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Is Envy Harmful to a Society's Psychological Health and Wellbeing? A Longitudinal Study of 18,000 Adults

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Abstract

Nearly 100 years ago, the philosopher and mathematician Bertrand Russell warned of the social dangers of widespread envy. One view of modern society is that it is systematically developing a set of institutions -- such as social media and new forms of advertising -- that make people feel inadequate and envious of others. If so, how might that be influencing the psychological health of our citizens? This paper reports the first large-scale longitudinal research into envy and its possible repercussions. The paper studies 18,000 randomly selected individuals over the years 2005, 2009, and 2013. Using measures of SF-36 mental health and psychological well-being, four main conclusions emerge. First, the young are especially susceptible. Levels of envy fall as people grow older. This longitudinal finding is consistent with a cross-sectional pattern noted recently by Nicole E. Henniger and Christine R. Harris, and with the theory of socioemotional regulation suggested by scholars such as Laura L. Carstensen. Second, using fixed-effects equations and prospective analysis, the analysis reveals that envy today is a powerful predictor of worse SF-36 mental health and well-being in the future. A change from the lowest to the highest level of envy, for example, is associated with a worsening of SF-36 mental health by approximately half a standard deviation ($p < 0.001$). Third, no evidence is found for the idea that envy acts as a useful motivator. Greater envy is associated with slower -- not higher -- growth of psychological well-being in the future. Nor is envy a predictor of later economic success. Fourth, the longitudinal decline of envy leaves unaltered a U-shaped age pattern of well-being from age 20 to age 70. These results are consistent with the idea that society should be concerned about institutions that stimulate large-scale envy.

Keywords: Envy, age, SF-36, mental health, well-being, longitudinal data

"Of all the characteristics of ordinary human nature, envy is the most unfortunate … not only does the envious person wish to inflict misfortune… but he is also himself rendered unhappy by envy….Whoever wishes to increase human happiness must … diminish envy."

Bertrand Russell, 1930, The Conquest of Happiness, 1st edition,
George Allen & Unwin, London.

There is growing interest -- partly because of the rise of social media -- in the possible psychological harm done within a society by widespread envy and social comparison. Studies such as Appel, Gerlach, & Crusius (2015), Tandoc, Ferrucci & Duffy (2015), Verduyn et al. (2015), Taylor & Strutton (2016), Christakis & Shakya (2017), and Shensa et al. (2017) document recent evidence on connections between social-media use, envy, and lower mental well-being. A second literature, on related concerns about advertising and psychological well-being, is beginning to emerge (Opree, Buijzen, & van Reijmersdal, 2016). Brain scientists have also recently become interested in the detection of human envy (for example, Fliessbach et al. 2007).

What might large-scale envy do to the mental health of a whole society? Currently, almost nothing is known by social scientists about the longitudinal consequences of envy. A search on the Web of Science, for example, reveals that, although there are over 2000 published papers in social-science journals that mention the topic of envy, essentially none of this research uses statistically representative or large-scale longitudinal data. This is for the understandable reason that data sets on recorded envy levels have been exceptionally rare.

The contribution of this paper is to try to fill the lacuna by providing new evidence on the longitudinal nature of envy and psychological well-being. The study examines data on envy using a sample of 18,000 randomly selected men and women who are interviewed in 2005 and then re-interviewed in the years 2009 and 2013. This data set is a statistically

representative population sample and comes from the nation of Australia. The paper addresses research questions that include:

What are the empirical connections, in the short and long run, between envy and psychological health?

How do envious feelings alter over the human life-cycle?

Might being envious (or perceiving oneself to be envious) have a valuable or positive side -- perhaps as a kind of motivator?

Are changes in envy part of the explanation for U-shaped well-being over the course of life?

The third of these questions links to an emerging literature on the potential difference between 'malicious' envy and 'benign' envy (Parks, Rumble, & Posey 2002; Smith & Kim, 2007; and Van de Ven et al. 2009, and recent arguments against such a distinction have been proposed by Cohen-Charash & Larson 2017). A later part of the paper provides a test of whether self-reported enviousness is associated with beneficial outcomes in the future. However, the survey data at hand do not allow us to isolate the specific form of envy (i.e., malicious, benign, or general) which may be driving this result.

Background

The modern study of human well-being has led to a large literature across the behavioral, social, and medical sciences (e.g., Diener et al., 1999; Easterlin, 2003; Steptoe, Wardle, & Marmot, 2005; Scollon & Diener, 2006; Fowler & Christakis, 2008; De Neve & Oswald, 2012; Boyce et al., 2013; White et al., 2013). A particular concern has been that of how happiness and mental health alter as people grow older (Mroczek & Spiro, 2005; Blanchflower & Oswald, 2008; Stone et al., 2010; Lang et al., 2011; Cheng, Powdthavee, & Oswald 2017; Graham & Pozuelo, 2017), and some of the latest research has begun to examine the different constituent emotions -- such as worry, anger, joy -- that lie below, and

are presumably themselves determining elements of, the lifetime pattern of overall human well-being. Research on these detailed emotions is largely in its infancy. Moreover, with important but rare exceptions (Scollon & Diener, 2006; Kunzmann, Richter, & Schmukle, 2013; Charles, Reynolds, & Gatz, 2001), much of the large-scale research has been cross-sectional (Stone et al., 2010; Henniger & Harris, 2015; Van de Ven, 2017).

It is necessary for the methodology of studies such as the current one to take the view that, although people's survey answers about how they feel will almost certainly contain some measurement error, such survey answers also provide some element of reliable information. There are precedents for this and there is evidence that people mean what they say (Vetschera & Kainz, 2013; Oswald & Wu, 2010). More broadly, the paper is a contribution to the existing literature on envy, which includes work in a number of sciences (Fliessbach et al., 2007; Takashi et al., 2009; Swencioncis & Fiske, 2014) and social psychology (Buss et al., 1992; Parks, Rumble, & Posey 2002; Smith & Kim 2007; Van De Ven, Zeelenberg, & Pieters, 2010; Hill, DelPriore, & Vaughan, 2011; Lange & Crusius, 2015). Research by economists includes Varian (1974), Kirchsteiger (1994), Mui (1995), Feldman & Kirman (1974), Grinblatt, Keloharju & Ikaheimo (2008), Chen & Li (2009) and Winkelmann (2012). A related set of studies also examines the empirical association between dispositional envy and individual mental health outcomes. For example, Smith et al. (1999) study a sample of undergraduate university students and find self-reported measures of envy to be negatively correlated with one's self-esteem and positively correlated with the incidence of depression. Similarly, Gold (1996) reports an association between enviousness and anxiety as well as depression. Nevertheless, the present paper's analysis is of a different kind than has previously been done. This is due to our ability to follow the same representative group of randomly selected adults over a prolonged period of time, while observing changes in their feelings of envy and in their mental health and subjective well-being as well as later economic outcomes.

Method

The data come from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. This is a nationally-representative longitudinal survey which was first conducted in 2001. The HILDA Survey collects annual information from members of Australian households who are at least 15 years of age. It began providing information on a total of 13,969 individuals from 7,682 different households interviewed since the first survey wave. Data are collected each year by face-to-face interviews and self-completion questionnaires. The former technique is mainly used to record demographic and socioeconomic information, while the latter is used to measure respondent health behaviours and lifestyle choices. Overall, quality individual-level information is collected on a variety of general and specialised topics including labour market dynamics, income and education levels, family composition, as well as the physical and emotional well-being of individuals.

The analysis in the present study uses Waves 5, 9 and 13 (years 2005, 2009, 2013) of the HILDA Survey. It is in these survey waves only that the unique and direct measures of individual feelings of envy (and jealousy) are available. The exact questions asked of the survey respondents are worded as follows:

> "*How well do the following words describe you? For each word, cross one box to indicate how well that word describes you. There are no right or wrong answers*." – *Envious; Jealous.*

with possible responses ranging on a seven-point scale from (1) '*Does not describe me at all*' to (7) '*Describes me very well*'. These are the main dependent variables used in our fixed-effects regression equations. After excluding respondents with missing information on the key

outcome and other control variables, the total available sample is 18,345 individuals (aged 15 to 101) and 34,019 person-year observations. Overall, the average self-reported envy score is 2.66 with a standard deviation of 1.42. The median response to this question is equal to 2, and the distribution of responses is positively skewed, with more than 70 percent of respondents choosing an envy score of less than 4 out of 7. A similar distribution of responses is apparent for self-reported jealousy, with a mean score of 2.37 and a standard deviation of 1.46.

A referee has pointed out that we could use the word 'enviousness' rather than 'envy'. The former is almost never used in the scientific published literature (a search of the Web of Science produces 4 mentions compared to approximately 2300 mentions); conventional dictionaries typically treat the words as synonyms. In this paper we adopt the latter term.

We also checked, and replicated, the analysis using measures of jealousy (rather than envy). Because the statistical equation structures turn out to be similar, we have concentrated on envy; equivalent results on jealousy are available on request. Table 1 displays the overall response frequency for the envy outcome measure.

Another feature of the HILDA Survey is the available information on recent occurrences of major life events including shocks to personal finances (e.g., winning the lottery, receiving an inheritance, or going bankrupt); getting married; being promoted at work; being fired; and becoming retired. Specifically, respondents are told:

> *We now would like you to think about major events that have happened in your life over the past 12 months. For each statement cross the YES box or the NO box to indicate whether each event happened during the past 12 months. If you answer 'YES', then also cross one box to indicate how long ago the event happened or started. This information is given by quarter.*

Since such positive and negative life events are likely to influence human envy and jealousy levels, we also account for these shocks in our formal analysis. The life event covariates are summarised in Table S3. In the total sample, we observe close to 25,000 reported life events, with the most common event being 'change of residence' (17% of total

occurrences) followed by 'change of job' (13%) and 'serious personal injury or illness' (9%). The death of a spouse or child is the least observed event (1%). A long list of other socioeconomic and lifestyle factors -- such as income, physical health, employment and marital status, which are also included as added controls in the regression equations -- is summarised in Table S1.

The paper uses data on two different measures of psychological well-being. As a general outcome measure of a person's mental health, we take the SF-36 Mental Health Index, which forms one of eight aggregated scales in the Medical Outcomes Short Form (SF-36) Questionnaire. The SF-36 is a one of the most widely used and validated self-completion measures of health status available (Butterworth & Crosier 2004). The Mental Health Index is a 5-item scale consisting of the following five questions "How much of the time in the previous 4 weeks: Have you been a very nervous person? Have you felt so down in the dumps that nothing could cheer you up? Have you felt calm and peaceful? Have you felt down? Have you been a happy person?" The raw survey responses are transformed and standardised to a 100-point scale ranging from 0 (worst) to 100 (best mental health). This aggregated variable has a mean of 74.65 and a standard deviation of 16.82. Second, reported life-satisfaction data are derived from the question: "All things considered, how satisfied are you with your life?" Respondents are told to: "Pick a number between 0 and 10 to indicate how satisfied you are", and that "the more satisfied you are the higher number you should pick". The full sample mean is 7.91 with a standard deviation of 1.41. About two-thirds of respondents give a life satisfaction score of more than 7 out of 10.

Results

Fig. 1 illustrates the study's first finding, which is based on 34,019 person-year observations. It plots the (uncorrected) downward-sloping relationship between envy and age.

Here the level of envy is scaled using seven integers in the way described in Table 1. The mean level of envy falls from approximately 3.2 among young people to approximately 1.9 among those older than 75 years. Women report slightly lower scores than men (shown in Fig. S1 in the Supplemental Material). Figure 1 is effectively cross-sectional, so is subject to standard statistical concerns, including the possibility that the negative slope is some form of spurious pattern generated by cohort effects.

Table 2 turns to a formal longitudinal analysis of envy. Here the individuals are followed through time and the statistical calculations adjust for a range of other influences. Table 2 provides 'within-person' estimates using fixed-effects regression equations. These are derived by observing how the envy scores of individuals alter as those individuals themselves grow steadily older between 2005 and 2013. In Table 2, the reference category is 15-24 years old. Hence the Table shows that the group aged 25-34 have, in the final column of Table 2, approximately -0.18 lower envy than those aged 15-24. The group aged greater than 75 years old have -0.31 lower envy. These findings are qualitatively consistent with cross-sectional results by Henniger & Harris (2015). They are also compatible with Laura Carstensen's socioemotional selectivity theory and related literature (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000; Charles, Mather, & Carstensen 2003; Gross et al., 1997; Brassen et al., 2012) in which it is postulated that aging helps humans to regulate their feelings of negative affect. The complete regression equations behind Table 2 can be seen in Table S4 in the Supplemental Material.

Another related and important strand of empirical research is that on the difference between positive and negative hedonic well-being, and in particular the finding that while positive human emotions tend to track together, negative emotions do not (see Stone and Mackie, 2013). To this end, we also compared the empirical patterns found for our self-reported envy and jealously measures to those which may arise for other negative emotions or experiences such as feeling 'fretful'; 'moody'; 'temperamental'; and 'touchy'. These

measures of negative hedonic well-being are also available under the Emotional Stability scale in the HILDA Survey. Similar to the enviousness variable, survey respondents were simply asked to indicate how well the given words described them, ranging from (1) 'Does not describe me at all' to (7) 'Describes me very well'. Figure S2 presents the raw average scores by age group, while Table S12 contains more formal within-person analysis that also takes into account potential influences from other important covariates such as income, education, employment and marital status. Overall, we find quite similar aging patterns as for self-reported envy. Older adults in HILDA perceive themselves are being less moody, temperamental, fretful, and touchy than young adults. Most of the estimated scores decrease monotonically with age and are largely unaffected by the inclusion of other demographic and socioeconomic controls. The observed patterns are generally consistent with those of a related kind that are reported earlier by Stone et al. (2010), for example, where the authors analyse responses from a representative survey of more than 340,000 US citizens. Stone et al. (2010) show that certain negative well-being measures -- such as stress, anger, and worry -- steadily decline with age. Graham and Pozuelo (2017) provide evidence of a hill-shaped pattern for stress over age within more than 30 countries around the world.

Tables 3A and 3B examine links between changes in envy and changes in mental well-being (measured, respectively, using a simple life-satisfaction score and SF-36 mental health score). This longitudinal relationship is substantial. The dependent variable in the fixed-effects equations in Table 3A is life satisfaction on a scale from 0 to 10. Table 3A's equations reveal that, in panel data, there is a strong inverse association between the two variables. Rises in envy are associated with falls in well-being. The key coefficient in Table 3A is -0.05, which implies that a movement from the lowest level of envy to the highest level of envy (which would be a movement of 6 points) is associated with approximately a drop of 0.3 points in life satisfaction (-0.05 times 6). To aid understanding of the scaling implied in within-person longitudinal data, Table S5A reveals, for example, that marital separation is

associated with a change of -0.4 life-satisfaction points and a long-term health problem is associated with a change of -0.14 life-satisfaction points.

Table 3B uses SF-36 mental-health data. In the first column of Table 3B, the coefficient on envy is approximately -1.11. As envy is scaled here from 1 to 7, this implies that a movement from the lowest level of envy to the highest level would be associated with a fall of approximately 7 points on an SF-36 mental health scale. This is slightly less than half a standard deviation in mental health.

What these sets of fixed-effects equations demonstrate is that contemporaneous changes in reported envy are inversely correlated, both in a substantive and statistically significant sense, with changes in people's satisfaction with life. To try to probe this potential connection in more detail, later tables turn to a different form of analysis in which envy today is considered as a possible predictor of later levels of psychological well-being. In that spirit, it is conceptually feasible that envy brings gains: it might be Nature's disciplining device. Perhaps envy is a painful human emotion in the short run but one that motivates a person to achieve more in the future.

To try to test whether envy is good or bad for future psychological well-being, Tables 4A and 4B gives results for a form of 'prospective' analysis. Here the dependent variable is the value in period t+1 (where that is four years ahead), measured in the two ways previously adopted. Because the test is for envy as a motivating device for the future, the sample seems most appropriately the set of individuals under the typical upper working-age of 70, so that is what is reported in the two parts of Table 4.

The main independent variable in Table 4A and 4B is envy in the current period, which enters with a negative coefficient of -0.05 in the final column of Table 4A, and a coefficient of -0.61 in the final column of Table 4B. The higher is envy today, therefore, the lower is mental well-being in the future. Quantitatively, the size of the link between envy and SF-36 mental health is large and is the same as earlier in the fixed-effects estimates. In column 1 of

Table 4B, for example, the coefficient on the lagged dependent variable is 0.56, and the coefficient on envy is -0.58. Hence the putative long-run consequences of envy can be viewed here as given approximately by a coefficient of -1.3 on envy (where we solve out for the implied long-run equilibrium of a discrete difference equation using the calculation [1/(1–0.56) multiplied by -0.58] = 1.3 approx.). Tables S6A and S6B in the Supplemental Material discusses the other current variables that are predictive of future well-being and mental health.

Table 5 looks at the equivalent issue for future economic prosperity. It, also, fails to find evidence for a beneficial long-term effect from being envious today. In the final column of Table 5, the coefficient on envy does enter positively, but it has a tiny coefficient (of 0.01) and a p-value of 0.204. It is not possible to reject the null hypothesis of a zero effect from envy upon later income.

Finally, Tables 6A and 6B turns to the life-cycle pattern of mental well-being. As in some previous research (Stone et al., 2010; Graham & Pozuelo, 2017; Lang et al., 2011; Cheng, Powdthavee, & Oswald 2017), there is evidence of a U shape in age. The first column of Table 6A estimates a fixed-effects life satisfaction equation in which banded dummy variables are used for the different age categories (younger than 25, 25-34,…65-70). From the youngest category to the category 45-54, the fall in life satisfaction is -0.09 points; from that point on up to the highest age category, the rise is to 0.11, which is an increase of 0.2 life satisfaction points from the midlife trough up to age 70. The next column in Table 6A enters an extra variable for envy. It can be seen that the coefficients on the banded age dummies are hardly affected. As would be expected, these coefficients individually have large standard errors. In columns 3 and 4 of Table 6A, a quadratic equation fits the data with p values below 0.001. The U shape in life satisfaction in column 3 of Table 6A is unaffected by the inclusion, in column 4, of the envy variable. This finding is also illustrated in Fig. 2 and is broadly consistent with the Mroczek-Spiro life satisfaction curve (Mroczek & Spiro, 2005) estimated over the age range from approximately 40 years to approximately 70 years. In one

sense, this is discouraging: it might be hoped that the perplexing rise in life satisfaction from midlife could be explained partly by a decline in feelings of envy. In another sense, it is scientifically valuable, because it implies that evidence for a U shape is apparently robust even to the inclusion of such a powerful variable. The standard errors in Table 6B are, broadly, too large to allow definite conclusions about aging, although in the final column there are signs of a convex relationship between SF-36 mental health and age.

Further checks and details are reported in Tables S7-S11 in the Supplemental Material. These lay out a set of further regression equations.

Why does envy not mediate the ageing relationship? Existing studies provide empirical support that some of the observed U shaped pattern is due to biology (Weiss et al., 2012), emotional wisdom and regulation (Baltes and Baltes, 1990; Carstensen et al. 2003; Scheibe and Blanchard-Fields, 2009), and unmet expectations (Schwandt, 2016). While it is difficult to know whether any of the suggested mechanisms also interact with reduced feelings of envy observed in later years, one reason why the inclusion of envy may not alter the estimated U shape is purely mathematical in nature. It is due to the fact that the observed statistical relations between mental well-being and envy, and between envy and age, both appear to be linear (see Figures 1 and S3). As a result, the curvature of the age U-shape in well-being, which is determined by the second derivative of life satisfaction with respect to age, remains unaffected by changes in envy over age. However, the steady decline in reported feelings of envy with age does alter the turning point of the U shaped relationship by a year or two, that is, the age at which minimum happiness occurs. The latter partly depends on the size of the envy coefficient that enters a life satisfaction equation, which we estimate to be fairly small (see Table 3).[1]

[1] To illustrate this, consider the following life satisfaction and envy functions: LS = f (Envy, Age, Age^2) and Envy = g (Age), where LS is linear in the Envy argument, and Envy is considered to be linear in Age. We can then express the two equations as LS = a + b Envy + c Age + d Age^2 and Envy = e + h Age. Substituting the latter equation into the former: LS = a + be + (bh + c) Age + d Age^2. The first derivative of LS w.r.t. Age is equal to: bh + c + 2d Age, where bh is a constant term partially determining the magnitude of the change in LS

Discussion

One view of the modern world, and especially of western society, is that it is unconsciously developing a set of institutions -- including social media and large-scale advertising -- that make people feel envious and inadequate. If so, it is of scholarly and policy importance to try to understand how envy might affect people's mental health.

This paper is the first to be able to study envy within a nationally representative longitudinal data set. The paper offers four contributions. First, it cross-validates in panel data the recent cross-section result of Henniger & Harris (2015) that older adults have monotonically lower levels of envy than young adults. Second, it shows that envy today is predictive of reduced psychological health, both contemporaneously and in the future. Third, the paper can find no evidence that envy is beneficial (for example, as a future economic motivator). Fourth, statistical evidence for U-shaped mental well-being is independent of declining lifetime levels of envy.

For policy-makers, the existence of these mechanisms raises the concern, as Bertrand Russell surmised, that a happier society may be one that somehow manages to foster lower levels of envy. Whether that would be feasible, and if so whether it might be achieved by some conscious government strategy, perhaps through policy on the nature of advertising or

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as individuals age, with h being the corresponding component due to a change (estimated decrease) in one's level of Envy. Consequently, the second derivative of LS w.r.t. Age is equal to: 2d, which is independent of the above bh term. The minimum point of the expanded LS function occurs at age: $-(bh+c)/(2d)$, where we find $c < 0$ and $|c| > bh$. Since the magnitude of b is reasonably small (see Table 3), when compared to the sum of other influences upon the well-being gradient, the turning point of the U curve is moved only by a comparatively small amount (i.e., a year or two).

education or social media, are profound issues on which this study cannot adjudicate. Much remains to be understood about envy and mental health in modern society. These issues demand attention.

References

Appel H, Gerlach AL, Crusius J (2015). The interplay between Facebook use, social comparison, envy, and depression. *Current Opinion in Psychology* 9, 44-49.

Baltes P B, Baltes M M (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. *Successful Aging: Perspectives from the Behavioral Sciences*, *1*(1), 1-34.

Blanchflower DG, Oswald AJ (2008). Is well-being U-shaped over the life cycle? *Social Science & Medicine* 66, 1733-1749.

Boyce CJ, Wood AM, Banks J, Clark AE, Brown GDA (2013). Money, well-being and loss averson: Does an income loss have a greater effect on well-being than an equivalent income gain? *Psychological Science* 24, 2557-2562.

Brassen S, Gamer M, Peters J, Gluth S, Büchel C (2012). Don't look back in anger! Responsiveness to missed chances in successful and non-successful aging. *Science* 336, 612-614.

Buss D M, Larsen RJ, Westen D, Semmelroth J (1992). Sex differences in jealousy: Evolution, physiology, and psychology. *Psychological Science*, 3(4), 251-255.

Butterworth P, Crosier T (2004). The validity of the SF-36 in an Australian National Household Survey: Demonstrating the applicability of the Household Income and Labour Dynamics in Australia (HILDA) Survey to examination of health inequalities. *BMC Public Health*, *4*(1), 44.

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 LL, Pasupathi M, Mayr U, Nesselroade J R (2000). Emotional experience in everyday life across the adult life span. *Journal of Personality and Social Psychology*, *79*(4), 644-655.

Charles ST, Mather M, Carstensen LL (2003). Aging and emotional memory: The forgettable nature of negative images for older adults. *Journal of Experimental Psychology - General* 132(2), 310–324.

Charles ST, Reynolds CA, Gatz M (2001). Age-related differences and change in positive and negative affect over 23 years. *Journal of Personality and Social Psychology* 80(1), 136-151.

Chen Y, Li SX (2009). Group identity and social preferences. *American Economic Review* 99(1), 431-457.

Cheng T, Powdthavee N, Oswald AJ (2017). Longitudinal evidence for a midlife nadir in human well-being: Results from four data sets. *Economic Journal* 127 (599), 126-142.

Christakis N, Shakya HB (2017). Association of Facebook use with compromised well-being: A longitudinal study. *American Journal of Epidemiology* 185(3), 203-211.

Cohen-Charash Y, Larson EC (2017). An emotion divided: Studying envy is better than studying 'benign' envy and 'malicious' envy. *Current Directions in Psychological Science* 26(2), 174-183.

De Neve J, Oswald, AJ (2012). Estimating the influence of life satisfaction and positive affect upon later income using sibling fixed effects. *Proceedings of the National Academy of Sciences of the USA* 109, 19953-19958.

Diener E, Suh EM, Lucas RE, Smith HL (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin* 125(2), 276-302.

Easterlin RA (2003). Explaining happiness. *Proceedings of the National Academy of Sciences of the USA* 100(19), 11176-11183.

Feldman A, Kirman A (1974). Fairness and envy. *American Economic Review* 64(6), 995-1005.

Fliessbach K, Weber B, Trautner P, Dohmen T, Sunde U, Elger CE, Falk A (2007). Social comparison affects reward-related brain activity in the human ventral striatum. *Science* 318, 1305-1308.

Fowler JH, Christakis NA (2008). Dynamic spread of happiness in a large social network: Longitudinal analysis over 20 years in the Framingham Heart Study. *BMJ* 337, a2338.

Gold BT (1996). Enviousness and its relationship to maladjustment and psychopathology. *Personality and Individual Differences* 21, 311-321.

Grinblatt M, Keloharju M, Ikaheimo S (2008). Social influence and consumption: Evidence from the automobile purchases of neighbors. *Review of Economics and Statistics* 90(4), 735-753.

Graham C, Pozuelo JR (2017). Happiness, stress, and age: How the U curve varies across people and places. *Journal of Population Economics* 30(1), 225-264.

Gross JJ, Carstensen LL, Pasupathi M, Tsai J, Skorpen CG, Hsu AYC (1997). Emotion and aging: Experience, expression, and control. *Psychology and Aging* 12(4), 590–599.

Henniger NE, Harris CR (2015). Envy across adulthood: The what and the who. *Basic and Applied Psychology* 37(6), 303–318.

Hill S E, DelPriore DJ, Vaughan PW (2011). The cognitive consequences of envy: attention, memory, and self-regulatory depletion. *Journal of Personality and Social Psychology 101*(4), 653-666.

Kirchsteiger G (1994). The role of envy in ultimatum games. *Journal of Economic Behavior & Organization* 25(3), 373-389.

Kunzmann U, Richter D, Schmukle SC (2013). Stability and change in affective experience across the adult life span: Analyses with a national sample from Germany. *Emotion* 13(6), 1086–1095.

Lang IA, Llewellyn DJ, Hubbard RE, Langa KM, Melzer D (2011). Income and the midlife peak in common mental disorder prevalence. *Psychological Medicine* 41, 1365-1372.

Lange J, Crusius J (2015). The tango of two deadly sins: The social-functional relation of envy and pride. *Journal of Personality and Social Psychology*, 109(3), 453-472.

Mroczek DK, Spiro III A (2005). Change in life satisfaction during adulthood: findings from the veterans affairs normative aging study. *Journal of Personality and Social Psychology* 88(1), 189-202.

Mui VL (1995). The economics of envy. *Journal of Economic Behavior & Organization* 26(3), 311–336.

Opree SJ, Buijen M, van Reijmersdal E (2016). The impact of advertising on children's psychological well-being and life satisfaction. *European Journal of Marketing* 50(11), 1975-1992.

Oswald AJ, Wu S (2010). Objective confirmation of subjective measures of human well-being: Evidence from the USA. *Science* 327, 576-579.

Parks AA, Rumble AC, Posey DC (2002). The effects of envy on reciprocation in a social dilemma. *Personality & Social Psychology Bulletin*, 28, 509-520.

Scheibe S, Blanchard-Fields F (2009). Effects of regulating emotions on cognitive performance: what is costly for young adults is not so costly for older adults. *Psychology and aging*, *24*(1), 217.

Schwandt H (2016). Unmet aspirations as an explanation for the age U-shape in wellbeing. *Journal of Economic Behavior & Organization*, *122*, 75-87.

Scollon C N, Diener E (2006). Love, work, and changes in extraversion and neuroticism over time. *Journal of Personality and Social Psychology 91*(6), 1152-1165.

Shensa A, Escobar-Viera CG, Sidani JE, Bowman ND, Marshal MP, Primack BA (2017). Problematic social media use and depressive symptoms among US young adults: A nationally representative study. *Social Science & Medicine* 182, 150-157.

Smith RH, Kim SH (2007). Comprehending envy. *Psychological Bulletin* 133(1), 46–64.

Smith RH, Parrott WG, Diener E, Hoyle RH, Kim SH (1999). Dispositional envy. *Personality and Social Psychology Bulletin*, 25, 1007-1020.

Steptoe A, Wardle J, Marmot M (2005). Positive affect and health-related neuroendocrine, cardiovascular, and inflammatory processes. *Proceedings of the National Academy of Sciences of the USA* 102, 6508-6512.

Stone AA, Schwartz JE, Broderick JE, Deaton A (2010). A snapshot of the age distribution of psychological well-being in the United States. *Proceedings of the National Academy of Sciences of the USA* 107, 9985–9990.

Swencioncis JK, Fiske ST (2014). How social neuroscience can inform theories of social comparison. *Neuropsychologia* 56, 140–146.

Takashi H, Kato M, Matsura M, Mobbs D, Suhara T, Okubo Y (2009). When your gain is my pain and your pain is my gain: Neural correlates of envy and Schadenfreude. *Science* 32(5916), 937–939.

Tandoc EC, Ferrucci P, Duffy M (2015). Facebook use, envy, and depression among college students: Is Facebook depressing? *Computers in Human Behavior* 43, 139-146.

Taylor DG, Strutton D (2016). Does Facebook usage lead to conspicuous consumption? The role of envy, narcissism, and self-promotion. *Journal of Research in Interactive Marketing* 10(3), 231-248.

Van de Ven N (2017). Envy and admiration: Emotion and motivation following upward comparison. *Cognition and Emotion* 31(1), 193–200.

Van de Ven N, Zeelenberg M, Pieters R (2009). Leveling up and down: The experiences of benign and malicious envy. *Emotion* 9(3), 419-429.

Van de Ven N, Zeelenberg M, Pieters R. (2010). Warding off the evil eye: When the fear of being envied increases prosocial behavior. *Psychological Science* 21(11), 1671-1677.

Varian HR (1974). Equity, envy, and efficiency. *Journal of Economic Theory* 9(1), 63-91.

Verduyn P, Lee DS, Park J, Shablack H, Orvell A, Bayer J, Ybarra O, Jonides J, Kross E (2015). Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence. *Journal of Experimental Psychology - General* 144(2), 480-488.

Vetschera R, Kainz G (2013). Do self-reported strategies match actual behavior in a social preference experiment? *Group Decision and Negotiation* 22(5), 823–849.

Weiss A, King JE, Inoue-Murayama M, Matsuzawa T, Oswald AJ (2012). Evidence for a midlife crisis in great apes consistent with the U-shape in human well-being. *Proceedings of the National Academy of Sciences, 109*(49), 19949-19952.

White MP, Alcock I, Wheeler BW, Depledge MH (2013). Would you be happier living in a greener urban area? A fixed-effects analysis of panel data. *Psychological Science* 24, 920-928.

Winkelmann R (2012). Conspicuous consumption and satisfaction. *Journal of Economic Psychology* 33(1), 183–191.

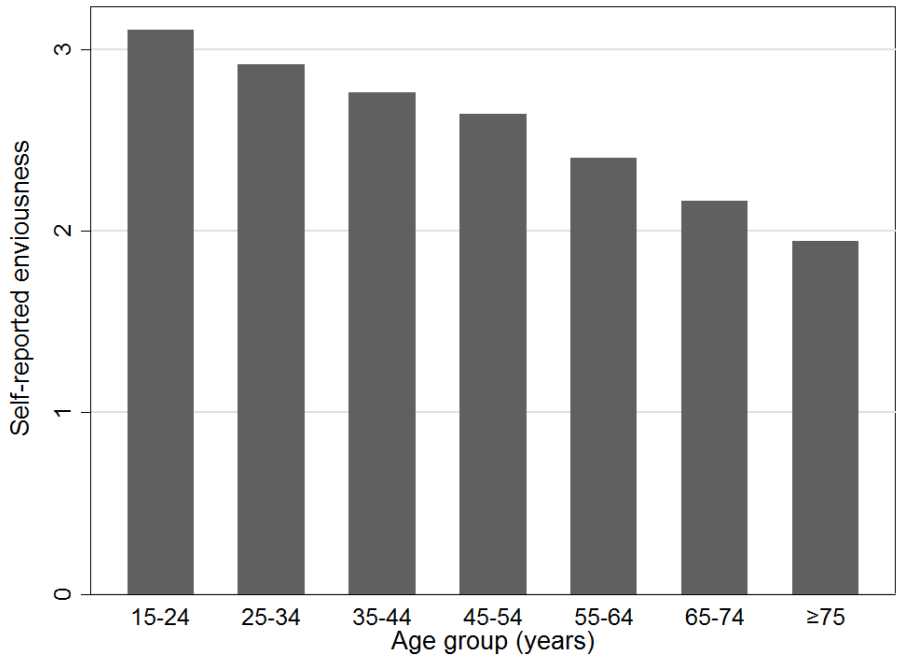
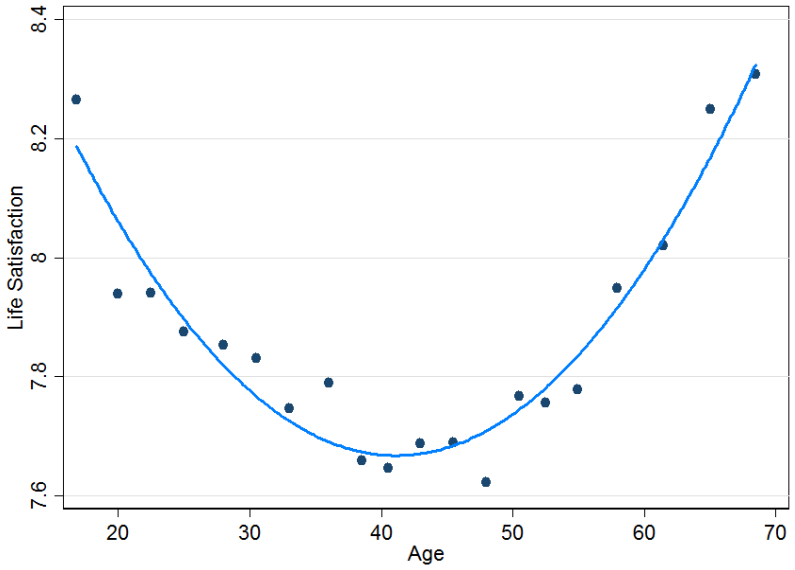


Figure 1: Self-reported Enviousness by Age Group

Notes: Self-reported enviousness ranges from 1 (lowest) to 7 (highest). Sample mean of self-reported enviousness is equal to 2.66 with a standard deviation of 1.42. Distribution of average self-reported envy scores, by age group: 3.10 (15-24 years), 2.92 (25-34 years), 2.76 (35-44 years), 2.64 (45-54 years), 2.40 (55-64 years), 2.16 (65-74 years), and 1.94 (≥75 years). Distribution of age groups is summarised in the Supplemental Material - Table S2. The above figure uses raw cross-sectional data, while Table 2 shows the relationship using within-person longitudinal data. Total sample contains 18,345 individuals and 34,019 person-year observations.

(a)



(b)

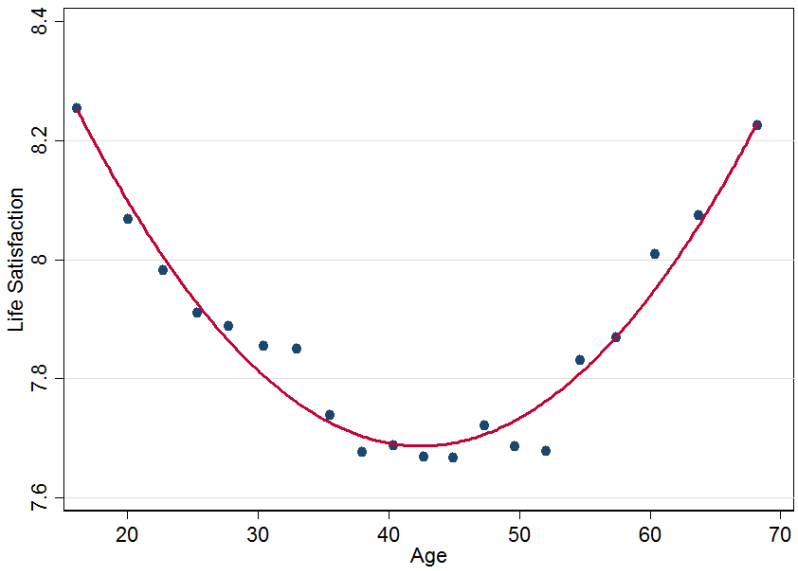


Figure 2: Longitudinal Evidence of a U-Shaped Relationship between Life Satisfaction and Age, *(a) with* and *(b) without* a control for individual feelings of envy.

Notes: Each dot measures the average life satisfaction of individuals of that particular age. The solid curves depict a fitted quadratic relationship as formally estimated using fixed-effects ('within-person') regression equations such as those in columns (3) and (4) of Table 6. The latter approach uses information on 'within-person' changes in life satisfaction as the same respondent steadily grows older, and not merely cross-sectional patterns between respondents of different age. The fitted (blue) curve in the top panel (a) does not control for individual self-reported feelings of envy. On the other hand, the fitted (red) curve in the bottom panel (b) controls for individual self-reported feelings of envy. Total sample contains 18,345 individuals and 34,019 person-year observations.

Table 1: Distribution of Envy Scores, HILDA Survey (2005, 2009, 2013)

"How well do the following words describe you?" – *Envious*	**Frequency**	**Percent**	**Cumulative frequency**
1 *"Does not describe me at all"*	8,212	24.14	24.14
2	10,126	29.77	53.91
3	6,276	18.45	72.35
4	5,462	16.06	88.41
5	2,704	7.95	96.36
6	891	2.62	98.98
7 *"Describes me very well"*	348	1.02	100.00
Total	34,019	100.00	

Notes: Total sample contains 18,345 individuals and 34,019 person-year observations.

Table 2: Longitudinal (Fixed-effects) Regression Models of Envy as a Function of Age, HILDA Survey (2005, 2009, 2013)

Dependent variable: *Self-reported Envy*	**(1)**			**(2)**			**(3)**		
	β	95% CI	*p*	β	95% CI	*p*	β	95% CI	*p*
Age group:									
25 to 34	-0.15	[-0.24, -0.07]	.000	-0.17	[-0.27, -0.08]	.000	-0.18	[-0.27, -0.08]	.000
35 to 44	-0.14	[-0.26, -0.03]	.013	-0.18	[-0.30, -0.05]	.006	-0.19	[-0.32, -0.06]	.003
45 to 54	-0.21	[-0.34, -0.07]	.002	-0.25	[-0.39, -0.10]	.001	-0.27	[-0.41, -0.12]	.000
55 to 64	-0.27	[-0.42, -0.12]	.000	-0.31	[-0.47, -0.15]	.000	-0.34	[-0.50, -0.17]	.000
65 to 74	-0.28	[-0.45, -0.12]	.001	-0.31	[-0.49, -0.13]	.001	-0.33	[-0.52, -0.15]	.000
≥ 75 years old	-0.26	[-0.46, -0.06]	.011	-0.28	[-0.50, -0.07]	.010	-0.31	[-0.52, -0.09]	.005
Constant	2.83	[2.73, 2.93]	.000	2.79	[2.52, 3.05]	.000	2.78	[2.52, 3.05]	.000
Socioeconomic controls	No			Yes			Yes		
Major life event controls	No			No			Yes		
Overall R^2	.043			.033			.033		
Number of individuals	18,345			18,345			18,345		
Number of observations	34,019			34,019			34,019		

Notes: This table presents three regression equations that are to be read vertically. The coefficients give the size of the longitudinal effects upon envy of different age bands (after adjusting for other influences on envy). The regression equations estimate the within-person changes in envy as people grow older. Dependent variable is *Self-reported Envy* level [range: 1 to 7]. Age-group categories are summarised in the Supplemental Material Table S2. The base (reference) age category is '15 to 24' years. Socioeconomic and other lifestyle controls are summarised in Table S1. Major life-event controls are summarised in Table S3. The full estimation results (with a complete set of control-variable coefficient estimates) are provided in Table S4.

Table 3A: Longitudinal (Fixed-effects) Regression Models of Life Satisfaction on Envy, HILDA Survey (2005, 2009, 2013)

Dependent variable: *Life Satisfaction*	**(1)**			**(2)**			**(3)**		
	β	95% CI	*p*	β	95% CI	*p*	β	95% CI	*p*
Envy	-0.05	[-0.07, -0.03]	.000	-0.05	[-0.07, -0.03]	.000	-0.05	[-0.06, -0.03]	.000
Constant	8.05	[8.00, 8.09]	.000	7.19	[6.91, 7.46]	.000	7.32	[7.04, 7.59]	.000
Socioeconomic controls	No			Yes			Yes		
Major life event controls	No			No			Yes		
Overall R^2	.022			.155			.169		
Number of individuals	18,345			18,345			18,345		
Number of observations	34,019			34,019			34,019		

Notes: This regression equations estimate the within-person changes in life satisfaction as people grow older. Dependent variable is *Life Satisfaction* [range: 0 to 10]. Self-reported life satisfaction is derived from the question: "*All things considered, how satisfied are you with your life?*" Respondents are told to: "*Pick a number between 0 and 10 to indicate how satisfied you are*", and that "*the more satisfied you are the higher number you should pick*". The sample mean is 7.91 with a standard deviation of 1.41. About two-thirds of respondents report a life satisfaction score of more than 7 out of 10. The full estimation results (with a complete set of control-variable coefficient estimates) are provided in Table S5A.

Table 3B: Longitudinal (Fixed-effects) Regression Models of SF-36 Mental Health on Envy, HILDA Survey (2005, 2009, 2013)

Dependent variable: *SF-36 Mental Health Index*	**(1)**			**(2)**			**(3)**		
	β	95% CI	*p*	β	95% CI	*p*	β	95% CI	*p*
Envy	-1.11	[-1.30, -0.91]	.000	-1.12	[-1.30, -0.93]	.000	-1.08	[-1.26, -0.89]	.000
Constant	77.59	[77.08, 78.11]	.000	59.93	[56.88, 62.97]	.000	61.31	[58.25, 64.38]	.000
Socioeconomic controls	No			Yes			Yes		
Major life event controls	No			No			Yes		
Overall R^2	.051			.228			.245		
Number of individuals	18,325			18,325			18,325		
Number of observations	33,976			33,976			33,976		

Notes: This regression equations estimate the within-person changes in overall mental health as people grow older. Dependent variable is *SF-36 Mental Health Index* [range: 0 to 100]. The SF-36 *Mental Health Index* is a 5-item scale consisting of the following five questions "How much of the time in the previous 4 weeks: Have you been a very nervous person? Have you felt so down in the dumps that nothing could cheer you up? Have you felt calm and peaceful? Have you felt down? Have you been a happy person?" The raw survey responses are transformed and standardised to a 100-point scale ranging from 0 (worst) to 100 (best mental health). The full sample mean is equal to 74.65 with a standard deviation of 16.82. The full estimation results (with a complete set of control-variable coefficient estimates) are provided in Table S5B.

Table 4A: Prospective Analysis of Future Changes in Life Satisfaction (period *t+1*) as a Function of Current Envy (period *t*), HILDA Survey (2005, 2009, 2013)

Dependent variable: *Life Satisfaction* $_{t+1}$	**(1)**			**(2)**			**(3)**		
	β	95% CI	*p*	β	95% CI	*p*	β	95% CI	*p*
Envy $_t$	-0.06	[-0.07, -0.04]	.000	-0.05	[-0.06, -0.03]	.000	-0.05	[-0.06, -0.03]	.000
Life Satisfaction $_t$	0.49	[0.47, 0.50]	.000	0.42	[0.41, 0.44]	.000	0.42	[0.41, 0.44]	.000
Constant	4.17	[4.05, 4.30]	.000	4.27	[3.96, 4.58]	.000	4.28	[3.97, 4.59]	.000
Socioeconomic controls	No			Yes			Yes		
Major life event controls	No			No			Yes		
Adjusted R^2	.258			.282			.284		
Number of observations	13,106			13,106			13,106		

Notes: Dependent variable is *Life Satisfaction* [range: 0 to 10] in period *t+1*. Self-reported life satisfaction is derived from the question: "*All things considered, how satisfied are you with your life?*" Respondents are told to: "*Pick a number between 0 and 10 to indicate how satisfied you are*", and that "*the more satisfied you are the higher number you should pick*". The full sample mean is 7.91 with a standard deviation of 1.41. About two-thirds of respondents report a life satisfaction score of more than 7 out of 10. The full estimation results (with a complete set of control-variable coefficient estimates) are provided in Table S6A. The above model estimates are restricted to survey respondents who are less than or equal to 70 years of age.

Table 4B: Prospective Analysis of Future Changes in SF-36 Mental Health (period *t+1*) as a Function of Current Envy (period *t*), HILDA Survey (2005, 2009, 2013)

Dependent variable: *SF-36 Mental Health Index* $_{t+1}$	**(1)**			**(2)**			**(3)**		
	β	95% CI	*p*	β	95% CI	*p*	β	95% CI	*p*
Envy $_t$	-0.58	[-0.75, -0.41]	.000	-0.61	[-0.78, -0.44]	.000	-0.61	[-0.79, -0.44]	.000
Mental Health Index $_t$	0.56	[0.55, 0.58]	.000	0.49	[0.47, 0.50]	.000	0.49	[0.47, 0.50]	.000
Constant	34.65	[33.35, 35.95]	.000	32.36	[28.85, 35.86]	.000	32.11	[28.58, 35.65]	.000
Socioeconomic controls	No			Yes			Yes		
Major life event controls	No			No			Yes		
Adjusted R^2	.319			.340			.340		
Number of observations	13,087			13,087			13,087		

Notes: Dependent variable is *SF-36 Mental Health Index* [range: 0 to 100] in period *t+1*. The SF-36 *Mental Health Index* is a 5-item scale consisting of the following five questions "How much of the time in the previous 4 weeks: Have you been a very nervous person? Have you felt so down in the dumps that nothing could cheer you up? Have you felt calm and peaceful? Have you felt down? Have you been a happy person?" The raw survey responses are transformed and standardised to a 100-point scale ranging from 0 (worst) to 100 (best mental health). The full sample mean is equal to 74.65 with a standard deviation of 16.82. The full estimation results (with a complete set of control-variable coefficient estimates) are provided in Table S6B. The above model estimates are restricted to survey respondents who are less than or equal to 70 years of age.

Table 5: Prospective Analysis of Future Changes in Log Income (period *t+1*) as a Function of Current Envy (period *t*), HILDA Survey (2005, 2009, 2013)

Dependent variable: *Log Income* $_{t+1}$	**(1)**			**(2)**			**(3)**		
	β	95% CI	*p*	β	95% CI	*p*	β	95% CI	*p*
Envy $_t$	0.01	[0.00, 0.02]	.026	0.01	[0.00, 0.01]	.234	0.01	[0.00, 0.01]	.204
Log Income $_t$	0.40	[0.38, 0.41]	.000	0.34	[0.33, 0.36]	.000	0.34	[0.33, 0.36]	.000
Life Satisfaction $_t$	0.01	[0.00, 0.02]	.007	0.01	[0.00, 0.02]	.150	0.01	[0.00, 0.02]	.127
Constant	6.47	[6.32, 6.62]	.000	6.97	[6.79, 7.15]	.000	6.97	[6.79, 7.16]	.000
Socioeconomic controls	No			Yes			Yes		
Major life event controls	No			No			Yes		
Adjusted R^2	.296			.349			.351		
Number of observations	10,119			10,119			10,119		

Notes: Dependent variable is the natural logarithm of equivalized household *Income* in period *t+1*. Self-reported life satisfaction is derived from the question: "*All things considered, how satisfied are you with your life?*" Respondents are told to: "*Pick a number between 0 and 10 to indicate how satisfied you are*", and that "*the more satisfied you are the higher number you should pick*". The full sample mean is 7.91 with a standard deviation of 1.41. About two-thirds of respondents report a life satisfaction score of more than 7 out of 10. The full estimation results (with a complete set of control-variable coefficient estimates) are provided in Table S7. The above model estimates are restricted to survey respondents who are less than or equal to 70 years of age and participate in the labor force.

Table 6A: Longitudinal (Fixed-effects) Regression Models of Life Satisfaction on Age and Envy, HILDA Survey (2005, 2009, 2013)

Dependent variable: *Life Satisfaction*	**(1)**			**(2)**			**(3)**			**(4)**		
	β	95% CI	*p*	β	95% CI	*p*	β	95% CI	*p*	β	95% CI	*p*
Envy				-0.05	[-0.07, -0.03]	.000				-0.05	[-0.07, -0.03]	.000
Age							-0.04	[-0.06, -0.02]	.000	-0.04	[-0.06, -0.02]	.000
Age-squared/100							0.05	[0.03, 0.06]	.000	0.05	[0.03, 0.06]	.000
Age group:												
25 to 34	-0.06	[-0.15, 0.02]	.122	-0.07	[-0.15, 0.01]	.079						
35 to 44	-0.07	[-0.19, 0.04]	.200	-0.08	[-0.20, 0.03]	.148						
45 to 54	-0.09	[-0.23, 0.04]	.171	-0.11	[-0.24, 0.03]	.118						
55 to 64	-0.05	[-0.20, 0.10]	.525	-0.06	[-0.22, 0.09]	.398						
65 to 70	0.11	[-0.07, 0.28]	.223	0.09	[-0.08, 0.27]	.293						
Constant	7.08	[6.80, 7.36]	.000	7.22	[6.93, 7.51]	.000	7.59	[7.20, 7.98]	.000	7.73	[7.34, 8.13]	.000
Socioeconomic controls		Yes			Yes			Yes			Yes	
Major life event controls		Yes			Yes			Yes			Yes	
Overall R^2		.166			.177			.168			.179	
Number of individuals		16,914			16,914			16,914			16,914	
Number of observations		30,802			30,802			30,802			30,802	

Notes: Dependent variable is *Life Satisfaction* [range: 0 to 10]. Self-reported life satisfaction is derived from the question: "*All things considered, how satisfied are you with your life?*" Respondents are told to: "*Pick a number between 0 and 10 to indicate how satisfied you are*", and that "*the more satisfied you are the higher number you should pick*". The full sample mean is 7.91 with a standard deviation of 1.41. About two-thirds of respondents report a life satisfaction score of more than 7 out of 10. *Self-reported Envy* [range: 1 to 7] is defined in the Materials and Methods section. The base (reference) age category in models (1) and (2) is '15 to 24' years. Socioeconomic and other lifestyle controls are summarised in Table S1. Major life-event controls are summarised in Table S3. The full estimation results (with a complete set of control-variable coefficient estimates) are provided in Tables S8 and S9. The above model estimates are restricted to survey respondents who are less than or equal to 70 years of age.

Table 6B: Longitudinal (Fixed-effects) Regression Models of SF-36 Mental Health on Age and Envy, HILDA Survey (2005, 2009, 2013)

Dependent variable: *SF-36 Mental Health Index*	**(1)**			**(2)**			**(3)**			**(4)**		
	β	95% CI	*p*	β	95% CI	*p*	β	95% CI	*p*	β	95% CI	*p*
Envy				-1.14	[-1.34, -0.94]	.000				-1.13	[-1.33, -0.94]	.000
Age							-0.17	[-0.38, 0.04]	.120	-0.18	[-0.39, 0.03]	.099
Age-squared/100							0.30	[0.08, 0.51]	.007	0.30	[0.08, 0.51]	.006
Age group:												
25 to 34	-0.22	[-1.25, 0.81]	.678	-0.42	[-1.44, 0.60]	.422						
35 to 44	-0.02	[-1.44, 1.39]	.973	-0.24	[-1.64, 1.16]	.738						
45 to 54	0.004	[-1.60, 1.60]	.996	-0.29	[-1.88, 1.29]	.716						
55 to 64	0.80	[-0.98, 2.58]	.378	0.42	[-1.34, 2.18]	.640						
65 to 70	2.32	[0.34, 4.30]	.022	1.96	[-0.002, 3.92]	.050						
Constant	57.76	[54.57, 60.95]	.000	61.02	[57.78, 64.26]	.000	59.53	[54.97, 64.09]	.000	62.90	[58.31, 67.50]	.000
Socioeconomic controls		Yes			Yes			Yes			Yes	
Major life event controls		Yes			Yes			Yes			Yes	
Overall R^2		.216			.248			.228			.257	
Number of individuals		16,898			16,898			16,898			16,898	
Number of observations		30,766			30,766			30,766			30,766	

Notes: Dependent variable is *SF-36 Mental Health Index* [range: 0 to 100] in period *t+1*. The SF-36 *Mental Health Index* is a 5-item scale consisting of the following five questions "How much of the time in the previous 4 weeks: Have you been a very nervous person? Have you felt so down in the dumps that nothing could cheer you up? Have you felt calm and peaceful? Have you felt down? Have you been a happy person?" The raw survey responses are transformed and standardised to a 100-point scale ranging from 0 (worst) to 100 (best mental health). The full sample mean is equal to 74.65 with a standard deviation of 16.82. *Self-reported Envy* [range: 1 to 7] is defined in the Materials and Methods section. The base (reference) age category in models (1) and (2) is '15 to 24' years. Socioeconomic and other lifestyle controls are summarised in Table S1. Major life-event controls are summarised in Table S3. The full estimation results (with a complete set of control-variable coefficient estimates) are provided in Tables S10 and S11. The above model estimates are restricted to survey respondents who are less than or equal to 70 years of age.