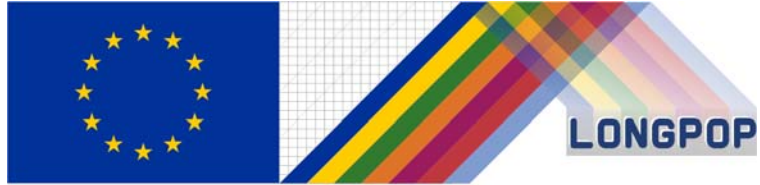
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