



# The mystery of the U-shaped relationship between happiness and age<sup>☆</sup>

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## ABSTRACT

In this paper, we address the puzzle of the relationship between age and happiness. Whilst the majority of psychologists have concluded there is not much of a relationship at all, the economic literature has unearthed a possible U-shape relationship with the minimum level of satisfaction occurring in middle age (35–50). In this paper, we look for a U-shape in three panel data sets, the German Socioeconomic Panel (GSOEP), the British Household Panel Survey (BHPS) and the Household Income Labour Dynamics Australia (HILDA). We find that the raw data mainly supports a wave-like shape that only weakly looks U-shaped for the 20–60 age range. That weak U-shape in middle age becomes more pronounced when allowing for socio-economic variables. When we then take account of selection effects via fixed-effects, however, the dominant age-effect in all three panels is a strong happiness increase around the age of 60 followed by a major decline after 75, with the U-shape in middle age disappearing such that there is almost no change in happiness between the age of 20 and 50.

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## 1. Introduction

What is the relationship between happiness and age? Do we become more miserable as we age, or, is our happiness relatively constant throughout our lives with only the occasional special event (marriage, birth, promotion, and illness) temporarily raising or reducing our happiness, or do we actually get happier as we age?

The answer to this question in the recent economic literature is that the age–happiness relationship is U-shaped.<sup>1</sup> This finding holds for the US, Germany, Britain, Australia, Europe, and South Africa. The stylised finding is that individuals gradually become unhappier after their 18th birthday, with a minimum around 50, followed by a gradual upturn in old age. The predicted effect of age can be quite large. For example, the predicted difference in average happiness between an 18 year old and a 50 year old from regressions can be as much as 1.5 points on a 10-point-scale.

This recent economics literature, however, conflicts with an old psychology literature that finds no happiness–age relationship (Cantril, 1965). Palmore and Luikart (1972) comment in their review; ‘Several variables thought to be related to life

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<sup>1</sup> Recent papers on this in the economic literature include: (Bell and Blanchflower, 2007; Blanchflower, 2008; Blanchflower and Oswald, 2001, 2004, 2007, 2008, 2009; Clark, 2006; Dear et al., 2002; Di Tella et al., 2001; Ferrer-i-Carbonell and Frijters, 2004; Ferrer-i-Carbonell, 2005; Gerdtham and Johannesson, 2001; Hayo and Seifert, 2003; Headey and Wearing, 1989; Helliwell, 2003; Oswald, 1997; Oswald and Powdthavee, 2008; Powdthavee, 2003; Seifert, 2003; Senik, 2004; Theodossiou, 1998; Van Landeghem, 2008; Winkelmann and Winkelmann, 1998; Wolpert, 2010).

satisfaction had little or no relationship: age, sex, total social contacts'. More recently, the psychologists Dear et al. (2002) postulate a slight reduction in life satisfaction as people age, due to the prevalence of high life satisfaction becoming less common at higher ages. From this reading, it is clear that either the psychologists have overlooked something important for a long time or that the methodology of economists begets different answers. This paper intends to find out, which it is.

We re-examine the age–happiness relationship and delve into the methodological aspects to provide an explanation for the difference of opinion between economists and psychologists. We essentially want to know if the U-shape that economic scholars find is an artefact or real, and what the actual relationship between age and life satisfaction is. We re-examine the age–happiness relationship in three often-used panel datasets, the German Socio Economic Panel (the GSOEP), the British Household Panel Survey (BHPS), and the Household Income Labour Dynamics Australia (HILDA), which all have an extensive set of variables on the individual level. This data-richness allows us to not only replicate the findings of other studies based on cross-sectional data, but, furthermore, allows us to explore the dynamic interplay between age, covariates, unobserved heterogeneity, and happiness.

The format of this paper is to let the solution to the puzzle of the age–happiness relationship progressively unfold. We first briefly review the recent literature where we summarise the main findings of others, as well as their methodology. Then we present the data we have and show that we can indeed replicate a U-shape in happiness when we run similar regressions to those in the literature. We then go through a succession of reasons for both the raw relationship between happiness and age in these panels, as well as the changes in coefficients of age-related variables as more factors are included. This includes the possibility: that the age–happiness relationship is dominated by a happiness reduction found in early adulthood (age 18–22); that found age effects are due to estimation biases arising from selectivity, or; that it is a truly robust finding. We find that selection, i.e. fixed effects, and are extremely important for the age–happiness puzzle. Not only does the inclusion of fixed-effects change the coefficients of important age-varying factors (such as employment and income), which in turn changes the found residual effects of age directly, but it also turns out that the raw relation is heavily tainted by selection effects; the panels seem to over-sample particularly happy very old individual and particularly unhappy middle age individuals, leading these datasets to exaggerate the happiness decline in middle-age and to underestimate the decline in very old age.

## 2. Literature review

Whilst a lot of the economic literature on the age–happiness relationship is recent, there have been earlier discussions of it (see Theodossiou, 1998 for a discussion of the history of this issue). Until the early 2000s, the opinion of economists about the effect of age was still divided. Clark and Oswald (1994) found a U-shaped pattern for the UK, whilst Winkelmann and Winkelmann (1998) found no U-shape in happiness but simply a very strong negative effect of age. Easterlin et al. (1993) using 20 years of the US General Social Survey concluded that life satisfaction is almost flat in age, with neither a U-shape nor a negative slope. Alesina et al. (2004) and van Praag et al. (2000) even found an inverted U-shape.

Despite this early controversy, nearly all recent papers come down on the side of a U-shaped relationship between happiness and age. Blanchflower and Oswald (2001, 2004) simply state that 'Wellbeing is U-shaped in age'. Gerdtham and Johannesson (2001) also report a U-shape in age with a minimum around the age of 55. Hayo and Seifert (2003) and Seifert (2003) also report a U-shape and call the U-shaped age effect a 'typical finding in happiness regressions'. The most comprehensive study to date is Blanchflower and Oswald (2007) who combine cross-sectional data for the US, Europe, and the World Value Survey. In total, they have about 800,000 respondents in over 60 countries for which they all report a U-shape in happiness and age. Clark (2006), (p. 14) claims some robustness with respect to methodology for this finding when he concludes that '*even controlling for individual fixed effects, . . . life satisfaction . . . remains U-shaped in age*'.

In order to get a feeling for the role of methodology in these findings, we reproduce in Tables 1a and 1b the main findings of the recent economic studies on the U-shape between age and happiness. The statistical model used in these studies generally takes the form:

$$LS_{it} = \alpha + X_{it}\beta_1 + \beta_2age + \beta_3age^2 + \varepsilon_{it}$$

where,

$LS_{it}$ : life satisfaction (individual happiness)

$\alpha$ : constant

$X_{it}$ : time-variant socio-demographic variables (e.g. income, health, employment status, relationship status, etc.)

$age + age^2$ : age effects

$\varepsilon_{it}$ : error term.

Importantly, in the economics of happiness literature, the existence of a U-shape is inferred from the combination of a negative coefficient on *age* and a positive coefficient on *age*<sup>2</sup> in happiness regressions. In the analysis sections of this paper we show the found coefficients on age and age-squared and detail the source of the data and the estimation method. We may mention already that all the studies included in this table also use other personal variables in the same regression. The controls mainly include measures for employment, income, partnerships, the number of children, education and, sometimes, indicators of where someone lives.

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