Moving up and sliding down:

An empirical assessment of the effect of social mobility on subjective wellbeing

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Abstract:

Many people remain in the same income group as their parents and this is a cause of much discussion and some concern. In this work, we examine how intergenerational mobility affects subjective wellbeing (SWB) using the British Cohort Study. Our SWB measures encapsulate life satisfaction and mental health. We find that *relative* income mobility is a significant predictor of life satisfaction and mental health whether people move upward or downward. For *absolute* income, mobility is only a predictor of SWB and mental health outcomes if the person moves downward. We also explore pathways through which income mobility can impact on these outcomes. In particular, we present evidence that suggests much of the effect of income mobility on SWB is due to changes in the perception of financial security. But those who slide down are still less satisfied with their lives over and above any effect of financial insecurity. Overall, there is an asymmetric effect of income mobility: the losses of sliding on down are larger than the gains of moving up.

Inter-generational income mobility affects life satisfaction and mental health- doing worse than your parents hurts more than doing better

1. Introduction

Social mobility is severely limited in the UK and elsewhere (Ermisch, Francesconi, and Siedler 2006; Jo Blanden, Gregg, and Macmillan 2007) and this raises concerns about inequalities of opportunity. Most recently, the Milburn (2012) report suggests that opening the doors to a university education is the only way to advance social mobility. Many papers have considered the effects of mobility on objective outcomes, such as employment, but fewer have considered the effects on reports of subjective wellbeing (SWB) and health. SWB is gaining prominence in academic and policy circles (Dolan and Metcalfe 2012) and so the time is right to consider intergenerational mobility and SWB. In this paper, we consider how social mobility affects SWB, with SWB being measured as either changes in life satisfaction or mental health. We consider three different measures of income mobility.

There is a large literature that looks at how relative income affects SWB (Dolan, Peasgood, and White 2008; Bechtel, Lordan, and Rao 2012). The main message is that SWB is adversely affected if you are surrounded by people who are richer than you. Relative income has been measured in a host of ways but usually the comparison group is people of a similar age and gender at a given point in time (Knight and Song 2006; Luttmer 2005; Card et al. 2010; Li et al. 2011; Senik 2004). That is, people 'like me'. This may reflect a theoretical suggestion that relative position enters the utility function directly (see Clark and Oswald (1998), for example) or it may simply reflect data availability.

Alternatively, the comparison group could be the income that the individual experienced in the past. This accommodates the notion that people feel changes in income more intensely than absolute levels of income (Rabin 2004). Where comparisons with past income have been considered, it has been usual to consider the income that the individual themselves has earned in the recent past. To our knowledge, the impact of inter-generational income mobility has yet to be considered with respect to SWB or health.

Two papers have considered different measures of inter-generational mobility. First, Clark and D'Angelo (2009) look at how upward *class* mobility affects SWB by using 15 waves of the BHPS. They find that individuals with greater mobility have higher levels of life satisfaction. Their scope is more limited than our work as they only consider upward mobility, defined as a binary indicator. Second, McBride (2001) utilises the answer to the following question to create an inter-generational measure of mobility: "compared to your parents when they were the age you are now, do you think your own standard of living now is: much better, somewhat better, about the same, somewhat worse, or much worse?" The author finds that respondents who perceive their parents as having a higher standard of living in comparison to their own report lower levels of well-being. This study is limited, however, in its cross sectional nature and by the fact that the respondent is asked to recall their parents' standard of living.

In this work, we explore both upward (positive) and downward (negative) income mobility. We use the British Cohort Study (BCS) to show how income mobility affects life satisfaction and mental health. In what follows, the next section outlines the conceptual framework for our analysis. Section 3 details the data used in this work, our definitions of income mobility and our methodology. Section 4 presents our results. The paper concludes with a discussion in section 5.

Overall, we find that relative income mobility is a significant predictor of life satisfaction and mental health. Only downward absolute income mobility is a predictor of these outcomes. We present analysis to highlight that variation in consumption patterns and perception of financial situation may be viable pathways through which our mobility effect operates. Crucially, our results are robust to a number of specifications, including those that utilise a lagged dependent variable.

2. Conceptual Framework

2.1 Income mobility and SWB

To consider how mobility can affect SWB, we envisage a utility function with a reference point for income determined by the individual's past income. We contend that new cohorts begin with aspirations that are at least as high as their parents' generation. We suggest that static social mobility is expected and upward mobility is viewed as pleasant. Downward mobility, however, is unexpected and unpleasant. We are in no way assuming that mobility is randomly allocated- we are simply assuming that variations in comparisons to the level of income experienced by one's parents are likely to have the aforementioned reactions. Therefore:

$$U_t = \frac{(y_1)^{(1-\eta)(1-\alpha)}}{1-\alpha} * \left(\frac{y_t}{\tilde{y}}\right)^{\eta(1-\alpha)}$$
$$\underbrace{\qquad\qquad\qquad\qquad}$$
$$y_t = \int_{-\infty}^{t} e^{-\rho(c-t)} y_c \, ds \qquad (1)$$

In equation 1, y_t denotes current income levels within a household and $\tilde{y}_t$ is the reference level of income that was experienced during childhood c. The parameter η is the 'weight' for relative concerns in individual utility and is constrained to values between 0 and 1. α represents the level of risk aversion and, as is typical (Ljungqvist and Uhlig 2000; Abel 2005), we assume that $\alpha > 1$. This is akin to the "keeping up with the Jones'" phenomenon. In our case, it implies that individuals want to consume more if their parents consumed more.

The reference position, $\tilde{y}_t$, is a function of ρ which relates to the speed of adaptation. We suggest that ρ will be smaller for those who lose income in comparison to their parents. Conversely, we suggest a relatively higher level of ρ for those who are upwardly mobile. This is consistent with the notion that losses in social mobility will resonate more than gains. Evidence of loss aversion abounds in many contexts (Shea 1995a; Shea 1995b; Bowman, Minehart, and Rabin 1999). The prediction is that the absolute effect on SWB of a loss of one dollar, from an initial reference position, is greater than the effect of a gain of one dollar (Tversky and Kahneman 1991). The idea that SWB adapts over time to new circumstances is not new (Inglehart and Rabier (1986) and has led to new models of adaptation (Bradford and Dolan, 2010). Interestingly, Burchardt (2005) finds that income adaptation is quicker for increases in income than for decreases. This is consistent with the loss aversion hypothesis.

In this work, we explore inter-generational upward and downward mobility. We see four pathways that are not mutually exclusive through which mobility can affect SWB and health. These are: i) stress ii) prosperity concerns iii) identity and iv) consumption changes.

For our first pathway, we envisage individuals fully internalizing their new status and gaining a 'feeling of pride' when they are mobile and a 'feeling of 'dispair' when they are dis-mobile.

Our second pathway is similar but the positive and negative effects on SWB are attributed solely to the gains and losses in prosperity. This hypothesis is consistent with a literature that highlights that poorer perceptions of one's current financial situation are associated with lower SWB and that perceptions of change in financial circumstances affect well-being (Wildman and Jones 2002; Brown, Taylor, and Wheatley Price 2005; Johnson and Krueger 2006). For both pathways, SWB and mental health will be affected mainly through increased or decreased stress levels. Johnston and Lordan 2012 document the mechanisms by which stress can affect SWB and overall health. These stress effects can be subsequently augmented, as individuals who report low SWB are also less likely to commit to the future and be optimistic. As a consequence, they may be less likely to pursue healthy lifestyle activities such as regular exercise and managing a nutritious diet. They may also choose to engage in risky health-behaviours such as excessive drinking and smoking (Macinko et al. 2003). This is also akin to status anxiety (Wilkinson and Pickett 2009; Botton 2005). For individuals who are mobile, there is likely to be an alleviation of stress as they move from a situation with less disposable income (and vice versa for the downwardly mobile). This change therefore has the potential to augment (worsen) their SWB.

Our third pathway is the identity hypothesis which stems from evidence that changing comparison groups, such as when there is mobility, can affect an individual's sense of identity (Akerlof and Kranton 2010). All animals, including human ones, need to feel that they belong to a group, and changing social classes, even in a supposedly good way, can result in an individual neither feeling part of their former group nor part of

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their new group. This process is used to explain why children from poor backgrounds who win scholarships are not as happy as their equally high achieving peers from more affluent backgrounds (Aries and Seider 2005). In our case, an identity loss can potentially affect both the upwardly and downwardly mobile if the person no longer socializes with old friends and family members regularly.

Our fourth pathway, consumption changes, suggests that individuals may not fully realise the utility (disutility) of their new income status. If true, individuals who are upwardly income mobile consume less. This may occur because these individuals do not feel secure in their newfound status and want to ensure they can smooth future consumption. Additionally, they are likely to have less permanent income in the sense that they may have a lower likelihood of having an inheritance. Finally, having grown up in a lower income environment, they may not view themselves as needing the same level of consumption as those who have grown used to it. This actually suggests that individuals who are mobile are slow to adapt. Conversely, downward mobility may impact SWB and health if individuals still spend in accordance with the reference group of their childhood. It follows that they worry about their financial situation (our first pathway) and also consume more.

3. Data and methods

This work utilises the 1970 British Cohort Study (BCS70). The BCS70 began by including more than 17,000 births between April 5-11 in 1970. It is estimated that these births represent more than 95% of births over these days in England, Scotland, Wales and Northern Ireland. Currently data are available for eight major follow-up surveys: 1975, 1980, 1986, 1991, 1996, 2000, 2004 and 2008. Added to the three major childhood surveys (age 5, 10 and 16) are any children who were born outside of the country during the week of April 5-11 and could be identified from school registers at later ages. We are using this data as it is one of the few data sets that have the information required to consider inter-generational mobility.

3.1 Income Mobility Measures

This work focuses on the impact of income mobility as defined by changes in

household income from ages 10 (1980) through age 30 (2000) and age 34. Age 10 is chosen, as it is the earliest year that income information was gathered from the BCS families. The response rate in 1986 is also lower. In 1980, income represents the gross income of the child's mother and father and is reported in bands (please see Appendix A, A.1).

Ages 30 and 34 are chosen as they are deemed ages when a person is likely to be settling into their income level. They are also the years when the most questions were asked regarding health and life satisfaction. Considering two different time points is important for two reasons. First, for some careers (for example, an academic who is tenure tracked) a person may not have settled into a particular income by age 30. Second, a person who finds they are doing better/worse than their parents at age 30 may have SWB and health gains/losses at that time but adapt as they realize their gains/losses are permanent. That is, they find satisfaction in some other life dimension. As in the case of the 1980 questionnaire, our measure of income for 2000 and 2004 represents household income. Here it is defined as the net weekly combined income of the BCS child and their partner (if applicable). As in 1980 it excludes any income of household members and child benefits.

Using multiple years of income in adulthood helps abate concerns that income gathered in a 'one snapshot' fashion is not a good measure of permanent income. It is, however, worth noting that for surveys like these the correlation between current income and permanent income is quite strong (0.74) (Blanden, Gregg, and Macmillan 2011). The first difficulty in defining income mobility surrounds how it should be calculated. An obvious way to proceed would be to take the difference of adult income minus child income but the mobility measure would then be perfectly multi-collinear with the adult income and child income variables that we include in our equation. That is, we would need to assume that either adult income or childhood income have no effect on SWB. This is an unrealistic assumption. Our work defines income mobility in different ways. While it seems obvious that if you do worse than your parents financially, your SWB will suffer owing to dips in standard of living but it could be that relative and/or absolute changes in income matter.

We therefore consider three measures of mobility that circumvent this problem. These

are two measures of relative mobility and one measure of absolute mobility. Our first relative measure of mobility is defined as the intergenerational movement between income quintiles. This allows us to overcome the problem of income being reported as bands at age 10. A person is defined as upwardly mobile if they moved upward at least one quintile from their parents' household income in 1980 to their own income quintile in 2000. Conversely, a person is defined as downwardly mobile if they moved downward at least one income quintile from their own parent's income in 1980. We rely on the Family Expenditure Survey to define our income quintiles given that attrition in 1980 is likely to be non-random in the BCS. We do this given the criticism that cohort studies tend to underestimate income for most of the income distribution in the BCS (Blanden, Gregg, and Macmillan 2011). This is in comparison to the Family Expenditure Surveys (FES) of the same year, which contain more detailed information. For 1980, the relevant income quintiles were drawn from the same year's data sets based on the variable representing gross normal household income. For 2000 and 2004, the relevant income quintiles were defined based on the disposable income deciles reported in the Office of National Statistics reports of the same surveys. Along with circumventing an attrition problem, we view that this also overcomes the limitations of income being reported in gross form in childhood surveys but as net in recent years. Full details of how the quintiles were derived can be found in Appendix A, A.2.

Our second measure of relative income mobility is based on percentile change in income inter-generationally and is defined internally based on incomes reported at ages 10, 30 and 34 within the BCS data. In this respect, it has the limitations on being based on a sample that may be biased by attrition; however, it has the advantage of retaining more information. That is, our first measure may also be biased by dubbing an individual as 'mobile' if they are sitting on the edge of a quintile between two time periods. This measure is derived by first calculating the difference between the BCS child's income in percentiles minus their parent's income in percentiles. Subsequently we create two variables to capture upward mobility and downward mobility. Upward mobility is defined as equal to this difference if it is positive and zero otherwise, and vice versa for downward mobility. Further details of these calculations are provided in Appendix A.3.

Our final measure is concerned with absolute movements in income inter-generationally. It is defined as the difference between adult and childhood income divided by childhood income. Because the income bands reported in 1980 relate to gross income, it is necessary to calculate an approximation of what the take home pay would have been. To do this, we convert the mid-points of the 1980 income bands into 2004 GBP. Next, we calculate what the weekly take home pay would have been given the average tax rules of the 2004/2005 tax year. For the 2000 differences we use the same values and therefore convert weekly income at age 30 into 2004 values. Further details of these calculations are provided in Appendix A.4. For values that are greater than zero, we create a variable defined 'upwardly' mobile, that is zero otherwise. For values that are less than zero, we create a variable defined 'downwardly' mobile that is zero otherwise.

3.2 SWB Outcomes

Our main analysis considers how inter-generational income mobility between 1980 and 2000/2004 affects SWB. The measure of SWB is based on a life satisfaction question that takes a value from 0 to 10 where 10 is the highest level of satisfaction. It is available at ages 30 and 34. Specifically, it is the response to the following question: "Here is a scale from 0-10 where '0' means that you are completely dissatisfied and '10' means that you are completely satisfied. Please enter the number, which corresponds with how satisfied or dissatisfied you are about the way you life has turned out so far".

Our first measure of mental health is the Rutter Malaise Inventory (Rutter, Tizard, and Whitmore 1970), which is a set of questions that combine to measure levels of psychological distress or depression. At age 30, its scores range from 0 to 24, with each question scoring a value of 1. Specifically, the index is derived through the number of yes scores to: having backaches, feeling tired, feeling miserable and depressed, having headaches, worrying, having difficulty in falling asleep or staying asleep, waking unnecessarily early in the morning, worrying about health, getting into a violent rage, getting annoyed by people, having twitches, becoming scared for no reason, being scared to be alone, being easily upset, being frightened of going out alone, being jittery, suffering from indigestion, suffering from upset stomach, having

poor appetite, being worn out by little things, experiencing racing heart, having bad pains in your eyes, being troubled by rheumatism, and having had a nervous breakdown. For age 34, only nine of the questions usually asked in the Rutter Malaise Inventory were included. Specifically, we derive a sub-malaise index by aggregating the number of yes responses to: feeling tired, feeling miserable and depressed, worrying, getting into a violent rage, becoming scared for no reason, being scared to be alone, being easily upset, being jittery, suffering from indigestion, suffering from upset stomach, having poor appetite, being worn out by little things, experiencing racing heart.

We also measure mental health using the 12-item version of the General Health Questionnaire (GHQ) at age 30. The GHQ is a commonly used self-reported measure of mental health and consists of questions regarding the respondent's emotional and behavioural health over the past few weeks. The 12 items in the GHQ are: ability to concentrate, sleep loss due to worry, perception of role, capability in decision making, whether constantly under strain, problems in overcoming difficulties, enjoyment of day-to-day activities, ability to face problems, whether unhappy or depressed, loss of confidence, self-worth, and general happiness. For each of the 12 items, the respondent indicates on a four-point scale the extent to which they have been experiencing a particular symptom. For example, the respondent is asked 'have you recently felt constantly under strain', to which they can respond: not at all (a score of 0), no more than usual (1), rather more than usual (2), much more than usual (3). We use the respondents' total response as our mental health measure.

The GHQ is not available at age 34 but this survey did include four questions usually included in the Kessler scale. The Kessler scale is usually featured as a 6 item or more normally as a 10-item questionnaire (Kessler et al. 2002). We follow the same method here used to aggregate the 10-item index but flag that this is not the usual Kessler index that is seen in the literature. The specific questions asked are during the last 30 days, about how often did you feel i) so depressed that nothing could cheer you up? ii) hopeless? iii) restless or fidgety? iv) that everything was an effort? The possible responses are: all of the time (a score of 1), most of the time (2), some of the time (3), a little of the time (4) and none of the time (5). This results in an index that has a range between 4 and 20, with 4 being the best outcome with respect to mental health.

We estimate the effect of social mobility on SWB in the first instance by ordinary least squares (OLS) using the three definitions of income mobility described above. Estimating this effect is complicated by the need to control for current adult income and childhood income, whereby the latter captures some aspects of childhood variables. Identification therefore comes from non-linearities such that for any given intergenerational income difference, mobility has a different effect that is not felt by those who are not mobile. Hence, specifying upward and downward mobility as we do allows us to control for both of these income types and identify a mobility effect.. That is, we estimate:

$$Outcome_{it} = \beta_1 UP_{t-1980} + \alpha_1 DOWN_{t-1980} + \gamma'x_{1980} + \chi'y_{adult} + \varepsilon_i \qquad (2)$$

Here i indexes the BCS child and t indicates either age 30 or aged 34. UP_{t-1980} denotes upward social mobility and $DOWN_{t-1980}$ denotes downward social mobility. As discussed we consider three definitions of income mobility. x is a vector of childhood variables. These are: household weekly income, birth weight, gender, maternal education (indicators as to whether she has a degree, a vocational qualification, 'A' levels, 'O' levels, a trade qualification or 'other' qualification), mother's age, maternal employment, fraternal education (consistent with the definition of maternal education), father's age, father's employment, household size, household size squared, tenure (lives in a rural area, lives in an urban area, lives in a council estate, lives in a suburb, lives in 'other' area), number of younger siblings, number of older siblings, region of birth, and a dummy indicating whether the child had no father figure. For cases where mother education, father education, mother employment, father employment, mother's age, father's age or household income are missing dummies are created in order to not lose the data.

y denotes a vector of adult variables that can affect SWB and health which are taken at age 30 or age 34 depending on the timing of the outcome of interest. These are weekly household income at age 30, social class (a set of fixed effects that denote one of the six registrar general social classes), marital status (disaggregated into fixed effects representing married, cohabiting, single and separated/divorced/widowed),

whether or not the BCS child has a degree, household size and household size squared.

Based on the above, our work can identify if mobility is a predictor of SWB, holding constant adult and childhood income as well as the usual demographics. We cannot claim a casual effect given that mobility may be correlated with many factors that are also correlated with SWB. Later, we make substantial efforts to explore what these factors may be.

4. Results

The OLS results pertaining to equation 2 are documented in Table 1 for relative income mobility at age 30, where we also document our control variables. Table 2 documents the results for our second measure of relative income mobility (percentile based) at age 30. We choose to focus on OLS as the coefficients are readily interpretable but using ordered probits for the life satisfaction equations does not change our overall conclusions. All our standard errors are robust and *, **, *** denote significance at the 10%, 5% and 1% levels respectively. Overall the main results of our work can be found in Tables 1 through 4, with an overall summary in Table 5.

From Table 1, we can see that very few of our childhood variables affect our SWB outcomes. For all outcomes, childhood income at age 10 is highly important, perhaps representing early childhood investments rather than income *per se*. Tenure type is also associated with varying levels in life satisfaction. Adult variables matter more. Social class is associated with variation in life satisfaction and mental health in the direction we would expect. Household weekly income is also a predictor of higher SWB and better mental health. Relationships are also associated with better SWB and mental health, with those who are married or co-habiting being better off than others.

Considering relative income mobility measured as quintile changes, upward mobility positively predicts life satisfaction and mental health. The magnitude of the coefficients are large and consistent with the loss aversion hypothesis, downward mobility hurts more. Turning to Table 2, for relative income mobility based on

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changes in the income percentile distribution, income mobility yields gains to SWB and mental health whilst downward mobility deteriorates these outcomes. This is consistent with the conclusions from Table 1 emanating from our quintile-based measure of relative mobility. The results for absolute mobility highlight a different story. That is, inter-generational movements in absolute income only affect SWB and mental health if they are downward.

Table 3 is in the same format as Table 1 and shows the outcomes at age 34. We again document our full set of controls, which follow a similar pattern to that described for Table 1. For relative income mobility based on quintile changes, the results that are directly comparable with Table 1 are those pertaining to life satisfaction. For life satisfaction, the associations in Table 3 are lower, implying that inter-generational mobility is less predictive of life satisfaction at age 34 than at age 30. It is therefore possible that we are seeing an adaptation process that is incomplete. The malaise index at age 34 is lower for those who are upwardly mobile. The results for the Kessler scale suggest that those who are upwardly mobile are significantly better off, whereas those who are downwardly mobile do worse.

Turning to Table 4, considering relative income mobility based on percentile income change, the conclusion is similar to that found at age 30: both upward and downward-mobility predict SWB and mental health. The exception here is that the coefficient on upward mobility for the malaise score is no longer significant. Comparing the coefficients for life satisfaction, the results for both upward and downward mobility at ages 30 (Table 2) and 34 (Table 4) are relatively stable. Therefore, we do not have evidence of adaptation to mobility over the four years we observe.

Table 4 shows the results for our absolute mobility measure. As was the case for SWB outcomes at age 30, the only associations are for downward absolute income mobility. For life satisfaction the size of the coefficient is larger at age 34 in comparison to age 30, suggesting that individuals do not adapt to absolute income mobility if it is downward. The deterioration to the malaise index and the Kessler scale is also large for those age 34 implying that being downwardly mobile in absolute terms is a predictor of SWB overall.

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Table 6 presents results that allow us to explore some pathways through which mobility affects SWB. Firstly, we explore whether our identity hypothesis may help explain this phenomenon utilising data from the 2000 (aged 30) surveys on the BCS child's level of contact with their mother. Specifically, the BCS child is asked how often they see their mother with the following options for response: i) more than once a week ii) more than once a month and iii) less than once a month iv) never v) lives with mother. The results under the heading 'maternal contact regressions' detail results from regressions that add these five fixed effects to the model described in equation 2. Two things are worth noting. Firstly, maternal contact does not seem to be an important predictor of SWB outcomes. Secondly, while in most cases the impact of mobility – both relative and absolute – is reduced, this reduction is small and does not over-ride the overall conclusions evident from Tables 1 through 4.

The section of Table 6 labelled 'prosperity regressions' considers prosperity concerns as a pathway through which inter-generational income mobility affects SWB and mental health. To do this, we add to equation 2 a measure of perceived financial prosperity at aged 30, taking values one through five, representing the response to the question: 'how well are you managing financially these days'. The options for the respondent are: 1) living comfortably 2) doing alright 3) just about getting by 4) finding it quite difficult or 5) finding it very difficult. We include this variable in equation 2 as a set of fixed effects. From Table 5, we see that prosperity concerns are a viable pathway through which income mobility is operating. In particular, upward mobility is no longer a significant predictor of SWB and mental health. For all three of our mobility measures, downward mobility is no longer a significant predictor of mental health. Interestingly, for life satisfaction, downward mobility is still a significant predictor of worse outcomes in all three cases. The size of the coefficients is reduced, however, indicating that prosperity concerns were indeed a partial pathway for the effect of downward mobility.

Realised and unrealized consumption changes may be an alternative pathway through which mobility affects SWB. We can explore this by using the fact that, if individuals are consuming less, they are likely to be saving more. Using information on savings habits gathered at age 34, we add two variables to equation 2 when considering outcomes at this age. That is, we add: i) an indicator (yes/no) for if the child saved

monthly; and ii) how much the child saves monthly. The results from these regressions are shown in Table 6 under the heading 'savings regressions'. For relative income mobility based on quintile changes, adding these variables renders the predictive power of upward mobility not significant. For downward mobility based on the same measure, the coefficients associated with all outcomes are reduced, however, for life satisfaction and our Kessler sub index the effects remain significant. The impact of upward and downward mobility based on relative changes in percentiles is still a predictor of SWB in all cases with the exception of the sub malaise indictor. For absolute income mobility, the significant impact of downward mobility remains for all outcomes at the 1% level.

Our work has documented a persistent and strong relationship between income mobility- both relative and absolute- and a variety of health outcomes. The pertinent question now is whether or not this is a causal relationship. That is, it is feasible that some of this relationship is determined by characteristics of the individual that makes them more likely to be mobile (for example, being the proverbial black sheep) and also report a certain level of SWB or health. Additionally, it is likely that there may be personality factors correlated with the reporting a certain level of health or SWB and the likelihood of being mobile. In order to consider this we include some measures that are likely to capture personality. That is, we include an index of emotional and behavioral problems at age 10 and age 16. These indexes are often labeled as non-cognitive skills (Heckman 2008) and are based on the Rutter behavioral problems index. Additionally, for two of the outcomes we consider it is possible to add a lagged dependent variable. These are life satisfaction and health which we observe with a lag of four years (that is, at age 26 for the age 30 outcomes and at age 30 for the age 34 outcomes). We argue that including a lagged dependent variable should over control for negative 'feelings' associated with being mobile as its information was gathered at a time when the BCS child would have had some knowledge of their income attainment in comparison to their parents. Additionally, assuming that the tendency to report a certain level of health or life satisfaction does not change in a four-year period than this approach also handles this concern. The results for life satisfaction and health are documented in Table 7.

From Table 7, considering the results that control for behavior at age 10 (under

heading 'behaviour results'), the overall conclusions of Tables 1 through 4 still hold- that is, relative income mobility-either based on quantile or percentile change- both upward and downward significantly predicts health and SWB, whereas for absolute mobility only downward mobility matters. Adding a lagged dependent variable in the health equation, when considering upward mobility, relative mobility is still a predictor of health status at age 30 when measured using changes in percentiles. It is only at age 34 that downward mobility, measured using absolute income changes, is a predictor of health. The results for life satisfaction are more consistent across definitions of mobility once we include the lagged dependent variable. For upward mobility, consistent with Tables 3 and 4, upward relative mobility, however measured, significantly predicts life satisfaction at 30. This effect is not significant at age 34 when relative mobility is measured based on changes in quantiles, but remains significant when it is measured based on percentiles. Regardless of how we measure downward mobility it is always a negative predictor of life satisfaction at ages 30 and 34.

This work has considered two ways to measure income mobility, however the data at our disposal does have a measure of social class- the Registrar Generals division of individuals into six social classes. Utilising this information we re-create Table 1 and 3 with respect to social class mobility. The results for upward and downward mobility are documented in Table 8. We do however present these results with caution. Unlike our income mobility estimates, which control for both child income and adult income, we cannot control for child and adult social class. This problem arises owing to multi-collinearity. Therefore, the results in Table 8 only contain adult social class (which we document). Overall, this Table suggests that social class mobility of this definition worsens health, regardless of whether it is upward or downward.

4. Discussion

Many people remain in the same social class as their parents and this is a cause of much discussion and some concern. In this work, we examine how intergenerational mobility affects life satisfaction and mental health using the British Cohort Study. We define mobility as income movements inter-generationally both relatively and absolutely. We define relative mobility based on changes in quintiles and percentiles.

The advantage of the former is that the quintiles are derived based on external data that arguably better represents the income distribution in the UK of that time, whereas the latter allows for greater numbers of individuals to be 'winners' and 'losers' We find that relative income mobility is a significant predictor of life satisfaction and mental health. We also find that its effects are consistent with the loss aversion hypothesis – going down matters more. This is reflected in the fact that the coefficients attached to downward mobility are always larger than those for upward mobility. Our measure of absolute income mobility is only a predictor of SWB if the person moves down. Again, this suggests that a negative life event is felt more than a positive life event. These conclusions are consistent whether we look at outcomes at age 30 or 34. Taken together, our results suggest an asymmetric effect of inter-generational income mobility on SWB.

We proposed four pathways through which mobility can affect life satisfaction and mental health: i) stress/alleviation of stress; ii) prosperity concerns; iii) changes in the sense of identity; and iv) realised or unrealised consumption changes. We do not have data to explore whether i) is a viable pathway. For the prosperity pathway, using data on financial concerns, we find it a viable pathway for our mobility affects. In particular, after adding these regressors mobility is no longer a significant predictor of mental health but its association with life satisfaction remains and it is large. Taken at face value, this seems to imply that only financial stress really matters for mental health when it comes to mobility. Interestingly, the effect of upward mobility on life satisfaction is also not significant. This suggests that it is the feeling of financial security that drives life satisfaction gains for the upwardly mobile and that the feeling of 'pride' associated with moving up in the world does not give long term life satisfaction gains.

Overall, we find that the identity hypothesis is not an important pathway. We do acknowledge, however, that maternal contact is a crude measure of identity and ideally we would have information on changes to social networks. Finally, for realised and unrealised consumption, we find that savings is a probable pathway for our mobility affects. This finding echoes the importance of research considering consumption data rather than income when exploring the effects of windfalls on SWB.

Clearly, individuals are not randomly assigned to a mobility status and these values describe an association rather than a cause and effect. We have tested the sensitivity of our results to controlling for non-cognitive skills at age 10 and a lagged dependent variable in our life satisfaction models. The conclusions documented here are stable to the addition of these variables. That is, relative income mobility (both upward and downward measured using either quintile or percentile changes) significantly predicts life satisfaction, whereas for absolute mobility only downward mobility matters. Given that the life satisfaction lagged measure we incorporate was likely to have been taken amidst a downward income spiral, we view these estimates as a lower bound of the effect of downward mobility on life satisfaction. Clearly, unambiguous proof of a casual effect of social mobility requires data does not exist.

We also consider how social mobility measured using the Registrar Generals framework affects our health outcomes. We do not find any significant associations between class mobility and SWB. This is in contrast with the results found by Clark and D'Angelo (2009); however, we do note that they identify effects of upward class mobility from a comparison with all others. In this case, 'others' includes those who are downwardly mobile. Additionally, the authors use the Hope and Goldthorpe framework for social class. This is a far more detailed measure of mobility and is currently beyond the data that is available to us.

A natural question arising from our work is *how* income mobility should be measured to best capture how a person decides if they are doing better or worse than their parents. The answer is that we do not know. We do however, believe that children do compare themselves to their parents. Additionally, the results we present should convince our audience that children make these comparisons based on income and some notion of changes in standard of living.

We are more circumspect in saying anything about the policy recommendations of this research because it raises many normative issues about how to appropriately weigh the many factors that go into the conceptualisation and derivation of the social welfare function. Firstly, it should be noted that income at ages 30 and 34 is also a significant predictor of SWB. Therefore, to the extent that you would like the world to

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remain equitable with respect to *who* gets this income effect, there is an argument to promote mobility. Secondly, as it has been noted many times, mobility in the UK is limited. This in itself affects the likelihood of finding significant mobility effects. Lastly, much of the deterioration of SWB can be explained by prosperity concerns and a lack of saving for the downwardly mobile that are larger than others experiencing the same level of income. This suggests that there might be a role for policy in helping people to stop living beyond their means that can mitigate some of the effects found here.

References:

Abel, A. B. 2005. "Optimal Taxation When Consumers Have Endogenous Benchmark Levels of Consumption." *The Review of Economic Studies* 72 (1): 21–42.

Akerlof, George A., and Rachel E. Kranton. 2010. *Identity Economics: How Our Identities Shape Our Work, Wages, and Well-Being*. Princeton University Press.

Aries, E., and M. Seider. 2005. "The Interactive Relationship Between Class Identity and the College Experience: The Case of Lower Income Students." *Qualitative Sociology* 28 (4): 419–443.

Bechtel, L., G. Lordan, and D. S. Rao. 2012. "Income Inequality And Mental Health—Empirical Evidence From Australia." *Health Economics* 21: 4–17.

Blanden, J., P. Gregg, and L. Macmillan. 2011. "Intergenerational Persistence in Income and Social Class: The Impact of Within-group Inequality." http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1976533.

Blanden, Jo, Paul Gregg, and Lindsey Macmillan. 2007. *Accounting for Intergenerational Income Persistence: Noncognitive Skills, Ability and Education*. Forschungsinstitut zur Zukunft der Arbeit.

Botton, Alain de. 2005. *Status Anxiety*. Penguin UK.

Bowles, Samuel, Herbert Gintis, and Melissa Osborne Groves. 2005. *Unequal Chances: Family Background and Economic Success*. Princeton University Press.

Bowman, D., D. Minehart, and M. Rabin. 1999. "Loss Aversion in a Consumption–savings Model." *Journal of Economic Behavior & Organization* 38 (2): 155–178.

Bradford, W. D., and P. Dolan. 2010. "Getting Used to It: The Adaptive Global Utility Model." *Journal of Health Economics* 29 (6): 811–820.

Brown, S., K. Taylor, and S. Wheatley Price. 2005. "Debt and Distress: Evaluating the Psychological Cost of Credit." *Journal of Economic Psychology* 26 (5): 642–663.

Burchardt, T. 2005. "Are One Man's Rags Another Man's Riches? Identifying Adaptive Expectations Using Panel Data." *Social Indicators Research* 74 (1): 57–102.

Card, David, Alexandre Mas, Enrico Moretti, and Emmanuel Saez. 2010. *Inequality at Work: The Effect of Peer Salaries on Job Satisfaction*. Working Paper. National Bureau of Economic Research. http://www.nber.org/papers/w16396.

Carroll, C. D., J. Overland, and D. N. Weil. 1997. "Comparison Utility in a Growth Model." *Journal of Economic Growth* 2 (4): 339–367.

———. 2000. "Saving and Growth with Habit Formation." *American Economic Review*: 341–355.

Clark, A., and E. D'Angelo. 2009. *Upward Social Mobility, Wellbeing and Political Preferences: Evidence from the BHPS*. working paper, Paris School of Economics, 17 October. http://jma2012.fr/fichiers2009/C5/clark_dangelo.pdf.

Clark, A. E., P. Frijters, and M. A. Shields. 2008. "Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and Other Puzzles." *Journal of Economic Literature* 46 (1): 95–144.

Clark, A. E., and A. J. Oswald. 1994. "Unhappiness and Unemployment." *The Economic Journal*: 648–659.

———. 1998. "Comparison-concave Utility and Following Behaviour in Social and Economic Settings." *Journal of Public Economics* 70 (1): 133–155.

Davey-Smith, G. 1996. "Income Inequality and Mortality: Why Are They Related?" *BMJ: British Medical Journal* 312 (7037): 987.

Deaton, Angus. 1992. *Understanding Consumption*. Oxford University Press, USA.

———. 2003. "Health, Inequality, and Economic Development." *Journal of Economic Literature* 41 (1) (March): 113–158.

Dolan, P., T. Peasgood, and M. White. 2008. "Do We Really Know What Makes Us Happy? A Review of the Economic Literature on the Factors Associated with Subjective Well-being." *Journal of Economic Psychology* 29 (1): 94–122.

Dolan, Paul, and Robert Metcalfe. 2012. "The Relationship Between Innovation and Subjective Wellbeing." *Research Policy* 41 (8) (October): 1489–1498. doi:10.1016/j.respol.2012.04.001.

Easterlin, R. A. 2004. "The Economics of Happiness." *Daedalus* 133 (2): 26–33.

Ermisch, J., M. Francesconi, and T. Siedler. 2006. "Intergenerational Mobility and Marital Sorting*." *The Economic Journal* 116 (513): 659–679.

Graham, C., and S. Pettinato. 2002. "Frustrated Achievers: Winners, Losers and Subjective Well-being in New Market Economies." *Journal of Development Studies* 38 (4): 100–140.

Hayo, Bernd, and Wolfgang Seifert. 2003. "Subjective Economic Well-being in Eastern Europe." *Journal of Economic Psychology* 24 (3) (June): 329–348. doi:10.1016/S0167-4870(02)00173-3.

Heckman, James J. 2008. "Schools, Skills, and Synapses." *Economic Inquiry* 46 (3) (June): 289.

Huberman, B. A., C. H. Loch, and A. Ön\ccüler. 2004. "Status as a Valued Resource." *Social Psychology Quarterly* 67 (1): 103–114.

Inglehart, R., and J. R. Rabier. 1986. "Aspirations Adapt to Situations—but Why Are the Belgians so Much Happier Than the French? A Cross-cultural

Analysis of the Subjective Quality of Life." *Research on the Quality of Life. Ann Arbor: Institute for Social Research University of Michigan.*

Johnson, W., and R. F. Krueger. 2006. "How Money Buys Happiness: Genetic and Environmental Processes Linking Finances and Life Satisfaction." *Journal of Personality and Social Psychology* 90 (4): 680.

Johnston, David W., and Grace Lordan. 2012. "Discrimination Makes Me Sick! An Examination of the Discrimination–health Relationship." *Journal of Health Economics* 31 (1) (January): 99–111. doi:10.1016/j.jhealeco.2011.12.002.

Kessler, R. C., G. Andrews, L. J. Colpe, E. Hiripi, D. K. Mroczek, S.-L. T. Normand, E. E. Walters, and A. M. Zaslavsky. 2002. "Short Screening Scales to Monitor Population Prevalences and Trends in Non-specific Psychological Distress." *Psychological Medicine* 32 (06): 959–976. doi:10.1017/S0033291702006074.

Knight, J., and L. Song. 2006. "Subjective Well-being and Its Determinants in Rural China." *University of Nottingham.* http://www.csae.ox.ac.uk/conferences/2006-eoi-rpi/papers/gprg/knight-song.pdf.

Li, H., P. W. Liu, M. Ye, and J. Zhang. 2011. *Does Money Buy Happiness? Evidence from Twins in Urban China.* Working Paper, Tsinghua University (April). http://www.people.fas.harvard.edu/~mye/papers/Ye_Aug2011_DoesMoneyBuyHappiness.pdf.

Ljungqvist, L., and H. Uhlig. 2000. "Tax Policy and Aggregate Demand Management Under Catching up with the Joneses." *American Economic Review*: 356–366.

Louis, Vincent V., and Shanyang Zhao. 2002. "Effects of Family Structure, Family SES, and Adulthood Experiences on Life Satisfaction." *Journal of Family Issues* 23 (8) (November 1): 986–1005. doi:10.1177/019251302237300.

Lucas, Richard E., Andrew E. Clark, Yannis Georgellis, and Ed Diener. 2004. "Unemployment Alters the Set Point for Life Satisfaction." *Psychological Science* 15 (1) (January 1): 8–13. doi:10.1111/j.0963-7214.2004.01501002.x.

Luttmer, E. F. P. 2005. "Neighbors as Negatives: Relative Earnings and Well-being." *Quarterly Journal of Economics* 120 (3): 963–1002.

Macinko, J. A., L. Shi, B. Starfield, and J. T. Wulu. 2003. "Income Inequality and Health: a Critical Review of the Literature." *Medical Care Research and Review* 60 (4): 407–452.

McBride, M. 2001. "Relative-income Effects on Subjective Well-being in the Cross-section." *Journal of Economic Behavior & Organization* 45 (3): 251–278.

McEwen, Bruce S. 1998. "Stress, Adaptation, and Disease: Allostasis and Allostatic Load." *Annals of the New York Academy of Sciences* 840 (1): 33–44. doi:10.1111/j.1749-6632.1998.tb09546.x.

Oswald, Andrew J., and Nattavudh Powdthavee. 2008. "Does Happiness Adapt? A Longitudinal Study of Disability with Implications for Economists and Judges." *Journal of Public Economics* 92 (5–6) (June): 1061–1077. doi:10.1016/j.jpubeco.2008.01.002.

Rabin, M. 2004. "Behavioural Economics." In *New Frontiers in Economics*, ed. Michael Szenberg and Lall Ramrattan. Cambridge University Press.

Ritterman, M. L. 2007. "Perceived Social Status and Adolescent Health and Risk Behaviors: A Systematic Review." http://escholarship.org/uc/item/01s0w5m9.pdf.

Robson, A. J. 1992. "Status, the Distribution of Wealth, Private and Social Attitudes to Risk." *Econometrica: Journal of the Econometric Society*: 837–857.

Rutter, Michael, Jack Tizard, and Kingsley Whitmore. 1970. *Education, Health and Behaviour*. Longman.

Selye, H. 1936. "A Syndrome Produced by Diverse Nocuous Agents." *Nature; Nature*. http://psycnet.apa.org/psycinfo/1937-02716-001.

Senik, C. 2004. "Relativizing Relative Income." http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.195.816&rep=rep1&type=pdf.

Shea, J. 1995a. "Union Contracts and the Life-cycle/permanent-income Hypothesis." *The American Economic Review*: 186–200.

———. 1995b. "Myopia, Liquidity Constraints, and Aggregate Consumption: a Simple Test." *Journal of Money, Credit and Banking*: 798–805.

Smith, D. M., K. M. Langa, M. U. Kabeto, and P. A. Ubel. 2005. "Health, Wealth, and Happiness Financial Resources Buffer Subjective Well-being After the Onset of a Disability." *Psychological Science* 16 (9): 663–666.

Subramanyam, M., I. Kawachi, L. Berkman, and S. V. Subramanian. 2009. "Relative Deprivation in Income and Self-rated Health in the United States." *Social Science & Medicine* 69 (3): 327–334.

Di Tella, Rafael, John Haisken-De New, and Robert MacCulloch. 2010. "Happiness Adaptation to Income and to Status in an Individual Panel." *Journal of Economic Behavior & Organization* 76 (3) (December): 834–852. doi:10.1016/j.jebo.2010.09.016.

Tversky, A., and D. Kahneman. 1991. "Loss Aversion in Riskless Choice: A Reference-dependent Model." *The Quarterly Journal of Economics* 106 (4): 1039–1061.

Whembolua, G. L., J. T. Davis, L. R. Reitzel, H. Guo, J. L. Thomas, K. R. Goldade, K. S. Okuyemi, and J. S. Ahluwalia. 2012. "Subjective Social Status Predicts Smoking Abstinence Among Light Smokers." *American Journal of Health Behavior* 36 (5): 639–646.

Wildman, J., and A. Jones. 2002. "Is It Absolute Income or Relative Deprivation That Leads to Poor Psychological Well Being." *A Test Based on Individual-level Longitudinal Data. University of York: YSHE*.

Wilkinson, Richard G., and Kate Pickett. 2009. *The Spirit Level: Why More Equal Societies Almost Always Do Better*. Allen Lane.

Winkelmann, Liliana, and Rainer Winkelmann. 1998. "Why Are the Unemployed So Unhappy?Evidence from Panel Data." *Economica* 65 (257): 1–15. doi:10.1111/1468-0335.00111.

Table 1: Impact of Relative Income Mobility-Quintile Based- on Outcomes at age 30

Variables	Life Satisfaction	Malaise	GHQ
Upward Mobility	0.161***	-0.217**	-0.311**
Downward Mobility	-0.319***	0.256**	0.300*
Control Variables (aged 30)			
Household Weekly Income (000)	0.030***	-0.073***	-0.076**
Social class 1	Reference	Reference	Reference
Social class 2	-0.161*	0.365**	0.084
Social class 3.1	-0.407***	0.272	0.303
Social class 3.2	-0.302***	0.313*	-0.155
Social class 4	-0.457***	0.472**	0.231
Social class 5	-0.326*	0.457	-0.049
Married	0.650***	-0.402***	-0.740***
Cohabiting	0.318***	-0.056	-0.453***
Single	Reference	Reference	Reference
Separated/divorced/widow	-0.830	-0.187	-0.105
Household Size	0.050	-0.177	-0.099
Household Size Squared	-0.016	0.039	0.021
Child Variables (age 10)			
Household weekly income	0.028***	-0.003***	-0.004***
Male	-0.148***	-0.642***	-0.934***
Birthweight*	-0.000	-0.000	0.000
Household Size	0.050	-0.165	-0.099
Household size squared	-0.016	0.016	0.021
No father figure	0.106	0.020	-0.228
Number of older siblings	0.058	-0.142	-0.191
Number of younger siblings	-0.032	-0.014	-0.053
Mothers age	0.004	-0.006	-0.019
Mother has a degree	0.067	0.119	0.522
Mother has a vocational qualification	-0.190*	-0.248	0.068
Mother has a levels	0.037	0.027	0.052
Mother has O levels	0.076	-0.161	-0.082
Mother has a trade qualification	-0.048	-0.119	0.018
Mother has other qualification	-0.249**	0.153	0.085
Mother is employed	-0.074	0.097	0.165
Fathers age	-0.008	-0.004	0.023
Father has a degree	-0.128	0.044	0.214
Father has a vocational qualification	0.104	0.018	-0.077
Father has a levels	0.017	-0.078	-0.010
Father has O levels	-0.033	0.129	0.225

Father has a trade qualification	0.033	-0.146	-0.073
Father has other qualification	0.038	0.117	0.404*
Father is employed	-0.114	0.126	0.071
Resides in a rural area	-0.011	0.010	0.026
Resides in an urban area	-0.241**	0.007	0.014
Resides in a council estate	-0.172***	0.194*	0.106
Resides in 'other' area	0.042	-0.043	-0.082
Sample size	5381	5383	5380

Note: These regressions also include controls for 11 possible regions of residence at age 10. When data at age 10 are missing for mothers or fathers education, age, income or employment a dummy is added to the regressions. The estimated effect is the OLS regression coefficient. *, ** and *** denote significance at .10, .05 and .01 levels. *Birth weight was collected at birth.

Table 2: Impact of Mobility on Outcomes at age 30

Variables	Life Satisfaction	Malaise	GHQ
	Percentile Income Change		
Upward	0.006***	-0.005**	-0.007*
Downward	-0.010***	0.008***	0.014***
N	5381	5383	5380
	Absolute Percentage Income Change		
Upward	0.005	-0.019*	-0.026
Downward	-0.832***	0.680***	1.083***
N	5381	5383	5380

Note: These regressions also include the controls detailed in Table 1. The estimated effect is the OLS regression coefficient. *, ** and *** denote significance at .10, .05 and .01 levels. *Birth weight was collected at birth.

Table 3: Impact of Relative Income Mobility (Quintile Based) on Outcomes at age 34

Variables	Life Satisfaction	Malaise	Kessler
Upward Mobility	0.127**	-0.116*	0.167*
Downward Mobility	-0.167***	0.095	-0.195**
Control Variables (aged 30)			
Household Weekly Income (000)	0.018	-0.014	0.011
Social class 1	Reference	Reference	Reference
Social class 2	-0.063	0.059	-0.002
Social class 3.1	-0.304****	0.161	-0.207
Social class 3.2	-0.084	0.007	-0.006
Social class 4	-0.288***	0.115	-0.325*
Social class 5	-0.249	0.116	-0.139
Married	1.101***	-0.360***	0.766***
Cohabiting	0.631***	-0.111	0.413***
Single	Reference	Reference	Reference
Separated/divorced/widow	-0.075	0.078	-0.015
Household Size	-0.009	0.106***	-0.127***
Household Size Squared	-0.000	-0.006	0.013**
Child Variables (age 10)			
Household weekly income	0.002***	-0.002***	0.002***
Male	-0.225***	-0.424***	0.277***
Birthweight*	0.000	0.000	-0.000
Household Size	-0.089	0.076	-0.154
Household size squared	0.006	-0.008	0.011
No father figure	-0.198	0.032	0.127
Number of older siblings	0.052	-0.064	0.007
Number of younger siblings	0.076	-0.106*	0.132*
Mothers age	0.012**	-0.006	0.006
Mother has a degree	-0.069	0.245*	-0.306
Mother has a vocational qualification	-0.285***	0.041	-0.185
Mother has a levels	0.020	0.017	0.048
Mother has O levels	0.068	-0.055	0.045
Mother has a trade qualification	-0.086	0.075	-0.097
Mother has other qualification	0.029	-0.138	-0.032
Mother is Employed	0.082	-0.009	0.091
Fathers Age	-0.012**	0.003	-0.004
Father has a degree	-0.002	-0.110	0.052
Father has a vocational qualification	0.228*	-0.218	0.136
Father has a levels	-0.007	0.111	-0.188*
Father has O levels	0.082	-0.026	0.055
Father has a trade qualification	-0.018	-0.011*	0.237***
Father has other qualification	-0.245**	0.113	-0.211
Father is employed	0.088	-0.096	0.013
Resides in a rural area	0.126**	-0.048	-0.052
Resides in an urban area	-0.046	0.103	-0.068
Resides in a council estate	0.035	0.022	-0.084
Resides in 'other' area	-0.187	0.251	
Sample size	4845	4844	4845

Note: These regressions also include the controls detailed in Table 1. The estimated effect is the OLS regression coefficient. *, ** and *** denote significance at .10, .05 and .01 levels. *Birth weight was collected at birth.

Table 4: Impact of Income Mobility on Outcomes at age 34

Variables	Life Satisfaction (0….10)	Malaise (1..9)	Kessler
Absolute Mobility Measure Percentage Income Change			
Upward	0.002	0.020	-0.036
Downward	-0.452***	0.411***	-0.612***
N	4845	4844	4845
Relative Mobility Measure Percentile Income Change			
Upward	0.006**	-0.002	0.005**
Downward	-0.009***	0.005**	-0.007***
N	4834	4833	4834

Note: These regressions also include the controls detailed in Table 1. The estimated effect is the OLS regression coefficient. *, ** and *** denote significance at .10, .05 and .01 levels. *Birth weight was collected at birth.

Table 5: Summary of Impact of Income Mobility on Outcomes at Ages 30 and 34

Variables	Life Satisfaction		Malaise		Kessler	GHQ
	Age 30	Age 34	Age 30	Age 34	Age 34	Age 30
Mobility						
Relative - quintile up	Y (+)	Y (+)	Y (-)	Y(-)	Y(+)	Y (-)
Relative - quintile down	Y (-)	Y (-)	Y (+)	N(+)	Y(-)	Y(+)
Relative - percentile up	Y (+)	Y (+)	Y (-)	N(+)	Y (+)	Y(-)
Relative - percentile down	Y (-)	Y (-)	Y (+)	Y (+)	Y (-)	Y(+)
Absolute - up	N(+)	N(+)	Y(-)	N(-)	N(+)	Y(-)
Absolute - down	Y (-)	Y (-)	Y (+)	Y (+)	Y (-)	Y(+)

Note: Y/N = Yes/No the coefficient is/is not significant at the 10% level or less, (+) positive coefficient, (-) negative coefficient

Table 6: Exploring Pathways for the mobility effects

Variables	Life Satisfaction	Malaise	GHQ
Maternal Contact Regressions			
Quintile Mobility			
Upward Mobility	0.166***	-0.206*	-0.275*
Downward Mobility	-0.292***	0.295***	0.302*
Maternal Contact			
once a week	0.053	-0.131	0.092
more than once a month	0.038	-0.031	0.197
less often than monthly	0.026	-0.040	0.252
never	-0.425	1.085*	0.953
lives with mother	Reference	Reference	Reference
Percentile Mobility			
Upward Mobility	0.006***	-0.006**	-0.006
Downward Mobility	-0.009***	0.009***	0.014***
Absolute Mobility			
Upward Mobility	0.005	-0.015	-0.017
Downward Mobility	-0.798***	0.769***	1.069***
Prosperity Regressions			
Quintile Mobility			
Upward Mobility	0.046	-0.097	-0.038
Downward Mobility	-0.193***	0.118	0.033
Prosperity			
Living comfortably	1.717***	-3.449***	-6.273***
Doing alright	1.395***	-3.281***	-6.015***
Just about getting by	0.876***	-2.457***	-4.725***
Finding it quite difficult	0.343***	-1.362***	-2.157**
Finding it very difficult	Reference	Reference	Reference
Percentile Mobility			
Upward Mobility	0.002	-0.001	0.002
Downward Mobility	-0.006***	0.003	0.006
Absolute Mobility			
Upward Mobility	-0.000	-0.012	-0.014
Downward Mobility	-0.503***	0.282	0.315
Savings Regressions			
Quintile Mobility			
Upward Mobility	0.081	-0.102	0.135
Downward Mobility	-0.113*	0.065	-0.159*
Savings			
Saves Monthly (yes/no)	0.367***	-0.258***	0.385***
Total Monthly Savings	0.182***	-0.000	0.094
Percentile Mobility			
Upward Mobility	0.004***	-0.002	0.004*
Downward Mobility	-0.007***	0.004*	-0.006**
Absolute Mobility			
Upward Mobility	-0.005	0.023	-0.042*
Downward Mobility	-0.332***	0.347***	-0.519***

Table 7: Controlling for childhood non cognitive skills and lagged models

Variables	Life Satisfaction Aged 30	Life Satisfaction Aged 34
Adding Non Cognitive Skills at age 10		
Quintile Mobility		
Upward Mobility	0.206***	0.128**
Downward Mobility	-0.395***	-0.156***
Behaviour		
Maternal reported	-0.006***	-0.006***
Percentile Mobility		
Upward Mobility	0.006***	0.004***
Downward Mobility	-0.009***	-0.007***
Absolute Mobility		
Upward Mobility	0.001	0.006
Downward Mobility	-0.825***	-0.314***
Adding Lagged Life Satisfaction		
Relative Mobility		
Upward Mobility	0.335	0.009
Downward Mobility	-0.693***	-0.362***
Lagged Dependant Variable		
4 years prior	0.335***	0.362***
Percentile Mobility		
Upward Mobility	0.006***	0.004***
Downward Mobility	-0.006***	-0.006***
Absolute Mobility		
Upward Mobility	0.010	0.002
Downward Mobility	-0.659***	-0.267**

Table 8: Social Class Mobility

Variables	Life Satisfaction Aged 30	Malaise Aged 30	Health Aged 30	GHQ Aged 30
Mobility				
Upward Mobility	-0.085	0.069	0.058**	0.279
Downward Mobility	-0.098	0.123	0.048*	-0.068
Social class				
Class 1	REFERENCE	REFERENCE	REFERENCE	REFERENCE
Class2	-0.166*	0.362**	0.065	0.029
Class 3.1	-0.384***	0.285	0.077*	0.243
Class 3.2	-0.397***	0.415**	0.140***	-0.300
Class 4	-0.495***	0.521**	0.180***	-0.097
Class 5	-0.453***	0.528	0.042	-0.229
	Life Satisfaction Aged 34	Sub malaise aged 34	Health Aged 34	Sub Kessler Aged 34
Upward Mobility	-0.018	0.035	0.007	-0.066
Downward Mobility	-0.073	0.049	0.002	-0.098
Social class				
Class 1	Reference	Reference	Reference	Reference
Class2	-0.067	0.056	0.035	-0.049
Class 3.1	-0.332***	0.147	0.068	-0.200
Class 3.2	-0.184	0.035	0.052	-0.131
Class 4	-0.326**	0.132	0.157**	-0.411*
Class 5	-0.341*	0.012	0.039	-0.162

Note: These regressions also include the controls detailed in Table 1. The estimated effect is the OLS regression coefficient. *, ** and *** denote significance at .10, .05 and .01 levels. *Birth weight was collected at birth.

Appendix A:

A.1 Income Measures

A.1.1. Gross Income Bands 1980:

The BCS child's parents in 1980 were asked the following question: "Please show the following income ranges and ask for the range in which the family's total gross weekly income falls (before deductions). An estimate will be acceptable."
Include all earned and unearned income of both mother and father before deductions for tax, national insurance etc.
Exclude any income of other household members and child benefit

Total gross weekly income of parents:

Under £35 per week
£35-£49 per week
£50-£99 per week
£100-£149 per week
£150-£199 per week
£200-£249 per week
£250 or more per week

A.1.2. Income at ages 30 and 34
At ages 30 and 34 the BCS child was asked to state in £s both their own and their partners usual take home pay. That is, they were asked for the monetary amount that they take home after 'all deductions for tax, National Insurance, union dues, pension and so on, but including overtime, bonuses, commission and tips'.

We combine these to get a measure of household income. Specifically, if both are employed we take the simple sum of these incomes. For those households in which only one person works, household income is assigned equal to the value of his/her wages alone.

A.2 Income Mobility Based on Inter Generational Mobility in Income Quintiles

Our work defines income mobility as the intergenerational movement between income quintiles. For this measure a person is defined as mobile if they move upward one quintile inter-generationally. Conversely, a person is defined as downward mobile if they move down one quintile inter-generationally. Therefore, if the BCS child's parent was in income quintile 5 but they are in income quintile 1 they are defined as upwardly mobile. So, we need to relate the incomes reported in the BCS in 1980, 2000 and 2004 to a relevant income quintile.

We therefore rely on the Family Expenditure Survey to define our income quintiles for 1980. In this case the relevant income quintiles were drawn from the same year data sets based on the variable representing gross normal household income. Clearly, the reported bands do not allow us to exactly match these quintiles. However, regardless of whether we define the quintile above or below the reported matched bands, the results are robust. In this work the reported results pertain to the following quintiles: >£55, >£110, >£160 and >£225 and we cut off the bands below each quintile. That is, these quintiles collapse into >£50, >£100, >£150 and >£200. .

For 2000 we also rely on the Family Expenditure Survey and the quintiles used are: > £148, >£281 >£464 and £719. Because the income data in 2000 is reported as a continuous variable we can use these quintiles 'as is'. For the 2004 the Expenditure and Food Survey replaced the Food Expenditure Survey, albeit for our purposes similar data was collected. For this year the relevant quintiles are defined as: > £205, >£375, >£579 and >£885.

A.3 Relative Mobility Based on Percentile Differences in Income
While our relative mobility measure based on quintiles has the advantage of not being affected by attrition in the BCS, it also has a disadvantage of throwing away information. We therefore consider a third measure that is defined by the BCS data but retains more information. That is, we calculate the difference between the percentile income of the BCS child in adulthood (age 30 and 34) and that of their parents (age 10). Upward mobility is then defined as all positive values of this result,

with negative values recoded to zero. Conversely, downward mobility is then defined as all negative values of this result, with negative values recoded to zero.

A.4 Absolute Mobility Based on Monetary Differences in Income

In order to create the absolute mobility measure we first transform weekly income from 1980 and 2000 into 2004 prices. Next, we use 2004 tax rules to form an estimate of what net take home pay would have been in 1980, based on the weekly gross earning bands that were collected. Specifically, this translates to

Under £35 per week in 1980 = £56.53 in 2004

£35-£49 per week in 1980 = £127.34 in 2004

£50-£99 per week in 1980 = £199.20 in 2004

£100-£149 per week = £403.81 in 2004

£150-£199 per week =£414.62 in 2004

£200-£249 per week =£530.78 in 2004

£250 or more per week = £626.07 in 2004

We define mobility as weekly net income from adulthood (age 30 or 34 in 2004 prices) minus weekly net income from childhood (age 10 in 2004 prices). As in the percentile measure, upward mobility is defined as the positive values of this result, with negative values recoded to zero. Similarly, downward mobility is defined as negative values of this result, with negative values recoded to zero.