Social Mobility and Well-being

Intragenerational Social Mobility and Well-being in Great Britain: A Biomarker Approach

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Social theory has long predicted that social mobility, in particular downward social mobility, is detrimental to the well-being of individuals. Dissociative and "falling from grace" theories suggest that mobility is stressful due to the weakening of social ties, feelings of alienation, and loss of status. In light of these theories, it is a puzzle that the majority of quantitative studies in this area have shown null results. Our approach to resolve the puzzle is two-fold. First, we argue for a broader conception of the mobility process than is often used and thus focus on *intra*generational occupational class mobility rather than restricting ourselves to the more commonly studied intergenerational mobility. Second, we argue that self-reported measures may be biased by habituation (or "entrenched deprivation"). Using nurse-collected health and biomarker data from the UK Household Longitudinal Study (2010–2012, $N = 4{,}123$), we derive a measure of allostatic load as an objective gauge of physiological "wear and tear" and compare patterns of mobility effects with self-reports of health using diagonal reference models. Our findings indicate a strong class gradient in both allostatic load and self-rated health, and that both first and current job matter for current well-being outcomes. However, in terms of the effects of mobility itself, we find that intragenerational social mobility is consequential for allostatic load, but not for self-rated health. Downward mobility is detrimental and upward mobility beneficial for well-being as assessed by allostatic load. Thus, these findings do not support the

idea of generalized stress from dissociation, but they do support the "falling from grace" hypothesis of negative downward mobility effects. Our findings have a further implication, namely that the differences in mobility effects between the objective and subjective outcome infer the presence of entrenched deprivation. Null results in studies of self-rated outcomes may therefore be a methodological artifact, rather than an outright rejection of decades-old social theory.

Introduction

Social class and well-being are closely correlated, with those of higher social class enjoying greater well-being than their lower-class counterparts. Further, childhood conditions, which are profoundly shaped by parental class position, predict later-life health and well-being, above and beyond current living conditions, a finding known as the "long arm" of childhood (Hayward and Gorman 2004). Whether social mobility per se—the movement of individuals between different class positions in society—is also associated with well-being (understood as a multidimensional construct which encompasses the absence of disease or infirmity and state of physical, mental, and social contentment) is a classical question in sociology.

Social theory (Blau 1956; Lipset and Bendix 1959; Sennett and Cobb 1973; Sorokin 1927; Tumin 1957) has long suggested there should be well-being consequences to social mobility conditional on the level of social class, for instance, because social mobility leads to weaker personal ties (Blau 1956), feelings of alienation (Lareau 2015), mental strain and stress (Hope 1975), and relative income effects (Easterlin, McVey, and Zweig 2010). Sorokin's (1927) "dissociative thesis" postulated that social mobility—both upwards and downwards—is very straining for individuals, in turn causing "mental diseases and nervousness, psychoses, and neuroses." Although predominantly focusing on *inter*generational rather than *intra*generational mobility, this idea proved influential in 20th century sociology (see Chan 2018; Houle and Martin 2011 for a review of the British and US American literature, respectively).

And indeed, much qualitative research has corroborated the idea of important mobility effects, either pointing towards negative (e.g., Friedman 2016; Ingram 2011) or positive consequences of social mobility (e.g., Reay, Crozier, and Clayton 2009). In contrast, quantitative studies of social mobility and well-being have rarely shown important mobility effects in large and representative population samples. We should note outright that the term "effect" here and in the earlier literature is to be understood in a statistical rather than causal sense. Data from dozens of countries and for various well-being outcomes such as life satisfaction, self-rated health, or depression report hardly any effects (e.g., Chan 2018; Dhoore, Daenekindt, and Roose 2019; Hoven et al. 2019), and if effects are found, they are often only found for subgroups (e.g., Becker and Birkelbach 2018 show that mobility effects are only found for those participants who attribute control of events to outside forces).

A possible explanation for the divide between social theory, qualitative, and quantitative research could be bias in the reporting of well-being. Sen (1992) problematized self-reports of well-being which, Sen argues, are susceptible to biased judgments once preferences have been adapted to the new circumstances, or "entrenched deprivation." This criticism of self-reports is echoed in Friedman's (2014) critique of Goldthorpe's (1987) qualitative interviews, which had guided participants to give linear accounts of their careers and had found no detrimental effects of social mobility. Biased judgments of one's own well-being may arise from cognitive dissonance (Festinger 1957) or from the presence of a new more extreme reference group which provides a new anchor against which subjective appraisals of well-being may be inflated or deflated (Merton 1968). In order to address the problem of reporting bias,[1] recent studies focused on health biomarkers rather than self-reports. For example, Präg and Richards (2019) drew on nurse-collected information in the context of a large and representative British survey to assess associations of social mobility with well-being. For their measure of well-being, they used allostatic load, a measure of the "wear and tear" that the body experiences over the life course (McEwen 2015). This measure is unaffected by any sort of reporting bias, as it is based on nurse-collected information (such as body mass index (BMI)) and a blood sample. Yet, Präg and Richards (2019) did not find any association of *inter*generational social mobility with allostatic load.

Another possible explanation of the persistent null findings of mobility effects in quantitative studies might be that social mobility is often only conceived in terms of the social origin class of the parents compared to a single destination in adulthood. This gives a one-sided view of social mobility, as it ignores the social mobility that individuals experience during their own career in adulthood. Recent research is suggesting that this *intra*generational social mobility is of rising importance (e.g., Lersch, Schulz, and Leckie 2020) and yet relatively few studies have investigated intragenerational mobility effects, and those that do often find no or contradictory associations (Houle and Martin 2011; Hadjar and Samuel 2015; Zang and de Graaf 2016; Zhao et al. 2017).

Many of the classically theorized consequences of intergenerational mobility—weakening ties, mental strain, and relative income effects for example—are likely to also apply to intragenerational mobility, but perhaps with greater salience. Increased salience can be understood from the perspective of reference group theory (Festinger 1954; Merton 1968), which posits that individuals assess their progress not only in comparison with their parents and peers but also in comparison with past and future selves (Michalos 1985) as anchor points and aspirations. Patterns of intragenerational mobility that depart from expectations are therefore likely to be stressful and potentially damaging to health. Both upward and downward mobility can be experienced as stressful processes because individuals struggle to adjust to new class positions. It could also be that it is only downward mobility which is detrimental to well-being, as it often involves loss of achieved status and thus indicates a failure to live up to social and personal expectations, whereas upward mobility can have positive effects on well-being, as it entails gains in status and material resources.

Our study builds on Präg and Richards (2019), who showed that intergenerational social mobility is unrelated to well-being as measured by a biomarker approach. We extend their work and make three key contributions to the literature. First, for our main outcome variable allostatic load, we draw on biomarkers based on a blood sample and a nurse assessment to generate our well-being outcome allostatic load. We make use of allostatic load to avoid any bias inherent in self-assessments of health (Grol-Prokopczyk, Verdes-Tennant, and Ispány 2015). Additionally, we use self-rated health as a supplementary outcome variable.[2]

Secondly, to overcome the linear dependency problems of conventional models, we make use of the diagonal reference model (DRM, Sobel 1985) specifically developed for estimating mobility effects. Conventional methods of consequences of social mobility may produce invalid results (Van der Waal, Daenekindt, and de Koster 2017), as class origin, class destination, and mobility are linearly correlated. The DRM offers a solution to this problem that is firmly grounded in sociological theory and is well established in the sociological literature (e.g., De Graaf, Nieuwbeerta, and Heath 1995).

Thirdly, since social mobility can take place anywhere in the life course and is not fixed across adulthood, we look at intragenerational mobility, arguing that an intergenerational parental origin-destination model might miss the relevant "lived experience" of social mobility. Using a biomarker approach, our study is the first to examine intragenerational social mobility associations with well-being.

Conceptual Framework

Theoretical Links between Social Mobility and Well-being

People follow different class trajectories over their life courses, switching employers and occupations, being promoted or voluntarily quitting their jobs. The social mobility process is complex, with educational attainment, the school-to-work transition, and mobility within the career being crucial aspects of it (Blau and Duncan 1967). We expect that changing class position over the life course has consequences for well-being. In exploring the theoretical links between social mobility and well-being, we consider well-being broadly, as a term that encompasses both objective states and subjective reports of mental states, thus encompassing both Aristotelian flourishing and Benthamite hedonic accounts of well-being.

Several hypotheses about the relation between social class mobility and well-being have been suggested (summarized in figure 1). First, the *dissociative hypothesis* posits that the social mobility process has a direct and distinct detrimental effect on well-being, above and beyond influences of one's prior or current social class (Sorokin 1927). Dissociation occurs through the difficulty adapting to the normative values and behaviors of the destination class, and it is the lack of understanding of social expectations and the sustained efforts to fit

Figure 1. Overview of hypotheses.

Hypothesis	Mobility effect on wellbeing	
	Downward	Upward
Dissociative	Negative	Negative
Acculturation	None	None
'Falling from grace'	Negative	
'Frustrated achievers'		Negative
'Rising from rags'		Positive

in that bring about mental distress (Houle and Martin 2011) and dissatisfaction with life (Zhao et al. 2017). Before Sorokin, Durkheim (1951, 252) had already pointed to detrimental effects of social mobility—both downward and upward. Downward mobility forces individuals to "reduce their requirements, restrain their needs, learn greater self-control." To cope with their new living situation, "their moral education has to be recommenced," and this process takes time, during which the moral education of the downwardly mobile is "not adjusted to the condition forced on them, and its very prospect is intolerable," potentially leading to psychological distress and anomic suicide. For the upwardly mobile, Durkheim (1951, 253) envisioned a similar fate: Before a new moral education can take hold, for upwardly mobile "the limits are unknown between the possible and the impossible, what is just and what is unjust, legitimate claims and hopes and those which are immoderate," leading to anomie.

Anomie, a lack of social integration and the shared norms that are provided by the collectivity, can also be experienced in terms of identity conflict. Ultimately, this disruption to identity and shared collective norms has negative consequences for social relationships while those pulled away from their familiar niche struggle for acceptance in the new social milieu (Blau 1956; Zhao et al. 2017). Social support, which is considered a necessary condition for health and well-being, may therefore also decline. Social connections and support provide meaning and purpose and also buffer negative consequences of stressors (Thoits 2010).

Thus, in summary, the dissociation hypothesis posits that social mobility—in any direction—disrupts the life courses of individuals, leaving them isolated, detached, and emotionally distressed. Adapting to a new class position is a stressful experience, resulting in damage to health and well-being via a lack of common purpose and collective activity. According to this hypothesis, we expect to find detrimental effects of mobility on well-being, irrespective of whether we look at socially upwardly or downwardly mobile individuals.

However, several recent studies (e.g., Daenekindt 2017) suggest that the influence of destination class will be stronger than that of origin. The process of acculturation occurs without dissociation or psychological problems, which is to say that adapting to the social destination is a matter of assimilation or re-socialization (Daenekindt 2017; Goldthorpe 1987; Houle and Martin 2011). This version of the acculturation hypothesis tallies with class-based theories of well-being, which posit that current class exerts proximate influence on material

and social resources and on exposure to stress. It follows that current class position is the most germane for current outcomes (Houle and Martin 2011).

In summary, our version of the acculturation hypothesis expects individuals to cope easily with the mobility process and simply adapt to any demands of the new class position. Here, well-being is a function of the new social class position and mobile individuals experience similar levels of well-being as those who share their current class position. We would expect destination effects to outweigh origin effects.

A third hypothesis—originally formulated for intragenerational rather than intergenerational mobility—holds that only downward mobility is detrimental for health and well-being, also known as the "*falling from grace" hypothesis* (Newman 1999). Downward mobility implies loss and usually involves involuntary and uncontrollable negative life events (e.g., unemployment), diminished status, authority, or rewards, and individuals can struggle to get used to their new, worsened living conditions (Gugushvili, Zhao, and Bukodi 2019). Being downwardly mobile can further be experienced as a failure to live up to social expectations or aspirations (Michalos 1985). These processes may lead to feelings of anger, dismay, pessimism, self-blame, and injustice (Jackson and Grusky 2018). The falling from grace hypothesis holds that it is not the lowered social class position per se, but the loss of control and the free fall itself that disrupts later psychological well-being. According to this hypothesis, distress emanating from downward mobility resembles long-lasting "scars" representing failure, fear, and personal shortcomings and this distress leads to long-term health and well-being consequences (Houle and Martin 2011). In contrast, under the falling from grace hypothesis upward mobility is not expected to be detrimental. If any dissociation exists at all, it is likely to be offset by these benefits (Zang and de Graaf 2016; Zhao et al. 2017).

A fourth hypothesis, the "*frustrated achievers" hypothesis*, presumes that especially upwardly mobile individuals report more frustration and lower levels of well-being than those who are not upwardly mobile (Boudon 1977; Zang and de Graaf 2016). For instance, Gaydosh et al. (2018) show that college completion is associated with lower depression for all racial groups in the United States, yet for minorities it exacts costs regarding physical health. Two complementary explanations are offered for their low levels of well-being: Firstly, upwardly mobile individuals suffer from adaption problems with their new situation. Frustrated achievers do not know how to use upper-class cultural codes and habits, resulting in high levels of stress. Even though the living standards of frustrated achievers may have improved, social integration might still be lacking. Secondly, their elevated levels of frustration are due to unfavorable comparisons with individuals in their new destination. In general, being more successful than relevant others such as friends and peers improves happiness through gaining a positive self-evaluation—but that achievers are likely to compare their situation negatively to relevant others because their relative position will have declined (Otten 2020; Zang and de Graaf 2016).

Most recently, Gugushvili, Zhao, and Bukodi (2019) have formalized the "*rising from rags" hypothesis*. Here, improving one's class position brings about

well-being benefits that the immobile, who are stuck in their origin positions, do not have. Reasons might be that upwards mobility entails overcoming barriers which reinforces a sense of control over one's life, which is linked to better health (Oi and Alwin 2017). Further, the upwardly mobile might leave poor health behaviors of their social class origin behind them (Frederick, Snellman, and Putnam 2014), thus improving their health. Or, the upwardly mobile might feel grateful towards their destination class environment (Tumin 1957), which has been linked to better health and well-being (Jans-Beken et al. 2020) and might outweigh potential detrimental effects of upward mobility.

The majority of hypotheses were derived with a focus on intergenerational mobility (the "falling from grace" hypothesis being the prominent exception), and most empirical tests deal with intergenerational rather than intragenerational mobility (see e.g., Table 1). However, we argue that they can be applied to intragenerational mobility as well,[3] in that the general mechanisms remain similar, however become more immediate in their effects. The experience of upward or downward mobility when losing or obtaining a high-status job is arguably more powerful than the effects resulting from an abstract comparison with one's parents' occupational position. When dissociation may occur through the difficulty adapting to new values and behaviors (e.g., a promotion into a higher-paid occupation), individuals have to cope with these new circumstances directly and promptly rather than over a longer period, which could increase levels of stress.

Empirical Evidence for Occupational Mobility Effects on Well-being

Much qualitative research has corroborated the idea of important mobility effects on individual well-being outcomes. Ingram (2011) interviewed working-class boys doing well at school and documented signs of their inner conflict, as boys attempt to diminish their affiliation to a working-class identity. Franceschelli, Evans, and Schoon (2016) reported that social mobility was associated with a "fish out of the water" feeling among middle-aged men, that is, a sense of displacement reported by working class participants when operating in the middle class context of higher education. Friedman (2016) diagnosed hidden emotional injuries in the participants of his study, the upwardly mobile faced feelings of inferiority and insecurity, the downwardly mobile guilt, estrangement, and abandonment. But not all qualitative research is describing negative consequences of social mobility. Reay, Crozier, and Clayton (2009) describe how students from working class backgrounds fit in easily at an elite higher education institution, and that it was in their working-class schools where they felt like "fish out of water" given their strong academic dispositions. Goldthorpe (1987) had concluded that both upwardly and downwardly mobile men "were overwhelmingly content with the progress of their lives." Friedman (2014) prominently challenged this latter conclusion by arguing that it might be an artifact—Goldthorpe had asked participants to "tell their own story" in written format, which might have caused participants to present a linear career trajectory, effectively keeping them from revealing problematic feelings, such as

Table 1. Intergenerational Occupational and Social Class Mobility Effects on Well-being, 1999–2021

Reference	Outcome	Setting	Mobility effect
Intergenerational mobility			
Kwon (2021)	Life satisfaction	Japan	None
Gugushvili and Präg (2021)	Self-reported physical health	Russia	Upward is beneficial
Gugushvili and Präg (2021)	Self-reported mental health	Russia	Downward is detrimental
Präg and Gugushvili (2021)	Self-rated health	Germany	Downward is detrimental
Präg and Gugushvili (2021)	Life satisfaction	Germany	Upward is beneficial
Präg and Gugushvili (2021)	Depression	Germany	None
Kaiser and Trinh (2021)	Life satisfaction	32 European countries	Upward is beneficial, downward is detrimental
Präg and Gugushvili (2020)	Self-rated health	30 European countries	None
Knöchelmann et al. (2020)	Self-reported physical health	Germany	Upward is beneficial, downward is detrimental
Knöchelmann et al. (2020)	Self-reported mental health	Germany	None
Präg and Richards (2019)	Allostatic load	Great Britain	None
Dhoore, Daenekindt, and Roose (2019)	Life satisfaction	44 European countries	None
Zhao and Li (2019)	Well-being	China	None
Chan (2018)	Mental health	United Kingdom	None
Chan (2018)	Life satisfaction	United Kingdom	None
Chan (2018)	Life evaluation	United Kingdom	Upward is beneficial
Becker and Birkelbach (2018)	Life satisfaction	Germany	Upward is detrimental (for subgroup)
Zhao et al. (2017)	Life satisfaction	China	None
Iveson and Deary (2017)	Life satisfaction	Scotland	None
Iveson and Deary (2017)	Self-rated health	Scotland	Upward is beneficial
Zang and de Graaf (2016)	Happiness	China	None

(*Continued*)

Table 1. Continued

Reference	Outcome	Setting	Mobility effect
Hadjar and Samuel (2015)	Life satisfaction	UK	Upward is detrimental
Hadjar and Samuel (2015)	Life satisfaction	Switzerland	None
Clark and D'Angelo (2015)	Life satisfaction	UK	Upward is beneficial
Nikolaev and Burns (2014)	Happiness	USA	Downward is detrimental
Nikolaev and Burns (2014)	Self-rated health	USA	Upward is beneficial, downward is detrimental
Houle and Martin (2011)	Depression	USA	Upward is beneficial (for subgroup)
Tiffin, Pearce, and Parker (2005)	Mental health	England	Downward is detrimental (for subgroup)
Marshall and Firth (1999)	Life satisfaction	Ten countries	None
Intragenerational mobility			
Knöchelmann et al. (2020)	Self-reported physical health	Germany	Upward is beneficial, downward is detrimental (for subgroup)
Knöchelmann et al. (2020)	Self-reported mental health	Germany	None
Hoven et al. (2019)	Depression	France	None
Zhao et al. (2017)	Life satisfaction	China	Downward is detrimental
Zang and de Graaf (2016)	Happiness	China	Downward is beneficial
Hadjar and Samuel (2015)	Life satisfaction	UK	None
Hadjar and Samuel (2015)	Life satisfaction	Switzerland	None
Houle (2011)	Depression	USA	None
Houle (2011)	Self-acceptance	USA	None
Tiffin, Pearce, and Parker (2005)	Mental health	England	Downward is detrimental (for subgroup)

emotional distress or cultural dislocation. Other qualitative research supports this criticism, as Miles, Savage, and Bühlmann (2011) show how men with

highly successful careers articulate "modest" life stories and Franceschelli, Evans, and Schoon (2016) document "therapeutic narratives" that socially mobile participants utilize.

Table 1 presents a review of the existing quantitative literature on occupational mobility effects. We consider quantitative studies that have been the target of recent critiques from those suggesting that null results might be a statistical artifact (e.g., Friedman 2014). Including every study from the last twenty years aiming to identify occupational class mobility effects on broad well-being outcomes, we find the following: Intergenerational mobility is the dominant form of mobility examined; only few studies take intragenerational mobility into account. The area of research is flourishing; most studies were published in the last five years. As such, despite decades of sociological attention, the debate remains current. While much of social science research is based on analyses of US society, the analysis of mobility effects on well-being is more diverse, yet still largely focused on Western, educated, industrialized, rich, and democratic countries. Life satisfaction is the most often used well-being outcome.

The majority of studies reported in table 1 do not report a mobility effect. Among the studies that do detect mobility effects, these are often contradictory, sometimes even when studies draw on similar data sources. For instance, Hadjar and Samuel (2015) and Clark and D'Angelo (2015) both analyze British Household Panel Study data, yet reach opposite conclusions for the effects of upward mobility on life satisfaction. Further, some studies only find mobility effects only for subgroups, for instance, Houle and Martin (2011) find a beneficial upward mobility effect only for those from a farming background and Becker and Birkelbach (2018) report a detrimental upward mobility effect only for those who do not feel in control of their lives.

For intragenerational mobility, fewer effects on well-being have been found, and again, studies drawing on the same source of data reach opposite conclusions (Zang and de Graaf 2016; Zhao et al. 2017). For the United States, Houle (2011) finds that the intragenerationally mobile acculturate to their current social class: the upwardly mobile reap the same benefits as those who stably remain in privileged positions, while the downwardly mobile face the same distress as those who permanently inhabit low social class positions. Hadjar and Samuel (2015) show that intragenerational mobility is unrelated to life satisfaction in both Switzerland and the UK. Most recently, Hoven et al. (2019) suggest that intragenerational mobility is unrelated with depression in France.

Going back to the hypotheses that we have found in the literature, support for the acculturation hypothesis—which is basically a null hypothesis—is strongest. Some studies support the rising from rags hypothesis. Only few studies support the dissociation hypothesis, but of course it is difficult to adjudicate between the dissociation hypothesis, which posited that any mobility is detrimental, and the falling from grace hypothesis, which only says that for downward mobility. This holds for both inter- and intragenerational mobility.

Allostatic Load as a Measure of Well-being

Central to the theoretical perspectives of dissociation and falling from grace is the notion of stress. Social mobility is conceived to be a persistently stressful process—social ties are being cut, new social mores need to be learned, and identities are being challenged. The human body manages stressful experiences with a mechanism called allostasis (McEwen and Stellar 1993), which causes wear and tear on the body. Allostasis is a compensatory physiological mechanism that enables the body to adapt to psychosocial stressors, so that the body is able to regain physiological balance (homeostatis). If the system is overworked because of repeated stress responses in persistently stressful situations, this has destructive effects throughout the body. For instance, one stress response is to increase blood pressure to ensure adequate blood flow to the organs and muscles that are essential in dangerous situations. While this is desirable in some situations, in the long run, this will lead to damaged and narrowed arteries and heart diseases and strokes. Further, allostatic stress responses are broad and unspecific—in a "fight or flight" situation, some responses, for example, elevated blood pressure to run away faster or antibody production when expecting a flesh wound, are highly functional. When faced with a stressful situation resulting from social mobility, be it the immediate stress reaction to not getting the job you want and being forced to take a lower-class position, or the chronic stress of difficult interactions or the lack of social support, most of the allostatic stress responses are not helpful. Yet, the body's stress management system triggers them all at once in response to threat. This leads to a multisystem predisease state, characterized by the dysregulation of neuroendocrine, metabolic, inflammatory, or cardiovascular systems.

In practical terms, allostatic load is a composite index of biomarker measures tapping at the strain experienced by the neuroendocrine, cardiovascular, immune, and metabolic systems. It is strongly correlated with subclinical conditions as well as morbidity and mortality and is seen as a useful summary measure of overall health (Juster, McEwen, and Lupien 2010). Allostatic load is better at predicting mid-life mortality than the separate biomarkers the allostatic load score comprises (Castagné et al. 2018), a powerful demonstration of the value of the measure. As such, allostatic load reflects health—as an objective dimension of well-being—and is particularly apposite since it conceptually links subjective experiences of social stressors to health. Given that biomarkers are now more routinely collected in social science surveys, allostatic load is now more frequently analyzed in sociological studies (e.g., Richards, Maharani, and Präg 2021).

A number of studies have linked disadvantage earlier in the life course to elevated allostatic load later in the life course. For the United States, Gruenewald et al. (2012) show that childhood and adult socioeconomic adversity is linked to higher allostatic load at a later point in time. In another US study, Merkin et al. (2014) reveal that both high parental education and high own education are associated with lower allostatic load. Van Deurzen and Vanhoutte (2019) show for England that greater socioeconomic adversity over the life course is

associated with higher levels and steeper increases in allostatic load after the age of 50. The only study of intergenerational class mobility and allostatic load (Präg and Richards 2019) confirmed that both origin and destination class exert an important effect on allostatic load, yet show that there is no effect of class mobility per se.

Data and Methods

Data

We analyze the UK Household Longitudinal Study ("Understanding Society," University of Essex et al. 2016), which is a prospective, nationally representative survey. In waves 2 and 3 (2010–2012), many participants were selected for nurse interviews, where physical measures, blood samples, and other health-related information were collected (University of Essex and ISER 2014). As no respondent attended the nurse interviews twice, we pool the two waves for a cross-sectional analysis. We restrict the sample to participants between 25 and 65 years of age who are active on the labor market and for whom all variables are observed. Our analytical sample comprises 4,123 complete cases.

Variables

Allostatic load is operationalized as a measure of physiological homeostasis and measured with a diverse set of biomarkers related to secondary and tertiary stress responses. Primary responses such as cortisol could not be collected in the study context due to measurement difficulties such as time-of-day effects. In particular, we use eleven biomarkers, categorized into five physiological systems: (1) lipid metabolism (total cholesterol, HDL cholesterol and triglycerides), (2) glucose metabolism (glycated hemoglobin HbA1c), (3) inflammation (C-reactive protein and fibrinogen), (4) cardiovascular (systolic and diastolic blood pressure and resting heart rate), and (5) body fat deposition (nurse-assessed BMI and waist circumference). Despite wide variation in the operationalization of allostatic load in previous studies (Johnson, Cavallaro, and Leon 2017), our biomarkers cover the most frequently included measures.

We first z-standardized our biomarkers, weighted them by the inverse of the number of biomarkers available for the physiological system, then calculate the mean score of the transformed biomarkers, and lastly z-standardized that resulting score, similar to the approach by Vie et al. (2014). This approach captures maximal variation as it is not reliant upon clinical cut-off values, thereby accounting for the full range of pre-disease states and allowing to interpret group differences and coefficients in terms of standard deviations, a commonly accepted effect size.

Self-rated health was measured with a question "In general, would you say your health is ... " with the response options "Poor" (coded as 0), "Fair" (1), "Good" (2), "Very good" (3), and "Excellent" (4). Self-rated health is a general assessment of one's health status, not connected to any specific illness, but

covering mental, physical, and social aspects of health. Self-rated health predicts mortality and morbidity and is frequently used in empirical research as a measure of overall health (Präg and Subramanian 2017; Präg 2020). Nonetheless, as outlined in the Introduction, self-rated health as a measure may be subject to the reporting bias that arises from adaptive preferences (Sen 1992). Some social groups, for example, assess similar health states differently (Molina 2016). We can compare the consequences of mobility on objective and subjective aspects. The Pearson correlation between allostatic load and self-rated health is $-.31$.

Social class is assessed for three times in participants' lives: destination social class based on the current occupation, social class of the first job when entering the labor market, and parental social class. Information about the first job when entering the labor market is probed with the question: "What was your own first job after leaving full-time education?" Parental social class is based on the occupations held by father and/or mother when the participants were 14 years of age. Occupations are recorded in the UK's Standard Occupational Classification based on the full job title and a full description of the work done.

Social class is based on the National Statistics Socio-Economic classification (NS-SEC, Rose and Pevalin 2003) and collapsed to: (1) the working class, (2) intermediate classes (comprising small employers and own account workers, intermediate occupations, and lower supervisory and technical occupations), and (3) the salariat. Typical working class occupations comprise among others cleaning, driving a bus, or working as a shop assistant. Being a plumber or airline cabin crew are examples of intermediate occupations. Positions such as teacher or lawyer are examples of salariat occupations. We collapsed the NS-SEC scheme to three classes for two reasons. Firstly, the three-class version of the scheme is the only version of NS-SEC in which classes are ordered hierarchically. Secondly, our analytical approach, the DRM, requires rather large-cell sizes to be able to reliably detect mobility effects. In a robustness check, we present findings based on a four-class scheme, which distinguishes between routine and semi-routine occupations within the working class.

Intragenerational mobility

First, based on first and current class position, we generate a dummy variable taking on the value 1 for those who have experienced any mobility between the first and the current job ("immobile" as a reference category). Second, we generate two dummy variables denoting upward mobility (from working class to intermediate class or salariat, or from intermediate class to salariat) and downward mobility (from salariat to intermediate class or working class, or from intermediate class to working class) between the first and current job, again with immobile individuals as the reference category. All those who have a bottom (top) origin cannot move downwards (upwards), and so their mobility will always be positive (negative) or zero.

Control variables

We control for gender (male as reference category), age (centered around the grand mean), ethnicity (white, non-white as reference category), and partnership status ("single or never married," "divorced, separated, or widowed," and "married/partnered" as a reference category). We further control for participant education ("no qualifications" and "tertiary education," with "secondary education" as reference category) and social class of the parents when the participant was 14 years old, as described above. If participants reported different class positions for their father and mother, we counted the highest class position reported (also known as the "dominance approach"). We consider all control variables as potential confounders, that is, factors that can both predict health outcomes and class and mobility. It can be argued that this might not apply for marital status; we therefore show models without controls for marital status in table A16. Descriptive statistics of variables used are presented in table A4.

Analytical Strategy

For our statistical analysis, we use the DRM (Sobel 1985), as it allows to disentangle effects of origin, destination, and mobility. Conventional regression models struggle with doing so, as mobility is a linear combination of origin and destination (Van der Waal, Daenekindt, and de Koster 2017). DRMs are nonlinear in nature and instead use the immobile as a reference group, representing the core of a social class, which is in line with Sorokin's (1927) suggestion that "if we want to know the characteristic attitudes of a farmer, we do not go to a man who has been a farmer for a few months, but go to a farmer who is a farmer for life" (p. 509). Cox (1990) noted how the DRM as a statistical model makes it possible to bridge theoretical and empirical concerns, as DRMs "explain what is observed in terms of processes (mechanisms), usually via quantities that are not directly observed, and some theoretical notions as to how the system under study 'works'" (p. 169).

DRMs estimate the effects of first job social class and destination social class on allostatic load using a single vector of coefficients for both class positions along with weighting parameters representing the relative importance of the origin and destination classes:

$$Y = a + p \times \mu_{ii} + q \times \mu_{jj} + b\mathbf{X} + e_{ij} \qquad (1)$$

In Equation (1), which follows Sobel's (1981) standard notation, a is the model intercept; subscripts i and j represent the social position of origin and destination, respectively. μ_{ii} and μ_{jj} are both estimates of Y in the diagonal cells. p represents the relative importance of the class of origin, and q the relative importance of the destination class (and $p = 1 - q$). $\mathbf{X}$ is a vector of covariates that can be interpreted like regression coefficients, and e_{ij} is the error term. We use a linear link function both for allostatic load and self-rated health.

The weight parameter can be used to calculate a predicted value in the following way, for example, working class to salariat predicted well-being = (origin

weight × working class) + (destination weight × salariat) + constant. If both origin and destination are the same, for example, salariat to salariat, then the calculation (origin weight × salariat) + (destination weight × salariat) is logically the equivalent to the immobile estimate, since origin and destination weights total 1.

The guiding assumption of DRM is that socially immobile individuals represent the most suitable point of reference, representing the true characteristics of that given class. Therefore, each mobile participant has two referents, the stable members of their first job social class and the stable members of their current social class, and the expected allostatic load is estimated as a function of those.

To test the presence of mobility effects over and above the origin and destination effects, we estimate models which include **mob**, a vector of dummy variables describing the mobility histories of individuals, as shown in Equation (2).

$$Y = a + p \times \mu_{ii} + q \times \mu_{jj} + b\mathbf{X} + c\mathbf{mob} + e_{ij} \qquad (2)$$

This approach of modeling social mobility effects with a vector of dummy variables in a DRM was suggested by Sobel (1985, equation 15) and is frequently used (e.g., Gugushvili, Zhao, and Bukodi 2019; Houle and Martin 2011; Zang and de Graaf 2016; Zhao et al. 2017).

We conducted our analyses with the "drm" command (Kaiser 2019) in Stata 17. The data used in our analyses are available from the UK Data Service and we provide a replication package (Präg, Fritsch, and Richards 2021, doi: 10.17605/OSF.IO/P8Q7J).

Results

Descriptive Analyses

Figure 2 shows a Sankey diagram of intragenerational mobility, displaying individual immobility, upward, and downward mobility by class position of the first job (left-hand side of the figure) and destination class of the current job (right-hand side of the figure). Almost half of participants remain socially immobile (48 percent). One fifth of participants (19 percent) start out and remain in the working class, 12 percent remain in the intermediate classes, and 17 percent remain in the salariat. In terms of upward mobility, 10 percent of participants are moving from a working class origin into the intermediate classes and 13 percent move from the working class to the salariat. A further 16 percent move from intermediate to the salariat. Thus, 39 percent are upwardly mobile overall. Downward mobility is less frequent at 15 percent in total, comprising 5 percent of participants moving from the salariat to intermediate classes or the working class and 10 percent are downwardly mobile starting from intermediate classes and ending up in the working class. Downward mobility from the salariat is relatively uncommon, perhaps unsurprising given that those starting out their careers as a professional or a manager are likely to have professional qualifications.

Figure 2. Sankey diagram of intragenerational mobility, *N* = 4,123. *Note:* Numbers on the left-hand side are outflow proportions, numbers on the right-hand side are inflow proportions. Absolute cell sizes reported in tables A5 and A6. See Laurison, Dow, and Chernoff (2020) for visualization details.
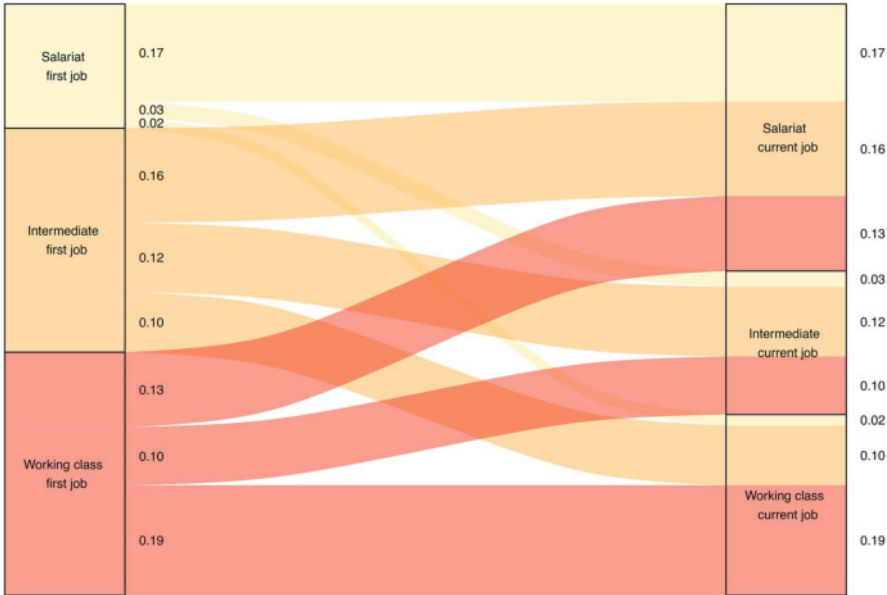
Figure 3 presents the averages of our outcomes by class position of the first job and by destination class. Panel A shows allostatic load and Panel B self-rated health. In both panels, the mid-diagonal reveals a social gradient in health among the immobile. Allostatic load for the stable working class participants (in Panel A) is higher (0.13 of a standard deviation) than the average (which is 0 due to standardization); for the stable intermediate classes, allostatic load is marginally bigger than average (0.02), and by a fifth of a SD lower (−0.19) for those stably in the salariat. In Panel B, we see a similar pattern for the self-rated health of the immobile, with the worst health for the stably working class participants and the best health for the stably salariat participants. Beyond the main diagonals, we see the health outcomes of the socially mobile. Right of the diagonal of Panel A, we can see that the allostatic load of the upwardly mobile is generally associated with lower allostatic load, moving out of the working class and the intermediate classes improves allostatic load, and left of the diagonal, the downwardly mobile show generally higher allostatic load than the immobile on the diagonal. In Panel B, we see a similar pattern for the self-rated health of the socially mobile. In contrast to allostatic load, the health difference between the upwardly and downwardly mobile is less pronounced (but still statistically significant, figure A2 in the Supplement).

Figure 3. Panel *A*: Allostatic load (*M* = 0, SD = 1) by social class of first job and of destination. Panel *B*: Self-rated health (*M* = 2.67, SD = .96) by social class of first job and of destination. *Note:* Cell sizes reported in tables A5 and A6. See Präg (2019) for visualization details.

A Allostatic load

Destination class

	Working class	Intermediate classes	Salariat
Working class	0.13	-0.02	0.04
Intermediate classes	0.22	0.02	-0.12
Salariat	-0.08	0.03	-0.19

Class position of first job

More wear and tear — Less wear and tear

B Self-rated health

Destination class

	Working class	Intermediate classes	Salariat
Working class	2.43	2.58	2.69
Intermediate classes	2.52	2.71	2.76
Salariat	2.69	2.77	2.92

Class position of first job

Worse health rating — Better health rating

Diagonal Reference Models

Table 2 presents findings from our DRMs, models with allostatic load as the outcome are shown on the left-hand side and with self-rated health on the right. Models in the table can be interpreted as follows. The constant at the bottom denotes the average allostatic load (on the left) or self-rated health (on the right) for individuals with 0 on all covariates, that is, average-aged married, white men. The class coefficients at the top indicate the class-specific deviations from the constant for the socially immobile.

The origin weight p ranges between 0 and 1 and indicates the importance of origin relative to destination. In DRMs, the origin weight sometimes goes out of its theoretical range of 0 and 1 when mobility dummies are included (see e.g., Models 3 and 4 in table 2 for allostatic load.) First, this is usually not a problem as the origin weight in these models is not of substantive interest. Second, the origin weight is also a parameter that is being estimated from the data. Thus, while the point estimate of the origin weight in Models 3 and 4 in table 2 for allostatic load is greater than one, it is not significantly different from one when considering that one lies within the 95 percent confidence intervals (point estimate $\pm 1.96 \times$ standard error).

The coefficients for the covariates (e.g., ethnicity, marital status) and the mobility parameters can be interpreted like regular OLS regression coefficients.

The class coefficients in Model 1 of Table 2 on the left confirm the social gradient in allostatic load already seen in figure 2, even after covariates are held constant. Working class participants fare worse than participants from the intermediate classes and the salariat. Coefficients can be interpreted as deviations from the conditional mean, that is, the average allostatic load of working class participants is .18 SD higher than of average-age married white males, .15 SD lower for salariat participants, and for participants from the intermediate classes it does not differ from the average.

The origin weight is .53, indicating that class position of the first job is roughly as important for allostatic load as is destination class. The coefficients for the control variables reveal that allostatic load is lower among women, increases with age, and is higher among ethnic minorities. Moreover, the divorced and widowed have higher allostatic load. For self-rated health on the right of table 2, results look similar (note that signs are reversed as higher values of self-rated health indicate better health). For marital status, we find a difference between the two outcomes. Married and partnered participants do just as well as single and never married participants in terms of allostatic load, but when it comes to self-reports of health, the single and never married participants report worse health than the married and partnered participants. When comparing married participants with divorced and widowed participants, the latter are doing worse in terms of allostatic load, yet we find no difference between these groups for self-reports of health.

Models 2 and 3 of table 2 investigate how social mobility is associated with allostatic load, whereas Model 4 accounts additionally for the parental class of the participants. Model 2 for allostatic load reveals that mobility in any

Table 2. Diagonal Reference Models of Allostatic Load and Self-Rated Health

	Allostatic load				Self-rated health			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Immobiles								
Working class	0.18***	0.18***	0.16***	0.07*	−0.25***	−0.25***	−0.25***	−0.17***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Intermediate class	−0.03	−0.03	−0.01	−0.00	0.03	0.04	0.04	0.05
	(0.03)	(0.03)	(0.02)	(0.01)	(0.03)	(0.03)	(0.03)	(0.03)
Salariat	−0.15***	−0.14***	−0.15***	−0.06*	0.22***	0.21***	0.21***	0.12***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Origin weight								
p	0.53	0.49	1.40	2.83	0.51	0.49	0.42	0.45
	(0.10)	(0.10)	(0.35)	(1.26)	(0.07)	(0.07)	(0.18)	(0.22)
Covariates								
Female sex (ref. male)	−0.37***	−0.36***	−0.36***	−0.35***	0.08**	0.08**	0.08**	0.07*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age (centered)	0.03***	0.03***	0.03***	0.02***	−0.02***	−0.02***	−0.02***	−0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (ref. white)	0.20**	0.20**	0.20**	0.21**	−0.19**	−0.19**	−0.19**	−0.20**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Marital status (ref. married/partnered)								
Single/never married	−0.02	−0.02	−0.02	−0.02	−0.14***	−0.14***	−0.14***	−0.13***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Divorced/ widowed	0.12**	0.12**	0.12**	0.11**	−0.05	−0.05	−0.05	−0.04
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Education (ref. secondary)								
No qualifications				0.24***				−0.14*
				(0.07)				(0.07)

(*Continued*)

Table 2. Continued

	Allostatic load				Self-rated health			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Tertiary education				−0.10**				0.18***
				(0.03)				(0.03)
Parental social class (ref. working class)								
Intermediate classes				−0.12**				0.06
				(0.04)				(0.04)
Salariat				−0.19***				0.06
				(0.04)				(0.04)
Mobility parameters (ref. immobile)								
Mobility in any direction		0.03				−0.03		
		(0.03)				(0.03)		
Downward mobility			0.22**	0.25***			−0.00	−0.03
			(0.07)	(0.07)			(0.07)	(0.06)
Upward mobility			−0.17*	−0.18*			−0.05	−0.04
			(0.07)	(0.07)			(0.07)	(0.05)
Constant	0.16***	0.15***	0.15***	0.28***	2.68***	2.69***	2.69***	2.59***
	(0.02)	(0.03)	(0.03)	(0.04)	(0.02)	(0.03)	(0.03)	(0.04)
Observations	4,123	4,123	4,123	4,123	4,123	4,123	4,123	4,123
AIC	11142.4	11143.5	11136.0	11082.1	11083.9	11085.1	11086.9	11055.2
BIC	11205.7	11213.0	11211.9	11183.3	11147.1	11154.7	11162.8	11156.4

Notes: Standard errors in parentheses. Destination parameters (which equal $-1 \times$ origin parameters) and destination weight (which equals $1 -$ origin weight) not displayed. A higher allostatic load score indicates lower well-being.

* $p < .05$, ** $p < .01$, *** $p < .001$.

direction is not associated with allostatic load, refuting the dissociative hypothesis. The same is observed for mobility in any direction and self-rated health; the coefficient is substantively small and not different from 0 at conventional levels of statistical significance. For allostatic load, Model 3 reveals why there is no support for the dissociative hypothesis and shows that the acculturation hypothesis cannot be corroborated—downward and upward mobility both show relatively strong associations (.22 SD for downward, −.17 SD for upward mobility) pointing in opposite directions, providing support for the "falling from grace" and the "rising from rags" hypotheses, respectively. For self-rated health, we see a different picture, mobility parameters are again substantively small and unlikely to be different from zero.

But is the intragenerational mobility effect we find for allostatic load in Model 3 perhaps confounded by parental class of origin and participants' educational attainment? Model 4 of table 2 accounts for these, comparing participants who come from the same parental class of origin with the same education. While the model shows important associations of education and parental class with allostatic load over and above later-life social class and mobility, the mobility coefficients do not change in size or statistical significance. Model 4 for self-rated health similarly shows little change once parental social class is accounted for; the only difference is that the correlation between parental class and self-rated health is not different from zero at conventional levels of statistical significance. Both the Akaike (AIC) and the Bayesian Information Criterion (BIC) reported at the bottom of table 2 suggest that the best-fitting model for allostatic load is Model 4. For self-rated health, on the other hand, the AIC prefers model 4 but the BIC, which imposes a harsher penalty for the number of parameters in the model, indicates that the most parsimonious Model 1 fits best.

Robustness checks and additional analyses

To assess the robustness of our findings, we conducted a number of sensitivity analyses which we document in the Supplementary Materials. Firstly, we assessed whether our findings are gender- or ethnicity-specific and could not detect any differences (tables A7 and A8). Secondly, we replicate our findings with a more detailed four-class scheme that distinguishes between routine and semi-routine occupations in the working class. We reach substantively similar findings (tables A9 and A10). We also investigate if mobility effects are associated with specific trajectories but find they do not (table A11). Thirdly, we include health behaviors as a control variable, leading to substantively similar findings (table A12). Fourthly, we account for self-rated health the year before, measures of social support, and personality traits in our models and remove the control for marital status (tables A13–A16). This also does not affect our main findings. Fifthly, we experiment with different lower age cut-offs. In Panel A1 of figure A4, we find that any benefits to allostatic load are greater in the first half of one's career, namely among those under 45 years. In Panel B of figure A4, we show that the coefficients of interest remain stable after controlling for various polynomials of age. Finally, we show models where we interact origin weight with age to

investigate the role of time spent in one's destination occupation (table A17). The interaction term is zero and non-significant, suggesting that the effect of one's first job does not diminish over the course of one's career.

Discussion

Analyzing self-reported health and allostatic load in a large and representative British data set, we show that intragenerational social mobility is related to allostatic load, but not to self-rated health. While downward mobility is detrimental for health as assessed by biomarkers, upward mobility is associated with better health as assessed by biomarkers. Thus, these findings do not support the idea of generalized stress from dissociation, but they do support the "falling from grace" hypothesis of negative downward mobility effects and the "rising from rags" hypothesis of positive upward mobility effects.

The consequences of social mobility have fascinated social scientists for a long time, and yet fascination may have been quelled by the large number of studies reporting null results, particularly for intergenerational mobility. Rather than seeing these null results as being deeply problematic for a long-lived social theory that ought to reveal consequences of mobility (Friedman 2014), our study has suggested that mobility effects are present if you look in the right place. We argued that mobility as experienced during adulthood, intragenerational mobility, is likely to have more salience than intergenerational mobility when considering that direct labor market experiences are more visceral and immediate in their effects on expectations and aspirations, even if the theoretical mechanisms remain similar. The experience of downward mobility for those who have experienced and then lost a high-status job, for example, is more likely to be stressful than the abstract proposition of doing better than one's parents in terms of occupational attainment. In their recent outline of a post-liberal theory of social stratification, Jackson and Grusky (2018) put "loss" center stage; our results confirm that downward mobility during adulthood is associated with higher allostatic load, from which we infer that downward mobility is a stressful experience. We also find that upward mobility is associated with lower allostatic load, thus we infer it is a beneficial experience. Counter to the dissociation hypothesis, we find that moving upwards in the occupational hierarchy is associated with net gains. Any losses due to dissociation appear to be offset by the benefits of rising status and perhaps of meeting or exceeding expectations.

In this study, we have suggested that allostatic load is an apposite indicator of objective well-being because it conceptually links the stressors of socioeconomic position to biomarkers. The null results for subjective self-rated health, in contrast to objective allostatic load, imply that inquiry into mobility effects may depend upon the degree to which the outcome of interest is self-rated or subjective. This feature of subjective measures may arise from adaptive preferences, in turn reflecting the presence of new reference groups for social comparison. In Festinger's (1954) seminal work on social comparison, he wrote:

"there exists, in the human organism, a drive to evaluate his opinions and his abilities" and "to the extent that objective, non-social means are not available, people evaluate their opinions and abilities by comparison respectively with the opinions and abilities of others" (pp. 117–8). The implication was inherent in Festinger's assertion that a change in the set of "others" in the reference group will potentially bring about a change in judgment. Going down the occupational ladder, for example, may provide a new reference group of people with worse health outcomes (compared to the previous social context) so that personal ratings of one's own health may be biased upwards in light of these new surroundings. It is not our intention to claim that allostatic load is a superior measurement to the various subjective measures of well-being that are widely applied across the social sciences. Subjective conceptualizations of well-being, for example, may better explain motivations and life choices. However, the availability of biomarker data in high-quality social surveys, as we have shown, offers a means by which we can compare how socio-economic patterns and movements might appear to have differing effects on objective and subjective outcome measures. Our finding that mobility influences allostatic load, but leaves no trace on self-rated health, has pointed towards the presence of bias, which in turn means that a null result should not be understood as the final word on the matter. Further, although we show a positive association of upward mobility with allostatic load, we cannot rule out that short-term stresses were present at the time of the transition, only that on average upward mobility is beneficial.

One limitation to our study is that we are unable to demonstrate the direction of causality. One might argue, for example, that a fall in well-being or health might increase the likelihood of a downward trajectory in the labor market, rather than the other way around. However, since we also find a positive effect of upward mobility on allostatic load, we find our theorized causal direction more convincing. Relatedly, we also can't distinguish between voluntary and involuntary downward mobility. This is an important avenue for future research on mobility effects, which has conflated voluntary and involuntary downward mobility, some people might be willing to take a short-distance downward mobility but obtain a more relaxing life in return. This would in turn also mean that the effect of downward mobility which we have found should be even higher for those involuntarily downward mobile if some respondents trade off downward mobility with a less stressful life. We are unable to control for childhood health, a potentially important confounder, instead we controlled for health reported in the previous wave. Further, our sample is somewhat younger, more white, less married, healthier, and more likely in the salariat class than the full sample. In a less healthy, older, and less upper-class sample, we would have expected stronger effects of social mobility. Lastly, our analysis is restricted to those in paid work. Given that unemployment leads to drops in well-being, our downward mobility effect might also be underestimated.

Recently, the DRM has come under criticism. Fosse and Pfeffer (2019) argue that the DRM is too restrictive in its assumptions "about the linear effect of social mobility, effectively building in the conclusion that social mobility is of

no consequence." While we agree that only relying on the DRM will be limiting for research on the effects of social mobility (for recent alternatives see e.g., Luo 2022; Wiedner 2022), we have argued that the assumptions of the DRM are in line with sociological theory, and our empirical results do show social mobility effects in line with sociological theory.

To conclude, in this study, we described processes of intragenerational social mobility and analyzed the links of social mobility and well-being, while comparing a biomarker outcome to self-rated health. We used the UK Household Longitudinal Study and found that the lowest allostatic load is found among the stable salariat and the highest among those who dropped to the working class from an intermediate class background. We also find a social gradient while using self-rated health. Additionally, we can show that downwardly mobile participants (both men and women) have higher allostatic load while upwardly mobile participants have lower allostatic load. However, based on our models, we find no evidence that intragenerational mobility, neither upward nor downward, makes a difference to self-rated health. These findings provide further indications lending towards the phenomenon Sen (1992) called entrenched deprivation, since individuals might be biased in their judgment when reporting their well-being as they adapt to their actual living conditions.

Notes

1. We use the term "reporting bias" not in the sense of measurement error or to imply that respondents are mistaken, but to indicate processes whereby subjective and objective indications of health may diverge, as outlined by, for example, Sen (1992).
2. In the Supplementary Materials, we replicate the analyses of Präg and Richards (2019) and show that the results shown there can be replicated with the current sample and also hold for self-rated health as an outcome.
3. For instance, Sorokin's (1927) original formulation of the dissociative hypothesis suggested that it also applies to *intra*generational mobility: "*Any change of occupation* or social-economic status requires from [a member of a mobile society] new efforts or new work. This increases the activity of the nervous system, and causes a permanent mental strain" (Sorokin, 1927, 510, our emphasis).

Supplementary Material

Supplementary material is available at *Social Forces* online, http://sf.oxfordjournals.org/.

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Intragenerational Social Mobility and Wellbeing in Great Britain. A Biomarker Approach

Supplementary Materials

Social Forces

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Contents

1   Additional information about the data

1.1   Selection of cases for the analyses

We analyze the UK Household Longitudinal Study (UKHLS, 'Understanding Society,' University of Essex *et al.*, 2016), which is a prospective, nationally representative survey. The British Household Panel Survey (BHPS), a similar panel study that existed since the early 1990's, was discontinued in 2009, and the former BHPS participants became a subsample of the UKHLS panel. In waves 2 (2010–2 for the UKHLS main sample) and 3 (2011–2 for the BHPS sample), many participants were invited for nurse interviews, where physical measures, blood samples, and other health-related information were collected (University of Essex and Institute for Social and Economic Research, 2014). We pool information from waves 2 and 3 for a cross-sectional analysis, as no participant attended the nurse interviews twice. Most variables used in the analyses were collected in waves 2 and 3. For specific variables, we draw on other waves of the panel. For parental origin and first class position, we obtained information BHPS cross-wave files, and added information for UKHLS from UKHLS waves 1–6. The exact data construction process is detailed in the replication package (Präg *et al.*, 2021).

In studies of the consequences of *inter*generational mobility, the age cut-off at the bottom of the distribution is a highly salient issue. In our analysis of *intra*generational mobility, this is less the case. Even if individuals have not yet time to move up the occupational ladder, our study design captures any wellbeing consequences of moving jobs, even if onto a 'stepping stone' job rather than their occupational destination. Nonetheless, we restrict the sample to participants between 25 and 65 years of age who are active on the labor market and for whom all variables are observed.

Table A1 shows the selection process of cases from the UKHLS data (University of Essex *et al.*, 2016; University of Essex and Institute for Social and Economic Research, 2014) that went into the analyses. Selection criteria for nurse interviews included not living in Northern Ireland, being 16 years or older, having completed the UKHLS survey interview, and speaking English.

More information on the participant selection process for the nurse interviews and the biomarker measurements can be found in Benzeval *et al.* (2014) and McFall *et al.* (2014).

Table A1: Selection of cases for analyses

	N
Adult respondents	48,328
Not eligible (Northern Ireland, incomplete interview, different language, not selected in PSU year)	−12,452
Eligible for the nurse visit	35,937
Pregnant, ill, died, out of scope	−349
No contact	−5,534
Refusal nurse visit	−9,354
Not eligible for blood sample	−1,579
No consent to give or store blood sample or reported inability to give blood	−4,688
Unable to give blood sample	−1,105
Unable to process samples	−221
Less than five biomarkers	−966
Origin or destination class missing	−5,039
Control variables missing	−12
Restriction to being in paid work and between 25 and 65 y. of age	−2,967
Cases for analysis	4,123

A relatively large number of cases are being excluded because their first job is not known. We know the first job of virtually all participants coming from the BHPS sample. For participants from the UKHLS, information about the first job was collected however only for a subset of participants. The first wave of UKHLS included a very detailed employment history question module which contained a question on participants' first job. However, after six months of data collection (every wave of UKHLS is collected over a span of two years), this module was discontinued due to interview time constraints. For this reason, first job information is missing from roughly three quarters of UKHLS participants in wave 1 of the survey. Later waves of UKHLS do again contain a question on participants' first job, and we include this information in our analyses. However, this question is asked only of participants who are active on the labor market as employees or self-employed. To address any potential bias from this, we restrict the entire sample to participants who are active on the labor market and younger than 65 years, the statutory retirement age in Great Britain at the time. Finally, as we are interested in destination class effects, we remove young people (younger than 25 years) from the analysis because they are unlikely to have reached occupational maturity.

1.2 Comparison between the analytical sample and the greater UKHLS sample

Table A2 compares descriptive statistics of the analytical sample to those of all participants (living in Great Britain between the ages of 25 and 65 years) of UKHLS wave 2.

The comparison reveals that the analytical sample has a similar share of women, is on average two years younger, has a somewhat higher share of whites, is somewhat more likely to be single, reports their health to be better, and is more likely to be in the salariat rather than the working class.

Table A2: Comparison analytical sample and UKHLS Wave 2 sample

	Analytical sample	Complete sample
Female sex	0.54	0.54
	[0.52,0.55]	
Age	45.65 (10.20)	47.93 (13.80)
	[45.34,45.96]	
Non-white ethnicity	0.05	0.07
	[0.04,0.06]	
Marital status:		
Married/partnered	0.63	0.70
	[0.62,0.65]	
Single/never married	0.20	0.15
	[0.19,0.21]	
Divorced/widowed	0.16	0.15
	[0.15,0.18]	
Self-rated health	2.67 (0.95)	2.40 (1.06)
	[2.64,2.70]	
Current job:		
Working class	0.31	0.36
	[0.29,0.32]	
Intermediate classes	0.24	0.24
	[0.23,0.26]	
Salariat	0.45	0.40
	[0.44,0.47]	
N	4,123	33,728

Proportion/mean, standard deviation in parentheses. 95 per cent confidence intervals in brackets.

Figure A1 shows the density of allostatic load and self-rated broken down by subgroups: Current social class on the one hand, and on the other hand

it shows the health outcomes of unemployed participants which we had to exclude from the analysis. The Figure reveals that unemployed participants have substantially higher allostatic load and worse self-rated health, even worse than those who are currently employed in working class occupations.

A Allostatic load

B Self-rated health

Salariat (M = -0.10, SD = 0.94, N = 1,863)
Intermediate (M = .01, SD = 1.03, N = 999)
Working class (M = .15, SD = 1.04, N = 1,261)
Unemployed (M = .33, SD = 1.09, N = 383)

Salariat (M = 2.8, SD = .92, N = 1,863)
Intermediate (M = 2.67, SD = .96, N = 999)
Working class (M = 2.48, SD = .97, N = 1,261)
Unemployed (M = 2.03, SD = 1.11, N = 393)
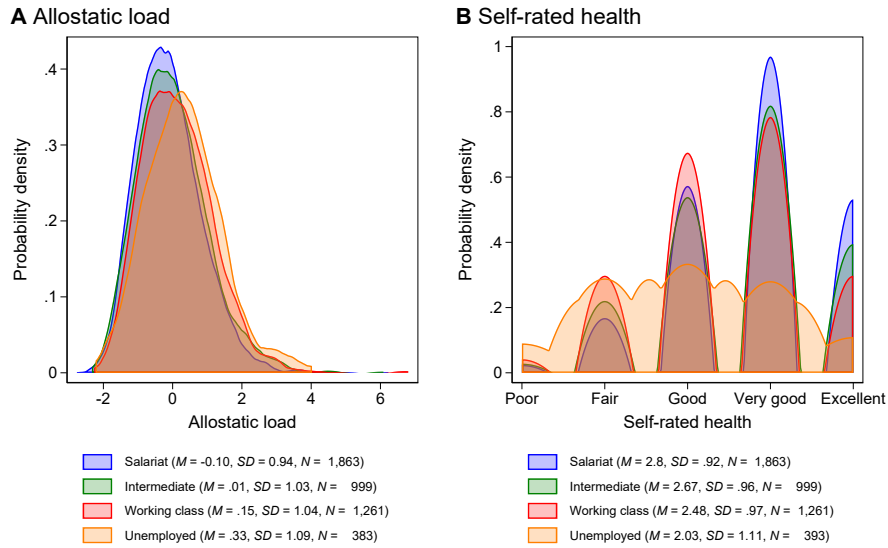
Figure A1: Density of allostatic load (*Panel A*) and self-rated health (*Panel B*) by current social class and unemployment status.

1.3 Measurement error in biomarkers

Table A3: Measurement error in blood sample biomarkers

Biomarker	Intra- and inter-assay coefficients of variation
Total cholesterol	< 2%
HDL cholesterol	< 2%
Triglycerides	< 3%
Glycated haemoglobin (HbA1c)	< 4%
C-reactive protein (CRP)	< 2%
Fibrinogen	< 7%

Source: Benzeval *et al.* (2014)

Table A3 shows indicators of measurement error as expressed as the coefficient of variation across and within assays reported for the allostatic load components based on the blood sample as reported in Benzeval *et al.* (2014). All of them show low to acceptable measurement error.

For indicators of cardiovascular health, systolic and dyastolic blood pressure as well as resting heart rate, the average of three validated measurements was used to minimize measurement error. Details of the measurements can be found in McFall *et al.* (2014).

For ensuring low measurement error for indicators of body fat deposition, height, weight, and waiast circumference were assessed by trained nurses. We restricted the sample to the vast majority of cases where nurses recorded no problems with the measurement. For participants weighing more than 130 kilograms (287 lbs.), their estimated weight was used because the scales in use were inaccurate beyond 130 kilograms (McFall *et al.*, 2014).

1.4 Descriptive statistics for variables used in analyses

Table A4: Descriptive statistics

	Mean	SD	Min.	Max.
Allostatic load (centered)	-0.00	1.00	-2.76	6.80
Self-rated health	2.67	0.95	0.00	4.00
First job:				
Working Class	0.41		0.00	1.00
Intermediate	0.38		0.00	1.00
Salariat	0.21		0.00	1.00
Current job:				
Working class	0.31		0.00	1.00
Intermediate classes	0.24		0.00	1.00
Salariat	0.45		0.00	1.00
Mobility:				
Mobility in any direction	0.53		0.00	1.00
Downward mobility	0.15		0.00	1.00
Upward mobility	0.38		0.00	1.00
Female sex (*ref.* male)	0.54		0.00	1.00
Age (centered)	-0.00	10.20	-20.65	19.35
Non-white ethnicity (*ref.* white)	0.05		0.00	1.00
Marital status:				
Married/partnered	0.63		0.00	1.00
Single/never married	0.20		0.00	1.00
Divorced/widowed	0.16		0.00	1.00
Education:				
No qualifications	0.05		0.00	1.00
Secondary education	0.49		0.00	1.00
Tertiary education	0.46		0.00	1.00
Parental occupation:				
Working class	0.36		0.00	1.00
Intermediate classes	0.26		0.00	1.00
Salariat	0.37		0.00	1.00
N	4,123			

Table A5: Arithmetic mean of allostatic load by social class of first job and destination class (N in parentheses)

Class position of first job	Destination class		
	Working Class	Intermediate	Salariat
Working Class	0.13	-0.02	0.04
	(768)	(405)	(523)
Intermediate	0.22	0.02	-0.12
	(418)	(483)	(659)
Salariat	-0.08	0.03	-0.19
	(75)	(111)	(681)

Table A6: Arithmetic mean of self-rated health (range from (0) to (4)) by social class of first job and destination class (N in parentheses)

Class position of first job	Destination class		
	Working Class	Intermediate	Salariat
Working Class	2.43	2.58	2.69
	(768)	(405)	(523)
Intermediate	2.52	2.71	2.76
	(418)	(483)	(659)
Salariat	2.69	2.77	2.92
	(75)	(111)	(681)
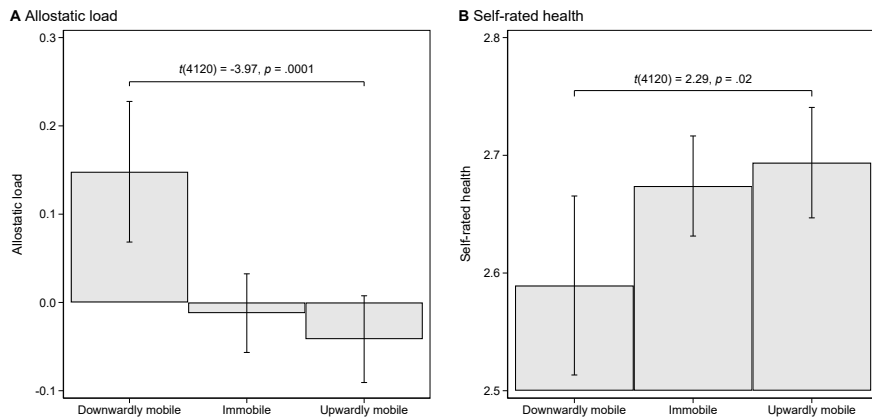
Figure A2: Mean allostatic load (*Panel A*) and self-rated health (*Panel B*) by mobility status, $N = 4{,}123$.

Note: Error bars denote 95 per cent confidence intervals.

2 Additional analyses

2.1 No gender differences in mobility effects

Table A7 shows Model 3 from Table 2 in the main text first stratified by gender and second with an interaction term of gender and mobility parameters. For allostatic load, the gender-specific models show that mobility coefficients go into the same direction as in Table 2, yet do not reach statistical significance due to diminished power. Further, the point estimate for women's upward mobility is twice the size of that for men. However, the interaction terms in the pooled model reveal that this difference does not reach conventional levels of statistical significance. Further, the pooled model for allostatic load reveals that while the mobility coefficients for men are not statistically distinguishable from 0 in the stratified model, they are also not different from those found for women. For self-rated health, gender-specific effects are also in line with Model 3 of Table 2, and the interaction in the pooled model reveals no relevant gender differences either. We conclude that the data at hand do not suggest that there are gender differences in mobility effects.

Table A7: Diagonal reference models of allostatic load and self-rated health, gender differences

	Allostatic load			Self-rated health		
	Women	Men	Pooled	Women	Men	Pooled
Immobiles						
Working class	0.19***	0.11**	0.15***	-0.26***	-0.27***	-0.26***
	(0.03)	(0.03)	(0.02)	(0.04)	(0.04)	(0.03)
Intermediate class	-0.01	0.01	-0.01	0.09*	-0.00	0.04
	(0.02)	(0.04)	(0.02)	(0.04)	(0.04)	(0.03)
Salariat	-0.18***	-0.11*	-0.15***	0.17***	0.27***	0.21***
	(0.03)	(0.05)	(0.02)	(0.03)	(0.04)	(0.03)
Origin weight						
p	1.47	1.19	1.40	0.29	0.34	0.42
	(0.43)	(0.83)	(0.35)	(0.19)	(0.25)	(0.18)
Covariates						
Female			-0.34***			0.13**
			(0.04)			(0.04)
Age (centered)	0.03***	0.02***	0.03***	-0.01***	-0.02***	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.20*	0.22*	0.20**	-0.27**	-0.08	-0.19**
	(0.09)	(0.10)	(0.07)	(0.09)	(0.10)	(0.07)
Marital status (*ref.* married/partnered)						
Single/never married	0.04	-0.08	-0.02	-0.15**	-0.11	-0.14***
	(0.05)	(0.06)	(0.04)	(0.05)	(0.06)	(0.04)
Divorced/widowed	0.05	0.24***	0.12**	-0.12*	0.07	-0.05
	(0.05)	(0.07)	(0.04)	(0.05)	(0.07)	(0.04)
Mobility parameters (*ref.* immobile)						
Downward mobility	0.23*	0.19	0.26**	-0.03	0.09	0.04
	(0.10)	(0.13)	(0.08)	(0.09)	(0.10)	(0.08)
Upward mobility	-0.22*	-0.09	-0.16*	-0.13	-0.03	-0.00
	(0.11)	(0.12)	(0.08)	(0.07)	(0.10)	(0.07)
Interaction terms						
Downward mobility × female			-0.08			-0.09
			(0.09)			(0.09)
Upward mobility × female			-0.01			-0.09
			(0.06)			(0.06)
Constant	-0.20***	0.14***	0.14***	2.82***	2.63***	2.67***
	(0.03)	(0.04)	(0.03)	(0.03)	(0.04)	(0.03)
Observations	2,225	1,898	4,123	2,225	1,898	4,123
AIC	6,005.3	5,133.5	11,139.1	5,967.3	5,125.9	11,088.6
BIC	6,068.1	5,194.6	11,227.7	6,030.1	5,186.9	11,177.2

Notes: Standard errors in parentheses. * p < .05, ** p < .01, p < .001. Destination parameters (which equal $-1\times$ origin parameters) and destination weight (which equals $1-$ origin weight) not displayed.

2.2 No discernible ethnic differences in mobility effects

As shown in Table A5, only five percent of cases ($N = 209$) in our sample are of non-white ethnicity, which makes it difficult to come to reliable conclusions about ethnic minorities in Great Britain. Nonetheless, in Table A8 we present analyses that first show the same results from Table 2 of the main text and

then restrict the sample to white participants only to examine whether the relationship estimates are different.

For both allostatic load and self-rated health, the point estimates of the mobility effects are almost identical, suggesting that non-whites are not exerting any influence on the parameter estimates. Unfortunately, sample size restrictions do not allow us to draw any further conclusions on this issue.

Table A8: Diagonal reference models of allostatic load and self-rated health, ethnic differences

	Allostatic load		Self-rated health	
	Full sample	Whites only	Full sample	Whites only
Immobiles				
Working class	0.16***	0.16***	-0.25***	-0.26***
	(0.02)	(0.02)	(0.03)	(0.03)
Intermediate class	-0.01	-0.00	0.04	0.05
	(0.02)	(0.02)	(0.03)	(0.03)
Salariat	-0.15***	-0.16***	0.21***	0.21***
	(0.02)	(0.03)	(0.03)	(0.03)
Origin weight				
p	1.40	1.41	0.42	0.43
	(0.35)	(0.33)	(0.18)	(0.18)
Covariates				
Female sex (*ref.* male)	-0.36***	-0.36***	0.08**	0.09**
	(0.03)	(0.03)	(0.03)	(0.03)
Age (centered)	0.03***	0.03***	-0.02***	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.20**		-0.19**	
	(0.07)		(0.07)	
Marital status (*ref.* married/partnered)				
Single/never married	-0.02	-0.01	-0.14***	-0.14***
	(0.04)	(0.04)	(0.04)	(0.04)
Divorced/widowed	0.12**	0.11**	-0.05	-0.05
	(0.04)	(0.04)	(0.04)	(0.04)
Mobility parameters (*ref.* immobile)				
Downward mobility	0.22**	0.23**	-0.00	-0.00
	(0.07)	(0.07)	(0.07)	(0.07)
Upward mobility	-0.17*	-0.18*	-0.05	-0.04
	(0.07)	(0.07)	(0.07)	(0.06)
Constant	0.15***	0.15***	2.69***	2.68***
	(0.03)	(0.03)	(0.03)	(0.03)
Observations	4,123	3,914	4,123	3,914
AIC	11,136.0	10,553.3	11,086.9	10,519.8
BIC	11,211.9	10,622.3	11,162.8	10,588.8

Notes: Standard errors in parentheses. * $p < .05$, ** $p < .01$, $p < .001$. Destination parameters (which equal $-1\times$ origin parameters) and destination weight (which equals $1-$ origin weight) not displayed.

2.3 Similar findings when using a more detailed class scheme

Table A9 shows Table 2 from the main text with a more detailed class scheme. Rather than distinguishing between only three broad classes, our four-class scheme distinguishes between routine and semi-routine occupations within the working class. An example for a routine working class occupation is a seamstress, a semi-routine occupation is for instance a highways maintenance worker. Mobility coefficients do not reach conventional levels of statistical precision anymore, but still point into the same direction as the findings from Table 2. We argue that this is due to reduced statistical power in the further stratified analyses.

Table A9: Diagonal reference models of allostatic load and self-rated health, four-class scheme

	Allostatic load				Self-rated health			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Immobiles								
Routine	0.13**	0.13**	0.13***	0.06*	-0.23***	-0.23***	-0.22***	-0.15***
	(0.05)	(0.05)	(0.03)	(0.03)	(0.05)	(0.05)	(0.04)	(0.05)
Semi-routine	0.13***	0.13***	0.13***	0.06*	-0.17***	-0.17***	-0.17***	-0.12**
	(0.04)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)
Intermediate class	-0.06*	-0.06*	-0.05*	-0.03	0.10**	0.10**	0.09**	0.09*
	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)
Salariat	-0.20***	-0.20***	-0.21***	-0.09*	0.30***	0.30***	0.30***	0.18***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)
Origin weight								
p	0.52	0.51	0.90	1.39	0.47	0.46	0.58	0.57
	(0.10)	(0.11)	(0.21)	(0.61)	(0.07)	(0.07)	(0.16)	(0.22)
Covariates								
Female sex (*ref.* male)	-0.37***	-0.37***	-0.37***	-0.35***	0.09**	0.09**	0.09**	0.08*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age (centered)	0.03***	0.03***	0.03***	0.02***	-0.02***	-0.02***	-0.02***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.20**	0.20**	0.20**	0.20**	-0.19**	-0.19**	-0.19**	-0.20**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Marital status (*ref.* married/partnered)								
Single/never married	-0.02	-0.02	-0.02	-0.02	-0.14***	-0.14***	-0.14***	-0.13***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Divorced/widowed	0.12**	0.12**	0.12**	0.11**	-0.04	-0.04	-0.04	-0.04
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Education (*ref.* secondary)								
No qualifications				0.23**				-0.13
				(0.07)				(0.07)
Tertiary education				-0.10**				0.17***
				(0.03)				(0.04)
Parental social class (*ref.* working class)								
Intermediate classes				-0.12**				0.06
				(0.04)				(0.04)
Salariat				-0.19***				0.06
				(0.04)				(0.04)
Mobility parameters (*ref.* immobile)								
Mobility in any direction		0.00				-0.01		
		(0.03)				(0.03)		
Downward mobility			0.11	0.12			-0.06	-0.05
			(0.06)	(0.06)			(0.06)	(0.06)
Upward mobility			-0.08	-0.08			0.03	0.01
			(0.05)	(0.06)			(0.06)	(0.05)
Constant	0.22***	0.22***	0.21***	0.32***	2.59***	2.59***	2.60***	2.52***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)
Observations	4,123	4,123	4,123	4,123	4,123	4,123	4,123	4,123
AIC	11,145.4	11,147.4	11,144.2	11,092.2	11,080.9	11,082.8	11,084.0	11,053.9
BIC	11,214.9	11,223.2	11,226.4	11,199.8	11,150.5	11,158.7	11,166.2	11,161.4

Notes: Standard errors in parentheses.

* p <.05, ** p <.01, p <.001.

Destination parameters (which equal -1 * origin parameters) and destination weight (which equals 1 - origin weight) not displayed.

With the granularity of the four-class scheme, we have the subsample sizes to distinguish between one-step and two-step mobility, Table A10 shows the more detailed class scheme with more detailed mobility indicators. Unsurprisingly, given the loss of statistical precision in Table A9 above, the mobility coefficients also do not reach statistical significance here. They do, however, demonstrate consistency in effect size and direction, a pattern that we interpret as supporting

our overall findings.

Table A10: Diagonal reference models of allostatic load and self-rated health, four-class scheme, long-range mobility

	Allostatic load				Self-rated health			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Immobiles								
Routine	0.13**	0.13**	0.12**	0.04	-0.23***	-0.23***	-0.22***	-0.15**
	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)	(0.05)	(0.04)	(0.05)
Semi-routine	0.13***	0.13***	0.13***	0.07	-0.17***	-0.17***	-0.17***	-0.12**
	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Intermediate class	-0.06*	-0.06*	-0.05	-0.03	0.10**	0.10**	0.09**	0.09**
	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)
Salariat	-0.20***	-0.20***	-0.21***	-0.09*	0.30***	0.30***	0.30***	0.18***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)
Origin weight								
p	0.52	0.51	0.89	1.05	0.47	0.46	0.65	0.47
	(0.10)	(0.11)	(0.33)	(0.88)	(0.07)	(0.07)	(0.29)	(0.34)
Covariates								
Female sex (*ref.* male)	-0.37***	-0.37***	-0.37***	-0.35***	0.09***	0.09**	0.09**	0.08*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age (centered)	0.03***	0.03***	0.03***	0.02***	-0.02***	-0.02***	-0.02***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.20**	0.20**	0.20**	0.20**	-0.19**	-0.19**	-0.19**	-0.20**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Marital status (*ref.* married/partnered)								
Single/never married	-0.02	-0.02	-0.02	-0.02	-0.14***	-0.14***	-0.14***	-0.13***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Divorced/widowed	0.12**	0.12**	0.12**	0.11**	-0.04	-0.04	-0.04	-0.04
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Education (*ref.* secondary)								
No qualifications				0.23***				-0.13
				(0.07)				(0.07)
Tertiary education				-0.10**				0.18***
				(0.03)				(0.04)
Parental social class (*ref.* working class)								
Intermediate classes				-0.12**				0.06
				(0.04)				(0.04)
Salariat				-0.19***				0.06
				(0.04)				(0.04)
Mobility parameters (*ref.* immobile)								
Mobility in any direction		0.00				-0.01		
		(0.03)				(0.03)		
Downward mobility (1 class)			0.09	0.08			-0.06	-0.04
			(0.07)	(0.07)			(0.08)	(0.07)
Downward mobility (2+ classes)			0.14	0.12			-0.10	-0.04
			(0.11)	(0.12)			(0.13)	(0.12)
Upward mobility (1 class)			-0.09	-0.06			0.04	0.00
			(0.06)	(0.07)			(0.07)	(0.05)
Upward mobility (2+ classes)			-0.07	-0.01			0.06	-0.03
			(0.11)	(0.13)			(0.13)	(0.10)
Constant	0.22***	0.22***	0.21***	0.31***	2.59***	2.59***	2.60***	2.52***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)
Observations	4,123	4,123	4,123	4,123	4,123	4,123	4,123	4,123
AIC	11,145.4	11,147.4	11,147.8	11,095.6	11,080.9	11,082.8	11,087.9	11,057.7
BIC	11,214.9	11,223.2	11,242.6	11,215.8	11,150.5	11,158.7	11,182.7	11,177.9

Notes: Standard errors in parentheses.

* p <.05, ** p <.01, p <.001.

Destination parameters (which equal -1 * origin parameters) and destination weight (which equals 1 - origin weight) not displayed.

2.4 Similar findings when interacting first job class origin with mobility

Models (5) of Table A11 include interactions between first job class origin and mobility. This allows us to explore whether the mobility effects are specific to particular trajectories, but we find that they are not. The increase in allostatic load that accompanies downward mobility is the same magnitude whether starting in the intermediate classes or the salariat. The upward mobility benefit to allostatic load is also evident from those starting out in the intermediate or the working classes, although the interaction does not reach statistical significance for the working class–upward mobility interaction. This is likely to reflect the reduced statistical power; as the coefficient estimate remains negative and of similar magnitude to the overall upward mobility effect shown in the main model, we are encouraged that this does not provide counter-evidence.

Table A11: Diagonal reference models of allostatic load and self-rated health—class interactions

	Allostatic load		Self-rated health	
	Model 4	Model 5	Model 4	Model 5
Immobiles				
Working class	0.07*	0.07*	-0.17***	-0.18***
	(0.03)	(0.03)	(0.03)	(0.03)
Intermediate class	-0.00	-0.01	0.05	0.06
	(0.01)	(0.02)	(0.03)	(0.03)
Salariat	-0.06*	-0.06*	0.12***	0.12***
	(0.03)	(0.03)	(0.03)	(0.03)
Origin weight				
p	2.83	3.05	0.45	0.71
	(1.26)	(1.45)	(0.22)	(0.52)
Covariates				
Female sex (*ref.* male)	-0.35***	-0.35***	0.07*	0.07*
	(0.03)	(0.03)	(0.03)	(0.03)
Age (centered)	0.02***	0.02***	-0.01***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.21**	0.21**	-0.20**	-0.21**
	(0.07)	(0.07)	(0.07)	(0.07)
Marital status (*ref.* married/partnered)				
Single/never married	-0.02	-0.02	-0.13***	-0.13***
	(0.04)	(0.04)	(0.04)	(0.04)
Divorced/widowed	0.11**	0.11**	-0.04	-0.04
	(0.04)	(0.04)	(0.04)	(0.04)
Education (*ref.* secondary)				
No qualifications	0.24***	0.24***	-0.14*	-0.14*
	(0.07)	(0.07)	(0.07)	(0.07)
Tertiary education	-0.10**	-0.10**	0.18***	0.18***
	(0.03)	(0.03)	(0.03)	(0.04)
Parental social class (*ref.* working class)				
Intermediate classes	-0.12**	-0.12**	0.06	0.05
	(0.04)	(0.04)	(0.04)	(0.04)
Salariat	-0.19***	-0.19***	0.06	0.06
	(0.04)	(0.04)	(0.04)	(0.04)
Mobility parameters (*ref.* immobile)				
Downward mobility	0.25***		-0.03	
	(0.07)		(0.06)	
Upward mobility	-0.18*		-0.04	
	(0.07)		(0.05)	
Downward from salariat		0.27*		-0.06
		(0.11)		(0.11)
Downward from intermediate		0.30*		-0.09
		(0.14)		(0.14)
Upward from intermediate	A17	-0.16*		-0.04
		(0.08)		(0.05)
Upward from working		-0.22		0.03
		(0.14)		(0.15)
Constant	0.28***	0.28***	2.59***	2.59***
	(0.04)	(0.04)	(0.04)	(0.04)
Observations	4,123	4,123	4,123	4,123

2.5 Similar findings when accounting for health behaviors

Table A12 shows Table 2 from the main text with additional controls for health behaviors. If the participants had eaten (9%), smoked (6%), consumed alcohol (1%), or exercised (1%) in the 30 minutes before the nurse visit, cardiovascular measures were invalidated. Thus, this is an essential robustness check. We account for sport activity, smoking status, and fruit and vegetable consumption. Table A12 shows that findings are similar when accounting for health behaviors.

We noted that the class gradient for the immobile is attenuated when health behaviors are included in the equation and further investigated which of the health behaviors is responsible for this attenuation. Figure A3 shows regression coefficients for immobile participants from diagonal reference models controlling for different combinations of health behaviors. The coefficients for baseline controls stem from a model like Model (1) of Table 2 where participant sex, age, ethnicity, and marital status are accounted for. In turn, the three health behaviors are separately added to the model; in a final model, all three health behaviors are accounted for simultaneously.

The results from Figure A3 suggest that in the case of allostatic load, smoking and sport both equally reduce the class gradient. The working class and salariat effects are closer to zero with each of these controls present. For self-reported health, it is smoking and fruit consumption that substantially reduce the class effect, but physical activity less so.

Table A12: Diagonal reference models of allostatic load and self-rated health, controlling for health behaviors

	Allostatic load				Self-rated health			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Immobiles								
Working class	0.09***	0.09***	0.08***	0.02	-0.15***	-0.15***	-0.15***	-0.11***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)
Intermediate class	-0.01	-0.01	-0.01	-0.00	0.00	0.01	0.01	0.02
	(0.03)	(0.03)	(0.01)	(0.00)	(0.03)	(0.03)	(0.03)	(0.03)
Salariat	-0.08**	-0.08**	-0.07**	-0.01	0.15***	0.14***	0.14***	0.09**
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Origin weight								
p	0.60	0.53	2.16	8.86	0.57	0.52	0.44	0.52
	(0.17)	(0.18)	(0.80)	(13.94)	(0.10)	(0.11)	(0.29)	(0.38)
Covariates								
Female sex (*ref.* male)	-0.39***	-0.39***	-0.38***	-0.38***	0.11***	0.11***	0.11***	0.10***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age (centered)	0.02***	0.02***	0.02***	0.02***	-0.01***	-0.01***	-0.01***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.19**	0.19**	0.19**	0.19**	-0.19**	-0.19**	-0.19**	-0.20**
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Marital status (*ref.* married/partnered)								
Single/never married	-0.05	-0.05	-0.05	-0.05	-0.10**	-0.10**	-0.10**	-0.10**
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Divorced/widowed	0.11**	0.11**	0.11**	0.10**	-0.03	-0.03	-0.03	-0.03
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Sport activity ranking	-0.08***	-0.08***	-0.08***	-0.07***	0.09***	0.09***	0.09***	0.09***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Smoking status (*ref.* non-smoker)								
Ex-smoker	0.00	0.00	-0.00	0.01	-0.05	-0.05	-0.05	-0.05
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Current smoker	0.24***	0.24***	0.23***	0.23***	-0.26***	-0.26***	-0.26***	-0.25***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Fruit consumption (*ref.* never)								
Fruit/veg. 1-3 d./w.	0.04	0.04	0.04	0.06	0.06	0.06	0.06	0.05
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Fruit/veg. 4-6 d./w.	0.03	0.03	0.03	0.06	0.03	0.03	0.03	0.01
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Fruit/veg. every day	-0.04	-0.04	-0.04	-0.01	0.13*	0.13*	0.13*	0.11
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Education (*ref.* secondary)								
No qualifications				0.20**				-0.10
				(0.07)				(0.07)
Tertiary education				-0.05				0.11***
				(0.03)				(0.03)
Parental social class (*ref.* working class)								
Intermediate classes				-0.09*				0.02
				(0.04)				(0.04)
Salariat				-0.16***				0.02
				(0.03)				(0.03)
Mobility parameters (*ref. immobile*)								
Mobility in any direction		0.04				-0.04		
		(0.03)				(0.03)		
Downward mobility			0.22***	0.25***			-0.02	-0.04
			(0.07)	(0.07)			(0.07)	(0.06)
Upward mobility			-0.14*	-0.14*			-0.05	-0.04
			(0.07)	(0.07)			(0.06)	(0.06)
Constant	0.15*	0.13	0.13	0.19**	2.63***	2.65***	2.65***	2.61***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Observations	4,088	4,088	4,088	4,088	4,088	4,088	4,088	4,088
AIC	10,775.5	10,776.0	10,768.6	10,737.2	10,607.3	10,607.9	10,609.8	10,601.9
BIC	10,876.6	10,883.4	10,882.2	10,876.1	10,708.4	10,715.3	10,723.5	10,740.8

Notes: Standard errors in parentheses.

* p <.05, ** p <.01, p <.001.

Destination parameters (which equal -1 * origin parameters) and destination weight (which equals 1 - origin weight) not displayed.

A Allostatic load
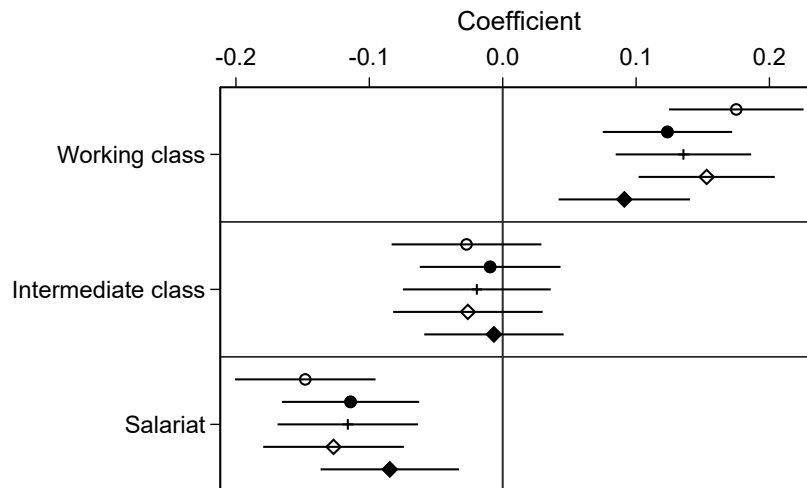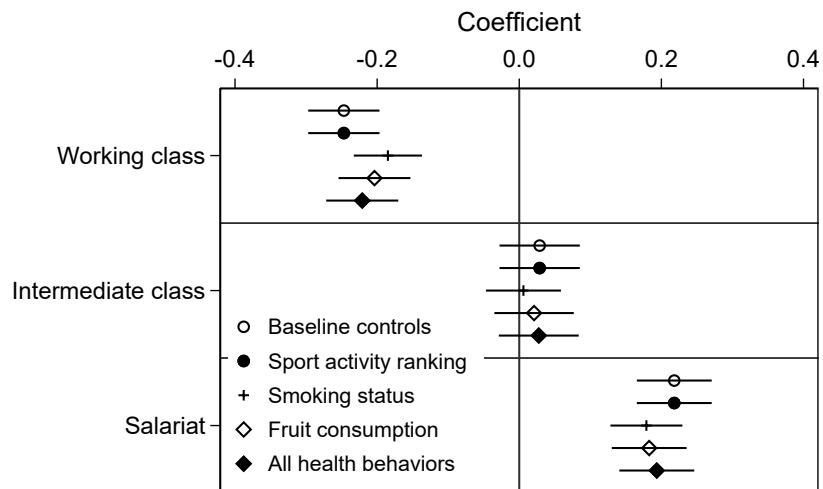

B Self-rated health

Figure A3: Regression coefficients for immobile participants from diagonal reference models controlling for different combinations of health behaviors

Note: Baseline control variables are the same as in Table 2 in the main text: Sex, age, ethnicity, and marital status.

2.6 Similar findings when controlling for self-rated health the year before

An important predictor of health at any given point in time is health at a point in the past. By accounting for health in the wave before allostatic load and the mobility destination are measured, we are attempting to control for some health selection effects, whereby an underlying or pre-existing health concern in the past (here, year $t-1$) can explain both health and destination now (year t). There are no measures of previous allostatic load available in the data.

Table A13 shows Table 2 with an additional control for participants' self-rated health from the year before, i.e. for participants with nurse interviews in Wave 2 we used their health self-rating from Wave 1, for those participants who had the nurse interview in Wave 3, we used their response from Wave 2, essentially making the analysis longitudinal. The key findings on the health consequences of mobility remain the same.

Table A13: Diagonal reference models of allostatic load and self-rated health, controlling for self-rated health the year before

	Allostatic load				Self-rated health			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Immobiles								
Working class	0.11***	0.12***	0.10***	0.03	-0.10***	-0.11***	-0.11***	-0.07**
	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Intermediate class	-0.01	-0.02	-0.00	-0.00	-0.01	0.01	0.02	0.03
	(0.03)	(0.03)	(0.01)	(0.00)	(0.03)	(0.03)	(0.03)	(0.02)
Salariat	-0.10***	-0.10***	-0.10***	-0.03	0.11***	0.10***	0.09***	0.05*
	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Origin weight								
p	0.51	0.43	1.86	5.21	0.55	0.41	0.27	0.12
	(0.15)	(0.15)	(0.58)	(4.55)	(0.14)	(0.15)	(0.41)	(0.39)
Covariates								
Female sex (*ref.* male)	-0.35***	-0.34***	-0.34***	-0.33***	0.05*	0.05*	0.05*	0.04
	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Age (centered)	0.02***	0.02***	0.02***	0.02***	-0.01***	-0.01***	-0.01***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.19**	0.19**	0.20**	0.20**	-0.12*	-0.12*	-0.12*	-0.13*
	(0.07)	(0.07)	(0.07)	(0.07)	(0.05)	(0.05)	(0.05)	(0.05)
Marital status (*ref.* married/partnered)								
Single/never married	-0.07	-0.07	-0.07	-0.07	-0.04	-0.04	-0.04	-0.04
	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Divorced/widowed	0.09*	0.09*	0.09*	0.09*	0.00	0.00	0.00	0.00
	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Self-rated health the year before	-0.24***	-0.24***	-0.24***	-0.24***	0.59***	0.59***	0.59***	0.59***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Education (*ref.* secondary)								
No qualifications				0.21**				-0.09
				(0.07)				(0.06)
Tertiary education				-0.07*				0.10***
				(0.03)				(0.03)
Parental social class (*ref.* working class)								
Intermediate classes				-0.09*				0.00
				(0.04)				(0.03)
Salariat				-0.16***				-0.01
				(0.04)				(0.03)
Mobility parameters (*ref.* immobile)								
Mobility in any direction		0.04				-0.05		
		(0.03)				(0.03)		
Downward mobility			0.24***	0.26***			-0.03	-0.04
			(0.07)	(0.07)			(0.06)	(0.05)
Upward mobility			-0.16*	-0.16*			-0.07	-0.07
			(0.07)	(0.07)			(0.06)	(0.04)
Constant	0.82***	0.80***	0.81***	0.88***	1.08***	1.10***	1.10***	1.08***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Observations	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985
AIC	10,534.2	10,534.4	10,526.1	10,491.8	8,889.9	8,888.3	8,890.2	8,882.0
BIC	10,603.4	10,609.9	10,607.8	10,598.7	8,959.1	8,963.8	8,972.0	8,988.9

Notes: Standard errors in parentheses. * p < .05, ** p < .01, p < .001.

Destination parameters (which equal −1× origin parameters) and destination weight (which equals 1− origin weight) not displayed.

A higher allostatic load score indicates lower wellbeing.

2.7 Similar findings when accounting for social support

Table A14 shows Table 2 from the main text with additional controls for social support. Several questions about perceptions of social support from friends were asked in a self-completion questionnaire in wave 2 of the survey, specifically 'How much can you rely on [your friends] if you have a serious problem?,' 'How much

do [your friends] really understand the way you feel about things?,' 'How much do [your friends] get on your nerves?,' 'How much do [your friends] criticize you?,' and 'How much do [your friends] let you down when you are counting on them?' Four response options ranged from 'A lot' to 'Not at all.' We recoded the items so that higher values indicate greater social support, calculated the average across items, and z-standardized the resulting score. (We exclude a further $N = 98$ respondents who report having no friends.)

Table A14 shows that findings are similar when accounting for social support. Social support is associated with lower allostatic load and better self-rated health, yet the pattern of the mobility dummy coefficients for allostatic load and self-rated health are the same as in Table 2 in the main text.

Table A14: Diagonal reference models of allostatic load and self-rated health, controlling for social support

	Allostatic load				Self-rated health			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Immobiles								
Working class	0.15***	0.16***	0.14***	0.06*	-0.23***	-0.23***	-0.23***	-0.16***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Intermediate class	-0.01	-0.03	0.00	-0.00	0.03	0.04	0.04	0.06
	(0.03)	(0.03)	(0.01)	(0.01)	(0.03)	(0.03)	(0.03)	(0.03)
Salariat	-0.14***	-0.13***	-0.14***	-0.05	0.20***	0.19***	0.19***	0.10**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Origin weight								
p	0.57	0.51	1.57	3.30	0.55	0.53	0.52	0.53
	(0.12)	(0.12)	(0.40)	(1.71)	(0.08)	(0.08)	(0.23)	(0.26)
Covariates								
Female sex (*ref.* male)	-0.33***	-0.33***	-0.32***	-0.31***	0.04	0.04	0.04	0.03
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age (centered)	0.03***	0.03***	0.03***	0.02***	-0.02***	-0.02***	-0.02***	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.18*	0.18*	0.19*	0.19**	-0.13	-0.13	-0.13	-0.14
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Marital status (*ref.* married/partnered)								
Single/never married	-0.02	-0.02	-0.02	-0.02	-0.14**	-0.14**	-0.14**	-0.13**
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Divorced/widowed	0.10*	0.10*	0.10*	0.10*	-0.04	-0.04	-0.04	-0.03
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Education (*ref.* secondary)								
No qualifications				0.24**				-0.19*
				(0.07)				(0.07)
Tertiary education				-0.10**				0.18***
				(0.04)				(0.04)
Parental social class (*ref.* working class)								
Intermediate classes				-0.11**				0.03
				(0.04)				(0.04)
Salariat				-0.17***				0.03
				(0.04)				(0.04)
Social support (standardized)	-0.04**	-0.04**	-0.04**	-0.04**	0.10***	0.10***	0.10***	0.09***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Mobility parameters (*ref.* immobile)								
Mobility in any direction		0.04				-0.03		
		(0.03)				(0.03)		
Downward mobility			0.24***	0.27***			-0.03	-0.04
			(0.07)	(0.07)			(0.07)	(0.06)
Upward mobility			-0.17*	-0.17*			-0.03	-0.04
			(0.07)	(0.07)			(0.07)	(0.05)
Constant	0.14***	0.12***	0.12***	0.24***	2.70***	2.71***	2.71***	2.63***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)
Observations	3,627	3,627	3,627	3,627	3,627	3,627	3,627	3,627
AIC	9,686.0	9,686.3	9,678.8	9,638.2	9,672.6	9,674.0	9,676.0	9,648.6
BIC	9,754.1	9,760.7	9,759.3	9,743.5	9,740.8	9,748.3	9,756.5	9,753.9

Notes: Standard errors in parentheses.

* p <.05, ** p <.01, p <.001.

Destination parameters (which equal -1 * origin parameters) and destination weight (which equals 1 - origin weight) not displayed.

2.8 Similar findings when controlling for personality traits

Table A15 shows Table 2 from the main text with additional controls for personality traits. Wave 3 of the data contains the 'Big Five' personality traits as measured by the Big Five Inventory (BFI, John and Srivastava, 1999). Each of the five personality traits was measured with three items. Example items are

'I see myself as someone who has a forgiving nature' (for agreeableness) or 'I see myself as someone who does a thorough job' (for conscientiousness). Trait scores were z-standardized. Given that personality traits were only collected in Wave 3 and not in Wave 2, the sample size in the analyses with personality traits is reduced. Personality traits of adults are generally assumed to be largely stable over time (Terracciano *et al.*, 2010).

Table A15 shows that findings are similar when accounting for personality traits. Conscientious is associated with lower allostatic load and better self-rated health and neuroticism is associated with worse self-rated health, yet the pattern of the mobility dummy coefficients for allostatic load and self-rated health are the same as in Table 2 in the main text.

Table A15: Diagonal reference models of allostatic load and self-rated health, controlling for Big 5 personality traits

	Allostatic load				Self-rated health			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Immobiles								
Working class	0.17***	0.18***	0.15***	0.07*	-0.24***	-0.24***	-0.25***	-0.18***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Intermediate class	-0.03	-0.04	-0.00	-0.00	0.04	0.05	0.06*	0.07*
	(0.03)	(0.03)	(0.02)	(0.01)	(0.03)	(0.03)	(0.03)	(0.03)
Salariat	-0.14***	-0.14***	-0.15***	-0.07*	0.20***	0.19***	0.19***	0.10***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Origin weight								
p	0.48	0.47	1.43	2.66	0.52	0.48	0.34	0.33
	(0.10)	(0.11)	(0.37)	(1.19)	(0.08)	(0.08)	(0.17)	(0.18)
Covariates								
Female sex (*ref.* male)	-0.35***	-0.34***	-0.34***	-0.32***	0.11***	0.10**	0.10**	0.08*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age (centered)	0.03***	0.03***	0.03***	0.03***	-0.02***	-0.02***	-0.02***	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.21**	0.21**	0.22**	0.23**	-0.17*	-0.17*	-0.17*	-0.19**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Marital status (*ref.* married/partnered)								
Single/never married	-0.05	-0.05	-0.05	-0.05	-0.10*	-0.10*	-0.10*	-0.09*
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Divorced/widowed	0.09*	0.09*	0.09*	0.09*	-0.03	-0.03	-0.03	-0.02
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Education (*ref.* secondary)								
No qualifications				0.22**				-0.11
				(0.08)				(0.07)
Tertiary education				-0.11**				0.18***
				(0.04)				(0.04)
Parental social class (*ref.* working class)								
Intermediate classes				-0.11**				0.07
				(0.04)				(0.04)
Salariat				-0.19***				0.08*
				(0.04)				(0.04)
Personality traits								
Agreeableness	0.01	0.01	0.01	0.00	-0.01	-0.01	-0.01	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Conscientiousness	-0.08***	-0.08***	-0.07***	-0.08***	0.10***	0.10***	0.10***	0.10***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Extraversion	0.04*	0.04*	0.04*	0.03	0.02	0.02	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Neuroticism	-0.01	-0.01	-0.01	-0.02	-0.15***	-0.15***	-0.15***	-0.15***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Openness	-0.00	-0.00	-0.00	0.02	-0.02	-0.02	-0.02	-0.04*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Mobility parameters (*ref.* immobile)								
Mobility in any direction		0.01				-0.05		
		(0.03)				(0.03)		
Downward mobility			0.20**	0.23**			0.00	-0.02
			(0.07)	(0.07)			(0.07)	(0.06)
Upward mobility			-0.19*	-0.19**			-0.09	-0.08
			(0.08)	(0.07)			(0.06)	(0.05)
Constant	0.16***	0.16***	0.16***	0.28***	2.66***	2.69***	2.69***	2.58***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)
Observations	3,732	3,732	3,732	3,732	3,732	3,732	3,732	3,732
AIC	10,089.7	10,091.6	10,085.2	10,042.6	9,837.5	9,837.3	9,838.6	9,808.2
BIC	10,183.1	10,191.1	10,191.0	10,173.3	9,930.8	9,936.9	9,944.4	9,938.9

Notes: Standard errors in parentheses.

* p <.05, ** p <.01, p <.001.

Destination parameters (which equal -1 * origin parameters) and destination weight (which equals 1 - origin weight) not displayed.

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2.9 Similar findings when not controlling for marital status

Table A16 shows Table 2 from the main text *sans* the set of dummies that controlled for participants' marital status. Findings remain unaffected.

Table A16: Diagonal reference models of allostatic load and self-rated health, not controlling for marital status

	Allostatic load				Self-rated health			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Immobiles								
Working class	0.18***	0.18***	0.16***	0.07*	-0.25***	-0.25***	-0.26***	-0.18***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Intermediate class	-0.03	-0.04	-0.01	-0.00	0.03	0.04	0.04	0.05
	(0.03)	(0.03)	(0.02)	(0.01)	(0.03)	(0.03)	(0.03)	(0.03)
Salariat	-0.15***	-0.15***	-0.15***	-0.06*	0.22***	0.22***	0.22***	0.12***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Origin weight								
p	0.52	0.49	1.39	2.77	0.51	0.49	0.40	0.42
	(0.09)	(0.10)	(0.34)	(1.19)	(0.07)	(0.07)	(0.18)	(0.21)
Covariates								
Female sex (*ref.* male)	-0.36***	-0.35***	-0.35***	-0.34***	0.08**	0.08**	0.08**	0.07*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age (centered)	0.03***	0.03***	0.03***	0.03***	-0.01***	-0.01***	-0.01***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.19**	0.19**	0.20**	0.20**	-0.18**	-0.18**	-0.18**	-0.20**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Education (*ref.* secondary)								
No qualifications				0.24***				-0.15*
				(0.07)				(0.07)
Tertiary education				-0.10**				0.18***
				(0.03)				(0.03)
Parental social class (*ref.* working class)								
Intermediate classes				-0.12**				0.06
				(0.04)				(0.04)
Salariat				-0.19***				0.06
				(0.04)				(0.04)
Mobility parameters (*ref.* immobile)								
Mobility in any direction		0.03				-0.03		
		(0.03)				(0.03)		
Downward mobility			0.22**	0.26***			0.00	-0.02
			(0.07)	(0.07)			(0.07)	(0.06)
Upward mobility			-0.18*	-0.18*			-0.06	-0.05
			(0.07)	(0.07)			(0.07)	(0.05)
Constant	0.18***	0.16***	0.16***	0.29***	2.64***	2.66***	2.66***	2.56***
	(0.02)	(0.03)	(0.03)	(0.04)	(0.02)	(0.03)	(0.03)	(0.04)
Observations	4,123	4,123	4,123	4,123	4,123	4,123	4,123	4,123
AIC	11,148.2	11,149.4	11,141.6	11,087.0	11,092.4	11,093.6	11,095.4	11,062.6
BIC	11,198.8	11,206.3	11,204.9	11,175.5	11,143.0	11,150.6	11,158.6	11,151.1

Notes: Standard errors in parentheses.

* p <.05, ** p <.01, p <.001.

Destination parameters (which equal -1 * origin parameters) and destination weight (which equals 1 - origin weight) not displayed.

2.10 Different age specifications lead to mostly similar findings

Figure A4 shows the key coefficients for upward and downward mobility from Models 4 of Table 2 in the main text for different age groups, for allostatic load

and self-rated health. On the left-hand side of Panel A1, we see the coefficients from Models (4) of Table 2 in the main text. They show that when younger participants are dropped from the model, the upward mobility coefficient loses significance and becomes closer to zero. This may imply that any benefits to allostatic are greater in the first half of one's career, namely among those under 45 years old. The downward mobility coefficient remains the same for all ages. In self-rated health, we see that both the upward and downward mobility coefficients get larger in magnitude after the age of 42 years, but since they remain statistically indistinguishable from zero the substantive interpretation is that it remains a null effect as shown in the main model.

On the right-hand side of Panel B in Figure A4, we see the upward and downward mobility coefficients from Table 2 in the main text. As we move to the right on the x-axis, age polynomials up to age^5 are added to the equation. The key finding is that both the size and the statistical significance of the coefficients are unaffected irrespective of which age polynomials are added.

Table A17 shows models where the origin weight is interacted with age to examine whether the effect of one's starting occupation diminishes or increases over the life course. The interaction is not significant throughout, thus suggesting that one's first class exerts an effect on health of around half the total class effect, for the whole of one's career.
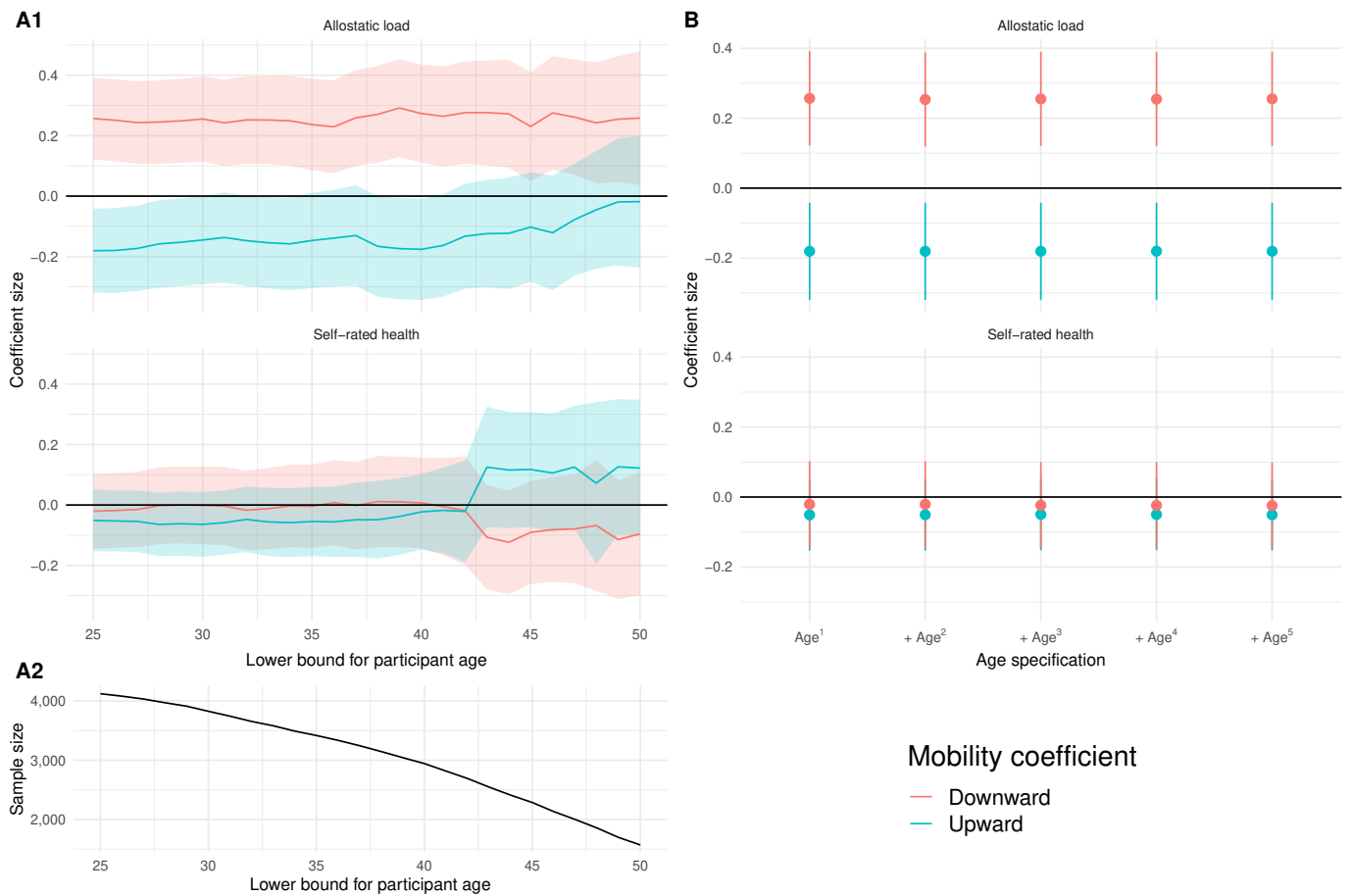
Figure A4: *Panel A1* on the left-hand side shows the robustness of the upward and downward mobility coefficients when increasing the lower age cut-off for sample inclusion from 25 years (i.e. the coefficients from Models (4) of Table 2 in the main text) to 50 years in yearly increments, for allostatic load (top) and self-rated health (bottom). *Panel A2* shows the decline in sample size when increasing the lower age cut-off for sample inclusion. *Panel B* on the left-hand side show the robustness of the upward and downward mobility coefficients when accounting for possible non-linearities of age, for allostatic load (top) and self-rated health (bottom). Coefficients on the left-hand side of *Panel B* are those from Models (4) of Table 2 in the main text with a linear age specification (age[1]), coefficients on the right add further polynomials of age to the equation, up to age[5].

Notes: Error bands in *Panel A1* and spikes in *Panel B* denote 95 per cent confidence intervals.

Table A17: Diagonal reference models of allostatic load and self-rated health, origin interacted with age (centered)

	Allostatic load				Self-rated health			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Immobiles								
Working class	0.18***	0.18***	0.16***	0.07*	-0.25***	-0.25***	-0.25***	-0.17***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Intermediate class	-0.03	-0.03	-0.01	-0.00	0.03	0.04	0.04	0.05
	(0.03)	(0.03)	(0.02)	(0.01)	(0.03)	(0.03)	(0.03)	(0.03)
Salariat	-0.15***	-0.14***	-0.15***	-0.06*	0.22***	0.21***	0.21***	0.12***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Origin weight								
p	0.53	0.49	1.41	2.84	0.52	0.49	0.44	0.46
	(0.10)	(0.10)	(0.35)	(1.26)	(0.07)	(0.07)	(0.19)	(0.22)
Interaction								
Age (centered)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Covariates								
Female sex (*ref.* male)	-0.37***	-0.36***	-0.36***	-0.35***	0.08**	0.08**	0.08**	0.07*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age (centered)	0.03***	0.03***	0.03***	0.02***	-0.02***	-0.02***	-0.02***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.20**	0.20**	0.20**	0.21**	-0.19**	-0.19**	-0.19**	-0.20**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Marital status (*ref.* married/partnered)								
Single/never married	-0.02	-0.02	-0.02	-0.02	-0.14***	-0.14***	-0.14***	-0.13***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Divorced/widowed	0.12**	0.12**	0.12**	0.11**	-0.05	-0.05	-0.05	-0.04
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Education (*ref.* secondary)								
No qualifications				0.24***				-0.14*
				(0.07)				(0.07)
Tertiary education				-0.10**				0.18***
				(0.03)				(0.03)
Parental social class (*ref.* working class)								
Intermediate classes				-0.12**				0.06
				(0.04)				(0.04)
Salariat				-0.19***				0.06
				(0.04)				(0.04)
Mobility parameters (*ref.* immobile)								
Mobility in any direction		0.03				-0.03		
		(0.03)				(0.03)		
Downward mobility			0.22**	0.26***			-0.01	-0.03
			(0.07)	(0.07)			(0.07)	(0.06)
Upward mobility			-0.17*	-0.18*			-0.05	-0.04
			(0.07)	(0.07)			(0.07)	(0.05)
Constant	0.16***	0.15***	0.15***	0.28***	2.68***	2.69***	2.69***	2.59***
	(0.02)	(0.03)	(0.03)	(0.04)	(0.02)	(0.03)	(0.03)	(0.04)
Observations	4,123	4,123	4,123	4,123	4,123	4,123	4,123	4,123
AIC	11,144.4	11,145.4	11,138.0	11,084.0	11,085.4	11,086.6	11,088.5	11,057.0
BIC	11,214.0	11,221.3	11,220.2	11,191.6	11,155.0	11,162.5	11,170.7	11,164.5

Notes: Standard errors in parentheses. * p < .05, ** p < .01, p < .001.

Destination parameters (which equal −1× origin parameters) and destination weight (which equals 1− origin weight) not displayed.

2.11 Similar results when removing potential outliers from the sample

Some participants have very high values of allostatic load (see e.g. Figure A1). To ensure that these are not driving our findings, we re-estimate our main model

from Table 2 with participants with high levels of allostatic load ($\geq$ 3 SD's–$\geq$ 6 SD's) removed (Table A18). Results stay substantively similar.

Table A18: Diagonal reference models of allostatic load, potential outliers (those with very high allostatic load) removed

|	Full sample	Dropping participants with			
		$\geq 6\,SD$	$\geq 5\,SD$	$\geq 4\,SD$	$\geq 3\,SD$
Immobiles					
Working class	0.07*	0.06*	0.06*	0.06*	0.07**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Intermediate class	-0.00	-0.01	-0.01	-0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Salariat	-0.06*	-0.06*	-0.06*	-0.06*	-0.07**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)
Origin weight					
p	2.83	2.84	2.84	2.78	2.68
	(1.26)	(1.27)	(1.27)	(1.27)	(1.08)
Covariates					
Female sex (*ref.* male)	-0.35***	-0.34***	-0.34***	-0.33***	-0.32***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age (centered)	0.02***	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.21**	0.22***	0.22***	0.22***	0.17**
	(0.07)	(0.06)	(0.06)	(0.06)	(0.06)
Marital status (*ref.* married/partnered)					
Single/never married	-0.02	-0.02	-0.02	-0.02	-0.03
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Divorced/widowed	0.11**	0.11**	0.11**	0.10*	0.07
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Education (*ref.* secondary)					
No qualifications	0.24***	0.21**	0.21**	0.22**	0.18**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Tertiary education	-0.10**	-0.11**	-0.11**	-0.12***	-0.11***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Parental social class (*ref.* working class)					
Intermediate classes	-0.12**	-0.13***	-0.13***	-0.12***	-0.12***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Salariat	-0.19***	-0.20***	-0.20***	-0.19***	-0.17***
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Mobility parameters (*ref.* immobile)					
Downward mobility	0.25***	0.25***	0.25***	0.24***	0.26***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.06)
Upward mobility	-0.18*	-0.16*	-0.16*	-0.15*	-0.14*
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Constant	0.28***	0.27***	0.27***	0.27***	0.24***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Observations	4,123	4,119	4,119	4,115	4,095
AIC	11,082.1	10,891.8	10,891.8	10,784.9	10,488.5
BIC	11,183.3	10,993.0	10,993.0	10,886.0	10,589.6

Notes: Standard errors in parentheses.

* p <.05, ** p <.01, p <.001. Destination parameters (which equal -1 * origin parameters)

and destination weight (which equals 1 - origin weight) not displayed.

2.12 Role of parental background in attenuating social class gradient in wellbeing outcomes

We further noted that the class gradient is attenuated by the presence of controls for parental class and parental education. To examine which of the two has a stronger effect, Figure A5 shows the coefficients for immobiles from Models 3 of Table 2 in the main text, then adds parental education and parental social class separately to the equation, and finally adds both simultaneously (i.e. Models 4 of Table 2 in the main text). While parental class does reduce the main class effects in comparison to the baseline models, we find that parental education is exerting a larger effect. With parental education controlled, the working class and salariat coefficients are closer to zero.

That being said, when interpreting this succession of models it should be kept in mind that the coefficients shown are conditional on the control variables in the model (Westreich and Greenland, 2013).
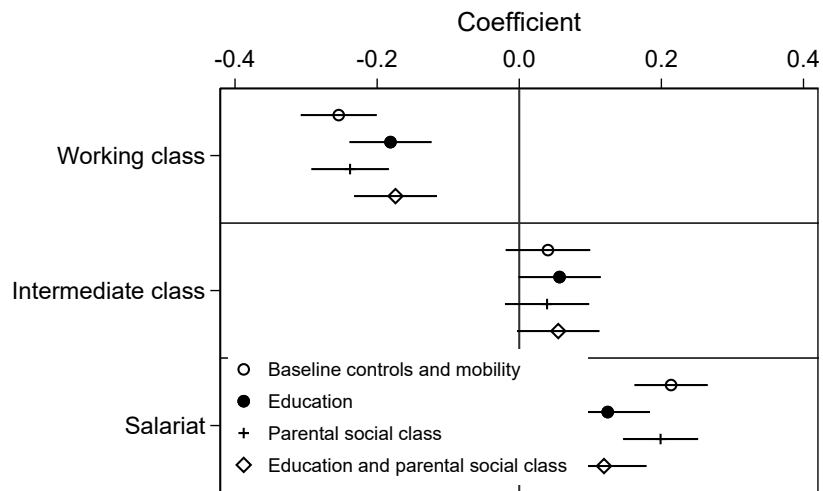
A Allostatic load
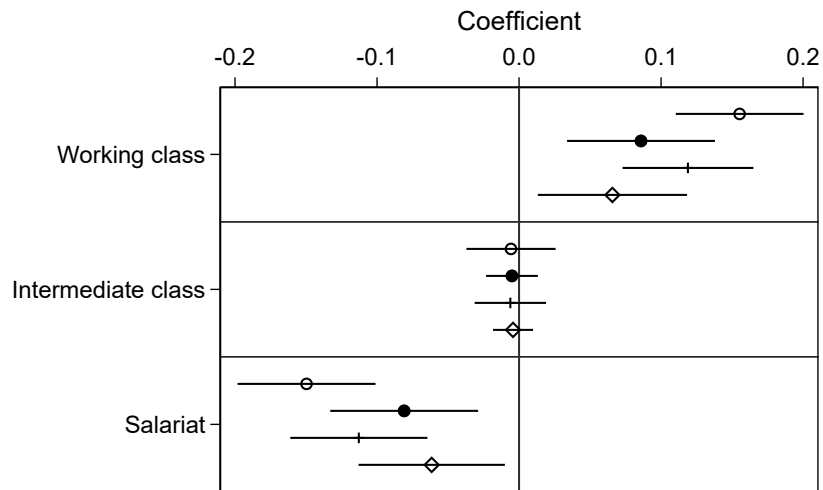
B Self-rated health

Figure A5: Regression coefficients for immobile participants from diagonal reference models controlling for different combinations of parental background

Note: Baseline control variables are the same as in Models 3 of Table 2 in the main text: Sex, age, ethnicity, marital status, and intragenerational mobility.

2.13 Replicating Präg and Richards (2019)

Präg and Richards (2019) had shown that there are no *inter*generational mobility effects on allostatic load using a somewhat larger sample of the same data.

In Table A19, we show that their results hold even in our restricted version of the same data set with the current regression specification. We further extend their analysis by showing that their key finding—no intergenerational mobility effects on allostatic load—also holds for the self-rated health outcome.

Table A19: Diagonal reference models of allostatic load and self-rated health, *inter*generational mobility

	Allostatic load			Self-rated health		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Immobiles						
Working class	0.21***	0.21***	0.21***	-0.22***	-0.22***	-0.22***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Intermediate class	-0.03	-0.04	-0.04	0.03	0.04	0.04
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Salariat	-0.18***	-0.18***	-0.18***	0.18***	0.18***	0.18***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Origin weight						
p	0.59	0.58	0.56	0.31	0.30	0.33
	(0.07)	(0.07)	(0.18)	(0.07)	(0.07)	(0.18)
Covariates						
Female sex (*ref.* male)	-0.36***	-0.36***	-0.36***	0.07*	0.07*	0.08*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age (centered)	0.03***	0.03***	0.03***	-0.01***	-0.01***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Non-white ethnicity (*ref.* white)	0.19**	0.20**	0.20**	-0.18**	-0.19**	-0.19**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Marital status (*ref.* married/partnered)						
Single/never married	-0.02	-0.02	-0.02	-0.14***	-0.14***	-0.14***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Divorced/widowed	0.12**	0.12**	0.12**	-0.05	-0.05	-0.05
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Mobility parameters (*ref.* immobile)						
*Inter*generational mobility in any direction		0.03			-0.05	
		(0.03)			(0.03)	
*Inter*generational downward mobility			0.02			-0.06
			(0.06)			(0.06)
*Inter*generational upward mobility			0.04			-0.03
			(0.06)			(0.06)
Constant	0.18***	0.16***	0.16***	2.66***	2.69***	2.69***
	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)
Observations	4,123	4,123	4,123	4,123	4,123	4,123
AIC	11,116.4	11,117.3	11,119.3	11,108.3	11,108.1	11,110.0
BIC	11,179.6	11,186.9	11,195.2	11,171.6	11,177.7	11,185.9

Notes: Standard errors in parentheses. * p < .05, ** p < .01, p < .001.

Destination parameters (which equal $-1\times$ origin parameters) and destination weight (which equals $1-$ origin weight) not displayed.

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