Subjective Social Status and Allostatic Load among Older People in England. A Longitudinal Analysis*

Lindsay Richards¹, Asri Maharani², and Patrick Präg³

¹University of Oxford

²Manchester Metropolitan University

³CREST, ENSAE, Institut Polytechnique de Paris

December 23, 2022

Abstract

Subjective social status has a known association with health, whereby better health outcomes are observed for those with higher perceived status. In this article, we offer new evidence on the status–health relationship using a rigorous methodological approach that considers both observed and unobserved confounders. We use five waves of data spanning 15 years from the English Longitudinal Study of Aging and derive a measure of allostatic load with biomarkers as an objective measure of health. We apply ‘within–between’ panel regression models which reveal the expected association between subjective status and health when comparing participants (the ‘between’ estimate), but no association when examining temporal variation within participants (the ‘within’ estimate). When controlling for personality traits including optimism, and parental education, the ‘between’ association between subjective status and allostatic load is reduced but not explained away. Thus, we conclude that person-level

*Previous versions of this study were presented at the 2021 ECSR conference, the 2022 RC28 Spring Meeting, and at seminars at University of Oslo, Institute for Employment Research IAB, University College London, and the European University Institute, and we thank discussants at these occasions, as well as Andreas Haupt, Zachary Van Winkle, Jonas Wiedner, and the four anonymous reviewers at *Social Science & Medicine*.

A replication package for all analyses shown in this study is available on-line ([Richards et al., 2022](#)).

The English Longitudinal Study of Aging ([Banks et al., 2021](#)) was developed by a team of researchers based at University College London, Natcen Social Research, the Institute for Fiscal Studies, the University of Manchester, and the University of East Anglia. The data were collected by Natcen Social Research. The funding is currently provided by the National Institute on Aging in the US, and a consortium of UK government departments coordinated by the National Institute for Health Research. Funding has also been received by the Economic and Social Research Council.

confounders play some role in explaining the observed link between subjective status and health. The exact nature of the link, including the role of psychological pathways and early-life confounders, remains a question for future research.

Introduction

Higher socioeconomic status goes along with better health (see e.g. [Mackenbach, 2019](#); [Marmot, 2015](#)), and at least since the 1980 Black Report, social scientists have been concerned with explaining the causal pathways linking social position and health ([Townsend and Davidson, 1982](#)). The pathways underlying the association include resources, health behaviors, employment conditions, and psychosocial stress. It is to the last of these pathways—psychosocial stress—that we make a contribution here. Specifically, we examine whether subjective social status (SSS), which is to say the perception of one’s standing in a social hierarchy, is a means by which social position “gets under the skin” ([McEwen, 2012](#)). SSS has been linked to different dimensions of health including mortality ([Demakakos *et al.*, 2018](#)), mental and self-rated health ([Präg *et al.*, 2016](#)), immune function ([Cohen *et al.*, 2008](#)), inflammation ([Demakakos *et al.*, 2008](#)), cardiovascular health ([Tang *et al.*, 2016](#)), and brain function ([Gianaros *et al.*, 2007](#)), among other specific physiological functions (see [Hoebel and Lampert, 2020](#), for a review).

SSS tends to be higher among those with higher socioeconomic status on objective dimensions—education, income, and social class—yet subjective and objective status are not perfectly correlated. The association of SSS and health holds in many studies after controlling for various dimensions of socio-economic status, demonstrating that SSS is not merely picking up on the effect of objective status or resources ([Präg, 2020](#); [Singh-Manoux *et al.*, 2005](#)). In some studies, SSS is estimated to have a stronger association than objective indicators of socioeconomic status (e.g. [Netuveli and Bartley, 2012](#); [Singh-Manoux *et al.*, 2005](#)). These findings suggest that SSS is more than a dimension of, or a reflection of, objective status. Indeed, evidence on the sources of perceived status show it to be correlated with social, as well as economic, dimensions of status including gender and ethnicity ([Galvan *et al.*, 2022](#); [Lindemann and Saar, 2014](#)). The persistent finding that higher SSS is associated with better health has had a key role in the literature on the sociology of health and wellbeing, and in social epidemiology, because it has suggested that there is something about the feeling of low status—variously conceptualized as a cognitive or emotional process—that is damaging to health and wellbeing. From this body of work, psychosocial theory posits that the experience of being low down in the social hierarchy is a stressful one, and this stress with its associated feelings of inferiority, shame, and frustration trigger physiological reactions, and these in turn bring about poor health ([Wilkinson, 1996](#); [Marmot, 2004](#)). Social epidemiological accounts have often emphasized the cognitive aspect of SSS, namely that it provides a good ‘all-encompassing’ summary, or cognitive average, of

socioeconomic position (Singh-Manoux *et al.*, 2005).

To date, the majority of evidence has come from cross-sectional studies, and those that do use longitudinal data have typically relied on just two waves. It is in this context that our study makes three contributions to the literature on SSS and health. First, we use allostatic load as our outcome measure of health. As an indicator of the cumulative wear and tear of life’s stressors (McEwen, 1998), allostatic load is a good theoretical fit to pick up on the consequences of long-standing status differences (see McEwen and Stellar, 1993; McLoughlin *et al.*, 2022). We assume that processes of ‘embodiment’, to use Krieger’s (2005) term—in which “we literally incorporate, biologically, the world in which we live, including our societal and ecological circumstances” (p.351)—take place subconsciously. As an objective, biological, measure of health, allostatic load has the advantage that it is not affected by reporting bias. Second, we use five waves of longitudinal data from the English Longitudinal Study of Ageing, a representative sample of people aged over 50 in England, which allows us to control for time-constant confounders, both observed and unobserved. To this end, we make use of the ‘between–within’ model. We also consider likely (observed) confounders including personality traits, non-cognitive skills, and control (Cundiff *et al.*, 2013; Hoebel and Lampert, 2020; Steptoe and Wardle, 2017). Most previous studies linking SSS to health have not accounted for wealth, despite evidence that it is an important covariate of SSS, particularly at the high end of the status scale (Andersson, 2018). Further, we account for conditions during childhood—parents’ socioeconomic status and childhood trauma—that may influence health and social status. Thus, a third contribution is that we include a more robust set of controls that include time-varying wealth (in addition to income), and relevant features of the respondents’ childhoods. We acknowledge the likely life-course implications of our sample, as status may depend to some degree on labour market status which is heavily contingent upon age, as well as possible gender differences, which we cover in robustness checks and in the discussion.

Theoretical links between subjective social status and health

The theoretical links between perceived status and health outcomes arise mainly from the epidemiological literature in which the main candidates for explaining the SSS gradient in health are threefold. The psychosocial mechanism, firstly, is causal in nature, and is the perhaps most associated with the work of Marmot, Wilkinson and Pickett and others, who show that it is not just absolute socio-economic status that matters for health outcomes, but relative position in the hierarchy (Marmot, 2004; Wilkinson, 1996; Wilkinson and Pickett, 2010). Psychosocial theory posits that individuals who perceive themselves as lower in the social hierarchy find this a stressful experience regardless of their material standing; in other words, it is possible to have resources that cover all of one’s

physical needs but perceiving oneself to be of lower standing than others brings detrimental psychological reactions. These reactions include stress, dissatisfaction, resentment, a sense of inferiority, shame and incompetence, and status anxiety (Adler *et al.*, 2000; Charlesworth *et al.*, 2004; Marmot, 2004; Wilkinson, 1996). SSS by this account is the result of social comparison processes. Being aware that one’s social standing is below that of others in the social context brings about lower SSS (Jackson *et al.*, 2015) and has been shown to have detrimental effects on health and wellbeing (Präg *et al.*, 2014).

The physiological reactions to perceiving oneself to be low status occur through psychoneurobiological mechanisms. The chronic stress of low social status brings about dysregulation in the neuroendocrine systems that include the hypothalamic-pituitary-adrenal axis and the sympathetic-adrenal-medulla (Hoebel and Lampert, 2020). Adler *et al.* (2000), for example, find that low SSS is associated with higher cortisol in a laboratory setting, indicating a greater presence of chronic stress. Negative emotions and stress also stimulate proinflammatory responses in turn leading to increased risk of type 2 diabetes, cardiovascular disease, and some cancers. In this account, the physiological stress reactions are seen as the result of perceived low status. Low status may itself lead to stronger stress reactions (Muscatell *et al.*, 2016) which is to say that having higher SSS may act as a resilience resource for dealing with stress. However, a number of studies looking into the mechanisms of action of SSS on health did not find an effect, thus casting some doubt on the role of stress. Cundiff *et al.* (2020), for example, in their review list a number of studies with null findings, i.e. showing no relationship between cardiovascular responses to stress and SSS. In an earlier review, Boylan *et al.* (2018) found no reliable association between social status and cardiovascular responses to stress in a laboratory setting, and Lê-Scherban *et al.* (2018) similarly did not establish a link between SSS and cortisol reactivity.

A second possible explanation for the observed association between SSS and health outcomes is methodological rather than causal. In this account, SSS is thought to ‘mop up’ the measurement error of socioeconomic status (SES). Studies typically control for one or more dimensions of SES including education, social class and income, but often miss other potentially important factors such as assets, wealth (included expected future wealth), and debt. Anderson (2022) makes an important distinction between “left out” factors such as college prestige or field of study that are not captured by standard education measures, and what respondents “read in”, namely the personal circumstances and “idiosyncratic hierarchies” that inform individual status. To the extent that there is measurement error in assessing socioeconomic status, this explanation might suggest that resource-based explanations have been underplayed. Indeed, in many studies, SSS is specifically conceptualised as an all-encompassing measure of socio-economic position, one that better synthesizes individual (or “intangible” — Chen *et al.*, 2012) aspects of social identity and socioeconomic position (Chen *et al.*, 2012; Demakakos *et al.*, 2018; Singh-Manoux *et al.*, 2005). Here, SSS might be seen as a ‘cognitive average’ of socio-economic position (An-

derson *et al.*, 2015). However, the fact that many studies cannot fully control away the SSS effect after extensive socioeconomic controls, including parents' and partners' positions (Präg, 2020), is often taken as indication of a direct pathway of SSS to health (Cundiff and Matthews, 2017; Nobles *et al.*, 2013a; Tang *et al.*, 2016). An additional point, on conceptualisation and measurement, is that the relationship between SSS and health runs in both directions. Health, Nobles *et al.* (2013a) suggest, is a constituent component of social status. They point out that the wage penalties of poor health are well-known (e.g. Dahl, 1993), as is the social stigma and loss of esteem ("loss of self") that comes with disability, chronic illness, and health decline (Scambler, 2009).

A third possibility, also a non-causal account, is that the statistical relationship between SSS and health is an artefact of a third factor. In such accounts, SSS and health are understood to have a causal factor in common that is (often) omitted from analyses. Such third factors include those specifically theorized to explain the pathway from SSS to health. Adler *et al.* (2000), for example, argue that SSS is associated with "psychological factors that may predispose individuals to better health trajectories" (p. 590). These include pessimism, control over life, and both active and passive coping styles. Steptoe and Wardle (2017) use the term 'life skills' to capture a set of non-cognitive skills, including "characteristics and capabilities thought to increase chances of success and wellbeing" (p. 4354) that are associated with both socioeconomic status and health outcomes. In other words, these skills may explain the mechanisms linking social status and health. Steptoe and Wardle include the following characteristics in their study: determination, conscientiousness, emotional stability, self-control, and optimism which are shown to be associated with social lives, wealth and income, and a range of health indicators both objective and subjective.

While these psychological factors and life skills may mediate the SSS–health relationship, an additional important factor to consider is the childhood experience. Studies have shown the 'long arm of childhood' (Hayward and Gorman, 2004), whereby the socioeconomic conditions of childhood continue to exert a sizeable effect on health throughout adulthood (Präg *et al.*, 2019). Assuming these early life experiences influence SSS as well as health, these could be another source of unmeasured or 'missing' variation in many studies, which are often hindered by the limited availability and reliability of such measures.

Previous longitudinal studies of SSS and health

Studies utilising longitudinal approaches remain relatively scarce in this literature, despite the clear advantages for establishing robust associations and elucidating underlying mechanisms. We review here some recent examples of overtime research and their findings; the majority of evidence here comes from study designs utilising two waves of data.

Demakakos *et al.* (2018), for example, used data from the English Longitudinal Study of Aging (ELSA) to show that a decrease in SSS over a ten-year period is associated with an increased risk of all-cause mortality. This effect

was stronger among the 50–64 year olds than among the over 65’s. The effect of SSS in this study was reduced, but not explained away, by controlling for wealth, health behaviors, and depressive symptoms. Also using two waves of ELSA data, [D’Hooge *et al.* \(2018\)](#) use biomarkers as the outcome measure and have a control for baseline. They explore whether SSS mediates the SES–health relationship and find that material class has a small indirect effect through SSS, and that SSS has a significant direct effect on health assessed by biomarkers. In another study, using a sample of new mothers in five locations in the USA, [Guardino and Dunkel Schetter \(2022\)](#) find an association between SSS and allostatic load six months later. Finally, [O’Leary *et al.* \(2021\)](#), using MIDUS data, also used a two-points-in-time model, and showed a relationship between SSS at time 1 and chronic health conditions at time 2, and that negative affect mediates the relationship.

Using longitudinal twin data, [Rivenbark *et al.* \(2020\)](#) find that perceptions of family status are associated with multiple indicators of self-rated health and well-being. Despite the strong evidence in this study that SSS and health are associated even among those from identical family backgrounds, this study also acknowledges the possibility of reverse causation, namely that poor health reduces status perceptions.

A small number of studies explicitly set out to determine the direction of causality between SSS and health. Using two waves of the Indonesia Family Life Survey, for example, [Nobles *et al.* \(2013b\)](#) provide empirical support for the reverse causality hypothesis using a structural equation model with cross-lagged effects, that nurse-assessed health in 2000 influenced SSS in 2007, but the opposite is not true, i.e. SSS in 2000 did not influence health in 2007. A similar result comes from [Euteneuer *et al.* \(2021\)](#) who conduct a cross-lagged panel analysis using two waves of the Innovation Sample of the German Socio-economic Panel. Their results show that baseline SSS predicted self-reported physical and mental health two years later, but also that physical health (not mental health) at baseline predicted SSS at follow up.

Research questions and preview of findings

In contrast to these previous longitudinal studies of SSS and health, we use five waves of data with repeated measures of SSS and biomarker indicators of health. We make use of one of the standard ‘ladder’ questions phrased in terms of occupation, income and education, and use the biomarkers to develop a measure of allostatic load. Our first research question is as follows: Is there an association between SSS and allostatic load within the same individuals over time? The answer to this question, to preview our findings, is that we see the expected association ‘between’ participants, but find no association between SSS and allostatic load in the ‘within’ analysis, where each participant serves as their own control case. Based on the answer to this first question, we then proceed to ask our second research question: what person-level characteristics can account for the ‘between’ association? We suggest that personality traits,

in which we include optimism as well as the big 5, and parental education are likely contenders, but these account for just some of the variation, leaving open questions to be answered by future studies.

Data and methods

We use five waves of the English Longitudinal Study of Ageing (ELSA) which is a nationally representative, biennial household panel survey that collects information on the demographic characteristics, socioeconomic position, and comorbidities of individuals aged 50+ in England. Details of the study design are given elsewhere (see [Banks *et al.*, 2021](#); [Steptoe *et al.*, 2013](#)). ELSA was started in 2002, and so far, there are nine waves. Our study predominately uses waves 2, 4, 6, 8, and 9 (in the following referred to as the time points T1–T5), as biomarker information was collected in those waves ([Banks *et al.*, 2021](#)). At T1 the mean age of participants was 64.0, rising to 72.3 at T5. In Waves 8 and 9, nurse data and biomarkers were available for only a subset of the sample. For full details of the methodology, see the Supplementary Materials, here in brief: for the main analysis, we use the nine biomarkers that are available in each wave. As a robustness check, we check a restricted number of time points for which additional biomarkers are available. We drop participants for whom biomarker information is missing (e.g. those participating in proxy interviews). For the main analysis, we use the complete-case sample (4,505 individuals, 10,893 observations). In additional analysis we use multiple imputation for missing covariates and missing time points (10,355 individuals, 51,633 observations). Full details about the case selection can be found in the Supplementary Materials. We undertake additional analysis to address concerns about selection, see Robustness Checks section and Supplementary Materials.

Ethics approval

Ethics approval was obtained by the ELSA team as follows: ELSA Wave 2 received ethical approval from the London Multi-Centre Research Ethics Committee on August 12, 2004 (MREC/04/2/006). ELSA Wave 4 received ethical approval from the National Hospital for Neurology and Neurosurgery and Institute of Neurology Joint Research Ethics Committee on October 12, 2007 (07/H0716/48). ELSA Wave 6 received ethical approval from the NRES Committee South Central—Berkshire on November 28, 2012 (11/SC/0374). ELSA Wave 8 received ethical approval from the South Central—Berkshire Research Ethics Committee on September 23, 2015 (15/SC/0526). ELSA Wave 9 received ethical approval from the South Central—Berkshire Research Ethics Committee on May 10, 2018 (17/SC/0588). This information was retrieved from elsa-project.ac.uk/ethical-approval.

Outcome measure: Allostatic load

Allostatic load was measured using nine biomarkers, drawing from four organ systems: namely cardiovascular (systolic and diastolic blood pressure), inflammation (C-reactive protein and fibrinogen), metabolic (glycosylated haemoglobin, high-density lipoprotein/total cholesterol ratio, triglycerides, and fasting blood glucose), and body fat deposition (body mass index). To calculate allostatic load following [Gruenewald *et al.* \(2012\)](#) and [Read and Grundy \(2014\)](#), each of the 9 biomarkers was recoded as 1 if beyond a clinical cut-off point, where a clearly defined cut-off point exists in the literature, and in the high risk quartile for the other items. We then derive scores for each of the four organ systems, where each indicator is given equal weight. We also corrected for known relevant diagnoses and medication use. The resulting score ranges from 0 to 4, and is a continuous measure where higher allostatic load scores indicate higher multi-system physiological dysregulation, i.e. worse health. See Supplementary Materials for full details of the cut-offs used.

Key predictor: subjective social status

Subjective social status (SSS) captures respondents’ perceptions of their relative social standing. Both conceptually and empirically, individuals can change their perception at different time-points, in accordance with changing life circumstances. In ELSA, in all waves, respondents were asked to place themselves on one of ten rungs of a ladder following the question: “Think of this ladder as representing where people stand in our society. At the top of the ladder are the people who are the best off—those who have the most money, most education and best jobs. At the bottom are the people who are the worst off—who have the least money, least education and the worst jobs or no jobs. The higher up you are on this ladder, the closer you are to people at the very top and the lower you are, the closer you are to people at the very bottom. Please mark a cross on the rung on the ladder where you would place yourself.” Responses to this question were recorded on a scale ranging from five (‘worst off’) to 100 (‘best off’) in increments of five. We divide by ten, as social status is more usually measured on a 10-point scale, to give a continuous measure with a value range from 0.5 to 10, with higher values denoting higher SSS. This measure resembles the one introduced by [Adler *et al.* \(2000\)](#), which is frequently used in current research ([Präg, 2020](#)). [Cundiff *et al.* \(2013\)](#) demonstrated the construct validity of the scale. [Galvan *et al.* \(2022\)](#) ask what the ladder question actually measures, and suggest that it may comprise two components: economic circumstances and social status, a point we come back to in the discussion.

Possible confounders

We control for relevant factors relating to childhood conditions, and current socioeconomic status including income, wealth, occupation, working status and education which are likely to influence both SSS and allostatic load. In addi-

tion, allostatic load and subjective social status may be influenced by mediating psychological states, and we control for several of these states, for which we have good measures available. For psychological states, we control for the big five personality traits: Conscientiousness, Neuroticism, Agreeableness, Openness, and Extraversion. The big five have been shown to be antecedents of mortality, and further, are stratified by socioeconomic status [Chapman *et al.* \(2010\)](#); [Mackenbach \(2019\)](#), and as such are possible confounders of the SSS–health association. It is widely assumed that personality traits remain constant across the life course, particularly among people over the age of 30 ([Terracciano *et al.*, 2010](#)). We follow [Lachman and Weaver \(1997\)](#) to derive the measures from a battery of 23 items: five items measure agreeableness, seven items measure openness, four items measure conscientiousness, five measure extraversion, and four measure neuroticism. These items are worded in the following way: “Please indicate how well each of the following describes you?” Examples include talkative (extraversion), calm (reversed, neuroticism), and curious (openness). We z -standardized the scores; see the Supplementary Materials for details. We measure optimism as an index of two items drawn from the CASP scale ([Hyde *et al.*, 2003](#)): How often do you feel that life is full of opportunity? (‘not at all’ to ‘very much’) and How often do you feel that the future looks good? (‘never’ to ‘often’). Following [Step toe and Wardle \(2017\)](#), we also consider control as a possible confounder for the SSS–health association. Perceived control we measure with a single item, scored from ‘strongly disagree’ to ‘strongly agree’: “At home, I feel I have control over what happens in most situations”. We standardized the variables to have a mean of 0 and a standard deviation of 1. The big 5, optimism, and control are not available in each wave, and we thereby rely on a single measure and treat them as time-invariant, though acknowledge this as a limitation (see Discussion).

We also include three indicators of childhood conditions, as potential confounders of SSS and health. These include parental occupation, parental education, and childhood adversity. Parental occupation at respondent’s age 14 is classified into 15 categories running from managerial to factory worker, with additional categories for disabled and long-term unemployed. Highest parental education is included as a set of dummies of school-leaving ages, ranging from ‘never went to school’ to finishing at age 19 or above. Childhood stress is a count of adverse experiences from the list: natural disasters, armed combat, divorced parents, difficult living arrangements, life-threatening illness or accident, and severe financial hardship, thus ranging from 0–7.

In addition, we control for several sociodemographic factors, namely age, sex, marital status, participant education, participant social class, and household wealth. Further, we include wave dummies to ensure that our results are not subject to wave-specific measurement or distributional fluctuations. Details of measurement are in the Supplementary Materials.

We estimated so-called within–between or ‘hybrid’ random-effects regression models ([Allison, 2009](#); [Gugushvili *et al.*, 2022](#); [Van Winkle and Leopold, 2021](#)), with observation-years nested within participants. Hybrid panel regres-

sion models combine the advantages of conventional fixed-effects and random-effects panel models, in that they can control for unobserved time-constant heterogeneity (like fixed-effects models can) while also being able to model observed time-constant predictors (like random-effects models can). To achieve this, all time-varying predictors are included twice in the hybrid model, firstly as time-constant individual means and secondly as time-varying deviations from those means. A linear within-between random-effects model is

$$y_{it} = \beta_0 + \bar{x}_i \beta^{RE} + (x_{it} - \bar{x}_i) \beta^{FE} + u_i + e_{it} \quad (1)$$

where allostatic load y of individual i at time t is a function of time-constant predictors $\bar{x}_i$ and their between-individual coefficients β^{RE} , and time-varying predictors $(x_{it} - \bar{x}_i)$ and their within-individual coefficients β^{FE} as well as an individual random intercept u_i and a random error term e_{it} . For our application, we have the following main terms in our model:

$$y_{it} = \beta_0 + \overline{SSS}_i \beta^{RE} + (SSS_{it} - \overline{SSS}_i) \beta^{FE} + u_i + e_{it} \quad (2)$$

Our main interest is in the β^{FE} and β^{RE} coefficients, with the former denoting the within-effect of changes in subjective social status (SSS) on allostatic load. For this within-effect β^{FE} , each participant serves as their own control group and any time-constant omitted variable bias is removed. The latter β^{RE} is the between-effect, indicating the association between the average SSS of a participant and their average allostatic load. In addition, we add a vector of control variables c_i to investigate potentially confounding variables:

$$y_{it} = \beta_0 + \overline{SSS}_i \beta^{RE} + (SSS_{it} - \overline{SSS}_i) \beta^{FE} + c_i \gamma + u_i + e_{it} \quad (3)$$

Replicability

Data necessary for replicating analyses shown in this study are available from the UK Data Service ([Banks *et al.*, 2021](#)); a set of Stata do-files for replicating the analyses are available on-line ([Richards *et al.*, 2022](#)).

Results

The distributions of within and between SSS can be seen in Figure reffig1. Our analytic approach, which emphasizes within-person patterns of association, relies on the presence of variation in the outcome and explanatory variables. Our measure of between SSS has a standard deviation of 1.40. The standard deviation of within SSS is smaller at 0.75 but nonetheless suggests a substantial amount of variation within individuals. Thus, it appears that SSS is not a fixed characteristic of individuals, but responsive to changing life conditions. Similarly, we find substantial within variation in allostatic load. An additional table of descriptive statistics (Supplementary Materials, Table A3) shows that the average age of the sample increased from 66.9 years at Time 1 (wave 2,

Figure 1: Median allostatic load increases as study participants get older (*Panel A1*). A substantial share of allostatic load can be found both between (*Panel A2*) as well as within (*Panel A3*) participants over time. Average subjective social status remains constant largely over time (*Panel B1*), and about two thirds of variance are found between (*Panel B2*) and one third within (*Panel B3*) participants. Violin plots of allostatic load and subjective social status across time points T1–T5. Sample sizes by time point shown in Table A3.

2004) to 72.3 years at T5 (wave 9, 2018). Given its association with age, it is unsurprising to see that allostatic load increases from 1.56 at T1 to 2.01 at T5.

Figure 2: *Panel A*: Higher subjective social status is associated with lower allostatic load. *Panel B*: Higher average-subjective social status over five waves is associated with lower allostatic load. *Panel C*: Within-participant subjective social status is not associated with allostatic load. Scatterplot of subjective social status (*A*), between-participant component (*B*), and within-participant component (*C*), and allostatic load, pooled over five time points, $N = 10,839$ observations, b coefficient from pooled OLS regression, gray areas denote 95% confidence intervals, data points jittered.

In order to address the first research question, we first summarize at the bivariate relationship between SSS and allostatic load in three scatter plots, shown in Figure 2. Panel A shows a negative association between overall SSS and allostatic load. People with an SSS score of zero would have an allostatic load of just above 2 while those scoring 10 on SSS would have an allostatic load closer to 1, as predicted by the linear regression line ($b = -0.08$). Panels B and C show SSS broken down into its constituent between and within parts. The between measure is based on the respondent average score over the five waves and shows the negative linear association ($b = -0.11$). Within SSS, on the other hand, has no association with allostatic load ($b = 0.01$). We show in the Supplementary Materials (Figure A2) that this holds when outliers are removed.

The multivariate analysis confirms this pattern (Figure 3). We begin (Model M1) by specifying a random effects model of SSS and allostatic load (top panel row of Panel A), which confirms as the bivariate association did, an overall negative relationship ($b = -0.014$, $se = 0.006$). Model M2 is the first within-between model that shows the constituent within and between components of SSS, this time with controls included for age, sex, marital status, ethnicity, education, social class, household wealth and household income. Again, this confirms the bivariate pattern that there is no association between within-person

Figure 3: *Panel A*: Subjective social status and allostatic load are associated (M1), yet the association only exists when comparing participants, not in the within-participant comparison (M2), and the association between participants is attenuated when accounting for childhood conditions and personality factors (M3–M7). Coefficient of the subjective social status–allostatic load association from seven model specifications M1–M7, $N_{participants} = 4,505$, $N_{observations} = 10,839$. Error bars denote 95% confidence intervals. *Panel B*: Parental education and personality traits are driving both subjective social status and allostatic load. Coefficients for parental education and personality factors from the fully adjusted model M7, $N_{participants} = 4,505$, $N_{observations} = 10,839$. Error bars denote 95% confidence intervals. Table A5 in the Supplementary Material shows the full models.

SSS and allostatic load ($b_{within} = -0.001$, $se = 0.008$), but the significant between association is robust to the initial set of socioeconomic and demographic controls ($b_{between} = -0.036$, $se = 0.010$). In Models M3 to M7, the time-invariant confounders are added incrementally. Model M3 shows that the between estimate is attenuated slightly when childhood conditions are controlled ($b_{within} = -0.030$); Model M4 shows further attenuation of the between effect of SSS ($b_{within} = -0.023$) once the big five personality traits are added to the model. The presence of optimism in the model further attenuates the size of the between coefficient (Model M6, $b_{within} = -0.011$). Perceived control over one’s life, added in Model M5 and then Model M7, makes little difference to the estimates. In this model specification, the between-effect loses statistical significance from Model M5. However, our interpretation here, which also draws on the robustness checks (see next section), is that our controls have attenuated rather than explained away the between-effect. Note that the within estimates do not change across models as our added controls only relate to the ‘between’ part of the model. The tables for the models showing all the coefficients can be found in the Supplementary Materials (Table A5).

Panel B of Figure 3 shows the coefficient estimates for the between-level confounders from Model M7. These include parental education, the big five personality traits, optimism, all of which are significantly associated with allostatic load, and sense of control, which has no association. Since personality may be correlated with socioeconomic status and health (Chapman *et al.*, 2010), any effects of personality are likely to be sensitive to model specification and we interpret here caution (Westreich and Greenland, 2013). Nonetheless, our models confirm that personality may be an important antecedent of good health (Mackenbach, 2010; Steptoe and Wardle, 2017). The positive effect of conscientiousness and extraversion have been shown elsewhere (e.g. Steptoe and Wardle, 2017), and it has also been noted that neuroticism can have positive association with health, the “healthy neuroticism” effect (Turiano *et al.*, 2013). Perceived control has no association with allostatic load. This is confirmed by the model fit statistics that show the models with parental education, and personality traits (but without perceived control) to be better fitting according the AIC (shown in Supplementary Materials, Table A5).

Comparison to self-rated health

Our results stand in contrast to those studies also using ELSA but showing a significant association of SSS with health outcomes (e.g. D’Hooge *et al.*, 2018; Demakakos *et al.*, 2018; Netuveli and Bartley, 2012). In order to rule out the possibility of a false negative due to lack of within-variation in subjective social status, we re-run our analysis with a different outcome variable, self-rated health, which is also available at all five time points. Running the analysis on the same effective sample as the main analysis, we find a significant ‘within’ association of higher subjective social status and better self-rated health, even with the full suite of controls. Since the within-participant coefficient of variation

for self-rated health is lower than for AL (see Table A3 in the Supplementary Materials), we interpret this as assurance that our result is not due to a lack of within variation. This result is of interest in itself and may imply that self-rated health taps somatic and vigor-related processes that allostatic load does not (see Coustaury *et al.*, 2022).

Further robustness checks

As further checks on the robustness of our findings, we re-run the analysis using Multiple Imputation (MI, see Table A15). The intention of this analysis is to assuage concerns that cases with missing values on the covariates are biasing results. Since our MI model also imputes values for those who drop out of the panel and thus provide additional assurance that the results are not driven by selective attrition (for which we also do further analysis, see below). The MI results, based on 10,355 participants with a valid allostatic load measurement, show the same pattern of findings regarding the within-SSS effect which is close to zero and non-significant. However, in this model the between effect remains significant in the presence of the controls for personality traits and childhood conditions. We are therefore cautious in our interpretation of the explanatory power of these controls. Personality and childhood appear to reduce the between effect by around 25% in this model, and are therefore likely to be just some of the relevant mediators and confounders.

We run a second robustness check on time points T1–T3 only, since these waves had a more comprehensive range of nurse and biomarker measures available. For these three time points, we calculated an alternative version of allostatic load which includes lung function and waist measurement. With this alternative measure, we find the patterns of results to be the same as the main analysis (Table A7).

We also run a suite of checks that restrict the sample in a number of ways, to rule out the possibility that the results only hold with a specific sample of the data (Tables A8–A10). Since the study by Demakakos *et al.* (2018) showed a stronger effect of SSS on the younger ELSA participants, we also run our analysis on the subset of those under 64 years old, and find our results hold (Table A9). We restrict the sample to those in paid work only since the question wording may have particular salience for those holding a position in the labour market, and because the importance of subjective social status for health might change after retirement. Here too the results hold (Table A10). Further, we run the models separately for men and women, and find that our results hold (Table A8).

We addressed the biases due to selective dropout by running a joint model (Table A13). This method models within and between effects whilst at the same time modeling attrition status with a survival model, providing valid estimates under missing not at random (MNAR) as conditional on the joint random effects, allostatic load and the risk of sample dropout are independent. The results of the various model specifications all confirm that the coefficient for the within

effect is close to zero and non-significant thus concurring with the main analysis. We also check the results for those who remained in the panel for all waves (Tables A11 and A12). Finally, we re-run our analysis with weights applied (Table A14), and our findings hold.

Discussion

Our first aim of this study was to test whether the association between subjective status and allostatic load holds within individuals over time, with a modeling approach that controls for person-level time-invariant traits. The ‘within’ results of our within-between models tell us that a change in SSS is not associated with a change in allostatic load, in our sample of older people in England. In the introduction, we set out the possible explanations for the relationship between SSS and health: psychosocial pathways, measurement error or reverse causality, and third causes. The lack of a ‘within’ effect provides evidence for the last of these explanations, namely that mediating factors (such as personality) and confounding factors (such as parental education) are likely to be important for understanding the mechanisms linking SSS and health. Our second aim was to find the most likely confounders that explain this ‘between’. We have shown that personality traits (the big 5 and optimism), and parental education have statistically significant effects, and that the between effect is attenuated, but not explained away, when these controls are present. We are not the first to show that the big 5 and optimism have a role in the explanation of how health inequalities come about (Cundiff *et al.*, 2013; Kim *et al.*, 2017; Mackenbach and Kunst, 1997), but here we suggest that they have a specific role in explaining the known status–health link. It seems likely from our results that parental education plays a confounding role, bringing about higher status and, separately, better health.

Limitations and future research directions

How can we reconcile our null finding—that SSS is not associated with health once controlling for all time-constant confounders—while previous studies show a significant association? First, since much of the evidence to date has emerged from cross-sectional data, or on the basis of two waves of data in a small number of longitudinal studies, one reason may be methodological. Our data included five time points, spanning fifteen years, allowing for a stronger test of association that accounts for within-person characteristics that may be important for explaining health and status trajectories as well as point-in-time associations. Our comparison to the results for self-rated health show that our null result is unlikely to result from a lack of within variation. A second point relates to the population in this study. Recent evidence, for example, suggests a causal link between SSS and health among adolescents, based on a robust within-family research design. A future research direction would be to examine the SSS–health link from a life-course perspective, as the nature and foundations of status hier-

archies may differ in different age groups. Status itself may matter more during periods of “heightened social awareness” (Rivenbark *et al.*, 2020) such as adolescence while at older ages, as friend and family social networks shrink, and as people leave the labour market, social status may shift in its causes and consequences compared to younger people. Further, it may be that expectations for the future become more important than current socioeconomic concerns (e.g. Andersson, 2015) and this may be inadequately picked up in our study. Similarly, it may be worth investigating cohort differences in the degree to which status matters for health, with early life experiences having particular importance. Social status may also have a particular role in mediating the effect of stress on health (Muscatell *et al.*, 2016) and this too could be contingent upon age. A third possible consideration relates to the operationalization of SSS. The question in ELSA is worded in terms of status in terms of education, money, and jobs, but it would also be important to replicate the study with an alternative measure that does not ask respondents to draw on (only) economic aspects of life to determine their social standing. Other well-established measures, for example, emphasise standing in the community (Ghaed and Gallo, 2007). In a recent examination of the components of status ladder questions and their effect on health, Galvan *et al.* (2022) find that a measure of social status based on ladder questions worded in terms of social influence, control, community, and power exert separate effects to economic standing. These other dimensions of social standing may well have greater salience for health among older people.

As well as these limitations to our study, there are several relevant questions which have been outside our scope, but will also make for potentially interesting future research. Patterns of change in allostatic load, for example, could be contingent upon having very high or very low starting levels of SSS. Cross-lagged models (Euteneuer *et al.*, 2021; Nobles *et al.*, 2013a) may also provide an insightful and interesting future direction, as would analysis that can include effects of early and mid-life status on later-life health outcomes. Other avenues for future research may include gender differences in the perception and implications of status, as well as how status within specific groups, at local or community level, may have more salience for older people. Further, while our use of self-rated health in this study served the primary purpose of a robustness check, it also reveals that the status-health association, and the linking mechanisms, may vary by different measures and conceptualizations of health. The full implications of the differences between subjective and objective outcomes (e.g. Gaydosch *et al.*, 2018; Präg *et al.*, 2022) have yet to be fully understood, including how mental states may influence self-rated health and objective indicators of health differently.

Our findings also have consequences for understanding the nature of SSS that can offer explanations for its associations with health. Others have argued that “researchers cannot fully understand the mechanisms behind these effects without adequately understanding from where individuals derive their senses of status” (Schnittker and McLeod, 2005, p. 84). While allostatic load has the benefit that reporting bias is minimized, chronic psychological states and traits

still matter, as they may respond to life stressors and influence physiological strain. Our results suggest these relevant psychological states and traits may include personality traits which are likely to be pathways from status to health (Matthews and Gallo, 2011; Steptoe and Wardle, 2017). In addition we find parental education to be a potentially important sources of status, in addition to known sources such as wealth, education, employment and ethnicity (Lindemann and Saar, 2014). Further, then, there may be implications in our findings for understanding health inequalities. What are the economic and sociological antecedents to optimism and big five traits? While these are often taken to be dispositional, optimism, for example, is estimated to be just 25% heritable (Plomin *et al.*, 1992), thus leaving considerable variation to be explained by other factors. It is also likely that optimism declines as health declines at older ages. Further, our measure of control which showed a non-significant effect, may also benefit from being explored as a time-variant measure and in multiple domains. These may be fruitful directions for future research to explore the social underpinnings of optimism and sense of control, and their association with status.

Conclusion

In the context of a large literature on the consequences of social status for health, we have shown that there is no within-person association between subjective social status and allostatic load among older people in England. These findings make a contribution to the literature on the psychosocial pathways linking status and health by implying that hidden causes and confounders may be present in cross-sectional analyses. However, our finding that allostatic load and self-rated health have different associations with status at the ‘within-person’ level of analysis shows that the outcome matters when considering the consequences of social status. These different concepts and measurements of health could usefully be further explored to uncover the linking mechanisms between social circumstances and health. Even for allostatic load, our findings do not imply that status hierarchies do not exist or are inconsequential, but rather highlight possible future research directions including which groups in society rely more on social standing for health, which specific conceptualizations of status may be most important, and how social standing stems from, or interacts with, other psychological factors such as optimism to exert its influence on health outcomes.

References

- Adler, Nancy E., Elissa S. Epel, Grace Castellazzo, and Jeannette R. Ickovics, 2000. ‘Relationship of Subjective and Objective Social Status With Psychological and Physiological Functioning. Preliminary Data in Healthy White Women.’ *Health Psychology* 19(6): 586–592. doi: [10.1037/0278-6133.19.6.586](https://doi.org/10.1037/0278-6133.19.6.586).
- Allison, Paul D., 2009. *Fixed Effects Regression Models*. Thousand Oaks, CA: Sage. doi: [10.4135/9781412993869](https://doi.org/10.4135/9781412993869).

- Anderson, Cameron, John Angus D. Hildreth, and Laura Howland, 2015. ‘Is the Desire for Status a Fundamental Human Motive? A Review of the Empirical Literature.’ *Psychological Bulletin* 141(3): 574–601. doi: [10.1037/a0038781](https://doi.org/10.1037/a0038781).
- Andersson, Matthew A., 2015. ‘How Do We Assign Ourselves Social Status? A Cross-Cultural Test of the Cognitive Averaging Principle.’ *Social Science Research* 52: 317–329. doi: [10.1016/j.ssresearch.2015.02.009](https://doi.org/10.1016/j.ssresearch.2015.02.009).
- , 2018. ‘An Odd Ladder to Climb. Socioeconomic Differences Across Levels of Subjective Social Status.’ *Social Indicators Research* 136(2): 621–643. doi: [10.1007/s11205-017-1559-7](https://doi.org/10.1007/s11205-017-1559-7).
- , 2022. ‘Seeing Class in Ladders. An Integrated Approach to Subjective Status and Health Inequality.’ *Sociological Perspectives* 65(3): 608–629. doi: [10.1177/07311214211040538](https://doi.org/10.1177/07311214211040538).
- Banks, James, G. David Batty, Josefiën Breedtveltdt, Kate Coughlin, Rowena Crawford, Michael G. Marmot, James Nazroo, Zoe Oldfield, Nicholas Steel, Andrew Steptoe, Martin Wood, and Paola Zaninotto, 2021. *English Longitudinal Study of Aging, Waves 0-9, 1998-2019*. Colchester: UK Data Service, 37th edition. doi: [10.5255/UKDA-SN-5050-24](https://doi.org/10.5255/UKDA-SN-5050-24).
- Boylan, Jennifer Morozink, Jenny M. Cundiff, and Karen A. Matthews, 2018. ‘Socioeconomic Status and Cardiovascular Responses to Standardized Stressors. A Systematic Review and Meta-Analysis.’ *Psychosomatic Medicine* 80(3). doi: [10.1097/PSY.0000000000000561](https://doi.org/10.1097/PSY.0000000000000561).
- Chapman, Benjamin P., Kevin Fiscella, Ichiro Kawachi, and Paul R. Duberstein, 2010. ‘Personality, Socioeconomic Status, and All-Cause Mortality in the United States.’ *American Journal of Epidemiology* 171(1): 83–92. doi: [10.1093/aje/kwp323](https://doi.org/10.1093/aje/kwp323).
- Charlesworth, Simon J., Paul Gilfillan, and Richard Wilkinson, 2004. ‘Living Inferiority.’ *British Medical Bulletin* 69(1): 49–60. doi: [10.1093/bmb/ldh003](https://doi.org/10.1093/bmb/ldh003).
- Chen, Bonnie, Kenneth E. Covinsky, Irena Stijacic Cenzer, Nancy Adler, and Brie A. Williams, 2012. ‘Subjective Social Status and Functional Decline in Older Adults.’ *Journal of General Internal Medicine* 27(6): 693–699. doi: [10.1007/s11606-011-1963-7](https://doi.org/10.1007/s11606-011-1963-7).
- Cohen, Sheldon, Cuneyt M. Alper, William J. Doyle, Nancy E. Adler, John J. Treanor, and Ronald B. Turner, 2008. ‘Objective and Subjective Socioeconomic Status and Susceptibility to the Common Cold.’ *Health Psychology* 27(2): 268–274. doi: [10.1037/0278-6133.27.2.268](https://doi.org/10.1037/0278-6133.27.2.268).
- Coustaury, Camille, Elias Jeannot, Adele Moreau, Clotilde Nietge, Asri Maharani, Lindsay Richards, and Patrick Präg, 2022. ‘Subjective Socioeconomic Status and Self-Rated Health in the English Longitudinal Study of Aging. A Fixed-Effects Analysis.’ *SocArXiv* doi: [10.31235/osf.io/2py57](https://doi.org/10.31235/osf.io/2py57).

- Cundiff, Jenny M., Jennifer Morozink Boylan, and Keely A. Muscatell, 2020. ‘The Pathway From Social Status to Physical Health. Taking a Closer Look at Stress as a Mediator.’ *Current Directions in Psychological Science* 29(2): 147–153. doi: [10.1177/0963721420901596](https://doi.org/10.1177/0963721420901596).
- Cundiff, Jenny M. and Karen A. Matthews, 2017. ‘Is Subjective Social Status a Unique Correlate of Physical Health? A Meta-Analysis.’ *Health Psychology* 36(12): 1109–1125. doi: [10.1037/hea0000534](https://doi.org/10.1037/hea0000534).
- Cundiff, Jenny M., Timothy W. Smith, Bert N. Uchino, and Cynthia A. Berg, 2013. ‘Subjective Social Status. Construct Validity and Associations with Psychosocial Vulnerability and Self-Rated Health.’ *International Journal of Behavioral Medicine* 20(1): 148–158. doi: [10.1007/s12529-011-9206-1](https://doi.org/10.1007/s12529-011-9206-1).
- Dahl, Espen, 1993. ‘Social Inequality in Health. The Role of the Healthy Worker Effect.’ *Social Science & Medicine* 36(8): 1077–1086. doi: [10.1016/0277-9536\(93\)90126-O](https://doi.org/10.1016/0277-9536(93)90126-O).
- Demakakos, Panayotes, Jane P. Biddulph, Cesar de Oliveira, Georgios Tsakos, and Michael G. Marmot, 2018. ‘Subjective Social Status and Mortality. The English Longitudinal Study of Aging.’ *European Journal of Epidemiology* 33(8): 729–739. doi: [10.1007/s10654-018-0410-z](https://doi.org/10.1007/s10654-018-0410-z).
- Demakakos, Panayotes, James Nazroo, Elizabeth Breeze, and Michael Marmot, 2008. ‘Socioeconomic Status and Health. The Role of Subjective Social Status.’ *Social Science and Medicine* 67(2): 330–340. doi: [10.1016/j.socscimed.2008.03.038](https://doi.org/10.1016/j.socscimed.2008.03.038).
- D’Hooge, Lorenzo, Peter Achterberg, and Tim Reeskens, 2018. ‘Mind Over Matter. The Impact of Subjective Social Status on Health Outcomes and Health Behaviors.’ *Plos One* 13(9): e0202489. doi: [10.1371/journal.pone.0202489](https://doi.org/10.1371/journal.pone.0202489).
- Euteneuer, Frank, Sarina J. Schäfer, Marie Neubert, Winfried Rief, and Philipp Süßenbach, 2021. ‘Subjective Social Status and Health-Related Quality of Life. A Cross-Lagged Panel Analysis.’ *Health Psychology* 40(1): 71–76. doi: [10.1037/hea0001051](https://doi.org/10.1037/hea0001051).
- Galvan, Manuel J, Keith Payne, Jason Hannay, Alexis Georgeson, and Keely Muscatell, 2022. ‘What does the MacArthur Scale of Subjective Social Status Measure? Separating Economic Circumstances and Social Status to Predict Health.’ *PsyArXiv* doi: [10.31234/osf.io/e9px3](https://doi.org/10.31234/osf.io/e9px3).
- Gaydosh, Lauren, Kristen M. Schorpp, Edith Chen, Gregory E. Miller, and Kathleen Mullan Harris, 2018. ‘College Completion Predicts Lower Depression but Higher Metabolic Syndrome among Disadvantaged Minorities in Young Adulthood.’ *Proceedings of the National Academy of Sciences* 115(1): 109–114. doi: [10.1073/pnas.1714616114](https://doi.org/10.1073/pnas.1714616114).

- Ghaed, Shiva G. and Linda C. Gallo, 2007. 'Subjective Social Status, Objective Socioeconomic Status, and Cardiovascular Risk in Women.' *Health Psychology* 26(6): 668–674. doi: [10.1037/0278-6133.26.6.668](https://doi.org/10.1037/0278-6133.26.6.668).
- Gianaros, Peter J., Jeffrey A. Horenstein, Sheldon Cohen, Karen A. Matthews, Sarah M. Brown, Janine D. Flory, Hugo D. Critchley, Stephen B. Manuck, and Ahmad R. Hariri, 2007. 'Perigenual Anterior Cingulate Morphology Covaries With Perceived Social Standing.' *Social Cognitive and Affective Neuroscience* 2(3): 161–173. doi: [10.1093/scan/nsm013](https://doi.org/10.1093/scan/nsm013).
- Gruenewald, Tara L., Arun S. Karlamangla, Perry Hu, Sharon Stein-Merkin, Carolyn Crandall, Brandon Koretz, and Teresa E. Seeman, 2012. 'History of Socioeconomic Disadvantage and Allostatic Load in Later Life.' *Social Science and Medicine* 74(1): 75–83. doi: [10.1016/j.socscimed.2011.09.037](https://doi.org/10.1016/j.socscimed.2011.09.037).
- Guardino, Christine and Christine Dunkel Schetter, 2022. 'Subjective Social Status and Allostatic Load in Mothers One Year After Birth.' *Health Psychology* 41(3): 235–241. doi: [10.1037/hea0001148](https://doi.org/10.1037/hea0001148).
- Gugushvili, Alexi, Olga Zelinska, Patrick Präg, and Grzegorz Bulczak, 2022. 'Does Perceived Social Mobility Affect Health? Evidence From a Fixed-Effects Approach.' *Social Science & Medicine* 294(114705): 1–11. doi: [10.1016/j.socscimed.2022.114705](https://doi.org/10.1016/j.socscimed.2022.114705).
- Hayward, Mark D. and Bridget K. Gorman, 2004. 'The Long Arm of Childhood. The Influence of Early-Life Social Conditions on Men's Mortality.' *Demography* 41(1): 87–107. doi: [10.1353/dem.2004.0005](https://doi.org/10.1353/dem.2004.0005).
- Hoebel, Jens and Thomas Lampert, 2020. 'Subjective Social Status and Health. Multidisciplinary Explanations and Methodological Challenges.' *Journal of Health Psychology* 25(2): 173–185. doi: [10.1177/1359105318800804](https://doi.org/10.1177/1359105318800804).
- Hyde, Martin, Richard D. Wiggins, Paul Higgs, and David B. Blane, 2003. 'A Measure of Quality of Life in Early Old Age. The Theory, Development, and Properties of a Needs Satisfaction Model (CASP-19).' *Aging and Mental Health* 7(3): 186–194. doi: [10.1080/1360786031000101157](https://doi.org/10.1080/1360786031000101157).
- Jackson, Benita, Laura Smart Richman, Onawa LaBelle, Madeleine S. Lempereur, and Jean M. Twenge, 2015. 'Experimental Evidence That Low Social Status Is Most Toxic to Wellbeing When Internalized.' *Self and Identity* 14(2): 157–172. doi: [10.1080/15298868.2014.965732](https://doi.org/10.1080/15298868.2014.965732).
- Kim, Eric S., Kaitlin A. Hagan, Francine Grodstein, Dawn L. DeMeo, Immaculata De Vivo, and Laura D. Kubzansky, 2017. 'Optimism and Cause-Specific Mortality. A Prospective Cohort Study.' *American Journal of Epidemiology* 185(1): 21–29. doi: [10.1093/aje/kww182](https://doi.org/10.1093/aje/kww182).
- Krieger, Nancy, 2005. 'Embodiment. A Conceptual Glossary for Epidemiology.' *Journal of Epidemiology and Community Health* 59(5): 350–355. doi: [10.1136/jech.2004.024562](https://doi.org/10.1136/jech.2004.024562).

- Lê-Scherban, Félice, Allison B. Brenner, Margaret T. Hicken, Belinda L. Needham, Teresa Seeman, Richard P. Sloan, Xu Wang, and Ana V. Diez Roux, 2018. ‘Child and Adult Socioeconomic Status and the Cortisol Response to Acute Stress. Evidence From the Multi-Ethnic Study of Atherosclerosis.’ *Psychosomatic Medicine* 80(2). doi: [10.1097/PSY.0000000000000543](https://doi.org/10.1097/PSY.0000000000000543).
- Lachman, Margie E. and Suzanne L. Weaver, 1997. *The Midlife Development Inventory (MIDI) Personality Scales. Scale Construction and Scoring*. Waltham, MA: Brandeis University.
- Lindemann, Kristina and Ellu Saar, 2014. ‘Contextual Effects on Subjective Social Position. Evidence from European Countries.’ *International Journal of Comparative Sociology* 55(1): 3–23. doi: [10.1177/0020715214527101](https://doi.org/10.1177/0020715214527101).
- Mackenbach, Johan P., 2010. ‘New Trends in Health Inequalities Research. Now It’s Personal.’ *Lancet* 376(9744): 854–855. doi: [10.1016/S0140-6736\(10\)60313-3](https://doi.org/10.1016/S0140-6736(10)60313-3).
- , 2019. *Health Inequalities. Persistence and Change in European Welfare States*. Oxford: Oxford University Press. doi: [10.1093/oso/9780198831419.001.0001](https://doi.org/10.1093/oso/9780198831419.001.0001).
- Mackenbach, Johan P. and Anton E. Kunst, 1997. ‘Measuring the Magnitude of Socio-Economic Inequalities in Health. An Overview of Available Measures Illustrated with Two Examples from Europe.’ *Social Science and Medicine* 44(6): 757–771. doi: [10.1016/S0277-9536\(96\)00073-1](https://doi.org/10.1016/S0277-9536(96)00073-1).
- Marmot, Michael G., 2004. *The Status Syndrome. How Social Standing Affects Our Health and Longevity*. New York: Holt.
- , 2015. *The Health Gap. The Challenge of an Unequal World*. London: Bloomsbury.
- Matthews, Karen A. and Linda C. Gallo, 2011. ‘Psychological Perspectives on Pathways Linking Socioeconomic Status and Physical Health.’ *Annual Review of Psychology* 62: 501–530. doi: [10.1146/annurev.psych.031809.130711](https://doi.org/10.1146/annurev.psych.031809.130711).
- McEwen, Bruce S., 1998. ‘Stress, Adaptation, and Disease. Allostasis and Allostatic Load.’ *Annals of the New York Academy of Sciences* 840(1): 33–44. doi: [10.1111/j.1749-6632.1998.tb09546.x](https://doi.org/10.1111/j.1749-6632.1998.tb09546.x).
- , 2012. ‘Brain on Stress. How the Social Environment Gets Under the Skin.’ *Proceedings of the National Academy of Sciences* 109(Supplement 2): 17180–17185. doi: [10.1073/pnas.1121254109](https://doi.org/10.1073/pnas.1121254109).
- McEwen, Bruce S. and Eliot Stellar, 1993. ‘Stress and the Individual. Mechanisms Leading to Disease.’ *Archives of Internal Medicine* 153(18): 2093–2101. doi: [10.1001/archinte.1993.00410180039004](https://doi.org/10.1001/archinte.1993.00410180039004).

- McLoughlin, Sinéad, Patrick Präg, Mel Bartley, Rose Anne Kenny, and Cathal McCrory, 2022. ‘Intergenerational Social Mobility and Allostatic Load in Mid-Life and Older Ages. A Diagonal Reference Modeling Approach.’ *Journals of Gerontology: Social Sciences* pp. 1–13. doi: [10.1093/geronb/gbac122](https://doi.org/10.1093/geronb/gbac122).
- Muscatell, Keely A., Katarina Dedovic, George M. Slavich, Michael R. Jarcho, Elizabeth C. Breen, Julianne E. Bower, Michael R. Irwin, and Naomi I. Eisenberger, 2016. ‘Neural Mechanisms Linking Social Status and Inflammatory Responses to Social Stress.’ *Social Cognitive and Affective Neuroscience* 11(6): 915–922. doi: [10.1093/scan/nsw025](https://doi.org/10.1093/scan/nsw025).
- Netuveli, Gopalakrishnan and Mel Bartley, 2012. ‘Perception is Reality. Effect of Subjective Versus Objective Socio-Economic Position on Quality of Life.’ *Sociology* 46(6): 1208–1215. doi: [10.1177/0038038512455963](https://doi.org/10.1177/0038038512455963).
- Nobles, Jenna, Miranda Rutterman Weintraub, and Nancy Adler, 2013a. ‘Subjective Socioeconomic Status and Health. Relationships Reconsidered.’ *Social Science & Medicine* 82(13): 58–66. doi: [10.1016/j.socscimed.2013.01.021](https://doi.org/10.1016/j.socscimed.2013.01.021).
- Nobles, Jenna, Miranda Rutterman Weintraub, and Nancy E. Adler, 2013b. ‘Subjective Socioeconomic Status and Health. Relationships Reconsidered.’ *Social Science & Medicine* 82(13): 58–66. doi: [10.1016/j.socscimed.2013.01.021](https://doi.org/10.1016/j.socscimed.2013.01.021).
- O’Leary, Daniel, Ahmet Uysal, David H. Rehkopf, and James J. Gross, 2021. ‘Subjective Social Status and Physical Health. The Role of Negative Affect and Reappraisal.’ *Social Science & Medicine* 291(114272): 1–10. doi: [10.1016/j.socscimed.2021.114272](https://doi.org/10.1016/j.socscimed.2021.114272).
- Plomin, Robert, Michael F. Scheier, Cindy S. Bergeman, Nancy L. Pedersen, John R. Nesselrode, and Gerald E. McClearn, 1992. ‘Optimism, Pessimism, and Mental Health. A Twin/Adoption Analysis.’ *Personality and Individual Differences* 13(8): 921–930. doi: [10.1016/0191-8869\(92\)90009-E](https://doi.org/10.1016/0191-8869(92)90009-E).
- Präg, Patrick, Melinda Mills, and Rafael Wittek, 2014. ‘Income and Income Inequality as Social Determinants of Health. Do Social Comparisons Play a Role?’ *European Sociological Review* 30(2): 218–229. doi: [10.1093/esr/jct035](https://doi.org/10.1093/esr/jct035).
- Präg, Patrick, 2020. ‘Subjective Socio-Economic Status Predicts Self-Rated Health Irrespective of Objective Family Socio-Economic Background.’ *Scandinavian Journal of Public Health* 48(7): 707–714. doi: [10.1177/1403494820926053](https://doi.org/10.1177/1403494820926053).
- Präg, Patrick, Katia Begall, and Judith Treas, 2019. ‘Understanding the Marriage–Cohabitation Gap in Income Pooling. Evidence from 29 European Countries.’ *Socarxiv* doi: [10.31235/osf.io/rqzj3](https://doi.org/10.31235/osf.io/rqzj3).
- Präg, Patrick, Nina-Sophie Fritsch, and Lindsay Richards, 2022. ‘Intragenerational Social Mobility and Wellbeing in Great Britain. A Biomarker Approach.’ *Social Forces* 101(2): 665–693. doi: [10.1093/sf/soab153](https://doi.org/10.1093/sf/soab153).

- Präg, Patrick, Melinda Mills, and Rafael Wittek, 2016. ‘Subjective Socio-Economic Status and Health in Cross-National Comparison.’ *Social Science & Medicine* 149: 84–92. doi: [10.1016/j.socscimed.2015.11.044](https://doi.org/10.1016/j.socscimed.2015.11.044).
- Read, Sanna and Emily Grundy, 2014. ‘Allostatic Load and Health in the Older Population of England. A Crossed-Lagged Analysis.’ *Psychosomatic Medicine* 76(7). doi: [10.1097/PSY.0000000000000083](https://doi.org/10.1097/PSY.0000000000000083).
- Richards, Lindsay, Asri Maharani, and Patrick Präg, 2022. ‘Subjective Social Status and Objective Health among Older People in England. A Longitudinal Analysis with Biomarkers.’ *SocArXiv* doi: [10.17605/OSF.IO/C756M](https://doi.org/10.17605/OSF.IO/C756M).
- Rivenbark, Joshua, Louise Arseneault, Avshalom Caspi, Andrea Danese, Helen L. Fisher, Terrie E. Moffitt, Line J. H. Rasmussen, Michael A. Russell, and Candice L. Odgers, 2020. ‘Adolescents’ Perceptions of Family Social Status Correlate with Health and Life Chances. A Twin Difference Longitudinal Cohort Study.’ *Proceedings of the National Academy of Sciences* 117(38): 23323–23328. doi: [10.1073/pnas.1820845116](https://doi.org/10.1073/pnas.1820845116).
- Scambler, Graham, 2009. ‘Health-Related Stigma.’ *Sociology of Health & Illness* 31(3): 441–455. doi: [10.1111/j.1467-9566.2009.01161.x](https://doi.org/10.1111/j.1467-9566.2009.01161.x).
- Schnittker, Jason and Jane D. McLeod, 2005. ‘The Social Psychology of Health Disparities.’ *Annual Review of Sociology* 31: 75–103. doi: [10.1146/annurev.soc.30.012703.110622](https://doi.org/10.1146/annurev.soc.30.012703.110622).
- Singh-Manoux, Archana, Michael G. Marmot, and Nancy E. Adler, 2005. ‘Does Subjective Social Status Predict Health and Change in Health Status Better Than Objective Status?’ *Psychosomatic Medicine* 67(6): 855–861. doi: [10.1097/01.psy.0000188434.52941.a0](https://doi.org/10.1097/01.psy.0000188434.52941.a0).
- Step toe, Andrew, Elizabeth Breeze, James Banks, and James Nazroo, 2013. ‘Cohort Profile. The English Longitudinal Study of Aging.’ *International Journal of Epidemiology* 42(6): 1640–1648. doi: [10.1093/ije/dys168](https://doi.org/10.1093/ije/dys168).
- Step toe, Andrew and Jane Wardle, 2017. ‘Life Skills, Wealth, Health, and Wellbeing in Later Life.’ *Proceedings of the National Academy of Sciences* 114(17): 4354–4359. doi: [10.1073/pnas.1616011114](https://doi.org/10.1073/pnas.1616011114).
- Tang, Karen L., Ruksana Rashid, Jenny Godley, and William A. Ghali, 2016. ‘Association between Subjective Social Status and Cardiovascular Disease and Cardiovascular Risk Factors. A Systematic Review and Meta-Analysis.’ *BMJ Open* 6(3): e010137. doi: [10.1136/bmjopen-2015-010137](https://doi.org/10.1136/bmjopen-2015-010137).
- Terracciano, Antonio, Robert R. McCrae, and Jr. Costa, Paul T., 2010. ‘Intra-Individual Change in Personality Stability and Age.’ *Journal of Research in Personality* 44(1): 31–37. doi: [10.1016/j.jrp.2009.09.006](https://doi.org/10.1016/j.jrp.2009.09.006).
- Townsend, Peter and Nick Davidson, 1982. *Inequalities in Health. The Black Report*. London: Penguin.

- Turiano, Nicholas A., Daniel K. Mroczek, Jan Moynihan, and Benjamin P. Chapman, 2013. ‘Big 5 Personality Traits and Interleukin-6. Evidence for “Healthy Neuroticism” in a US Population Sample.’ *Brain, Behavior, and Immunity* 28: 83–89. doi: [10.1016/j.bbi.2012.10.020](https://doi.org/10.1016/j.bbi.2012.10.020).
- Van Winkle, Zachary and Thomas Leopold, 2021. ‘Family Size and Economic Wellbeing Following Divorce. The United States in Comparative Perspective.’ *Social Science Research* 96(102541): 1–19. doi: [10.1016/j.ssresearch.2021.102541](https://doi.org/10.1016/j.ssresearch.2021.102541).
- Westreich, Daniel and Sander Greenland, 2013. ‘The Table 2 Fallacy. Presenting and Interpreting Confounder and Modifier Coefficients.’ *American Journal of Epidemiology* 177(4): 292–298. doi: [10.1093/aje/kws412](https://doi.org/10.1093/aje/kws412).
- Wilkinson, Richard G., 1996. *Unhealthy Societies. The Afflictions of Inequality*. London and New York: Routledge. doi: [10.4324/9780203421680](https://doi.org/10.4324/9780203421680).
- Wilkinson, Richard G. and Kate E. Pickett, 2010. *The Spirit Level. Why Equality Is Better for Everyone*. London: Penguin, 3rd edition.

Supplementary materials

Contents

Additional information about ELSA data	A2
Data selection	A2
Table A1: Selection of cases for analyses	A3
Variable descriptions and descriptive statistics	A3
Allostatic load	A3
Table A2: Biomarkers used for allostatic load, cut-off values, and references	A4
Table A3: Descriptive statistics for pooled sample and by time point.	A6
Personality factors	A8
Table A4: Number of items, results from principal-component factor analysis, and Cronbach's alpha for multi-item covariates.	A8
Childhood living conditions	A9
Sociodemographic control variables	A9
Table underlying Figure 3	A10
Table A5: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation.	A10
Robustness checks	A12
Comparison of subjective social status in ELSA to subjective social status in BSA	A12
Figure A1: Scatterplot of age and subjective social status in BSA and ELSA	A13
Self-rated health as an alternative outcome	A14
Table A6: Self-rated health regressed on subjective social status and covariates, maximum-likelihood random-effects estimation.	A14
Alternative version of allostatic load	A16
Table A7: Allostatic load (T1–T3) regressed on subjective social status and covariates, maximum-likelihood random-effects estimation.	A17
Sample stratification by sex	A20
Table A8: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation, stratified by participant sex.	A20
Sample restriction: Possible outliers excluded	A25
Figure A2: Scatterplot of subjective social status (within-participant component) and allostatic load, excluding possible outliers	A25
Sample restriction: Age 50–64 years only	A25

Table A9: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation. Sample restricted to participants between 50 and 64 years.	A25
Sample restriction: Participants in paid work only	A28
Table A10: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation. Sample restricted to participants in paid work.	A28
Sensitivity to attrition	A30
Table A11: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation. Sample restricted to participants who participated in at least four time points.	A30
Table A12: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation. Sample restricted to participants who participated at five time points.	A33
Table A13: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation. Attrition corrected using joint models	A35
Using weighted data	A37
Table A14: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation, weighted data.	A37
Multiple imputation	A39
Table A15: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation, multiply imputed data.	A40
References supplementary materials	A42

Additional information about ELSA data

Data selection

Table A1 shows the selection of cases for the study. 19,807 individuals have ever taken part in one of ELSA's nine waves. We removed participants younger than 50 years or older than 89 years of age because main participants of ELSA were aged 50 years or older (younger respondents were spouses or partners of the main participants and do not reflect the general population at that age groups), and ages above 89 years are top-coded by the data providers for privacy reasons. Our outcome variable allostatic load was measured at the nurse interviews offered to participants in waves 2, 4, 6, 8, and 9 (here also called T1–T5). At T4, only half of the respondents were offered nurse interviews and examinations, while the other half received offers at T5. For 10,355 participants, we have at least

Table A1: Selection of cases for analyses

	<i>N</i>
Total number of participants	19,807
Participants younger than 50 y. or older than 89 y.	-661
Participants without any valid measure of allostatic load	-8,791
<i>Imputation sample</i>	10,355
Participants with missing values on subjective social status	-778
Participants with missing values on marital status, income, wealth, or education	-86
Participants with missing values on personality information	-998
Participants with missing childhood information	-3,988
<i>Complete-case sample</i>	4,505
Imputation sample: Number of complete observations	21,320
Complete-case sample: Number of observations	10,893

one valid measure of allostatic load—we refer to this group of participants as the *imputation sample*.

On the key explanatory variable, subjective social status, 7.5% of values are missing ($N = 778$), as this question stems from a self-completion questionnaire to be filled in either while other participants in the household were interviewed or to be filled in after the interviewer had left and mailed to the data collectors. The number of participants with missing information on sociodemographic covariates marital status, education, income, or wealth is $N = 86$.

In wave 5, information on personality factors was collected with a self-completion questionnaire. 10% of participants did not return their self-completion questionnaires. Those who only participated via proxy interviews (due to physical or cognitive impairments, hospital, or temporary care home stays) also do not have information on these variables. Information on childhood stressors conditions stems from the life history module in wave 3, which was an optional additional self-completion section leaving about 38% missing values.

When selecting only cases with no missing values on all our variables of interest, we have 4,505 participants. We refer to those as the *complete-case sample*.

Our panel regression models allow us to analyze participants even if they have not participated in all four time points used for the analysis. In total, we have 21,320 observations for the imputation sample and 10,893 observations for the complete-case sample.

Variable descriptions and descriptive statistics

Allostatic load

For time points T1–T5, allostatic load was measured using nine biomarkers available in ELSA. Four biomarkers, including systolic blood pressure (SBP), diastolic blood pressures (DBP), and weight and height, were obtained from

Table A2: Biomarkers used for allostatic load, cut-off values, and references

Biomarker	Cut-off value	Reference
<i>Cardiovascular</i>		
Systolic blood pressure	≥ 140 mmHg	Flint <i>et al.</i> (2019)
Diastolic blood pressure	≥ 90 mmHg	Flint <i>et al.</i> (2019)
<i>Inflammation</i>		
C-reactive protein	Top quartile	—
Fibrinogen	Top quartile	—
<i>Metabolic</i>		
Glycosylated haemoglobin	Top quartile	—
High-density lipoprotein/total cholesterol ratio	Top quartile	—
Triglycerides	Top quartile	—
Fasting blood glucose	≥ 7 mmol/l	Forouhi <i>et al.</i> (2007)
<i>Body fat</i>		
BMI	≥ 30 kg/m ²	World Health Organization (1995)
Waist circumference (T1–T3 only)	≥ 88 cm (women), ≥ 102 cm (men)	Janssen <i>et al.</i> (2002)
<i>Lung function</i> (T1–T3 only)		
Forced expiratory volume in one second (FEV1)	Bottom quartile	—
Forced vital capacity (FVC)	Bottom quartile	—
Peak expiratory flow (PEF)	Bottom quartile	—

physical measures. SBP and DBP (in millimetres of mercury) were measured three times and we used the mean of valid readings. We used weight and height information collected in kilograms and metres, respectively. Body mass index (BMI) was calculated as weight divided by the square of height. Information on the remaining biomarkers (high-density lipoprotein and total cholesterol in milligrams per decilitre; triglycerides in milligrams per decilitre, fasting blood glucose or FBG in millimole per litre; glycosylated haemoglobin or HbA1c in percent; fibrinogen in milligrams per decilitre; and C-reactive protein or CRP in milligrams per decilitre) was derived from the blood sample.

We calculated allostatic load in two steps (Gruenewald *et al.*, 2012; Read and Grundy, 2014). In a first step, we recoded each biomarker based on its cut-off point (Table A2). In defining the cut-off values of each biomarker, we followed prior study drawing the trajectories of allostatic load using ELSA (Tampubolon and Maharani, 2018). We used clinical cut-off for biomarkers where there is an established cut-off point available, i.e. systolic blood pressure (Flint *et al.*, 2019), diastolic blood pressure (Flint *et al.*, 2019), fasting blood glucose (Forouhi *et al.*, 2007), BMI (World Health Organization, 1995), and waist circumference (Janssen *et al.*, 2002). For other biomarkers, we followed Read and Grundy (2014) and coded the biomarker as 1 if the biomarker values fell into their high-risk quartiles. Doctor diagnosis and medication were also considered in constructing the allostatic load. We coded the SBP and DBP readings into 1 if the respondents were diagnosed with cardiovascular diseases or used medication for hypertension. We coded the FBG into 1 if the respondents were diagnosed with diabetes mellitus. We coded the HbA1c into 1 if the respondents had blood glucose lowering medication or insulin. As prior study suggests that cholesterol, blood glucose, and blood pressure lowering medication reduced the values of CRP between 25–30%, we coded the CRP into 1 if participants used those medications (Prasad, 2006).

In a second step, we calculated scores for each organ system. The nine biomarkers used for time points T1–T5 covered four organ systems, cardiovascular (SBP and DBP), inflammation (CRP and fibrinogen), metabolic (HbA1c, high-density lipoprotein/total cholesterol ratio, triglycerides, and FBG), and body fat (BMI). Within each organ system each indicator receives the same weight, for example the cardiovascular system has two biomarkers, each potentially contributing half a point. We then sum the scores for those five organ systems. The scores range from 0 to 4, and higher allostatic load scores indicate higher multi-system physiological dysregulation.

Nurse interviews at time points T1–T3 comprised a wider range of health measures, specifically waist measurement and lung function. Waist circumference was measured in cm. We categorised the respondents as obese if their waist circumferences were 88 cm for women or 102 cm for men or higher. The information of forced expiratory volume in one second (FEV1), forced vital capacity (FVC), and peak expiratory flow (PEF) were recorded in ml to measure the lung function in ELSA. We defined the cut-off point as the bottom quartile for each of the lung function measure. In a robustness check, we re-run the

models with this version of the allostatic load variable for time points T1–T3 (Table A7).

Descriptive statistics for both versions of allostatic load can be found in Table A3.

Table A3: Descriptive statistics for pooled sample and by time point. Proportions unless otherwise stated.

	Pooled	T1	T2	T3	T4	T5
Allostatic load (mean (<i>SD</i>))	1.56 (1.00)	1.39 (0.94)	1.55 (1.04)	1.49 (1.00)	1.85 (0.96)	2.01 (0.91)
Subjective status (mean (<i>SD</i>))	6.03 (1.59)	6.06 (1.57)	5.90 (1.60)	5.98 (1.61)	6.21 (1.55)	6.47 (1.55)
Age (mean (<i>SD</i>))	66.94 (8.49)	64.00 (8.09)	65.39 (8.66)	68.32 (7.99)	71.31 (7.11)	72.34 (6.49)
Marital status:						
Married/cohabiting	0.74	0.75	0.75	0.74	0.74	0.60
Divorced/separated	0.09	0.09	0.08	0.09	0.08	0.14
Widowed	0.13	0.13	0.13	0.13	0.14	0.22
Single, never married	0.04	0.03	0.04	0.05	0.04	0.04
Household wealth (mean (<i>SD</i>))	12.38 (3.72)	12.22 (3.76)	12.19 (4.07)	12.42 (3.71)	12.82 (3.14)	12.89 (2.37)
Household income (ln)	5.71 (0.64)	5.56 (0.62)	5.66 (0.68)	5.79 (0.60)	5.86 (0.56)	5.92 (0.61)
Female (ref. male)	0.55	0.55	0.55	0.56	0.56	0.59
Non-white race (ref. white)	0.01	0.01	0.01	0.01	0.01	0.03
Education:						
No qualification	0.24	0.27	0.25	0.24	0.21	0.20
Foreign/other	0.08	0.09	0.08	0.07	0.07	0.07
Lower secondary	0.26	0.26	0.26	0.26	0.27	0.27
Upper secondary	0.08	0.07	0.08	0.08	0.09	0.09
Some tertiary	0.15	0.15	0.15	0.16	0.16	0.15
Tertiary	0.18	0.16	0.18	0.19	0.20	0.23
Missing	0.00	0.00	0.00	0.00	0.00	0.00
Social class:						
Higher managerial and professional	0.15	0.14	0.14	0.15	0.16	0.17
Lower managerial and professional	0.29	0.28	0.29	0.30	0.30	0.33
Intermediate occupations	0.14	0.15	0.14	0.14	0.14	0.13
Small employers and own account	0.11	0.11	0.10	0.11	0.10	0.09
Lower supervisory and technical	0.10	0.10	0.10	0.10	0.10	0.08
Semi-routine	0.14	0.14	0.14	0.13	0.13	0.10

Routine	0.07	0.08	0.07	0.07	0.06	0.09
Other	0.01	0.01	0.01	0.01	0.00	0.01
Conscientiousness	-0.00	-0.08	-0.02	0.05	0.07	0.12
	(1.00)	(1.03)	(1.01)	(0.97)	(0.97)	(0.97)
Neuroticism	0.00	-0.06	0.01	0.02	0.04	0.05
	(1.00)	(0.99)	(1.00)	(1.00)	(1.00)	(1.02)
Agreeableness	-0.00	-0.02	-0.01	0.02	0.00	0.06
	(1.00)	(1.01)	(1.01)	(0.99)	(0.99)	(0.93)
Openness	0.00	-0.05	-0.02	0.03	0.04	0.09
	(1.00)	(1.01)	(1.01)	(0.98)	(0.98)	(1.05)
Extraversion	-0.00	-0.04	-0.01	0.03	0.00	0.15
	(1.00)	(1.01)	(1.01)	(0.99)	(0.98)	(0.99)
Sense of control	0.00	-0.01	-0.01	0.02	0.01	-0.02
	(1.00)	(1.01)	(1.02)	(0.96)	(0.99)	(1.03)
Optimism	0.00	-0.05	-0.01	0.03	0.03	0.07
	(1.00)	(1.04)	(1.01)	(0.97)	(0.96)	(1.02)
Parental education:						
Question not asked	0.04	0.07	0.06	0.00	0.00	0.00
Age 14 or under or no school	0.65	0.65	0.64	0.67	0.65	0.62
At age 15	0.12	0.11	0.11	0.12	0.13	0.13
At age 16	0.09	0.07	0.09	0.09	0.09	0.11
At age 17 or 18	0.06	0.05	0.05	0.06	0.07	0.06
At age 19 or over	0.05	0.04	0.05	0.06	0.05	0.07
Parental occupation:						
Armed Forces	0.03	0.03	0.02	0.03	0.03	0.02
Manager or senior official in	0.06	0.06	0.06	0.05	0.05	0.09
someone else s business						
Running his own business	0.07	0.07	0.07	0.08	0.07	0.09
Professional or technical	0.14	0.13	0.14	0.15	0.16	0.14
Administrative, clerical or	0.07	0.07	0.07	0.07	0.08	0.07
secretarial						
Skilled trade	0.26	0.27	0.26	0.26	0.26	0.24
Caring, leisure, travel or per-	0.02	0.02	0.02	0.02	0.02	0.03
sonal services						
Sales or customer service	0.03	0.03	0.04	0.03	0.04	0.02
Plant, process or machine	0.09	0.08	0.09	0.08	0.09	0.09
drivers or operators						
Other jobs	0.14	0.15	0.15	0.14	0.13	0.14
Something else	0.05	0.05	0.05	0.05	0.05	0.05
Casual jobs	0.01	0.01	0.01	0.01	0.00	0.00
Retired	0.01	0.01	0.01	0.01	0.01	0.00
Unemployed	0.01	0.01	0.01	0.01	0.01	0.00
Sick / disabled	0.01	0.01	0.01	0.01	0.01	0.00
Missing	0.00	0.00	0.00	0.00	0.00	0.01
Childhood stress	0.64	0.64	0.64	0.63	0.63	0.58

	(0.89)	(0.87)	(0.91)	(0.90)	(0.90)	(0.86)
Allostatic load (T1–T3, mean (SD))	1.87	1.76	1.85	1.99	.	.
	(1.11)	(1.06)	(1.13)	(1.12)	(.)	(.)
Self-rated health (mean (SD))	2.39	2.47	2.42	2.35	2.30	2.33
	(1.03)	(1.04)	(1.02)	(1.03)	(1.00)	(1.07)
Working (ref. not working)	0.40	0.48	0.41	0.37	0.32	0.28
<i>N</i> observations	10,893	2,926	3,112	2,752	1,673	430
<i>N</i> participants	4,505	2,926	3,112	2,752	1,673	430

Personality factors

Table A4: Number of items, results from principal-component factor analysis, and Cronbach’s alpha for multi-item covariates.

	Number of items	Number of factors extracted	Variance explained	Cronbach’s alpha
Agreeableness	5	1	0.57	0.80
Openness	7	1	0.45	0.79
Conscientiousness	4	1	0.45	0.56
Extraversion	5	1	0.52	0.75
Neuroticism	4	1	0.51	0.68
Optimism	2	1	0.83	0.80

‘Big 5’ personality variables *agreeableness*, *openness*, *conscientiousness*, *extraversion*, and *neuroticism* were measured following [Lachman and Weaver’s \(1997\)](#) Midlife Development Inventory. We code scores, which run from 1 (‘Not at all’) to 4 (‘A lot’), for a battery of 23 items including worded ‘Please indicate how well each of the following describes you?’ Examples include ‘talkative’ (extraversion), ‘calm’ (reversed, neuroticism), and ‘curious’ (openness). We conducted principal component analyses to assess the factor structure and calculated Cronbach’s alpha to assess internal consistency before calculating averages for each personality dimension. Details can be found in Table A4. We standardized the scores to have a mean of 0 and a standard deviation of 1. These items were only measured in wave 5 of data collection. Though it is widely assumed that psychological traits remain constant across the life course, particularly among people over the age of 30 years ([Terracciano *et al.*, 2010](#)).

Following [Steptoe and Wardle \(2017\)](#), we supplemented the ‘Big 5’ factors with measures of optimism and control. *Optimism* was measured with two items from the CASP scale ([Hyde *et al.*, 2003](#)): ‘How often do you feel that life is full of opportunity?’, scored from 1 (‘not at all’) to 5 (‘very much’) and ‘How often do you feel that the future looks good?’, scored from 1 (‘never’) to 4 ‘often.’ Principal component analysis results are shown in Table A4. Perceived *sense of control* we measure with a single item, scored from ‘strongly disagree’ (1) to

‘strongly agree’ (6): ‘At home, I feel I have control over what happens in most situations.’ Again, we standardized the variables to have a mean of 0 and a standard deviation of 1. Descriptive statistics can be found in Table A3.

Childhood living conditions

Parental occupation was measured with the question ‘What was your father’s (or main carer’s) main occupation when you were 14?’ Respondents were presented with a list of 15 response options shown in Table A3. For *parental education*, participants were probed about the school-leaving age of both parents, ranging from ‘never went to school’ to ‘age 19 and above.’ We draw on the highest reported school-leaving age should parents differ in their school-leaving ages.

Childhood stress is a count of adverse experiences from the list: natural disasters, armed combat, divorced parents, difficult living arrangements, life-threatening illness or accident, and severe financial hardship, thus ranging from 0–7. Descriptive statistics can be found in Table A3.

Sociodemographic control variables

Age is included in the analysis as a continuous measure that varies over time. *Sex* was categorized into male and female. *Education* was categorized into ‘no qualifications,’ ‘foreign or other qualifications,’ ‘lower secondary’ (e.g. O-level), ‘upper secondary’ (e.g. A-level), ‘some tertiary’ (e.g. higher education below degree level) and ‘tertiary’ (e.g. university degree). *Marital status* is categorized into married, divorced/separated, widowed, and never married. Marital status can vary over time.

For *social class*, we take the highest NS-SEC (Rose and Pevalin, 2003) recorded for each participant, in the following categories: ‘higher managerial and professional,’ ‘lower managerial and professional,’ ‘intermediate occupations,’ ‘small employers and own account holders,’ ‘lower supervisory and technical,’ ‘semi-routine,’ ‘routine,’ and an ‘other’ category encompassing the never worked, long-term unemployed, and unknown.

Household *wealth* is net total wealth of a benefit unit and comprises the sum of savings, investments, physical wealth, and housing wealth after financial debt and mortgage debt has been subtracted. The ELSA survey is designed to make the collection of financial data as simple as possible for respondents, and data is imputed where possible to keep the level of missing data as low as possible. We transformed the wealth variable with the inverse hyperbolic sine (IHS, Friedline et al., 2015) to reduce skew, to retain negative and zero values of wealth, and to achieve a log-like interpretation of the coefficient. Wealth is also a time-varying covariate.

For household *income*, the following income streams of a benefit unit are included: employment income, self-employment income, state benefit income, state pension income, private pension income, asset income, and other income. The variable is equivalized to account for differences in household size. Again, income data is imputed where possible, and we log-transformed the variable to

reduce skew and to improve interpretability. The income covariate also varies over time.

Table underlying Figure 3

Table A5: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Subjective status	-0.014*						
	(0.006)						
Subjective status (between)		-0.036***	-0.030**	-0.023*	-0.021	-0.011	-0.011
		(0.010)	(0.010)	(0.011)	(0.011)	(0.011)	(0.011)
Subjective status (within)		-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
		(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Age (between)	0.020***	0.020***	0.020***	0.018***	0.018***	0.017***	0.017***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Age (within)	0.046*	0.046*	0.046*	0.046*	0.046*	0.046*	0.046*
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Marital status (<i>ref.</i> married)							
Divorced/separated	-0.010	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007
	(0.086)	(0.086)	(0.086)	(0.086)	(0.086)	(0.086)	(0.086)
Widowed	0.182***	0.183***	0.183***	0.183***	0.183***	0.183***	0.183***
	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)
Never married	0.183	0.180	0.180	0.180	0.180	0.180	0.180
	(0.177)	(0.177)	(0.177)	(0.177)	(0.177)	(0.177)	(0.177)
Female sex (<i>ref.</i> male)	-0.079**	-0.078**	-0.061*	-0.046	-0.048	-0.048	-0.049
	(0.028)	(0.028)	(0.028)	(0.029)	(0.029)	(0.029)	(0.029)
Non-white (<i>ref.</i> white)	0.124	0.115	0.162	0.170	0.162	0.182	0.180
	(0.104)	(0.104)	(0.104)	(0.104)	(0.104)	(0.103)	(0.103)
Education (<i>ref.</i> lower secondary)							
No qualification	0.102**	0.097**	0.071	0.063	0.066	0.065	0.066
	(0.037)	(0.037)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)
Foreign/other	0.061	0.060	0.042	0.052	0.054	0.061	0.062
	(0.052)	(0.052)	(0.052)	(0.051)	(0.051)	(0.051)	(0.051)
Upper secondary	-0.008	-0.006	0.011	-0.000	0.000	-0.001	-0.001
	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)
Some tertiary	-0.025	-0.023	-0.022	-0.033	-0.032	-0.036	-0.035
	(0.043)	(0.043)	(0.043)	(0.042)	(0.042)	(0.042)	(0.042)
Tertiary	-0.138**	-0.126**	-0.095*	-0.103*	-0.104*	-0.106*	-0.107*
	(0.044)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)
Missing	0.133	0.135	0.113	0.129	0.141	0.165	0.167
	(0.312)	(0.311)	(0.310)	(0.309)	(0.309)	(0.308)	(0.308)
Social class (<i>ref.</i> lower managerial)							
Higher managerial and professional	0.005	0.011	0.019	0.013	0.013	0.015	0.015
	(0.043)	(0.044)	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)
Intermediate occupations	0.020	0.015	0.008	0.002	0.001	0.002	0.001
	(0.044)	(0.044)	(0.044)	(0.043)	(0.043)	(0.043)	(0.043)
Small employers and own account	-0.076	-0.079	-0.082	-0.081	-0.083	-0.087	-0.088
	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)
Lower supervisory and technical	0.060	0.052	0.032	0.032	0.030	0.028	0.027
	(0.050)	(0.050)	(0.050)	(0.049)	(0.049)	(0.049)	(0.049)
Semi-routine	-0.009	-0.017	-0.035	-0.044	-0.046	-0.045	-0.046
	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)
Routine	0.195***	0.183**	0.160**	0.149**	0.148**	0.146**	0.146**

	(0.056)	(0.057)	(0.057)	(0.056)	(0.056)	(0.056)	(0.056)
Other	-0.122	-0.117	-0.091	-0.105	-0.111	-0.131	-0.132
	(0.157)	(0.157)	(0.157)	(0.156)	(0.156)	(0.155)	(0.155)
Household wealth (between)	-0.034***	-0.033***	-0.031***	-0.029***	-0.029***	-0.028***	-0.028***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Household wealth (within)	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Household income (ln) (between)	-0.064*	-0.050	-0.039	-0.034	-0.034	-0.025	-0.025
	(0.027)	(0.027)	(0.028)	(0.027)	(0.027)	(0.027)	(0.027)
Household income (ln) (within)	0.002	0.001	0.001	0.001	0.001	0.001	0.001
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Parental school-leaving age (ref. Age 14 or below)							
Question not asked			0.058	0.030	0.030	0.024	0.024
			(0.056)	(0.056)	(0.056)	(0.056)	(0.056)
At age 15			-0.056	-0.056	-0.056	-0.052	-0.052
			(0.042)	(0.041)	(0.041)	(0.041)	(0.041)
At age 16			-0.057	-0.059	-0.057	-0.058	-0.058
			(0.049)	(0.048)	(0.048)	(0.048)	(0.048)
At age 17 or 18			-0.174**	-0.168**	-0.164**	-0.161**	-0.160**
			(0.059)	(0.059)	(0.059)	(0.059)	(0.059)
At age 19 or over			-0.169**	-0.169**	-0.168**	-0.163**	-0.163**
			(0.064)	(0.063)	(0.063)	(0.063)	(0.063)
Occupation father (ref. skilled trade)							
Manager or senior official in someone else s business			-0.054	-0.064	-0.061	-0.064	-0.064
			(0.095)	(0.094)	(0.094)	(0.094)	(0.094)
Running his own business			-0.045	-0.043	-0.039	-0.035	-0.034
			(0.091)	(0.091)	(0.091)	(0.091)	(0.091)
Professional or technical			-0.002	-0.005	-0.003	-0.003	-0.002
			(0.086)	(0.086)	(0.086)	(0.086)	(0.086)
Administrative, clerical or secretarial			-0.106	-0.111	-0.107	-0.102	-0.101
			(0.092)	(0.091)	(0.091)	(0.091)	(0.091)
Skilled trade			-0.007	-0.006	-0.004	-0.000	0.000
			(0.083)	(0.082)	(0.082)	(0.082)	(0.082)
Caring, leisure, travel or personal services			0.021	0.025	0.026	0.035	0.035
			(0.122)	(0.121)	(0.121)	(0.121)	(0.121)
Sales or customer service			-0.026	-0.027	-0.025	-0.015	-0.014
			(0.104)	(0.104)	(0.104)	(0.103)	(0.103)
Plant, process or machine drivers or operators			0.094	0.101	0.104	0.109	0.110
			(0.090)	(0.090)	(0.090)	(0.090)	(0.090)
Other jobs			0.099	0.100	0.103	0.108	0.108
			(0.086)	(0.085)	(0.085)	(0.085)	(0.085)
Something else			0.056	0.069	0.072	0.069	0.069
			(0.097)	(0.096)	(0.096)	(0.096)	(0.096)
Casual jobs			0.016	0.031	0.037	0.031	0.032
			(0.177)	(0.176)	(0.176)	(0.175)	(0.175)
Retired			0.019	0.027	0.025	-0.001	-0.001
			(0.171)	(0.170)	(0.170)	(0.169)	(0.169)
Unemployed			-0.011	0.007	0.017	0.022	0.025
			(0.143)	(0.143)	(0.143)	(0.142)	(0.142)
Sick / disabled			-0.159	-0.159	-0.160	-0.160	-0.160
			(0.146)	(0.145)	(0.145)	(0.145)	(0.145)
Missing			0.040	0.040	0.051	0.046	0.048
			(0.212)	(0.211)	(0.211)	(0.210)	(0.210)
Childhood stress			0.022	0.023	0.022	0.021	0.021
			(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Conscientiousness				-0.060***	-0.058***	-0.055***	-0.055***
				(0.015)	(0.015)	(0.015)	(0.015)
Neuroticism				-0.030*	-0.034*	-0.045***	-0.046***

				(0.013)	(0.013)	(0.014)	(0.014)
Agreeableness				0.072***	0.072***	0.071***	0.072***
				(0.016)	(0.016)	(0.016)	(0.016)
Openness				0.041*	0.042*	0.051**	0.051**
				(0.017)	(0.017)	(0.017)	(0.017)
Extraversion				-0.096***	-0.092***	-0.072***	-0.072***
				(0.018)	(0.018)	(0.018)	(0.018)
Sense of control					-0.022		-0.006
					(0.013)		(0.014)
Optimism						-0.082***	-0.081***
						(0.015)	(0.016)
Constant	1.164***	1.195***	1.094***	1.116***	1.102***	1.041***	1.039***
	(0.202)	(0.203)	(0.222)	(0.222)	(0.222)	(0.222)	(0.222)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N participants	4,505	4,505	4,505	4,505	4,505	4,505	4,505
N observations	10,893	10,893	10,893	10,893	10,893	10,893	10,893
AIC	26,339.5	26,334.3	26,331.4	26,286.4	26,285.8	26,259.4	26,261.2
BIC	26,572.9	26,575	26,725.4	26,716.9	26,723.6	26,697.2	26,706.3
Deviance	26,275.5	26,268.3	26,223.4	26,168.4	26,165.8	26,139.4	26,139.2

Robustness checks

Comparison of subjective social status in ELSA to subjective social status in BSA

ELSA has participants in the relatively select 50–89 y. age bracket, raising the concern that findings in this age group might not generalize to younger individuals. While there is no data set (known to us) that would allow us to study our research question for younger age groups, we can compare the subjective social status measurements from ELSA to those from an English general population survey.

The British Social Attitudes Survey (BSA) is an annually repeated cross-sectional general population survey which included a subjective social status question three times during the observation window of our study, in 2009, 2016, and 2019 ([Natcen Social Research, 2011, 2017, 2021](#)), which we pool for the analysis below. BSA respondents are in the age range of 18–95 years, with respondents’ ages top-coded at age 95. After restricting data sets to the English subsample and removing observations with missing values on age and subjective social status, sample sizes are $N_{2009} = 788$, $N_{2016} = 1,277$, and $N_{2019} = 1,460$.

The BSA subjective social status survey differs in wording from the ELSA, asking participants: ‘In our society there are groups which tend to be towards the top and groups which tend to be towards the bottom. Below is a scale that runs from top to bottom. Where would you put yourself on this scale?’ Participants have ten response options from 1 (bottom) to 10 (top).

Panels A1 and A2 of Figure A1 show scatterplots of age and subjective social status stratified by age group, 18–49 years and 50–89 years. In both age groups the linear association is roughly zero, and the polynomial smoother suggest that the linear approximation of the association is reasonable. Panel A3 shows the linear associations overlaid, and the overlap of the 95% confidence intervals shows that any difference in the regression slopes is not different from

A1 BSA: 18-49 y.

A2 BSA: 50-89 y.

A3 BSA

B ELSA

Figure A1: In BSA data, age is largely uncorrelated to subjective social status among those 18–49 years old (*Panel A1*) and those 50–89 years old (*Panel A2*), and the correlation is similar in the two age groups (*Panel A3*), in line with the age–subjective social status association in ELSA (*Panel B*). Scatterplot of age and subjective social status in BSA and ELSA, b coefficients from (pooled) OLS regressions, smoother: kernel-weighted local polynomial smoothing, error bands: 95% confidence intervals, data points jittered.

zero at conventional levels of statistical precision. Panel B shows the association between age and subjective social status for ELSA, and here we also find that according to the local polynomial smoother, a linear approximation of the age–subjective social status relationship is reasonable, and this linear relationship between age and subjective social status is close to zero.

While this exercise is of course not able to verify that findings based on the ELSA sample can be generalized to other age groups, it also did not reveal any differences in the subjective social status distribution by age, which is reassuring.

Self-rated health as an alternative outcome

To address the question as to whether our results are driven by a lack of within-variation in the subjective social status variable, in Table A6 we replicate our analysis with a different outcome variable, namely self-rated health.

Self-rated health is a popular measure of general health, as it is easy to measure, captures important aspects of social, physical, and mental health, and is a strong predictor of mortality (Hardy *et al.*, 2014). In ELSA, self-rated health was measured with a question: ‘How is your health in general?’, and response options range from ‘poor’ (0) to ‘excellent’ (4).

The within-participant coefficient of variation (i.e. the within-standard deviation over the mean) for self-rated health is $.51/2.39 = .21$. For comparison, the coefficient of variation for allostatic load is $.50/1.56 = .32$. This mean that there is more variation in allostatic load in participants rather than in self-rated health, lending further credence to our assumption that there is sufficient variation for a within-analysis of the subjective social status–allostatic load association.

An elaborated version of this analysis can be found in Coustaury *et al.* (2022).

Table A6: Self-rated health regressed on subjective social status and covariates, maximum-likelihood random-effects estimation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Subjective status	0.071*** (0.007)						
Subjective status (between)		0.143*** (0.010)	0.138*** (0.010)	0.083*** (0.010)	0.078*** (0.010)	0.059*** (0.010)	0.057*** (0.010)
Subjective status (within)		0.026** (0.008)	0.026** (0.008)	0.026** (0.008)	0.026** (0.008)	0.026** (0.008)	0.026** (0.008)
Age (between)	-0.011*** (0.002)	-0.011*** (0.002)	-0.011*** (0.002)	-0.009*** (0.002)	-0.009*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)
Age (within)	-0.004 (0.023)	-0.002 (0.023)	-0.002 (0.023)	-0.002 (0.023)	-0.002 (0.023)	-0.002 (0.023)	-0.002 (0.023)
Marital status (<i>ref.</i> married)							
Divorced/separated	0.061 (0.094)	0.050 (0.094)	0.050 (0.094)	0.050 (0.094)	0.050 (0.094)	0.050 (0.094)	0.050 (0.094)
Widowed	0.069 (0.052)	0.064 (0.052)	0.064 (0.052)	0.064 (0.052)	0.064 (0.052)	0.064 (0.052)	0.064 (0.052)
Never married	-0.040 (0.194)	-0.026 (0.194)	-0.026 (0.194)	-0.026 (0.194)	-0.026 (0.194)	-0.026 (0.194)	-0.026 (0.194)

Female sex (<i>ref.</i> male)	0.040 (0.028)	0.037 (0.028)	0.032 (0.028)	0.011 (0.028)	0.015 (0.028)	0.016 (0.027)	0.017 (0.027)
Non-white (<i>ref.</i> white)	-0.197 (0.104)	-0.171 (0.104)	-0.188 (0.104)	-0.230* (0.099)	-0.210* (0.099)	-0.257** (0.098)	-0.250* (0.098)
Education (<i>ref.</i> lower secondary)							
No qualification	-0.153*** (0.038)	-0.138*** (0.037)	-0.130*** (0.038)	-0.093** (0.036)	-0.100** (0.036)	-0.096** (0.035)	-0.098** (0.035)
Foreign/other	-0.066 (0.052)	-0.061 (0.052)	-0.040 (0.052)	-0.051 (0.049)	-0.056 (0.049)	-0.072 (0.048)	-0.073 (0.048)
Upper secondary	0.011 (0.052)	0.006 (0.052)	0.009 (0.052)	0.049 (0.049)	0.047 (0.049)	0.052 (0.048)	0.052 (0.048)
Some tertiary	-0.014 (0.043)	-0.019 (0.043)	-0.016 (0.042)	-0.005 (0.040)	-0.008 (0.040)	0.002 (0.040)	0.001 (0.040)
Tertiary	0.070 (0.044)	0.030 (0.044)	0.022 (0.045)	0.060 (0.043)	0.062 (0.043)	0.069 (0.042)	0.069 (0.042)
Missing	0.270 (0.317)	0.263 (0.315)	0.250 (0.314)	0.311 (0.300)	0.280 (0.300)	0.233 (0.296)	0.224 (0.296)
Social class (<i>ref.</i> lower managerial)							
Higher managerial and professional	0.074 (0.044)	0.056 (0.043)	0.051 (0.043)	0.075 (0.041)	0.075 (0.041)	0.068 (0.040)	0.068 (0.040)
Intermediate occupations	-0.020 (0.044)	-0.004 (0.044)	-0.012 (0.044)	0.024 (0.041)	0.025 (0.041)	0.024 (0.041)	0.024 (0.041)
Small employers and own account	0.000 (0.048)	0.010 (0.047)	0.010 (0.047)	0.002 (0.045)	0.005 (0.045)	0.015 (0.044)	0.016 (0.044)
Lower supervisory and technical	-0.149** (0.050)	-0.123* (0.050)	-0.117* (0.050)	-0.122** (0.047)	-0.115* (0.047)	-0.112* (0.046)	-0.110* (0.046)
Semi-routine	-0.071 (0.046)	-0.045 (0.046)	-0.044 (0.046)	-0.033 (0.044)	-0.029 (0.044)	-0.031 (0.043)	-0.030 (0.043)
Routine	-0.215*** (0.057)	-0.177** (0.057)	-0.163** (0.057)	-0.133* (0.054)	-0.130* (0.054)	-0.126* (0.053)	-0.125* (0.053)
Other	0.093 (0.158)	0.080 (0.157)	0.064 (0.157)	0.090 (0.149)	0.106 (0.148)	0.146 (0.146)	0.150 (0.146)
Household wealth (between)	0.035*** (0.004)	0.030*** (0.004)	0.028*** (0.004)	0.024*** (0.004)	0.024*** (0.004)	0.021*** (0.004)	0.021*** (0.004)
Household wealth (within)	0.002 (0.004)	0.003 (0.004)	0.003 (0.004)	0.003 (0.004)	0.003 (0.004)	0.003 (0.004)	0.003 (0.004)
Household income (ln) (between)	0.112*** (0.027)	0.069* (0.028)	0.062* (0.028)	0.069** (0.026)	0.070** (0.026)	0.050 (0.026)	0.051 (0.026)
Household income (ln) (within)	-0.000 (0.018)	0.003 (0.018)	0.003 (0.018)	0.003 (0.018)	0.003 (0.018)	0.003 (0.018)	0.003 (0.018)
Parental school-leaving age (<i>ref.</i> Age 14 or below)							
Question not asked			-0.065 (0.057)	0.019 (0.054)	0.019 (0.054)	0.033 (0.053)	0.032 (0.053)
At age 15			0.017 (0.041)	0.043 (0.039)	0.043 (0.039)	0.035 (0.039)	0.035 (0.039)
At age 16			0.033 (0.049)	0.049 (0.046)	0.045 (0.046)	0.049 (0.045)	0.047 (0.045)
At age 17 or 18			0.047 (0.059)	0.080 (0.056)	0.071 (0.056)	0.065 (0.055)	0.062 (0.055)
At age 19 or over			0.105 (0.064)	0.130* (0.060)	0.127* (0.060)	0.118* (0.059)	0.117* (0.059)
Occupation father (<i>ref.</i> skilled trade)							
Manager or senior official in someone else's business			-0.186* (0.095)	-0.143 (0.090)	-0.150 (0.089)	-0.144 (0.088)	-0.146 (0.088)
Running his own business			-0.144 (0.091)	-0.127 (0.086)	-0.136 (0.086)	-0.144 (0.085)	-0.147 (0.085)

Professional or technical	-0.123 (0.086)	-0.088 (0.082)	-0.092 (0.081)	-0.094 (0.080)	-0.095 (0.080)
Administrative, clerical or secretarial	-0.090 (0.092)	-0.067 (0.087)	-0.076 (0.087)	-0.086 (0.085)	-0.089 (0.085)
Skilled trade	-0.140 (0.083)	-0.117 (0.078)	-0.121 (0.078)	-0.129 (0.077)	-0.130 (0.077)
Caring, leisure, travel or personal services	-0.092 (0.121)	-0.060 (0.115)	-0.061 (0.115)	-0.081 (0.113)	-0.081 (0.113)
Sales or customer service	-0.054 (0.104)	-0.043 (0.099)	-0.048 (0.098)	-0.072 (0.097)	-0.073 (0.097)
Plant, process or machine drivers or operators	-0.165 (0.090)	-0.162 (0.085)	-0.170* (0.085)	-0.182* (0.084)	-0.184* (0.084)
Other jobs	-0.191* (0.086)	-0.160* (0.081)	-0.168* (0.081)	-0.177* (0.080)	-0.179* (0.080)
Something else	-0.106 (0.097)	-0.098 (0.092)	-0.106 (0.092)	-0.098 (0.090)	-0.101 (0.090)
Casual jobs	-0.236 (0.177)	-0.228 (0.168)	-0.242 (0.168)	-0.230 (0.165)	-0.235 (0.165)
Retired	-0.301 (0.170)	-0.254 (0.161)	-0.250 (0.160)	-0.195 (0.158)	-0.195 (0.158)
Unemployed	0.075 (0.143)	0.094 (0.136)	0.069 (0.136)	0.062 (0.134)	0.054 (0.134)
Sick / disabled	-0.207 (0.146)	-0.099 (0.138)	-0.095 (0.138)	-0.096 (0.136)	-0.095 (0.136)
Missing	-0.388 (0.212)	-0.313 (0.201)	-0.338 (0.200)	-0.323 (0.197)	-0.332 (0.197)
Childhood stress	-0.074*** (0.014)	-0.068*** (0.014)	-0.066*** (0.013)	-0.065*** (0.013)	-0.064*** (0.013)
Conscientiousness		0.088*** (0.014)	0.083*** (0.014)	0.078*** (0.014)	0.077*** (0.014)
Neuroticism		-0.090*** (0.013)	-0.081*** (0.013)	-0.058*** (0.013)	-0.056*** (0.013)
Agreeableness		-0.109*** (0.015)	-0.110*** (0.015)	-0.108*** (0.015)	-0.109*** (0.015)
Openness		-0.023 (0.016)	-0.024 (0.016)	-0.044** (0.016)	-0.043** (0.016)
Extraversion		0.254*** (0.017)	0.245*** (0.017)	0.203*** (0.017)	0.201*** (0.017)
Sense of control			0.053*** (0.013)		0.019 (0.013)
Optimism				0.179*** (0.014)	0.174*** (0.015)
Constant	1.632*** (0.204)	1.538*** (0.203)	1.773*** (0.222)	1.932*** (0.212)	1.966*** (0.212)
Wave dummies	Yes	Yes	Yes	Yes	Yes
<i>N</i> participants	4,505	4,505	4,505	4,505	4,505
<i>N</i> observations	10,892	10,892	10,892	10,892	10,892
AIC	27,586.3	27,512.2	27,504.8	27,028.5	27,012.8
BIC	27,819.8	27,752.9	27,898.8	27,459	27,450.6
Deviance	27,522.3	27,446.2	27,396.8	26,910.5	26,892.8
					26,757.5
					26,755.2

Alternative version of allostatic load

For time points T1–T3, we have an alternative version of the allostatic load outcome that also takes into account participants' waist circumference and lung function.

Table A7: Allostatic load (T1–T3) regressed on subjective social status and covariates, maximum-likelihood random-effects estimation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Subjective status	-0.022** (0.007)						
Subjective status (between)		-0.044*** (0.012)	-0.038** (0.012)	-0.028* (0.012)	-0.026* (0.012)	-0.015 (0.012)	-0.015 (0.013)
Subjective status (within)		-0.009 (0.009)	-0.009 (0.009)	-0.009 (0.009)	-0.009 (0.009)	-0.009 (0.009)	-0.009 (0.009)
Age (between)	0.032*** (0.002)	0.032*** (0.002)	0.031*** (0.002)	0.029*** (0.002)	0.029*** (0.002)	0.028*** (0.002)	0.028*** (0.002)
Age (within)	0.021 (0.024)	0.020 (0.024)	0.020 (0.024)	0.020 (0.024)	0.020 (0.024)	0.020 (0.024)	0.020 (0.024)
Marital status (<i>ref.</i> married)							
Divorced/separated	-0.129 (0.114)	-0.131 (0.114)	-0.128 (0.114)	-0.130 (0.114)	-0.129 (0.114)	-0.131 (0.114)	-0.131 (0.114)
Widowed	-0.023 (0.063)	-0.023 (0.063)	-0.020 (0.063)	-0.019 (0.062)	-0.019 (0.062)	-0.019 (0.062)	-0.019 (0.062)
Never married	0.368 (0.228)	0.363 (0.228)	0.364 (0.228)	0.359 (0.227)	0.362 (0.227)	0.374 (0.227)	0.374 (0.227)
Female sex (<i>ref.</i> male)	-0.048 (0.032)	-0.047 (0.032)	-0.030 (0.032)	-0.010 (0.033)	-0.011 (0.033)	-0.012 (0.033)	-0.013 (0.033)
Non-white (<i>ref.</i> white)	0.326** (0.118)	0.317** (0.118)	0.368** (0.118)	0.377** (0.117)	0.370** (0.118)	0.394*** (0.117)	0.393*** (0.117)
Education (<i>ref.</i> lower secondary)							
No qualification	0.151*** (0.043)	0.147*** (0.043)	0.117** (0.043)	0.109* (0.043)	0.111** (0.043)	0.111** (0.043)	0.111** (0.043)
Foreign/other	0.062 (0.059)	0.061 (0.059)	0.037 (0.059)	0.052 (0.058)	0.054 (0.058)	0.063 (0.058)	0.063 (0.058)
Upper secondary	0.002 (0.060)	0.004 (0.059)	0.019 (0.059)	0.006 (0.059)	0.007 (0.059)	0.005 (0.059)	0.005 (0.059)
Some tertiary	-0.049 (0.049)	-0.047 (0.049)	-0.046 (0.048)	-0.060 (0.048)	-0.059 (0.048)	-0.063 (0.048)	-0.063 (0.048)
Tertiary	-0.177*** (0.051)	-0.164** (0.051)	-0.130* (0.052)	-0.141** (0.051)	-0.142** (0.051)	-0.147** (0.051)	-0.147** (0.051)
Missing	0.192 (0.371)	0.197 (0.370)	0.172 (0.369)	0.184 (0.366)	0.194 (0.366)	0.218 (0.365)	0.219 (0.365)
Social class (<i>ref.</i> lower managerial)							
Higher managerial and professional	-0.014 (0.050)	-0.008 (0.050)	0.001 (0.050)	-0.006 (0.049)	-0.006 (0.049)	-0.002 (0.049)	-0.002 (0.049)
Intermediate occupations	-0.032 (0.050)	-0.037 (0.050)	-0.041 (0.050)	-0.050 (0.049)	-0.051 (0.049)	-0.050 (0.049)	-0.050 (0.049)
Small employers and own account	-0.089 (0.054)	-0.093 (0.054)	-0.096 (0.054)	-0.095 (0.053)	-0.097 (0.053)	-0.100 (0.053)	-0.100 (0.053)
Lower supervisory and technical	0.043 (0.056)	0.035 (0.057)	0.015 (0.056)	0.015 (0.056)	0.013 (0.056)	0.010 (0.056)	0.009 (0.056)
Semi-routine	-0.032 (0.052)	-0.041 (0.052)	-0.061 (0.052)	-0.075 (0.052)	-0.076 (0.052)	-0.076 (0.052)	-0.076 (0.052)
Routine	0.172** (0.064)	0.159* (0.065)	0.135* (0.065)	0.117 (0.064)	0.116 (0.064)	0.116 (0.064)	0.115 (0.064)
Other	-0.166 (0.176)	-0.162 (0.176)	-0.133 (0.175)	-0.153 (0.174)	-0.159 (0.174)	-0.185 (0.173)	-0.185 (0.173)
Household wealth (between)	-0.040*** (0.004)	-0.039*** (0.004)	-0.037*** (0.004)	-0.034*** (0.004)	-0.034*** (0.004)	-0.032*** (0.004)	-0.032*** (0.004)
Household wealth (within)	-0.007 (0.005)	-0.007 (0.005)	-0.007 (0.005)	-0.007 (0.005)	-0.007 (0.005)	-0.007 (0.005)	-0.007 (0.005)

Household income (ln) (between)	-0.075*	-0.061	-0.050	-0.044	-0.044	-0.034	-0.034
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
Household income (ln) (within)	0.023	0.022	0.022	0.021	0.021	0.021	0.021
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Parental school-leaving age (ref. Age 14 or below)							
Question not asked			0.056	0.022	0.022	0.015	0.015
			(0.063)	(0.063)	(0.063)	(0.062)	(0.062)
At age 15			-0.074	-0.075	-0.075	-0.072	-0.072
			(0.048)	(0.047)	(0.047)	(0.047)	(0.047)
At age 16			-0.086	-0.089	-0.086	-0.087	-0.086
			(0.056)	(0.055)	(0.055)	(0.055)	(0.055)
At age 17 or 18			-0.164*	-0.157*	-0.153*	-0.149*	-0.148*
			(0.068)	(0.068)	(0.068)	(0.068)	(0.068)
At age 19 or over			-0.235**	-0.238***	-0.237***	-0.231**	-0.231**
			(0.073)	(0.072)	(0.072)	(0.072)	(0.072)
Occupation father (ref. skilled trade)							
Manager or senior official in someone else s business			-0.029	-0.045	-0.042	-0.047	-0.046
			(0.108)	(0.107)	(0.107)	(0.106)	(0.106)
Running his own business			-0.035	-0.033	-0.029	-0.026	-0.025
			(0.103)	(0.103)	(0.103)	(0.102)	(0.102)
Professional or technical			0.015	0.010	0.011	0.011	0.011
			(0.098)	(0.097)	(0.097)	(0.097)	(0.097)
Administrative, clerical or secretarial			-0.081	-0.088	-0.084	-0.079	-0.079
			(0.104)	(0.103)	(0.103)	(0.103)	(0.103)
Skilled trade			-0.001	-0.001	0.001	0.004	0.005
			(0.094)	(0.093)	(0.093)	(0.093)	(0.093)
Caring, leisure, travel or personal services			-0.053	-0.050	-0.050	-0.039	-0.039
			(0.140)	(0.138)	(0.138)	(0.138)	(0.138)
Sales or customer service			-0.017	-0.017	-0.015	-0.005	-0.004
			(0.118)	(0.117)	(0.117)	(0.117)	(0.117)
Plant, process or machine drivers or operators			0.128	0.136	0.139	0.145	0.145
			(0.103)	(0.102)	(0.102)	(0.101)	(0.101)
Other jobs			0.114	0.115	0.119	0.121	0.121
			(0.097)	(0.096)	(0.096)	(0.096)	(0.096)
Something else			0.058	0.073	0.076	0.071	0.071
			(0.110)	(0.109)	(0.109)	(0.109)	(0.109)
Casual jobs			0.012	0.032	0.037	0.029	0.030
			(0.197)	(0.195)	(0.195)	(0.195)	(0.195)
Retired			0.106	0.117	0.115	0.083	0.083
			(0.192)	(0.190)	(0.190)	(0.190)	(0.190)
Unemployed			0.111	0.136	0.146	0.147	0.149
			(0.163)	(0.162)	(0.162)	(0.161)	(0.161)
Sick / disabled			-0.131	-0.132	-0.134	-0.135	-0.135
			(0.166)	(0.165)	(0.165)	(0.165)	(0.165)
Missing			-0.018	-0.024	-0.013	-0.018	-0.016
			(0.237)	(0.235)	(0.235)	(0.235)	(0.235)
Childhood stress	0.045**	0.045**	0.044**	0.043**	0.043**	0.043**	0.043**
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Conscientiousness			-0.088***	-0.086***	-0.083***	-0.083***	-0.083***
			(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Neuroticism			-0.038*	-0.042**	-0.055***	-0.056***	-0.056***
			(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Agreeableness			0.095***	0.096***	0.095***	0.095***	0.095***
			(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Openness			0.059**	0.060**	0.071***	0.071***	0.071***
			(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Extraversion			-0.124***	-0.120***	-0.097***	-0.097***	-0.097***
			(0.020)	(0.020)	(0.021)	(0.021)	(0.021)

Sense of control					-0.022 (0.015)		-0.004 (0.016)
Optimism						-0.095*** (0.017)	-0.094*** (0.018)
Constant	0.911*** (0.231)	0.943*** (0.231)	0.823** (0.253)	0.860*** (0.252)	0.846*** (0.252)	0.779** (0.252)	0.777** (0.252)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i> participants	4,359	4,359	4,359	4,359	4,359	4,359	4,359
<i>N</i> observations	8,790	8,790	8,790	8,790	8,790	8,790	8,790
AIC	22,499.5	22,495.8	22,490	22,421.3	22,421.2	22,393.5	22,395.4
BIC	22,726.1	22,729.5	22,872.4	22,839.1	22,846.1	22,818.4	22,827.4
Deviance	22,435.5	22,429.8	22,382	22,303.3	22,301.2	22,273.5	22,273.4

		(0.063)	(0.094)	(0.063)	(0.094)	(0.063)	(0.094)	(0.062)	(0.094)	(0.062)	(0.094)	(0.062)	(0.094)	(0.062)	(0.094)
	Upper secondary	0.080	-0.113	0.087	-0.114	0.104	-0.092	0.084	-0.095	0.084	-0.093	0.083	-0.096	0.083	-0.096
		(0.074)	(0.073)	(0.074)	(0.073)	(0.074)	(0.073)	(0.074)	(0.073)	(0.074)	(0.073)	(0.073)	(0.073)	(0.073)	(0.073)
	Some tertiary	-0.007	-0.052	-0.000	-0.052	0.008	-0.049	-0.006	-0.054	-0.004	-0.054	-0.009	-0.058	-0.009	-0.058
		(0.063)	(0.058)	(0.063)	(0.058)	(0.063)	(0.058)	(0.063)	(0.058)	(0.063)	(0.058)	(0.062)	(0.058)	(0.063)	(0.058)
	Tertiary	-0.080	-0.218***	-0.059	-0.211***	-0.026	-0.184**	-0.028	-0.191**	-0.028	-0.192**	-0.025	-0.200**	-0.025	-0.200**
		(0.065)	(0.061)	(0.065)	(0.061)	(0.066)	(0.062)	(0.066)	(0.062)	(0.066)	(0.062)	(0.065)	(0.062)	(0.066)	(0.062)
	Missing	-0.160	0.133	-0.150	0.125	-0.144	0.112	-0.115	0.110	-0.107	0.124	-0.077	0.149	-0.077	0.153
		(0.684)	(0.397)	(0.683)	(0.397)	(0.680)	(0.396)	(0.675)	(0.396)	(0.675)	(0.396)	(0.674)	(0.395)	(0.674)	(0.395)
	Social class (<i>ref.</i> lower managerial)														
	Higher managerial and professional	-0.019	-0.027	-0.007	-0.025	0.003	-0.015	0.001	-0.018	0.002	-0.019	-0.002	-0.011	-0.001	-0.011
		(0.079)	(0.054)	(0.079)	(0.054)	(0.079)	(0.054)	(0.078)	(0.054)	(0.078)	(0.054)	(0.078)	(0.054)	(0.078)	(0.054)
	Intermediate occupations	0.051	-0.036	0.049	-0.045	0.039	-0.057	0.036	-0.064	0.036	-0.067	0.034	-0.053	0.034	-0.053
		(0.053)	(0.091)	(0.053)	(0.091)	(0.053)	(0.091)	(0.053)	(0.091)	(0.053)	(0.091)	(0.052)	(0.091)	(0.052)	(0.091)
	Small employers and own account	-0.050	-0.118	-0.048	-0.123	-0.055	-0.116	-0.059	-0.113	-0.060	-0.115	-0.064	-0.118	-0.064	-0.118
		(0.071)	(0.063)	(0.071)	(0.063)	(0.071)	(0.064)	(0.071)	(0.064)	(0.071)	(0.064)	(0.070)	(0.063)	(0.070)	(0.063)
	Lower supervisory and technical	0.134	-0.011	0.128	-0.019	0.103	-0.027	0.112	-0.031	0.111	-0.035	0.111	-0.036	0.111	-0.037
		(0.080)	(0.064)	(0.080)	(0.064)	(0.080)	(0.064)	(0.079)	(0.064)	(0.079)	(0.064)	(0.079)	(0.064)	(0.079)	(0.064)
	Semi-routine	0.071	-0.214**	0.065	-0.224**	0.044	-0.226**	0.036	-0.230**	0.034	-0.229**	0.032	-0.222**	0.032	-0.222**
		(0.058)	(0.082)	(0.058)	(0.082)	(0.058)	(0.083)	(0.058)	(0.082)	(0.058)	(0.082)	(0.058)	(0.082)	(0.058)	(0.082)
	Routine	0.217**	0.147	0.202**	0.138	0.168*	0.128	0.155*	0.122	0.155*	0.120	0.152*	0.121	0.152*	0.120
		(0.077)	(0.083)	(0.077)	(0.084)	(0.077)	(0.084)	(0.077)	(0.084)	(0.076)	(0.084)	(0.076)	(0.084)	(0.076)	(0.084)
	Other	-0.135	-0.107	-0.132	-0.095	-0.117	-0.038	-0.125	-0.046	-0.129	-0.055	-0.150	-0.072	-0.150	-0.074
		(0.183)	(0.322)	(0.182)	(0.322)	(0.182)	(0.322)	(0.180)	(0.321)	(0.180)	(0.321)	(0.180)	(0.321)	(0.180)	(0.321)
	Household wealth (between)	-0.036***	-0.031***	-0.034***	-0.030***	-0.032***	-0.029***	-0.029***	-0.027***	-0.029***	-0.027***	-0.028***	-0.025***	-0.028***	-0.025***
		(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)
	Household wealth (within)	-0.005	-0.002	-0.006	-0.002	-0.006	-0.002	-0.006	-0.002	-0.006	-0.002	-0.006	-0.002	-0.006	-0.002
		(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)
	Household income (ln (between))	-0.091*	-0.012	-0.070	-0.003	-0.062	0.010	-0.052	0.011	-0.052	0.011	-0.040	0.016	-0.040	0.016

	(0.036)	(0.041)	(0.037)	(0.041)	(0.037)	(0.041)	(0.037)	(0.041)	(0.037)	(0.041)	(0.037)	(0.041)	(0.037)	(0.041)
Household income (ln)	0.009	-0.004	0.008	-0.005	0.008	-0.005	0.008	-0.005	0.008	-0.005	0.008	-0.005	0.008	-0.005
(within)														
	(0.024)	(0.023)	(0.024)	(0.023)	(0.024)	(0.023)	(0.024)	(0.023)	(0.024)	(0.023)	(0.024)	(0.023)	(0.024)	(0.023)
Parental school-leaving age (<i>ref.</i> Age 14 or below)														
Question not asked					0.025	0.103	-0.011	0.089	-0.012	0.089	-0.033	0.099	-0.033	0.099
					(0.078)	(0.081)	(0.078)	(0.081)	(0.078)	(0.081)	(0.078)	(0.080)	(0.078)	(0.080)
At age 15					-0.017	-0.105	-0.014	-0.106	-0.014	-0.107	-0.005	-0.108	-0.005	-0.108
					(0.057)	(0.060)	(0.057)	(0.060)	(0.057)	(0.060)	(0.056)	(0.060)	(0.056)	(0.060)
At age 16					-0.016	-0.110	-0.012	-0.114	-0.011	-0.111	-0.010	-0.115	-0.010	-0.114
					(0.065)	(0.074)	(0.064)	(0.074)	(0.064)	(0.074)	(0.064)	(0.074)	(0.064)	(0.074)
At age 17 or 18					-0.147	-0.201*	-0.133	-0.199*	-0.131	-0.196*	-0.116	-0.206*	-0.116	-0.205*
					(0.080)	(0.090)	(0.079)	(0.089)	(0.079)	(0.089)	(0.079)	(0.089)	(0.079)	(0.089)
At age 19 or over					-0.126	-0.206*	-0.119	-0.206*	-0.118	-0.205*	-0.117	-0.196*	-0.117	-0.196*
					(0.086)	(0.094)	(0.085)	(0.094)	(0.085)	(0.094)	(0.085)	(0.094)	(0.085)	(0.094)
Occupation father (<i>ref.</i> skilled trade)														
Manager or senior official in someone else's business					-0.109	0.032	-0.122	0.031	-0.120	0.034	-0.123	0.032	-0.123	0.033
					(0.126)	(0.145)	(0.125)	(0.144)	(0.125)	(0.144)	(0.125)	(0.144)	(0.125)	(0.144)
Running his own business					-0.071	-0.029	-0.063	-0.024	-0.060	-0.022	-0.056	-0.016	-0.055	-0.015
					(0.123)	(0.137)	(0.122)	(0.136)	(0.122)	(0.136)	(0.121)	(0.136)	(0.122)	(0.136)
Professional or technical					-0.082	0.088	-0.082	0.085	-0.081	0.088	-0.082	0.092	-0.082	0.093
					(0.118)	(0.125)	(0.117)	(0.125)	(0.117)	(0.125)	(0.117)	(0.124)	(0.117)	(0.124)
Administrative, clerical or secretarial					-0.113	-0.102	-0.123	-0.096	-0.119	-0.092	-0.114	-0.087	-0.113	-0.087
					(0.125)	(0.134)	(0.124)	(0.134)	(0.124)	(0.134)	(0.124)	(0.133)	(0.124)	(0.133)
Skilled trade					-0.024	-0.000	-0.018	0.004	-0.017	0.006	-0.011	0.008	-0.011	0.009
					(0.113)	(0.120)	(0.113)	(0.120)	(0.113)	(0.120)	(0.112)	(0.119)	(0.112)	(0.119)
Caring, leisure, travel or personal services					-0.005	0.053	0.013	0.056	0.015	0.055	0.038	0.048	0.038	0.048

	(0.170)	(0.173)	(0.169)	(0.172)	(0.169)	(0.172)	(0.169)	(0.172)	(0.169)	(0.172)
Sales or customer service	-0.075	-0.003	-0.078	0.001	-0.076	0.004	-0.064	0.014	-0.064	0.015
	(0.144)	(0.151)	(0.143)	(0.150)	(0.143)	(0.150)	(0.142)	(0.150)	(0.142)	(0.150)
Plant, process or machine drivers or operators	0.183	-0.021	0.188	-0.011	0.192	-0.008	0.197	-0.003	0.197	-0.002
	(0.123)	(0.132)	(0.122)	(0.132)	(0.122)	(0.132)	(0.122)	(0.131)	(0.122)	(0.131)
Other jobs	0.123	0.073	0.126	0.078	0.128	0.082	0.131	0.087	0.131	0.088
	(0.117)	(0.125)	(0.116)	(0.125)	(0.116)	(0.125)	(0.116)	(0.125)	(0.116)	(0.125)
Something else	0.089	0.021	0.107	0.031	0.109	0.035	0.112	0.024	0.113	0.025
	(0.132)	(0.141)	(0.131)	(0.141)	(0.131)	(0.141)	(0.131)	(0.140)	(0.131)	(0.141)
Casual jobs	0.008	0.015	0.025	0.042	0.031	0.045	0.032	0.029	0.033	0.030
	(0.232)	(0.273)	(0.230)	(0.272)	(0.230)	(0.272)	(0.229)	(0.272)	(0.229)	(0.272)
Retired	-0.042	0.108	-0.025	0.116	-0.031	0.122	-0.058	0.109	-0.059	0.111
	(0.220)	(0.271)	(0.219)	(0.271)	(0.219)	(0.271)	(0.218)	(0.270)	(0.218)	(0.270)
Unemployed	-0.097	0.140	-0.068	0.150	-0.058	0.158	-0.053	0.162	-0.052	0.164
	(0.179)	(0.248)	(0.178)	(0.247)	(0.178)	(0.247)	(0.177)	(0.247)	(0.177)	(0.247)
Sick / disabled	-0.205	-0.042	-0.204	-0.024	-0.206	-0.025	-0.212	-0.016	-0.213	-0.016
	(0.191)	(0.226)	(0.190)	(0.225)	(0.190)	(0.225)	(0.189)	(0.225)	(0.189)	(0.225)
Missing	0.055	-0.057	0.030	-0.022	0.036	-0.005	0.034	-0.013	0.035	-0.009
	(0.269)	(0.344)	(0.267)	(0.343)	(0.267)	(0.344)	(0.266)	(0.342)	(0.266)	(0.343)
Childhood stress	0.017	0.028	0.017	0.027	0.016	0.026	0.015	0.025	0.014	0.025
	(0.019)	(0.021)	(0.019)	(0.021)	(0.019)	(0.021)	(0.019)	(0.021)	(0.019)	(0.021)
Conscientiousness			-0.067***	-0.047*	-0.065**	-0.046*	-0.064**	-0.042	-0.064**	-0.042
			(0.020)	(0.022)	(0.020)	(0.022)	(0.020)	(0.022)	(0.020)	(0.022)
Neuroticism			-0.051**	-0.001	-0.055**	-0.005	-0.065***	-0.017	-0.066***	-0.018
			(0.018)	(0.020)	(0.018)	(0.020)	(0.018)	(0.020)	(0.018)	(0.020)
Agreeableness			0.086***	0.064**	0.086***	0.066**	0.083***	0.066**	0.083***	0.066**
			(0.024)	(0.022)	(0.024)	(0.022)	(0.024)	(0.022)	(0.024)	(0.022)
Openness			0.059**	0.015	0.059**	0.016	0.070**	0.023	0.070**	0.023
			(0.022)	(0.025)	(0.022)	(0.025)	(0.022)	(0.025)	(0.022)	(0.025)
Extraversion			-0.123***	-0.061*	-0.119***	-0.058*	-0.099***	-0.038	-0.098***	-0.038
			(0.024)	(0.026)	(0.024)	(0.026)	(0.025)	(0.027)	(0.025)	(0.027)
Sense of control					-0.020	-0.019			-0.003	-0.005
					(0.018)	(0.020)			(0.018)	(0.021)
Optimism							-0.083***	-0.082***	-0.083***	-0.080***

Constant	0.889** (0.271)	1.372*** (0.301)	0.927*** (0.271)	1.397*** (0.301)	0.791** (0.297)	1.348*** (0.330)	0.841** (0.298)	1.343*** (0.331)	0.831** (0.298)	1.327*** (0.331)	(0.021) 0.772** (0.297)	(0.023) 1.258*** (0.331)	(0.021) 0.771** (0.297)	(0.023) 1.255*** (0.331)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i> participants	2,500	2,005	2,500	2,005	2,500	2,005	2,500	2,005	2,500	2,005	2,500	2,005	2,500	2,005
<i>N</i> observations	6,038	4,855	6,038	4,855	6,038	4,855	6,038	4,855	6,038	4,855	6,038	4,855	6,038	4,855
AIC	14,753.3	11,603.7	14,747.2	11,604.1	14,749.8	11,624.5	14,714.1	11,619.5	14,714.9	11,620.6	14,699.8	11,608.8	14,701.8	11,610.7
BIC	14,961.2	11,804.8	14,961.8	11,811.8	15,105.2	11,968.4	15,103.1	11,995.8	15,110.5	12,003.4	15,095.5	11,991.6	15,104.2	12,000
Deviance	14,691.3	11,541.7	14,683.2	11,540.1	14,643.8	11,518.5	14,598.1	11,503.5	14,596.9	11,502.6	14,581.8	11,490.8	14,581.8	11,490.7

Sample restriction: Possible outliers excluded

Figure A2: Within-participant subjective social status is not substantially associated with allostatic load, even when excluding possible outliers. Scatterplot of subjective social status (within-participant component) and allostatic load, pooled over five time points, $N = 10,839$ to $10,032$ observations, b coefficients from pooled OLS regression, data points jittered.

After ruling out that our results are driven by a lack of within-variation (Table A6), we show in Figure A2 that they are also not driven by participants with very high variation over time. Figure A2 reproduces Figure 2C from the main text, overlaid with regression lines from subsamples where individuals with particularly high over-time variance on subjective social status and allostatic load excluded. Exclusion proceeds in a stepwise fashion, first only dropping those participants in the top percentile of variance in allostatic load or subjective social status, down to those to the 95th or above percentile. As Figure A2 shows, the key finding remains unchanged.

Sample restriction: Age 50–64 years only

Table A9: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation. Sample restricted to participants between 50 and 64 years.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
-----	-----	-----	-----	-----	-----	-----

Subjective status	-0.023*						
	(0.009)						
Subjective status (between)		-0.037*	-0.029*	-0.018	-0.015	-0.003	-0.003
		(0.015)	(0.015)	(0.015)	(0.016)	(0.016)	(0.016)
Subjective status (within)		-0.012	-0.012	-0.013	-0.012	-0.012	-0.012
		(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Age (between)	0.013**	0.013**	0.014**	0.013**	0.013**	0.012**	0.012**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Age (within)	0.017	0.017	0.018	0.018	0.018	0.017	0.017
	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)
Marital status (<i>ref.</i> married)							
Divorced/separated	-0.083	-0.079	-0.081	-0.077	-0.077	-0.074	-0.074
	(0.130)	(0.130)	(0.130)	(0.130)	(0.130)	(0.130)	(0.130)
Widowed	-0.192	-0.191	-0.193	-0.189	-0.189	-0.181	-0.181
	(0.113)	(0.113)	(0.113)	(0.112)	(0.112)	(0.112)	(0.112)
Never married	0.207	0.212	0.215	0.213	0.215	0.218	0.219
	(0.252)	(0.252)	(0.252)	(0.251)	(0.251)	(0.251)	(0.251)
Female sex (<i>ref.</i> male)	-0.149***	-0.148***	-0.128**	-0.108**	-0.109**	-0.107**	-0.108**
	(0.040)	(0.039)	(0.040)	(0.041)	(0.041)	(0.041)	(0.041)
Non-white (<i>ref.</i> white)	0.181	0.175	0.270*	0.280*	0.267*	0.288*	0.283*
	(0.131)	(0.131)	(0.132)	(0.131)	(0.131)	(0.131)	(0.131)
Education (<i>ref.</i> lower secondary)							
No qualification	0.011	0.009	-0.027	-0.040	-0.038	-0.037	-0.036
	(0.056)	(0.056)	(0.056)	(0.056)	(0.056)	(0.056)	(0.056)
Foreign/other	0.024	0.022	-0.011	0.004	0.009	0.020	0.021
	(0.079)	(0.079)	(0.078)	(0.078)	(0.078)	(0.078)	(0.078)
Upper secondary	-0.073	-0.071	-0.050	-0.055	-0.054	-0.057	-0.056
	(0.068)	(0.068)	(0.068)	(0.067)	(0.067)	(0.067)	(0.067)
Some tertiary	-0.019	-0.017	-0.013	-0.024	-0.022	-0.028	-0.027
	(0.058)	(0.058)	(0.058)	(0.057)	(0.057)	(0.057)	(0.057)
Tertiary	-0.220***	-0.211***	-0.166**	-0.178**	-0.180**	-0.182**	-0.183**
	(0.058)	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)
Missing	0.304	0.314	0.211	0.110	0.124	0.150	0.154
	(0.703)	(0.703)	(0.700)	(0.696)	(0.696)	(0.694)	(0.694)
Social class (<i>ref.</i> lower managerial)							
Higher managerial and professional	0.018	0.022	0.041	0.034	0.035	0.032	0.032
	(0.058)	(0.058)	(0.058)	(0.058)	(0.058)	(0.057)	(0.057)
Intermediate occupations	-0.014	-0.018	-0.021	-0.034	-0.035	-0.038	-0.039
	(0.061)	(0.061)	(0.061)	(0.061)	(0.061)	(0.060)	(0.060)
Small employers and own account	-0.107	-0.110	-0.109	-0.107	-0.110	-0.119	-0.119
	(0.066)	(0.066)	(0.066)	(0.066)	(0.066)	(0.066)	(0.066)
Lower supervisory and technical	0.008	0.000	-0.016	-0.013	-0.014	-0.021	-0.022
	(0.071)	(0.071)	(0.071)	(0.070)	(0.070)	(0.070)	(0.070)
Semi-routine	0.005	-0.001	-0.017	-0.035	-0.037	-0.043	-0.044
	(0.066)	(0.066)	(0.066)	(0.065)	(0.065)	(0.065)	(0.065)
Routine	0.185*	0.176*	0.152	0.134	0.131	0.120	0.119
	(0.084)	(0.085)	(0.084)	(0.084)	(0.084)	(0.084)	(0.084)
Other	-0.054	-0.046	0.001	-0.040	-0.051	-0.057	-0.061
	(0.313)	(0.313)	(0.312)	(0.310)	(0.310)	(0.309)	(0.309)
Household wealth (between)	-0.036***	-0.035***	-0.033***	-0.030***	-0.030***	-0.028***	-0.028***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Household wealth (within)	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Household income (ln) (between)	-0.047	-0.040	-0.029	-0.019	-0.020	-0.013	-0.014
	(0.035)	(0.036)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
Household income (ln) (within)	0.010	0.010	0.010	0.011	0.011	0.011	0.011

	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Parental school-leaving age (<i>ref.</i> Age 14 or below)							
Question not asked			0.130 (0.094)	0.109 (0.094)	0.109 (0.094)	0.095 (0.094)	0.096 (0.094)
At age 15			-0.065 (0.053)	-0.060 (0.052)	-0.060 (0.052)	-0.059 (0.052)	-0.059 (0.052)
At age 16			-0.101 (0.063)	-0.101 (0.063)	-0.100 (0.063)	-0.102 (0.063)	-0.102 (0.063)
At age 17 or 18			-0.193* (0.078)	-0.186* (0.077)	-0.181* (0.078)	-0.177* (0.077)	-0.175* (0.077)
At age 19 or over			-0.301*** (0.085)	-0.308*** (0.084)	-0.307*** (0.084)	-0.309*** (0.084)	-0.309*** (0.084)
Occupation father (<i>ref.</i> skilled trade)							
Manager or senior official in someone else s business			-0.141 (0.146)	-0.147 (0.145)	-0.148 (0.145)	-0.162 (0.144)	-0.162 (0.144)
Running his own business			-0.104 (0.143)	-0.096 (0.142)	-0.093 (0.142)	-0.098 (0.142)	-0.097 (0.142)
Professional or technical			-0.066 (0.136)	-0.063 (0.135)	-0.064 (0.135)	-0.068 (0.134)	-0.069 (0.134)
Administrative, clerical or secretarial			-0.196 (0.144)	-0.185 (0.143)	-0.184 (0.143)	-0.185 (0.142)	-0.185 (0.142)
Skilled trade			-0.088 (0.133)	-0.078 (0.132)	-0.079 (0.132)	-0.083 (0.132)	-0.083 (0.132)
Caring, leisure, travel or personal services			0.044 (0.181)	0.053 (0.180)	0.053 (0.180)	0.045 (0.179)	0.046 (0.179)
Sales or customer service			-0.195 (0.160)	-0.181 (0.159)	-0.185 (0.159)	-0.178 (0.158)	-0.179 (0.158)
Plant, process or machine drivers or operators			0.043 (0.141)	0.057 (0.140)	0.059 (0.140)	0.058 (0.140)	0.059 (0.140)
Other jobs			0.036 (0.138)	0.047 (0.136)	0.048 (0.136)	0.043 (0.136)	0.044 (0.136)
Something else			-0.039 (0.152)	-0.021 (0.151)	-0.019 (0.151)	-0.024 (0.151)	-0.023 (0.151)
Casual jobs			-0.382 (0.268)	-0.364 (0.266)	-0.358 (0.266)	-0.366 (0.265)	-0.363 (0.265)
Retired			0.106 (0.284)	0.136 (0.282)	0.135 (0.282)	0.104 (0.282)	0.105 (0.282)
Unemployed			-0.114 (0.221)	-0.080 (0.220)	-0.074 (0.220)	-0.069 (0.219)	-0.067 (0.219)
Sick / disabled			-0.049 (0.220)	-0.027 (0.218)	-0.031 (0.218)	-0.053 (0.218)	-0.053 (0.218)
Missing			-0.032 (0.283)	-0.020 (0.281)	-0.012 (0.281)	-0.033 (0.280)	-0.029 (0.280)
Childhood stress			0.041* (0.020)	0.036 (0.020)	0.034 (0.020)	0.034 (0.020)	0.033 (0.020)
Conscientiousness				-0.088*** (0.021)	-0.085*** (0.021)	-0.083*** (0.021)	-0.082*** (0.021)
Neuroticism				-0.027 (0.018)	-0.032 (0.019)	-0.043* (0.019)	-0.045* (0.019)
Agreeableness				0.089*** (0.023)	0.090*** (0.023)	0.090*** (0.023)	0.090*** (0.023)
Openness				0.060* (0.024)	0.060* (0.024)	0.069** (0.024)	0.068** (0.024)
Extraversion				-0.107*** (0.025)	-0.102*** (0.025)	-0.083** (0.025)	-0.082** (0.025)
Sense of control					-0.027 (0.018)		-0.012 (0.019)
Optimism						-0.091*** (0.023)	-0.088*** (0.023)
Constant	1.643***	1.670***	1.521***	1.420***	1.409***	1.334***	1.332***

	(0.347)	(0.348)	(0.376)	(0.375)	(0.375)	(0.375)	(0.375)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i> participants	2,632	2,632	2,632	2,632	2,632	2,632	2,632
<i>N</i> observations	4,636	4,636	4,636	4,636	4,636	4,636	4,636
AIC	11,608.3	11,608.5	11,604.3	11,571.3	11,571.1	11,557.5	11,559.1
BIC	11,814.4	11,821.1	11,952.1	11,951.4	11,957.6	11,944	11,952
Deviance	11,544.3	11,542.5	11,496.3	11,453.3	11,451.1	11,437.5	11,437.1

Sample restriction: Participants in paid work only

Table A10: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation. Sample restricted to participants in paid work.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Subjective status	-0.016* (0.008)						
Subjective status (between)		-0.039** (0.014)	-0.034* (0.014)	-0.029* (0.015)	-0.027 (0.015)	-0.018 (0.015)	-0.018 (0.015)
Subjective status (within)		-0.005 (0.010)	-0.005 (0.010)	-0.005 (0.010)	-0.005 (0.010)	-0.005 (0.010)	-0.005 (0.010)
Age (between)	0.020*** (0.003)	0.020*** (0.003)	0.020*** (0.003)	0.019*** (0.003)	0.019*** (0.003)	0.018*** (0.003)	0.018*** (0.003)
Age (within)	0.041 (0.026)	0.041 (0.026)	0.041 (0.026)	0.041 (0.026)	0.041 (0.026)	0.041 (0.026)	0.041 (0.026)
Marital status (<i>ref.</i> married)							
Divorced/separated	-0.016 (0.102)	-0.013 (0.102)	-0.013 (0.102)	-0.013 (0.102)	-0.013 (0.102)	-0.013 (0.102)	-0.013 (0.102)
Widowed	0.086 (0.070)	0.087 (0.070)	0.087 (0.070)	0.087 (0.070)	0.087 (0.070)	0.087 (0.070)	0.087 (0.070)
Never married	0.217 (0.203)	0.213 (0.203)	0.213 (0.203)	0.213 (0.203)	0.213 (0.203)	0.213 (0.203)	0.213 (0.203)
Female sex (<i>ref.</i> male)	-0.142*** (0.037)	-0.143*** (0.037)	-0.123*** (0.037)	-0.101** (0.038)	-0.102** (0.038)	-0.102** (0.038)	-0.102** (0.038)
Non-white (<i>ref.</i> white)	0.193 (0.130)	0.182 (0.130)	0.236 (0.131)	0.240 (0.131)	0.233 (0.131)	0.242 (0.131)	0.241 (0.131)
Education (<i>ref.</i> lower secondary)							
No qualification	0.020 (0.053)	0.017 (0.053)	-0.010 (0.053)	-0.014 (0.053)	-0.013 (0.053)	-0.013 (0.053)	-0.013 (0.053)
Foreign/other	0.001 (0.074)	-0.002 (0.074)	-0.015 (0.074)	0.003 (0.073)	0.004 (0.073)	0.013 (0.073)	0.013 (0.073)
Upper secondary	-0.119 (0.064)	-0.118 (0.064)	-0.096 (0.064)	-0.095 (0.064)	-0.096 (0.064)	-0.099 (0.064)	-0.099 (0.064)
Some tertiary	-0.052 (0.054)	-0.050 (0.054)	-0.040 (0.054)	-0.048 (0.054)	-0.048 (0.054)	-0.049 (0.054)	-0.049 (0.054)
Tertiary	-0.216*** (0.054)	-0.203*** (0.054)	-0.168** (0.055)	-0.175** (0.056)	-0.177** (0.056)	-0.177** (0.055)	-0.177** (0.055)
Missing	0.146 (0.858)	0.170 (0.858)	0.091 (0.857)	-0.004 (0.854)	0.007 (0.854)	0.044 (0.852)	0.045 (0.852)
Social class (<i>ref.</i> lower managerial)							
Higher managerial and professional	-0.024 (0.052)	-0.019 (0.052)	-0.009 (0.053)	-0.012 (0.052)	-0.011 (0.052)	-0.010 (0.052)	-0.010 (0.052)
Intermediate occupations	-0.016 (0.058)	-0.023 (0.059)	-0.034 (0.059)	-0.044 (0.059)	-0.044 (0.059)	-0.047 (0.058)	-0.047 (0.058)
Small employers and own account	-0.139* (0.058)	-0.144* (0.059)	-0.151** (0.059)	-0.152** (0.059)	-0.155** (0.059)	-0.162** (0.058)	-0.163** (0.058)

	(0.058)	(0.058)	(0.059)	(0.058)	(0.058)	(0.058)	(0.058)
Lower supervisory and technical	-0.013	-0.024	-0.046	-0.047	-0.049	-0.050	-0.050
	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)
Semi-routine	-0.019	-0.028	-0.052	-0.061	-0.062	-0.066	-0.066
	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)
Routine	0.161	0.147	0.116	0.110	0.108	0.099	0.098
	(0.085)	(0.085)	(0.085)	(0.085)	(0.085)	(0.084)	(0.084)
Other	0.470	0.407	0.369	0.546	0.560	0.542	0.544
	(1.284)	(1.284)	(1.281)	(1.277)	(1.277)	(1.274)	(1.274)
Household wealth (between)	-0.030***	-0.028***	-0.025***	-0.024***	-0.024***	-0.023***	-0.023***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Household wealth (within)	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Household income (ln) (between)	-0.063	-0.051	-0.035	-0.029	-0.030	-0.024	-0.024
	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
Household income (ln) (within)	-0.007	-0.008	-0.008	-0.008	-0.008	-0.008	-0.008
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Parental school-leaving age (ref. Age 14 or below)							
Question not asked			0.019	-0.004	-0.003	-0.013	-0.013
			(0.092)	(0.091)	(0.091)	(0.091)	(0.091)
At age 15			-0.061	-0.065	-0.063	-0.061	-0.061
			(0.051)	(0.051)	(0.051)	(0.051)	(0.051)
At age 16			-0.108	-0.116	-0.115	-0.118*	-0.118*
			(0.060)	(0.060)	(0.060)	(0.060)	(0.060)
At age 17 or 18			-0.177*	-0.174*	-0.170*	-0.165*	-0.164*
			(0.073)	(0.073)	(0.073)	(0.073)	(0.073)
At age 19 or over			-0.122	-0.127	-0.126	-0.126	-0.126
			(0.077)	(0.077)	(0.077)	(0.077)	(0.077)
Occupation father (ref. skilled trade)							
Manager or senior official in someone else s business			-0.130	-0.120	-0.119	-0.132	-0.131
			(0.140)	(0.140)	(0.140)	(0.139)	(0.139)
Running his own business			-0.061	-0.044	-0.041	-0.038	-0.037
			(0.136)	(0.136)	(0.136)	(0.135)	(0.135)
Professional or technical			-0.078	-0.059	-0.057	-0.062	-0.061
			(0.129)	(0.129)	(0.129)	(0.128)	(0.128)
Administrative, clerical or secretarial			-0.219	-0.197	-0.194	-0.196	-0.195
			(0.136)	(0.136)	(0.136)	(0.135)	(0.136)
Skilled trade			-0.031	-0.012	-0.011	-0.014	-0.014
			(0.127)	(0.126)	(0.126)	(0.126)	(0.126)
Caring, leisure, travel or personal services			0.027	0.042	0.042	0.034	0.034
			(0.167)	(0.166)	(0.166)	(0.166)	(0.166)
Sales or customer service			-0.101	-0.081	-0.081	-0.075	-0.076
			(0.150)	(0.149)	(0.149)	(0.149)	(0.149)
Plant, process or machine drivers or operators			0.037	0.059	0.062	0.064	0.065
			(0.135)	(0.135)	(0.135)	(0.135)	(0.135)
Other jobs			0.043	0.060	0.063	0.062	0.062
			(0.131)	(0.130)	(0.130)	(0.130)	(0.130)
Something else			0.053	0.074	0.076	0.070	0.071
			(0.145)	(0.144)	(0.144)	(0.144)	(0.144)
Casual jobs			-0.004	0.007	0.011	0.008	0.008
			(0.254)	(0.253)	(0.253)	(0.252)	(0.252)
Retired			0.058	0.059	0.054	0.036	0.035
			(0.272)	(0.271)	(0.271)	(0.271)	(0.271)
Unemployed			-0.026	0.006	0.015	0.014	0.015
			(0.223)	(0.223)	(0.223)	(0.222)	(0.222)
Sick / disabled			-0.132	-0.110	-0.110	-0.115	-0.115
			(0.211)	(0.210)	(0.210)	(0.209)	(0.209)

Missing			-0.020 (0.314)	-0.011 (0.313)	0.000 (0.313)	0.005 (0.312)	0.007 (0.312)
Childhood stress			0.008 (0.019)	0.007 (0.019)	0.006 (0.019)	0.006 (0.019)	0.005 (0.019)
Conscientiousness				-0.060** (0.021)	-0.059** (0.021)	-0.057** (0.021)	-0.057** (0.021)
Neuroticism				-0.035* (0.018)	-0.038* (0.018)	-0.048** (0.018)	-0.049** (0.018)
Agreeableness				0.059** (0.022)	0.059** (0.022)	0.061** (0.022)	0.061** (0.022)
Openness				0.042 (0.022)	0.043 (0.022)	0.050* (0.022)	0.050* (0.022)
Extraversion				-0.079*** (0.024)	-0.075** (0.024)	-0.058* (0.024)	-0.058* (0.024)
Sense of control					-0.019 (0.018)		-0.003 (0.018)
Optimism						-0.081*** (0.021)	-0.080*** (0.022)
Constant	1.208*** (0.283)	1.252*** (0.284)	1.160*** (0.315)	1.149*** (0.315)	1.132*** (0.315)	1.066*** (0.315)	1.064*** (0.315)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i> participants	2,617	2,617	2,617	2,617	2,617	2,617	2,617
<i>N</i> observations	6,537	6,537	6,537	6,537	6,537	6,537	6,537
AIC	15,831.9	15,830.1	15,840.3	15,826.1	15,827	15,814	15,816
BIC	16,049	16,054.1	16,206.7	16,226.4	16,234.1	16,221.1	16,229.9
Deviance	15,767.9	15,764.1	15,732.3	15,708.1	15,707	15,694	15,694

Sensitivity to attrition

To test the sensitivity of our findings to selective attrition, in Table A11 we restricted our sample to participants who have participated in at least four of the five time points (be reminded that four time points is the maximum number that any participant can have taken part in the allostatic load assessment; both at T4 and T5, a random half of the sample was offered a nurse interview).

Table A12 repeats the exercise for a subsample of the above, namely those who participated at all five time points.

Table A13 shows a joint model along the lines of [Graham *et al.* \(2011\)](#), which models the within and between effects while at the same time modeling attrition status with a survival model. These models provide valid estimates under missing not at random (MNAR) as conditional on the joint random effects, allostatic load and the risk of sample dropout are independent. As random effects influence both allostatic load scores and the risk of dropout, the estimates from the main model can be considered as net of any link between allostatic load and attrition. These models were estimated in Latent Gold 5.1.

Table A11: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation. Sample restricted to participants who participated in at least four time points.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Subjective status	-0.014* (0.007)						
Subjective status (between)		-0.042***	-0.036**	-0.028*	-0.026*	-0.017	-0.017

		(0.012)	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)
Subjective status (within)		-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
		(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Age (between)	0.021***	0.021***	0.021***	0.019***	0.019***	0.019***	0.019***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Age (within)	0.060**	0.059**	0.059**	0.059**	0.059**	0.059**	0.059**
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Marital status (<i>ref.</i> married)							
Divorced/separated	-0.013	-0.010	-0.010	-0.010	-0.010	-0.010	-0.010
	(0.090)	(0.090)	(0.090)	(0.090)	(0.090)	(0.090)	(0.090)
Widowed	0.179***	0.180***	0.180***	0.180***	0.180***	0.180***	0.180***
	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
Never married	0.117	0.113	0.113	0.113	0.113	0.113	0.113
	(0.188)	(0.188)	(0.188)	(0.188)	(0.188)	(0.188)	(0.188)
Female sex (<i>ref.</i> male)	-0.066*	-0.065*	-0.049	-0.030	-0.030	-0.030	-0.030
	(0.031)	(0.031)	(0.031)	(0.032)	(0.032)	(0.032)	(0.032)
Non-white (<i>ref.</i> white)	0.145	0.136	0.185	0.197	0.191	0.208	0.207
	(0.111)	(0.111)	(0.112)	(0.111)	(0.112)	(0.111)	(0.111)
Education (<i>ref.</i> lower secondary)							
No qualification	0.075	0.069	0.043	0.036	0.038	0.037	0.037
	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)
Foreign/other	0.031	0.028	0.012	0.021	0.022	0.031	0.031
	(0.058)	(0.058)	(0.058)	(0.058)	(0.058)	(0.058)	(0.058)
Upper secondary	-0.029	-0.029	-0.010	-0.023	-0.023	-0.025	-0.025
	(0.057)	(0.057)	(0.057)	(0.056)	(0.056)	(0.056)	(0.056)
Some tertiary	-0.049	-0.047	-0.050	-0.064	-0.064	-0.068	-0.068
	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)
Tertiary	-0.148**	-0.133**	-0.103*	-0.114*	-0.116*	-0.119*	-0.119*
	(0.049)	(0.049)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
Missing	0.054	0.053	0.014	0.002	0.012	0.037	0.038
	(0.343)	(0.343)	(0.341)	(0.340)	(0.340)	(0.339)	(0.339)
Social class (<i>ref.</i> lower managerial)							
Higher managerial and professional	-0.013	-0.005	-0.001	-0.004	-0.004	-0.001	-0.001
	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)
Intermediate occupations	0.026	0.019	0.014	0.004	0.004	0.006	0.006
	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)
Small employers and own account	-0.048	-0.052	-0.053	-0.049	-0.050	-0.055	-0.055
	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)
Lower supervisory and technical	0.070	0.059	0.038	0.039	0.037	0.035	0.035
	(0.056)	(0.056)	(0.056)	(0.056)	(0.056)	(0.056)	(0.056)
Semi-routine	0.007	-0.003	-0.018	-0.024	-0.026	-0.025	-0.025
	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)
Routine	0.153*	0.140*	0.113	0.099	0.099	0.096	0.096
	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)
Other	-0.158	-0.147	-0.105	-0.109	-0.117	-0.123	-0.123
	(0.189)	(0.189)	(0.188)	(0.187)	(0.187)	(0.186)	(0.186)
Household wealth (between)	-0.039***	-0.037***	-0.036***	-0.034***	-0.034***	-0.033***	-0.033***
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Household wealth (within)	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Household income (ln) (between)	-0.046	-0.028	-0.014	-0.007	-0.008	0.000	0.000
	(0.031)	(0.032)	(0.032)	(0.031)	(0.031)	(0.031)	(0.031)
Household income (ln) (within)	0.003	0.002	0.002	0.002	0.002	0.002	0.002
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Parental school-leaving age (<i>ref.</i> Age 14 or below)							
Question not asked			0.797	0.720	0.703	0.717	0.715
			(0.431)	(0.429)	(0.430)	(0.428)	(0.429)
At age 15			-0.033	-0.034	-0.034	-0.031	-0.031

			(0.044)	(0.044)	(0.044)	(0.044)	(0.044)
At age 16			-0.052	-0.058	-0.057	-0.060	-0.060
			(0.052)	(0.052)	(0.052)	(0.052)	(0.052)
At age 17 or 18			-0.143*	-0.141*	-0.139*	-0.136*	-0.136*
			(0.063)	(0.063)	(0.063)	(0.063)	(0.063)
At age 19 or over			-0.138*	-0.143*	-0.143*	-0.140*	-0.140*
			(0.068)	(0.068)	(0.068)	(0.068)	(0.068)
Occupation father (ref. skilled trade)							
Manager or senior official in someone else s business			0.004	-0.002	-0.000	-0.002	-0.002
			(0.105)	(0.104)	(0.104)	(0.104)	(0.104)
Running his own business			-0.042	-0.028	-0.025	-0.017	-0.017
			(0.102)	(0.102)	(0.102)	(0.102)	(0.102)
Professional or technical			0.028	0.035	0.036	0.040	0.040
			(0.096)	(0.096)	(0.096)	(0.096)	(0.096)
Administrative, clerical or secretarial			-0.060	-0.054	-0.051	-0.046	-0.045
			(0.103)	(0.102)	(0.102)	(0.102)	(0.102)
Skilled trade			0.045	0.056	0.057	0.063	0.063
			(0.093)	(0.092)	(0.092)	(0.092)	(0.092)
Caring, leisure, travel or personal services			0.043	0.065	0.067	0.079	0.079
			(0.135)	(0.134)	(0.134)	(0.134)	(0.134)
Sales or customer service			-0.002	0.005	0.006	0.022	0.022
			(0.116)	(0.116)	(0.116)	(0.116)	(0.116)
Plant, process or machine drivers or operators			0.146	0.162	0.164	0.169	0.169
			(0.101)	(0.101)	(0.101)	(0.100)	(0.100)
Other jobs			0.146	0.158	0.160	0.165	0.165
			(0.096)	(0.096)	(0.096)	(0.096)	(0.096)
Something else			0.155	0.178	0.180	0.177	0.178
			(0.109)	(0.109)	(0.109)	(0.108)	(0.108)
Casual jobs			0.090	0.125	0.132	0.148	0.149
			(0.211)	(0.210)	(0.210)	(0.209)	(0.209)
Retired			0.027	0.047	0.047	0.027	0.027
			(0.198)	(0.197)	(0.197)	(0.196)	(0.196)
Unemployed			-0.019	-0.000	0.008	0.007	0.008
			(0.158)	(0.157)	(0.158)	(0.157)	(0.157)
Sick / disabled			-0.171	-0.160	-0.160	-0.162	-0.162
			(0.171)	(0.170)	(0.170)	(0.170)	(0.170)
Missing			0.118	0.142	0.147	0.149	0.149
			(0.238)	(0.237)	(0.237)	(0.236)	(0.236)
Childhood stress			0.034*	0.035*	0.035*	0.034*	0.034*
			(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Conscientiousness				-0.065***	-0.064***	-0.061***	-0.061***
				(0.017)	(0.017)	(0.017)	(0.017)
Neuroticism				-0.032*	-0.034*	-0.045**	-0.045**
				(0.015)	(0.015)	(0.015)	(0.015)
Agreeableness				0.066***	0.067***	0.066***	0.066***
				(0.018)	(0.018)	(0.018)	(0.018)
Openness				0.045*	0.045*	0.053**	0.053**
				(0.019)	(0.019)	(0.019)	(0.019)
Extraversion				-0.094***	-0.091***	-0.072***	-0.072***
				(0.020)	(0.020)	(0.020)	(0.020)
Sense of control					-0.016		-0.002
					(0.015)		(0.016)
Optimism						-0.076***	-0.075***
						(0.018)	(0.018)
Constant	1.022***	1.068***	0.888***	0.889***	0.877***	0.816**	0.815**
	(0.233)	(0.233)	(0.255)	(0.255)	(0.255)	(0.255)	(0.255)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N participants	3,456	3,456	3,456	3,456	3,456	3,456	3,456
N observations	9,080	9,080	9,080	9,080	9,080	9,080	9,080
AIC	21,827.3	21,821.1	21,819.4	21,785.6	21,786.6	21,768.9	21,770.9

BIC	22,054.9	22,055.9	22,203.6	22,205.3	22,213.4	22,195.8	22,204.9
Deviance	21,763.3	21,755.1	21,711.4	21,667.6	21,666.6	21,648.9	21,648.9

Table A12: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation. Sample restricted to participants who participated at five time points.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Subjective status	-0.020* (0.008)						
Subjective status (between)		-0.052*** (0.014)	-0.046** (0.014)	-0.045** (0.015)	-0.044** (0.015)	-0.032* (0.015)	-0.032* (0.015)
Subjective status (within)		-0.006 (0.009)	-0.006 (0.009)	-0.006 (0.009)	-0.006 (0.009)	-0.006 (0.009)	-0.006 (0.009)
Age (between)	0.021*** (0.002)	0.021*** (0.002)	0.020*** (0.002)	0.019*** (0.003)	0.019*** (0.003)	0.018*** (0.003)	0.018*** (0.003)
Age (within)	0.042 (0.025)	0.041 (0.025)	0.041 (0.025)	0.041 (0.025)	0.041 (0.025)	0.041 (0.025)	0.041 (0.025)
Marital status (<i>ref.</i> married)							
Divorced/separated	0.068 (0.107)	0.067 (0.107)	0.067 (0.107)	0.067 (0.107)	0.067 (0.107)	0.067 (0.107)	0.067 (0.107)
Widowed	0.152** (0.055)	0.153** (0.055)	0.153** (0.055)	0.153** (0.055)	0.153** (0.055)	0.153** (0.055)	0.153** (0.055)
Never married	0.045 (0.209)	0.042 (0.208)	0.042 (0.208)	0.042 (0.208)	0.042 (0.208)	0.042 (0.208)	0.042 (0.208)
Female sex (<i>ref.</i> male)	-0.062 (0.036)	-0.062 (0.036)	-0.052 (0.036)	-0.033 (0.038)	-0.033 (0.038)	-0.034 (0.038)	-0.034 (0.038)
Non-white (<i>ref.</i> white)	0.175 (0.142)	0.164 (0.142)	0.183 (0.142)	0.207 (0.142)	0.202 (0.142)	0.231 (0.142)	0.231 (0.142)
Education (<i>ref.</i> lower secondary)							
No qualification	0.076 (0.050)	0.068 (0.050)	0.043 (0.050)	0.054 (0.050)	0.055 (0.050)	0.050 (0.050)	0.050 (0.050)
Foreign/other	0.002 (0.066)	-0.001 (0.066)	-0.016 (0.066)	-0.006 (0.066)	-0.005 (0.066)	0.008 (0.066)	0.008 (0.066)
Upper secondary	-0.042 (0.066)	-0.042 (0.066)	-0.025 (0.066)	-0.035 (0.066)	-0.034 (0.066)	-0.040 (0.065)	-0.040 (0.066)
Some tertiary	-0.025 (0.055)	-0.022 (0.055)	-0.027 (0.055)	-0.044 (0.055)	-0.044 (0.055)	-0.053 (0.055)	-0.053 (0.055)
Tertiary	-0.112 (0.058)	-0.094 (0.058)	-0.076 (0.059)	-0.088 (0.059)	-0.088 (0.059)	-0.097 (0.059)	-0.097 (0.059)
Missing	0.332 (0.571)	0.294 (0.571)	0.233 (0.569)	0.289 (0.568)	0.303 (0.568)	0.334 (0.566)	0.333 (0.567)
Social class (<i>ref.</i> lower managerial)							
Higher managerial and professional	0.002 (0.055)	0.008 (0.055)	0.005 (0.055)	-0.000 (0.055)	0.001 (0.055)	0.007 (0.055)	0.007 (0.055)
Intermediate occupations	0.083 (0.057)	0.075 (0.057)	0.070 (0.057)	0.071 (0.056)	0.070 (0.056)	0.070 (0.056)	0.070 (0.056)
Small employers and own account	-0.011 (0.063)	-0.018 (0.063)	-0.020 (0.063)	-0.025 (0.062)	-0.026 (0.062)	-0.036 (0.062)	-0.036 (0.062)
Lower supervisory and technical	0.088 (0.066)	0.074 (0.066)	0.053 (0.066)	0.055 (0.065)	0.054 (0.065)	0.051 (0.065)	0.051 (0.065)
Semi-routine	0.012 (0.060)	0.000 (0.060)	-0.013 (0.060)	-0.019 (0.060)	-0.020 (0.060)	-0.020 (0.060)	-0.020 (0.060)
Routine	0.146 (0.075)	0.131 (0.075)	0.113 (0.075)	0.111 (0.075)	0.110 (0.075)	0.104 (0.075)	0.104 (0.075)
Other	-0.336 (0.075)	-0.324 (0.075)	-0.294 (0.075)	-0.308 (0.075)	-0.312 (0.075)	-0.332 (0.075)	-0.332 (0.075)

	(0.253)	(0.252)	(0.251)	(0.251)	(0.251)	(0.250)	(0.250)
Household wealth (between)	-0.050***	-0.048***	-0.047***	-0.045***	-0.045***	-0.044***	-0.044***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Household wealth (within)	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Household income (ln) (between)	-0.049	-0.029	-0.012	-0.008	-0.008	-0.000	-0.000
	(0.039)	(0.039)	(0.039)	(0.039)	(0.039)	(0.039)	(0.039)
Household income (ln) (within)	0.007	0.005	0.005	0.005	0.005	0.005	0.005
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
At age 15			-0.127*	-0.125*	-0.126*	-0.121*	-0.121*
			(0.051)	(0.051)	(0.051)	(0.051)	(0.051)
At age 16			-0.033	-0.036	-0.035	-0.040	-0.040
			(0.062)	(0.062)	(0.062)	(0.062)	(0.062)
At age 17 or 18			-0.159*	-0.157*	-0.155*	-0.147*	-0.147*
			(0.074)	(0.073)	(0.073)	(0.073)	(0.073)
At age 19 or over			-0.175*	-0.174*	-0.175*	-0.166*	-0.166*
			(0.079)	(0.079)	(0.079)	(0.079)	(0.079)
Occupation father (ref. skilled trade)							
Manager or senior official in someone else's business			-0.023	-0.037	-0.037	-0.038	-0.038
			(0.120)	(0.120)	(0.120)	(0.120)	(0.120)
Running his own business			-0.016	-0.017	-0.015	-0.002	-0.003
			(0.119)	(0.118)	(0.118)	(0.118)	(0.118)
Professional or technical			0.081	0.077	0.077	0.083	0.083
			(0.111)	(0.111)	(0.111)	(0.110)	(0.110)
Administrative, clerical or secretarial			-0.099	-0.101	-0.099	-0.089	-0.090
			(0.117)	(0.117)	(0.117)	(0.117)	(0.117)
Skilled trade			0.021	0.019	0.019	0.030	0.030
			(0.106)	(0.106)	(0.106)	(0.106)	(0.106)
Caring, leisure, travel or personal services			0.116	0.124	0.123	0.141	0.141
			(0.152)	(0.151)	(0.151)	(0.151)	(0.151)
Sales or customer service			0.033	0.026	0.027	0.039	0.039
			(0.135)	(0.135)	(0.135)	(0.134)	(0.134)
Plant, process or machine drivers or operators			0.094	0.098	0.099	0.114	0.114
			(0.116)	(0.116)	(0.116)	(0.115)	(0.116)
Other jobs			0.137	0.138	0.138	0.147	0.147
			(0.111)	(0.110)	(0.110)	(0.110)	(0.110)
Something else			0.214	0.222	0.222	0.222	0.222
			(0.128)	(0.128)	(0.128)	(0.127)	(0.127)
Casual jobs			0.040	0.061	0.068	0.082	0.082
			(0.248)	(0.248)	(0.248)	(0.247)	(0.247)
Retired			0.078	0.096	0.096	0.068	0.068
			(0.225)	(0.224)	(0.224)	(0.224)	(0.224)
Unemployed			0.180	0.201	0.207	0.206	0.206
			(0.209)	(0.208)	(0.208)	(0.208)	(0.208)
Sick / disabled			-0.316	-0.303	-0.304	-0.301	-0.301
			(0.205)	(0.204)	(0.204)	(0.204)	(0.204)
Missing			0.279	0.302	0.305	0.314	0.314
			(0.287)	(0.286)	(0.286)	(0.285)	(0.285)
Childhood stress			0.030	0.030	0.029	0.028	0.028
			(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Conscientiousness				-0.038	-0.037	-0.035	-0.035
				(0.019)	(0.019)	(0.019)	(0.019)
Neuroticism				-0.024	-0.026	-0.038*	-0.037*
				(0.018)	(0.018)	(0.018)	(0.018)
Agreeableness				0.038	0.038	0.037	0.037
				(0.022)	(0.022)	(0.022)	(0.022)
Openness				0.073***	0.073***	0.082***	0.082***
				(0.022)	(0.022)	(0.022)	(0.022)
Extraversion				-0.082***	-0.079***	-0.058*	-0.058*

				(0.023)	(0.023)	(0.024)	(0.024)
Sense of control					-0.015		0.001
					(0.018)		(0.019)
Optimism						-0.085***	-0.085***
						(0.021)	(0.021)
Constant	1.218***	1.278***	1.159***	1.166***	1.157***	1.077***	1.077***
	(0.295)	(0.296)	(0.317)	(0.318)	(0.318)	(0.318)	(0.318)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i> participants	2,478	2,478	2,478	2,478	2,478	2,478	2,478
<i>N</i> observations	6,986	6,986	6,986	6,986	6,986	6,986	6,986
AIC	16,775.9	16,770.7	16,769.2	16,756.8	16,758.1	16,742	16,744
BIC	16,995.2	16,996.8	17,132.4	17,154.2	17,162.3	17,146.2	17,155.1
Deviance	16,711.9	16,704.7	16,663.2	16,640.8	16,640.1	16,624	16,624

Table A13: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation. Attrition corrected using joint models

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Subjective status	-0.028*** (0.004)						
Subjective status (between)		-0.038*** (0.005)	-0.032*** (0.005)	-0.026*** (0.005)	-0.024*** (0.005)	-0.015*** (0.005)	-0.015*** (0.005)
Subjective status (within)		-0.001 (0.008)	0.001 (0.008)	0.001 (0.008)	0.001 (0.008)	0.001 (0.008)	0.001 (0.008)
Age (between)	0.021*** (0.001)	0.021*** (0.001)	0.021*** (0.002)	0.019*** (0.001)	0.019*** (0.001)	0.018*** (0.001)	0.018*** (0.001)
Age (within)	0.050* (0.023)	0.049* (0.023)	0.050* (0.023)	0.050* (0.023)	0.050* (0.023)	0.050* (0.023)	0.050* (0.023)
Marital status (<i>ref.</i> married)							
Divorced/separated	-0.034 (0.091)	-0.026 (0.091)	-0.024 (0.091)	-0.026 (0.091)	-0.025 (0.091)	-0.022 (0.091)	-0.022 (0.091)
Widowed	0.183*** (0.050)	0.186*** (0.050)	0.184*** (0.050)	0.184*** (0.050)	0.184*** (0.050)	0.185*** (0.050)	0.185*** (0.050)
Never married	0.142 (0.192)	0.132 (0.192)	0.126 (0.191)	0.132 (0.190)	0.134 (0.190)	0.143 (0.190)	0.143 (0.190)
Female sex (<i>ref.</i> male)	-0.074*** (0.013)	-0.074*** (0.013)	-0.057*** (0.014)	-0.043** (0.014)	-0.044** (0.014)	-0.044** (0.014)	-0.044** (0.014)
Non-white (<i>ref.</i> white)	0.168*** (0.050)	0.164*** (0.050)	0.208*** (0.050)	0.217*** (0.050)	0.209*** (0.050)	0.229*** (0.050)	0.226*** (0.050)
Education (<i>ref.</i> lower secondary)							
No qualification	0.026 (0.025)	0.025 (0.025)	0.016 (0.025)	0.000 (0.025)	0.001 (0.025)	-0.008 (0.025)	-0.008 (0.025)
Foreign/other	-0.053* (0.025)	-0.052* (0.025)	-0.036 (0.025)	-0.045 (0.025)	-0.047 (0.025)	-0.054* (0.025)	-0.055* (0.025)
Upper secondary	-0.083** (0.031)	-0.082** (0.031)	-0.048 (0.031)	-0.068** (0.031)	-0.069* (0.031)	-0.080* (0.031)	-0.080* (0.031)
Some tertiary	-0.076** (0.028)	-0.075** (0.028)	-0.060* (0.028)	-0.081** (0.028)	-0.083** (0.028)	-0.095*** (0.028)	-0.095*** (0.028)
Tertiary	-0.185*** (0.029)	-0.178*** (0.029)	-0.136*** (0.029)	-0.152*** (0.029)	-0.154*** (0.029)	-0.165*** (0.029)	-0.165*** (0.029)
Missing	0.029 (0.156)	0.031 (0.156)	0.024 (0.155)	0.032 (0.155)	0.046 (0.155)	0.055 (0.154)	0.058 (0.154)
Social class (<i>ref.</i> lower managerial)							
Higher managerial and professional	0.021 (0.020)	0.021 (0.020)	0.024 (0.020)	0.029 (0.020)	0.022 (0.020)	0.022 (0.020)	0.025 (0.020)
Intermediate occupations	0.025 (0.156)	0.022 (0.156)	0.015 (0.155)	0.009 (0.155)	0.008 (0.155)	0.008 (0.154)	0.008 (0.154)

	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Small employers and own account	-0.051*	-0.053*	-0.055*	-0.056*	-0.057*	-0.062**	-0.062**
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Lower supervisory and technical	0.051*	0.047*	0.028*	0.028	0.025	0.023	0.022
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
Semi-routine	0.005	0.000	-0.017	-0.026	-0.027	-0.028	-0.028
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Routine	0.199***	0.193***	0.173***	0.163***	0.162***	0.157***	0.157***
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
Other	-0.058	-0.059	-0.030	-0.043	-0.052	-0.062	-0.065
	(0.078)	(0.078)	(0.078)	(0.078)	(0.078)	(0.077)	(0.077)
Household wealth (between)	-0.036***	-0.035***	-0.034***	-0.032***	-0.032***	-0.031***	-0.031***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Household wealth (within)	-0.005	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Household income (ln) (between)	-0.055***	-0.048***	-0.036**	-0.031*	-0.031	-0.023	-0.024
	(0.013)	(0.014)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)
Household income (ln) (within)	-0.003	-0.006	-0.006	-0.005	-0.006	-0.006	-0.006
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Parental school-leaving age (ref. Age 14 or below)							
Question not asked			0.050	0.024	0.021	0.017	0.017
			(0.033)	(0.033)	(0.033)	(0.033)	(0.033)
At age 15			-0.057**	-0.057**	-0.057**	-0.054**	-0.054**
			(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
At age 16			-0.050**	-0.052**	-0.050**	-0.053**	-0.053**
			(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
At age 17 or 18			-0.166***	-0.162***	-0.159***	-0.157***	-0.156***
			(0.028)	(0.027)	(0.027)	(0.027)	(0.027)
At age 19 or over			-0.166***	-0.165***	-0.164***	-0.163***	-0.163***
			(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
Occupation father (ref. skilled trade)							
Manager or senior official in someone else's business			-0.056	-0.065	-0.062	-0.064	-0.063
			(0.045)	(0.045)	(0.045)	(0.045)	(0.045)
Running his own business			-0.049	-0.048	-0.043	-0.039	-0.037
			(0.044)	(0.044)	(0.044)	(0.044)	(0.044)
Professional or technical			0.000	-0.003	-0.001	0.001	0.002
			(0.042)	(0.041)	(0.041)	(0.041)	(0.041)
Administrative, clerical or secretarial			-0.119**	-0.121**	-0.117**	-0.112*	-0.111*
			(0.044)	(0.044)	(0.044)	(0.044)	(0.044)
Skilled trade			-0.011	-0.008	-0.006	-0.001	0.000
			(0.040)	(0.040)	(0.040)	(0.040)	(0.040)
Caring, leisure, travel or personal services			0.003	0.010	0.012	0.021	0.021
			(0.057)	(0.057)	(0.057)	(0.057)	(0.057)
Sales or customer service			-0.025	-0.027	-0.025	-0.010	-0.010
			(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
Plant, process or machine drivers or operators			0.080	0.087*	0.092*	0.099*	0.100*
			(0.044)	(0.043)	(0.043)	(0.043)	(0.43)
Other jobs			0.086*	0.086*	0.089*	0.094*	0.095*
			(0.041)	(0.041)	(0.041)	(0.041)	(0.041)
Something else			0.058	0.071	0.075	0.072	0.073
			(0.047)	(0.047)	(0.047)	(0.047)	(0.047)
Casual jobs			-0.047	-0.031	-0.024	-0.026	-0.023
			(0.089)	(0.088)	(0.088)	(0.088)	(0.088)
Retired			-0.027	-0.017	-0.018	-0.039	-0.039
			(0.081)	(0.081)	(0.081)	(0.081)	(0.081)
Unemployed			0.012	0.028	0.038	0.046	0.049

			(0.070)	(0.070)	(0.070)	(0.070)	(0.070)
Sick / disabled			-0.190**	-0.190**	-0.191**	-0.188**	-0.188**
			(0.072)	(0.071)	(0.071)	(0.071)	(0.071)
Missing			0.045	0.059	0.068	0.059	0.062
			(0.101)	(0.101)	(0.101)	(0.101)	(0.101)
Childhood stress			0.026***	0.027***	0.026***	0.025***	0.025***
			(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Conscientiousness				-0.053***	-0.051***	-0.050***	-0.049***
				(0.007)	(0.007)	(0.007)	(0.007)
Neuroticism				-0.032***	-0.036***	-0.046***	-0.047***
				(0.007)	(0.007)	(0.007)	(0.007)
Agreeableness				0.065***	0.066***	0.065***	0.066***
				(0.008)	(0.008)	(0.008)	(0.008)
Openness				0.040***	0.041***	0.049***	0.049***
				(0.008)	(0.008)	(0.008)	(0.008)
Extraversion				-0.088***	-0.084***	-0.066***	-0.066***
				(0.009)	(0.009)	(0.009)	(0.009)
Sense of control					-0.022***		-0.007
					(0.007)		(0.007)
Optimism						-0.077***	-0.075***
						(0.007)	(0.008)
Constant	1.182***	1.197***	1.083***	1.116***	1.105***	1.052***	1.049***
	(0.101)	(0.101)	(0.101)	(0.101)	(0.101)	(0.101)	(0.101)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AIC	117,278.1	117,263.8	117,117.1	116,928.1	116,922.9	116,822.9	116,823.7
BIC	117,570.2	117,564.0	117,587.7	117,439.2	117,442.1	117,342.1	117,351.0

Using weighted data

Table A14: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation, weighted data.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Subjective status	-0.014*						
	(0.007)						
Subjective status (between)		-0.036***	-0.030**	-0.022*	-0.020	-0.012	-0.011
		(0.011)	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)
Subjective status (within)		-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
		(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Age (between)	0.018***	0.018***	0.017***	0.015***	0.015***	0.014***	0.014***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Age (within)	0.044***	0.043***	0.042***	0.038***	0.039***	0.039***	0.039***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Marital status (<i>ref.</i> married)							
Divorced/separated	0.012	0.015	0.014	0.014	0.014	0.013	0.013
	(0.107)	(0.107)	(0.107)	(0.107)	(0.107)	(0.107)	(0.107)
Widowed	0.158**	0.159**	0.161**	0.162**	0.162**	0.162**	0.162**
	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
Never married	0.212	0.206	0.205	0.200	0.201	0.203	0.203
	(0.164)	(0.164)	(0.164)	(0.165)	(0.165)	(0.165)	(0.165)
Female sex (<i>ref.</i> male)	-0.076**	-0.075*	-0.056	-0.042	-0.043	-0.044	-0.045
	(0.029)	(0.029)	(0.030)	(0.031)	(0.031)	(0.031)	(0.031)
Non-white (<i>ref.</i> white)	0.158	0.150	0.201	0.209	0.199	0.218	0.215
	(0.108)	(0.109)	(0.110)	(0.112)	(0.112)	(0.112)	(0.112)
Education (<i>ref.</i> lower sec- ondary)							
No qualification	0.100*	0.095*	0.067	0.059	0.062	0.061	0.062
	(0.039)	(0.039)	(0.039)	(0.039)	(0.039)	(0.039)	(0.039)
Foreign/other	0.041	0.039	0.021	0.032	0.034	0.042	0.043

		(0.054)	(0.054)	(0.054)	(0.054)	(0.054)	(0.053)	(0.053)
Upper secondary		-0.033	-0.033	-0.015	-0.026	-0.025	-0.027	-0.027
		(0.055)	(0.055)	(0.054)	(0.054)	(0.054)	(0.054)	(0.054)
Some tertiary		-0.020	-0.019	-0.016	-0.026	-0.025	-0.030	-0.030
		(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)
Tertiary		-0.139**	-0.128**	-0.095*	-0.103*	-0.104*	-0.108*	-0.108*
		(0.047)	(0.047)	(0.048)	(0.047)	(0.047)	(0.047)	(0.047)
Social class (<i>ref.</i> lower managerial)								
Higher managerial and professional	0.018	0.023	0.034	0.027	0.027	0.030	0.030	
	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)
Intermediate occupations	0.014	0.009	0.001	-0.006	-0.007	-0.006	-0.007	
	(0.046)	(0.046)	(0.046)	(0.046)	(0.045)	(0.045)	(0.045)	(0.045)
Small employers and own account	-0.088	-0.092	-0.095	-0.094	-0.095	-0.099*	-0.099*	
	(0.049)	(0.049)	(0.049)	(0.050)	(0.050)	(0.049)	(0.049)	(0.049)
Lower supervisory and technical	0.060	0.052	0.033	0.033	0.030	0.029	0.028	
	(0.052)	(0.052)	(0.052)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)
Semi-routine	-0.012	-0.020	-0.038	-0.049	-0.050	-0.049	-0.050	
	(0.047)	(0.047)	(0.048)	(0.048)	(0.048)	(0.047)	(0.047)	(0.047)
Routine	0.190**	0.178**	0.155*	0.140*	0.139*	0.139*	0.139*	
	(0.061)	(0.061)	(0.062)	(0.061)	(0.061)	(0.061)	(0.061)	(0.061)
Other	-0.140	-0.134	-0.107	-0.128	-0.135	-0.156	-0.157	
	(0.128)	(0.128)	(0.128)	(0.126)	(0.126)	(0.127)	(0.127)	(0.127)
Household wealth (between)	-0.035***	-0.034***	-0.032***	-0.030***	-0.030***	-0.029***	-0.029***	-0.029***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Household wealth (within)	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Household income (ln) (between)	-0.060*	-0.046	-0.033	-0.028	-0.028	-0.020	-0.020	
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
Household income (ln) (within)	0.015	0.014	0.014	0.014	0.014	0.014	0.014	
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Question not asked			0.158*	0.129	0.129	0.120	0.120	
			(0.070)	(0.070)	(0.070)	(0.070)	(0.070)	(0.070)
Age 14 or under or no school			0.071	0.071	0.071	0.067	0.067	
			(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)
Parental school-leaving age (<i>ref.</i> Age 14 or below)								
At age 16			-0.003	-0.007	-0.005	-0.010	-0.009	
			(0.062)	(0.062)	(0.062)	(0.062)	(0.062)	(0.062)
At age 17 or 18			-0.113	-0.108	-0.104	-0.104	-0.103	
			(0.067)	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)
At age 19 or over			-0.124	-0.126	-0.125	-0.124	-0.123	
			(0.072)	(0.072)	(0.072)	(0.072)	(0.072)	(0.072)
Occupation father (<i>ref.</i> skilled trade)								
Manager or senior official in someone else's business			-0.060	-0.068	-0.066	-0.068	-0.067	
			(0.096)	(0.095)	(0.095)	(0.094)	(0.094)	(0.094)
Running his own business			-0.044	-0.043	-0.040	-0.035	-0.034	
			(0.095)	(0.093)	(0.093)	(0.092)	(0.092)	(0.092)
Professional or technical			0.005	0.001	0.003	0.006	0.007	
			(0.090)	(0.089)	(0.088)	(0.088)	(0.087)	(0.087)
Administrative, clerical or secretarial			-0.116	-0.120	-0.116	-0.110	-0.109	
			(0.094)	(0.094)	(0.093)	(0.093)	(0.092)	(0.092)
Skilled trade			-0.014	-0.011	-0.010	-0.005	-0.005	

				(0.086)	(0.085)	(0.084)	(0.084)	(0.084)
Caring, leisure, travel or personal services				-0.043	-0.042	-0.042	-0.033	-0.033
				(0.128)	(0.126)	(0.125)	(0.125)	(0.125)
Sales or customer ser- vice				-0.002	-0.003	-0.001	0.010	0.011
				(0.109)	(0.108)	(0.107)	(0.106)	(0.106)
Plant, process or ma- chine drivers or operators				0.071	0.079	0.082	0.088	0.089
				(0.095)	(0.094)	(0.093)	(0.093)	(0.093)
Other jobs				0.097	0.099	0.103	0.107	0.108
				(0.089)	(0.088)	(0.088)	(0.087)	(0.087)
Something else				0.055	0.067	0.071	0.069	0.070
				(0.100)	(0.099)	(0.098)	(0.098)	(0.098)
Casual jobs				0.025	0.050	0.055	0.053	0.054
				(0.204)	(0.199)	(0.198)	(0.198)	(0.198)
Retired				0.010	0.019	0.018	-0.006	-0.006
				(0.156)	(0.155)	(0.153)	(0.153)	(0.152)
Unemployed				0.007	0.027	0.038	0.036	0.040
				(0.153)	(0.150)	(0.150)	(0.150)	(0.150)
Sick / disabled				-0.132	-0.138	-0.140	-0.135	-0.136
				(0.153)	(0.152)	(0.151)	(0.150)	(0.149)
Missing				0.036	0.030	0.041	0.036	0.040
				(0.180)	(0.184)	(0.182)	(0.184)	(0.184)
Childhood stress				0.023	0.024	0.023	0.022	0.022
				(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Conscientiousness					-0.068***	-0.066***	-0.064***	-0.063***
					(0.015)	(0.015)	(0.015)	(0.015)
Neuroticism					-0.036**	-0.040**	-0.050***	-0.051***
					(0.014)	(0.014)	(0.014)	(0.014)
Agreeableness					0.076***	0.077***	0.076***	0.076***
					(0.017)	(0.017)	(0.017)	(0.017)
Openness					0.041*	0.042*	0.050**	0.050**
					(0.017)	(0.017)	(0.017)	(0.017)
Extraversion					-0.098***	-0.094***	-0.075***	-0.074***
					(0.019)	(0.019)	(0.019)	(0.019)
Sense of control						-0.023		-0.008
						(0.014)		(0.014)
Optimism							-0.079***	-0.076***
							(0.016)	(0.016)
Constant	1.282***	1.311***	1.143***	1.180***	1.165***	1.110***	1.107***	1.107***
	(0.213)	(0.214)	(0.234)	(0.233)	(0.233)	(0.233)	(0.233)	(0.233)
/								
var(_cons[idauniq])	0.530***	0.529***	0.521***	0.512***	0.512***	0.508***	0.508***	0.508***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
var(e.alloswX)	0.364***	0.364***	0.364***	0.363***	0.364***	0.363***	0.363***	0.363***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N participants								
N observations	10,190	10,190	10,190	10,190	10,190	10,190	10,190	10,190
AIC	22,217.3	22,212.7	22,209.8	22,161.4	22,160.5	22,139	22,140.7	22,140.7
BIC	22,434.2	22,436.8	22,585.7	22,573.4	22,579.8	22,558.3	22,567.2	22,567.2
Deviance	22,157.3	22,150.7	22,105.8	22,047.4	22,044.5	22,023	22,022.7	22,022.7

Multiple imputation

To address the question in how far results are robust to the assumptions of list-wise deletion, we used multiple imputation (Enders, 2010). Specifically, we used multiple imputation by chained equations (Van Buuren, 2018) as implemented in Royston's Stata command 'ice' (Royston, 2004, 2005, 2007, 2009). Estimates obtained from the $m = 20$ models of imputed data were combined in line with

the Rubin (1987) rules.

Table A15: Allostatic load regressed on subjective social status and covariates, maximum-likelihood random-effects estimation, multiply imputed data.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Subjective status	-0.012 (0.008)						
Subjective status (between)		-0.041*** (0.007)	-0.038*** (0.007)	-0.036*** (0.008)	-0.036*** (0.008)	-0.031*** (0.008)	-0.030*** (0.008)
Subjective status (within)		0.008 (0.009)	0.008 (0.009)	0.008 (0.009)	0.008 (0.009)	0.008 (0.009)	0.008 (0.009)
Age (between)	0.019*** (0.001)	0.019*** (0.001)	0.018*** (0.001)	0.017*** (0.001)	0.017*** (0.002)	0.017*** (0.001)	0.016*** (0.002)
Age (within)	0.038*** (0.007)	0.038*** (0.007)	0.044*** (0.010)	0.043*** (0.010)	0.043*** (0.010)	0.042*** (0.010)	0.043*** (0.010)
Marital status (<i>ref.</i> married)							
Divorced/separated	0.080 (0.060)	0.083 (0.060)	0.083 (0.060)	0.083 (0.060)	0.083 (0.060)	0.083 (0.060)	0.083 (0.060)
Widowed	0.205*** (0.047)	0.206*** (0.047)	0.204*** (0.047)	0.204*** (0.047)	0.204*** (0.047)	0.204*** (0.047)	0.204*** (0.047)
Never married	0.369* (0.157)	0.368* (0.157)	0.369* (0.157)	0.369* (0.157)	0.369* (0.157)	0.369* (0.157)	0.369* (0.157)
Female sex (<i>ref.</i> male)	-0.066*** (0.018)	-0.065*** (0.018)	-0.063*** (0.018)	-0.059** (0.019)	-0.057** (0.019)	-0.062** (0.019)	-0.058** (0.019)
Non-white (<i>ref.</i> white)	0.150* (0.058)	0.144* (0.058)	0.147* (0.058)	0.151* (0.059)	0.155* (0.059)	0.158** (0.059)	0.170** (0.059)
Education (<i>ref.</i> lower secondary)							
No qualification	0.090*** (0.024)	0.086*** (0.024)	0.080*** (0.023)	0.084*** (0.023)	0.083*** (0.023)	0.087*** (0.023)	0.083*** (0.023)
Foreign/other	0.048 (0.032)	0.049 (0.032)	0.047 (0.032)	0.053 (0.031)	0.053 (0.031)	0.056 (0.032)	0.055 (0.031)
Upper secondary	0.013 (0.033)	0.015 (0.033)	0.024 (0.033)	0.019 (0.033)	0.019 (0.033)	0.020 (0.033)	0.020 (0.033)
Some tertiary	-0.019 (0.028)	-0.016 (0.028)	-0.013 (0.028)	-0.017 (0.028)	-0.017 (0.028)	-0.017 (0.028)	-0.018 (0.028)
Tertiary	-0.108*** (0.029)	-0.094** (0.029)	-0.078** (0.030)	-0.083** (0.029)	-0.083** (0.029)	-0.084** (0.029)	-0.084** (0.029)
Missing	0.035 (0.096)	0.040 (0.095)	0.050 (0.095)	0.049 (0.095)	0.048 (0.095)	0.054 (0.095)	0.051 (0.095)
Social class (<i>ref.</i> lower managerial)							
Higher managerial and professional	-0.035 (0.029)	-0.027 (0.029)	-0.025 (0.029)	-0.026 (0.028)	-0.027 (0.028)	-0.025 (0.028)	-0.025 (0.028)
Intermediate occupations	-0.021 (0.029)	-0.027 (0.029)	-0.027 (0.029)	-0.028 (0.029)	-0.028 (0.029)	-0.028 (0.029)	-0.028 (0.029)
Small employers and own account	-0.063* (0.032)	-0.065* (0.032)	-0.071* (0.031)	-0.071* (0.032)	-0.070* (0.032)	-0.073* (0.032)	-0.072* (0.032)
Lower supervisory and technical	0.078* (0.032)	0.070* (0.032)	0.061 (0.031)	0.061* (0.031)	0.062* (0.031)	0.059 (0.031)	0.061 (0.031)
Semi-routine	0.013 (0.030)	0.003 (0.029)	-0.007 (0.029)	-0.013 (0.029)	-0.012 (0.029)	-0.013 (0.029)	-0.012 (0.029)
Routine	0.090** (0.035)	0.080* (0.034)	0.069* (0.034)	0.068* (0.034)	0.068* (0.034)	0.070* (0.034)	0.070* (0.033)
Other	0.043 (0.060)	0.039 (0.060)	0.047 (0.061)	0.050 (0.060)	0.049 (0.060)	0.047 (0.060)	0.045 (0.060)
Household wealth (between)	-0.037*** (0.003)	-0.034*** (0.003)	-0.033*** (0.003)	-0.031*** (0.003)	-0.031*** (0.003)	-0.031*** (0.003)	-0.030*** (0.003)
Household wealth (within)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)

Household income (ln) (between)	(0.003) -0.073*	(0.003) -0.054	(0.003) -0.059*	(0.003) -0.051*	(0.003) -0.051*	(0.003) -0.043	(0.003) -0.042
Household income (ln) (within)	(0.028) -0.010	(0.028) -0.011	(0.025) -0.011	(0.025) -0.011	(0.025) -0.011	(0.025) -0.011	(0.025) -0.011
Parental school-leaving age (ref. Age 14 or below)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Question not asked			-0.127 (0.067)	-0.128 (0.067)	-0.130 (0.068)	-0.127 (0.067)	-0.133 (0.067)
At age 15			-0.050 (0.027)	-0.046 (0.027)	-0.047 (0.027)	-0.042 (0.027)	-0.043 (0.027)
At age 16			-0.044 (0.034)	-0.044 (0.034)	-0.046 (0.034)	-0.042 (0.034)	-0.045 (0.033)
At age 17 or 18			-0.052 (0.040)	-0.048 (0.041)	-0.050 (0.041)	-0.045 (0.041)	-0.048 (0.041)
At age 19 or over			-0.046 (0.050)	-0.047 (0.050)	-0.048 (0.050)	-0.042 (0.049)	-0.044 (0.049)
Occupation father (ref. skilled trade)							
Manager or senior official in someone else's business			-0.054 (0.064)	-0.059 (0.063)	-0.060 (0.063)	-0.059 (0.063)	-0.062 (0.063)
Running his own business			-0.040 (0.065)	-0.036 (0.065)	-0.037 (0.065)	-0.033 (0.065)	-0.036 (0.065)
Professional or technical			-0.076 (0.059)	-0.076 (0.059)	-0.077 (0.059)	-0.075 (0.059)	-0.077 (0.059)
Administrative, clerical or secretarial			-0.108 (0.061)	-0.107 (0.061)	-0.109 (0.061)	-0.103 (0.061)	-0.108 (0.061)
Skilled trade			-0.027 (0.059)	-0.027 (0.058)	-0.028 (0.058)	-0.026 (0.058)	-0.028 (0.058)
Caring, leisure, travel or personal services			-0.031 (0.083)	-0.030 (0.082)	-0.031 (0.082)	-0.027 (0.082)	-0.029 (0.082)
Sales or customer service			-0.072 (0.074)	-0.072 (0.074)	-0.072 (0.074)	-0.068 (0.074)	-0.069 (0.074)
Plant, process or machine drivers or operators			0.006 (0.062)	0.009 (0.061)	0.007 (0.061)	0.010 (0.061)	0.007 (0.061)
Other jobs			0.028 (0.061)	0.030 (0.060)	0.028 (0.060)	0.032 (0.059)	0.028 (0.060)
Something else			-0.002 (0.065)	0.004 (0.064)	0.003 (0.064)	0.005 (0.064)	0.003 (0.064)
Casual jobs			-0.075 (0.096)	-0.068 (0.095)	-0.069 (0.095)	-0.069 (0.096)	-0.074 (0.096)
Retired			-0.064 (0.109)	-0.058 (0.109)	-0.059 (0.108)	-0.063 (0.109)	-0.069 (0.108)
Unemployed			0.031 (0.090)	0.041 (0.089)	0.037 (0.089)	0.049 (0.089)	0.042 (0.090)
Sick / disabled			-0.085 (0.093)	-0.076 (0.091)	-0.078 (0.091)	-0.073 (0.091)	-0.077 (0.092)
Missing			0.027 (0.113)	0.030 (0.112)	0.026 (0.112)	0.034 (0.111)	0.027 (0.112)
Childhood stress			0.019 (0.015)	0.018 (0.015)	0.019 (0.015)	0.016 (0.015)	0.018 (0.015)
Conscientiousness				-0.057*** (0.014)	-0.063*** (0.014)	-0.046** (0.015)	-0.057*** (0.014)
Neuroticism				-0.013 (0.009)	-0.017 (0.009)	-0.013 (0.009)	-0.021* (0.010)
Agreeableness				0.080*** (0.017)	0.077*** (0.017)	0.085*** (0.017)	0.079*** (0.017)
Openness				0.062*** (0.014)	0.059*** (0.014)	0.073*** (0.015)	0.070*** (0.015)
Extraversion				-0.087***	-0.092***	-0.067***	-0.072***

				(0.016)	(0.016)	(0.017)	(0.017)
Sense of control					0.012		0.033**
					(0.010)		(0.011)
Optimism						-0.054***	-0.072***
						(0.015)	(0.017)
Constant	1.363***	1.379***	1.482***	1.482***	1.500***	1.405***	1.429***
	(0.184)	(0.180)	(0.192)	(0.186)	(0.187)	(0.189)	(0.190)
Wave dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i> participants	10,355	10,355	10,355	10,355	10,355	10,355	10,355
<i>N</i> observations	51,633	51,633	51,633	51,633	51,633	51,633	51,633
No. of imputations <i>m</i>	20	20	20	20	20	20	20

References supplementary materials

- Coustaury, Camille, Elias Jeannot, Adele Moreau, Clotilde Nietge, Asri Maharani, Lindsay Richards, and Patrick Präg, 2022. ‘Subjective Socioeconomic Status and Self-Rated Health in the English Longitudinal Study of Aging. A Fixed-Effects Analysis.’ *SocArXiv* doi: [10.31235/osf.io/2py57](https://doi.org/10.31235/osf.io/2py57).
- Enders, Craig K., 2010. *Applied Missing Data Analysis*. New York: Guilford.
- Flint, Alexander C., Carol Conell, Xiushui Ren, Nader M. Banki, Sheila L. Chan, Vivek A. Rao, Ronald B. Melles, and Deepak L. Bhatt, 2019. ‘Effect of Systolic and Diastolic Blood Pressure on Cardiovascular Outcomes.’ *New England Journal of Medicine* 381(3): 243–251. doi: [10.1056/NEJMoa1803180](https://doi.org/10.1056/NEJMoa1803180).
- Forouhi, Nita Gandhi, Jian’an Luan, Susie Hennings, and Nicholas J. Wareham, 2007. ‘Incidence of Type 2 Diabetes in England and Its Association With Baseline Impaired Fasting Glucose. The Ely Study, 1990–2000.’ *Diabetic Medicine* 24(2): 200–207. doi: [10.1111/j.1464-5491.2007.02068.x](https://doi.org/10.1111/j.1464-5491.2007.02068.x).
- Friedline, Terri, Rainier D. Masa, and Gina A. N. Chowa, 2015. ‘Transforming Wealth. Using the Inverse Hyperbolic Sine (IHS) and Splines to Predict Youth’s Math Achievement.’ *Social Science Research* 49: 264–287. doi: [10.1016/j.ssresearch.2014.08.018](https://doi.org/10.1016/j.ssresearch.2014.08.018).
- Graham, Petra L., Louise M. Ryan, and Mary A. Luszcz, 2011. ‘Joint Modeling of Survival and Cognitive Decline in the Australian Longitudinal Study of Aging.’ *Journal of the Royal Statistical Society C* 60(2): 221–238. doi: [10.1111/j.1467-9876.2010.00737.x](https://doi.org/10.1111/j.1467-9876.2010.00737.x).
- Gruenewald, Tara L., Arun S. Karlamangla, Perry Hu, Sharon Stein-Merkin, Carolyn Crandall, Brandon Koretz, and Teresa E. Seeman, 2012. ‘History of Socioeconomic Disadvantage and Allostatic Load in Later Life.’ *Social Science and Medicine* 74(1): 75–83. doi: [10.1016/j.socscimed.2011.09.037](https://doi.org/10.1016/j.socscimed.2011.09.037).

- Hardy, Melissa A., Francesco Acciai, and Adriana M. Reyes, 2014. ‘How Health Conditions Translate into Self-Ratings. A Comparative Study of Older Adults across Europe.’ *Journal of Health and Social Behavior* 55(3): 320–341. doi: [10.1177/0022146514541446](https://doi.org/10.1177/0022146514541446).
- Hyde, Martin, Richard D. Wiggins, Paul Higgs, and David B. Blane, 2003. ‘A Measure of Quality of Life in Early Old Age. The Theory, Development, and Properties of a Needs Satisfaction Model (CASP-19).’ *Aging and Mental Health* 7(3): 186–194. doi: [10.1080/1360786031000101157](https://doi.org/10.1080/1360786031000101157).
- Janssen, Ian, Peter T. Katzmarzyk, and Robert Ross, 2002. ‘Body Mass Index, Waist Circumference, and Health Risk. Evidence in Support of Current National Institutes of Health Guidelines.’ *Archives of Internal Medicine* 162(18): 2074–2079. doi: [10.1001/archinte.162.18.2074](https://doi.org/10.1001/archinte.162.18.2074).
- Natcen Social Research, 2011. *British Social Attitudes Survey 2009*. London: UK Data Service. doi: [10.5255/UKDA-SN-6695-1](https://doi.org/10.5255/UKDA-SN-6695-1).
- , 2017. *British Social Attitudes Survey 2016*. London: UK Data Service. doi: [10.5255/UKDA-SN-8252-1](https://doi.org/10.5255/UKDA-SN-8252-1).
- , 2021. *British Social Attitudes Survey 2019*. London: UK Data Service. doi: [10.5255/UKDA-SN-8772-1](https://doi.org/10.5255/UKDA-SN-8772-1).
- Prasad, Kailash, 2006. ‘C-Reactive Protein (CRP) Lowering Agents.’ *Cardiovascular Drug Reviews* 24(1): 33–50. doi: [10.1111/j.1527-3466.2006.00033.x](https://doi.org/10.1111/j.1527-3466.2006.00033.x).
- Read, Sanna and Emily Grundy, 2014. ‘Allostatic Load and Health in the Older Population of England. A Crossed-Lagged Analysis.’ *Psychosomatic Medicine* 76(7). doi: [10.1097/PSY.0000000000000083](https://doi.org/10.1097/PSY.0000000000000083).
- Rose, David and David J. Pevalin, 2003. *A Researcher’s Guide to the National Statistics Socio-Economic Classification*. London: Sage. doi: [10.4135/9780857024725](https://doi.org/10.4135/9780857024725).
- Royston, Patrick, 2004. ‘Multiple Imputation of Missing Values.’ *Stata Journal* 4: 227–241. doi: [10.1177/1536867X0400400301](https://doi.org/10.1177/1536867X0400400301).
- , 2005. ‘Multiple Imputation of Missing Value. Update.’ *Stata Journal* 5: 188–201. doi: [10.1177/1536867X0500500204](https://doi.org/10.1177/1536867X0500500204).
- , 2007. ‘Multiple Imputation of Missing Values. Further Update of ‘ice,’ with an Emphasis on Interval Censoring.’ *Stata Journal* 7(4): 445–464. doi: [10.1177/1536867X0800700401](https://doi.org/10.1177/1536867X0800700401).
- , 2009. ‘Multiple Imputation of Missing Values. Further Update of ‘ice,’ with an Emphasis on Categorical Variables.’ *Stata Journal* 9: 466–477. doi: [10.1177/1536867X0900900308](https://doi.org/10.1177/1536867X0900900308).
- Rubin, Donald B., 1987. *Multiple Imputation for Nonresponse in Surveys*. New York: Wiley. doi: [10.1002/9780470316696](https://doi.org/10.1002/9780470316696).

- Step toe, Andrew and Jane Wardle, 2017. ‘Life Skills, Wealth, Health, and Wellbeing in Later Life.’ *Proceedings of the National Academy of Sciences* 114(17): 4354–4359. doi: [10.1073/pnas.1616011114](https://doi.org/10.1073/pnas.1616011114).
- Tampubolon, Gindo and Asri Maharani, 2018. ‘Trajectories of Allostatic Load Among Older Americans and Britons. Longitudinal Cohort Studies.’ *BMC Geriatrics* 18(1): 255. doi: [10.1186/s12877-018-0947-4](https://doi.org/10.1186/s12877-018-0947-4).
- Terracciano, Antonio, Robert R. McCrae, and Jr. Costa, Paul T., 2010. ‘Intra-Individual Change in Personality Stability and Age.’ *Journal of Research in Personality* 44(1): 31–37. doi: [10.1016/j.jrp.2009.09.006](https://doi.org/10.1016/j.jrp.2009.09.006).
- Van Buuren, Stef, 2018. *Flexible Imputation of Missing Data*. Boca Ration, FL: Chapman and Hall/CRC, 2nd edition. doi: [10.1201/9780429492259](https://doi.org/10.1201/9780429492259).
- World Health Organization, 1995. ‘Physical Status. The Use of and Interpretation of Anthropometry.’ *WHO Technical Report Series* 854.