

# Childhood Circumstances and Young Adulthood Outcomes: The Effects of Financial Problems\*

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This version: April 2016

## Abstract

We here consider the cognitive and non-cognitive consequences on young adults of growing up with a mother who reported experiencing major financial problems. We use data from the Avon Longitudinal Study of Parents and Children to show that these financial problems are associated with worse cognitive and non-cognitive outcomes in adolescence, even after controlling for both income and a set of standard variables, and with an effect that is mostly larger in size than that of income. Distinguishing by child age when the problems occurred, we find a larger effect on physical health for financial problems in early childhood, but no difference between early and late circumstances for all the other cognitive and non-cognitive outcomes.

**Keywords:** Insecurity, Poverty, Subjective well-being, Conduct, Education, ALSPAC.

**JEL Classification Codes:** I31, I32, D60.

\* We are grateful to Martin Evans, Anthony Heyes, David Johnston, Ariel Kalil, Richard Layard, Frances Woolley and all of the members of the well-being group at the LSE for useful comments and valuable suggestions. We also thank seminar participants at the CEP Away Day, the ECINEQ Conference (Luxembourg), the HEIRS Conference (Lugano), Kent Business School, Kingston, Korea Labor Institute, the LABEX OSE Rencontres d'Aussois, Leeds, LSE, the Luxembourg-Singapore Well-Being Workshop, Orléans, Ottawa, Örebro, the PEARL Workshop (Luxembourg), Salerno and Stockholm (SOFI). Support from CEPREMAP, the US National Institute on Aging (Grant R01AG040640), the John Templeton Foundation and the What Works Centre for Wellbeing is gratefully acknowledged. Marta Barazzetta and Conchita D'Ambrosio also thank the Fonds National de la Recherche Luxembourg for financial support.

## 1. Introduction

One of the consequences of the Great Recession has been the increasing centrality of Economic terms in daily public debate. Lay discussion has come to include *the 99%*, the word *spread* was introduced into the daily language of non-English natives, and *quantitative easing* a common subject of debate. In the context of the current paper, perhaps the same can be said about financial insecurity. One well-known contribution in this respect is found in the executive summary of the *Shriver Report: A Woman's Nation Pushes Back from the Brink* (2014), written by Maria Shriver and the Center for American Progress. This report includes contributions written by Beyoncé, Hillary Clinton and Eva Longoria, among others, and aims to convey the national crisis through the eyes of women, in an era in which women constitute half of the American labour force, and two-thirds of the primary or co-breadwinners in families.

The report summary opens with a statement claiming that the most common shared story in today's America is family financial insecurity. One in three women face financial difficulties: *"Forty-two million women, and the 28 million children who depend on them, are living one single incident—a doctor's bill, a late paycheck, or a broken-down car—away from economic ruin. Women make up nearly two-thirds of minimum-wage workers, the vast majority of whom receive no paid sick days. This is at a time when women earn most of the college and advanced degrees in this country, make most of the consumer spending decisions by far, and are more than half of the nation's voters."* The report describes these women facing financial insecurity, and proposes policies to improve their quality of life.

Such financial insecurity undoubtedly affects the adults concerned. But it may also have long-lasting effects on their children. For the Commission on the Measurement of Economic Performance and Social Progress (see Stiglitz, Sen and Fitoussi, 2009, p.198) *"This insecurity may generate stress and anxiety in the people concerned, and make it harder for families to invest in education and housing."* The research we propose here takes a step forward in this direction by looking at the adolescent cognitive and non-cognitive outcomes of children who grew up with a mother experiencing major financial problems.

We are not the first to look at the consequences of family finances on children's achievements. A large literature from a variety of disciplines, reviewed in Section 2, has asked how income and family background transmit to children's well-being and other outcomes later in

life. The two main questions in this literature are first whether income affects such child outcomes, and second whether it matters more in early or late childhood.

We here extend this literature by first following the current perspective on women, and second expanding the analysis from low income only to self-reported major financial problems. The advantage of this latter variable over and above income is that it may better capture financial insecurity and thus parental stress. As feelings of insecurity likely depend on unobservable needs and resources, low income may only capture part of the story. Major financial problems do not necessarily mean poverty, but include “*a doctor’s bill, a late paycheck, or a broken-down car*”, or other housing problems, the job loss of a family member, divorce, falling housing equity, and so on. During the current Great Recession, these financial problems have arguably been more widespread than low income, and have hit the middle-class as well. If, as the Stiglitz Commission suggested above, insecurity affects not only parents but also their children, the current economic downturn will have potential consequences over many decades.

We here use data from the Avon Longitudinal Study of Parents and Children (ALSPAC) to show that mother’s major financial problems are associated with worse cognitive and non-cognitive outcomes of their children a number of years later. This correlation persists when controlling for income and a set of standard variables (and is larger than the correlation between the child outcomes and income). Distinguishing between early (ages 0 to 5) and late childhood (ages 6 to 11), we find that major financial problems matter more for physical health outcomes when experienced in early childhood, but there is no timing difference regarding the other child outcomes.

The remainder of the paper is organised as follows. Section 2 contains a review of the relevant literature, and the dataset, variables and empirical methods are described in Section 3. The main results and a series of extensions appear in Section 4. Last, Section 5 concludes.

## **2. Existing Literature**

Research across a variety of disciplines has asked how income and family background influence child outcomes later in life. Two broad channels of influence have been identified. In the first resource or investment channel, income directly affects the family’s ability to obtain the resources and services required for child development; in the second family-process channel, the

effect of income goes through family relationships and the parents' behaviour towards their children by reducing parental stress. Haveman and Wolfe (1995) provide an excellent summary of the multidisciplinary approaches taken in this context.

In the (direct) resource channel the family is an economic unit deciding how best to allocate its resources (Becker, 1981, Becker and Tomes, 1986 and 1994). The amount, type and timing of the resources allocated to children influence their future achievements. This is a choice-based view of children's attainments, which depend on the choices made by society (policy instruments), parents (the resource channel), and the children themselves (for example in terms of their own behaviour and effort). Other disciplines emphasise the indirect effect via the process channel. Parents are role models for their children, and parental behaviour, attitudes and well-being affect the child's cognitive and behavioural development. As such, stressful events during childhood can create emotional uncertainty that undermines child development (McLoyd, 1990 and 1998).

The related empirical literature can be split into that considering the direct effect of income on children's achievements (see, for example, Blau, 1999, Shea, 2000, Maurin, 2002, Hardy, 2014), and that attempting to include all the indirect factors influencing children's well-being (see, for example, Guo and Harris, 2000, Yeung *et al.*, 2002, Washbrook *et al.*, 2014). The overall conclusion is that income does matter for child outcomes, with there being more evidence for child cognitive than non-cognitive outcomes as the latter have not to date been explored in depth (for reviews see Mayer, 1997, Duncan and Brooks-Gunn, 1997, Haveman and Wolfe, 1995). We discuss some of this relevant literature below.

## **2.1 Cognitive Outcomes**

Blanden and Gregg (2004) analyse three British datasets, and conclude that a 0.4 reduction in log family income leads to an average 3-4 percent fall in the probability of achieving GCSE A-C grades or obtaining a degree. Ermisch and Francesconi (2010) consider various family characteristics in the first seven waves of the British Household Panel Survey (BHPS), and conclude that income is a strong predictor of educational attainment. Gregg and Machin (2000) estimate the effects of family background on children's educational attainment and labour outcomes at ages 16, 23 and 33 using British National Child Development Study data. The strongest negative family-related predictor of school attendance and staying on at school at age 16 is financial hardship (defined as whether the family experienced financial difficulties in the

year prior to the survey date). Children in families experiencing financial difficulties were also more likely to have contact with the police and experience unemployment at age 23, and earn lower wages at age 33. Maurin (2002) uses French INSEE data to show that ten percent higher family income is associated with a 6.5 percent lower probability of being held back a year in elementary school. In Acemoglu and Pischke (2001), 10 percent higher family income leads to about 1.4 percent rise in the probability of children's college attendance.

Other work, mainly on US data, has found smaller income effects. Blau (1999), for example, finds a small, and in some cases insignificant, effect of current income on children's outcomes in National Longitudinal Survey of Youth (NLSY) data. The effect of permanent income is larger than that of transitory income, but still smaller than that of other family characteristics such as mother's ability or ethnicity. Hardy (2014) presents evidence from the Panel Study of Income Dynamics (PSID) that family-income volatility has a negative effect on post-Secondary education but no effect on adult income.

Some work has used non-income measures of economic resources: wealth or financial assets reflect economic security that can reduce family stress and financial anxiety and promote child development. Yeung and Conley (2008) look at family wealth and Black-White test-score gaps in children aged 3 and 12 in PSID data. Wealth plays no role for the test-score gaps of pre-school children but does so for in-school children; wealth is also shown to be significantly correlated with mediating factors such as parental warmth, parental activities with the child, and the learning resources available at home. Kim and Sherraden (2011) analyse the effect of financial assets, non-financial assets, and home ownership on high-school completion and college-degree attainment. Assets significantly predict children's educational outcomes, reduce the size of the income effect and, in some cases, even render it insignificant.

Other work has considered the indirect effect of family income on child development, via parental behaviour toward the child, the family relationship, home environment, stimulating material at home, and activities. Washbrook *et al.* (2014) use the same ALSPAC data as we do here and find both direct and indirect effects of family income on the cognitive outcomes of children aged between 7 and 9, but not on their non-cognitive outcomes. Yeung *et al.* (2002) uncover both direct and indirect income effects on child cognitive outcomes at ages 3 through 5 in PSID data, with the direct effect being reduced by the introduction of the mediating factors. Yeung *et al.* also look at economic instability, measured by a year-on-year fall in income of at

least 30 percent. This has a direct effect on some test scores, a small effect on behavioural problems, but a larger effect on mediating factors such as mother's mental well-being and parental behaviour, which in turn significantly affect child development. We will address the question of income falls in Section 4 below.

## **2.2 Non-cognitive Outcomes**

As noted above, Duncan and Brooks-Gunn (1997) consider that non-cognitive outcomes are in general less sensitive to family income than are cognitive outcomes. Some work has found a positive correlation between income and children's physical health (see, among others, Case and Paxson, 2002, for the US, and Currie and Stabile, 2002, for Canada). However, there is no link between low-income and health in ALSPAC data in Burgess *et al.* (2004) once mother's health, including mental health, has been controlled for.

Children from low-income families appear to have more psychological and behavioural problems (McLeod and Shanahan, 1993, and Bolger *et al.*, 1995), with the effect working only indirectly via family stress and parental attitudes towards the child (see, among others, Yeung *et al.*, 2002, for the US, and Washbrook *et al.*, 2014, for the UK), with no direct income effect. Analogously, child emotional well-being and mental health seem to be affected by family income only indirectly via its effect on family stress (see, for example, Mistry *et al.*, 2002). Income and child self-esteem do not seem to be correlated (Axinn *et al.*, 1997, and Washbrook *et al.*, 2014), although the importance of timing in determining children's non-cognitive outcomes, and in particular children's mental health in adulthood, remains to be established.

We will here add to this existing literature and analyse both cognitive and a variety of non-cognitive outcomes of young adults. Our main contribution will be to relate these outcomes to both household income during childhood and a measure of exposure to financial stress. Our broad conclusion will be that income on its own is an insufficient statistic for the economic resources that are available to households and the demands that are made on these resources. Conditional on income, financial stress is a significant predictor of almost all of our adolescent outcome measures.

## **3. Data and Methods**

The ALSPAC survey, also known as “*The Children of the 90s*”, is a long-term health research project that recruited over 14,000 pregnant women who were due to give birth between April 1991 and December 1992 in Bristol and its surrounding areas, including some of Somerset and Gloucestershire. These women and their families have been followed ever since, even if they move out of the original catchment area.<sup>1</sup>

The initial sample was composed of 14,541 pregnant women who enrolled in the ALSPAC study, resulting in a total of 14,062 live births of whom 13,988 were alive at the age of one year. This is the sample of children that we will use for our empirical analysis. Although the ALSPAC sample in Avon is richer and whiter than the UK on average, the children are very similar to the UK average in terms of height and weight at birth, and at ages one and two years (<http://www.bristol.ac.uk/alspac/researchers/cohort-profile/>).

### **3.1 Dependent Variables**

We consider five types of child outcome during adolescence/early adulthood: subjective well-being (henceforth SWB), conduct, emotional health, physical health and education.

Child SWB is measured via the Short Moods and Feelings Questionnaire (SMFQ), which is composed of a number of items reflecting how the child felt over the past two weeks, such as being miserable or unhappy, crying a lot, and feeling lonely: see Appendix B2 for the questionnaire. Each item is answered on a three-point scale (true, sometimes true, not true). The SMFQ is child-reported at ages 16 and 18, and carer-reported (most often the mother) at age 16. It consists of 17 items at age 16, and 13 at age 18. To make the results comparable over time, we use the 13 items that are common to both ages. The total SMFQ scores, the sum of the answers to all the questions, range between 0 and 26, and have been recoded so that higher values indicate better SWB.

Child antisocial behaviour at ages 16 and 11 is measured by the Troublesome Behaviours Score from the Development and Well-Being Assessment (DAWBA) questionnaire. The DAWBA is a long questionnaire assessing common emotional, behavioural and hyperactivity disorders among children aged 5 to 17 (it is not designed to assess severe disorders), and can be administered to children, teachers or the carer. It consists of several sections, each assessing a different type of child disorder (e.g. depression, hyperactivity, phobias, and self-harm). The

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<sup>1</sup> See <http://www.bristol.ac.uk/alspac/>.

troublesome behaviours section asks the carer and the teacher if over the last 12 months (over the past school year in the teacher's version) the child had exhibited a number of different behaviours. The carer- and teacher-reported versions of the questionnaire are slightly different, with the carer-reported questionnaire being composed of a list of 15 behaviours<sup>2</sup> (with possible answers of "No", "Perhaps", and "Definitely" for minor troublesome behaviours, and "Yes" or "No" for more serious behaviours), and the teacher-reported version of 12 behaviours (with possible answers of "Not true", "Somewhat true", "Certainly true"). These behaviours include bullying people, fighting with other siblings, stealing from shops, and hurting or being physically cruel with someone. Despite the different number of questions, the total antisocial behaviour score ranges from 0 to 22 in both versions, with higher scores indicating worse behaviour (see Appendices B3 and B4). In ALSPAC the DAWBA questionnaire is administered to teachers when the child is aged 11 and to carers when the child is aged 16.

Both child emotional health and a second measure of conduct come from the Strengths and Difficulties Questionnaire (henceforth SDQ). The SDQ is a behavioural-screening questionnaire for children about 3 to 16 years old and consists of 25 questions that are answered by an adult regarding the child's concentration span, temper tantrums, happiness, worries and fears, whether the child is obedient, often lies or cheats, and so on: See Appendix B5. The answers to these questions can be used to produce five wellbeing sub-scales (each consisting of five items) referring to emotional problems, peer problems, behavioural problems, hyperactivity and pro-social behaviour. Following Goodman *et al.* (2010), we use two broader sub-scales, as in low-risk samples such as the ALSPAC respondents the five finer sub-scales may not be able to detect distinct aspects of child wellbeing. The "internalising behaviour" measure is a composite of the emotional and peer subscales, and can be argued to measure emotional health, while "externalising behaviour" is made up of the conduct and hyperactivity subscales and refers to conduct problems. Both internalising and externalising SDQ are scored on a 0-20 scale; we reverse this scale so that higher values indicate better outcomes. We have both carer- and teacher-reported SDQ at age 11.

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<sup>2</sup> The original list includes also "forcing someone into sexual activity against their will" among the possible antisocial behaviours, but this item resulted in zero affirmative cases so we excluded this behaviour from the list.



Children’s physical health is measured by their BMI at age 11, 13 and 16, compared to the distribution of BMI in other children of the same age by sex. We construct a dummy variable for “normal” BMI between the 5<sup>th</sup> and 85<sup>th</sup> percentiles.

Last, our educational outcomes refer to the results of the GCSE qualifications or equivalent exams (Key Stage 4, or KS4) taken in the UK at the end of compulsory schooling (at age 16), matched in from the National Pupil Database.<sup>3</sup> A GCSE exam score of 16 corresponds to grade G, and 58 or over to grade A\*.<sup>4</sup> At the pupil-level KS4 outcomes are given in five mutually-exclusive groups: level 2 (five or more A\*-C GCSEs or equivalent); level 1 (five or more A\*-G GCSEs or equivalent); one or more level-1 standard qualifications (1 or more A\*-G GCSEs or equivalent, but not five or more); only entry-level qualifications (GCSEs with grades below G); and no passes. We consider a dummy for achieving the highest level (level 2), and average GCSE points (total exam points divided by the total number of entries).

The summary statistics of the different child outcome variables appear in Appendix Table 1A.

### 3.2 Explanatory Variables

We wish to relate the above dependent variables to the financial resources that were available to the household when the child was growing up. Household income is measured in ALSPAC when the child is aged 3, 4, 7, 8, and 11. The question “*On average, about how much is the take home family income each week (include social benefits etc.)?*” is using a scale of five income bands at ages 3, 4, 7 and 8, and ten income bands at age 11. We convert these ALSPAC band values at each wave to income figures using data from the Family Resources Survey (FRS) on the distribution of net household income in the South West region, deflated to 2008 prices. We are careful to match this distribution by year of birth (for 1991 births at age 3, we use the 1994 income distribution, but the 1995 income distribution for 1992 births, and so on). The resulting FRS net household income figures for each ALSPAC income band appear in Appendix Table 3A.

As in most survey data, we are confronted with missing values. When the dependent variable is missing, the case is dropped. For missing values on control variables we appeal to the

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<sup>3</sup> The National Pupil Database (NPD) contains information on pupils’ educational attainments in England, including test and exam results at different key stages. To date information on key stage results are available for each ALSPAC study child at ages 7, 11, 14 and 16.

<sup>4</sup> See [http://www.education.gov.uk/schools/performance/2013/secondary\\_13/Average\\_Grade\\_Per\\_Qualification.pdf](http://www.education.gov.uk/schools/performance/2013/secondary_13/Average_Grade_Per_Qualification.pdf).

missing indicator approach (as used in Layard *et al.*, 2014). Household income is calculated as a household-level mean over all of the childhood waves in which income information is reported. When all income observations are missing for a given child, we replace the value with the overall sample mean and insert a missing-value flag. About 30% of mothers reported income information in all five waves, while 23% have missing information in all waves. Our final income figure is the average household value over all waves: this has a mean of £424 and a standard deviation of £150. Household income enters in logs in the empirical analyses.

Our second (and more novel) financial variable relates to the major financial problems (MFPs) reported by the child's mother. The MFP variable may capture financial insecurity over and above traditional income indicators, in the sense that financial problems are not a synonym for poverty. Almost every year parents are asked: "*Listed below are a number of events which may have brought changes in your life. Have any of these occurred since your study child's XXX birthday?*". One of these events is "*You had a major financial problem*": see Appendix B1 for further details. We count the number of years from birth to age 11 in which the mother reported a MFP; the question was not asked when the child was aged seven, so that the maximum number of MFPs is ten.

About 37% of mothers answer the MFP question in all ten waves. Another 30% have missing values for one to five waves, 21% have missing values for six to nine waves, while 12% of mothers never replied to this question. When information in some waves is missing, we replace it by the mother's MFP count in the available waves, multiplied by the ratio of the total number of waves to the observed number of waves.<sup>5</sup> When the information is not available in any wave, we replace the missing value with the total sample mean and introduce a missing-value flag as a right-hand side variable.<sup>6</sup>

The distribution of MFP after imputation appears in Figure 1. Overall, just under one half of children grew up in households with at least one MFP over the child's first 11 years, 17% at least two, and 12% at least three, up to a maximum figure of ten. The annual incidence of MFP is correlated with the South-West region unemployment rate in the (with a correlation coefficient of 0.16). However, at the household level the correlation between number of MFPs and income is, as expected, negative but not large at -0.16. In particular, financial problems seem to spread

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<sup>5</sup> With ten waves of MFP information, someone who reports eight values (of 0 or 1), will then have their count over these eight years multiplied by 10/8.

<sup>6</sup> We use the same missing-value strategy for number of house moves and the number of years the mother worked.

up into the middle class. While those in the bottom income quartile (averaged over the child's first 11 years) report an average of 1.7 financial problems, the figures in the second and third income quartile are 1.0 and 0.9 (dropping to 0.5 for the top quartile).

### **3.3 Specifications**

We have three specifications for each child outcome: the first with household income, the second with the number of MFP years, and the third with both together. All regressions include controls for gender, first-born dummy, mother's age at the child's birth, number of children in the household, single-adult household, parents divorced/separated, parents' education, child ethnicity, mother born in a non-European country, private school, number of years in which the mother worked, number of house moves, home ownership, and parental childcare (divided into early childcare, pre-school childcare and in-school childcare). For all of these other control variables, we replace missing values by the overall sample mean for that variable, and add a missing indicator flag to the regression. The summary statistics of the control variables after imputation, as they appear in the regression analysis, are presented in Appendix Table 3A.

Cohort data suffers from attrition, which increases with child age to reach about 40 percent after child age 16. Attrition is more concentrated in lower-income and lower-educated families, producing an over-representation of the middle and upper class. We take this into account in our estimations via inverse probability weighting. We use observable pre-birth information (child's gender, and mother's education, age at birth, ethnicity, marital status, employment status, financial problems and mental health) to predict the attrition probability at each child outcome wave, and correct our final estimates using the inverse of the predicted probabilities ( $1/p$ ) as weights.

To make the results easier to compare across equations, all variables, both dependent and explanatory, are standardised. Within each child-outcome table we also balance the sample so that the estimated coefficients refer to the same children. All equations are estimated linearly.

## **4. Results**

This section presents our main results: we broadly show that the correlation between child non-cognitive outcomes and financial problems is larger than that with income (which is mostly insignificant), while for cognitive outcomes the correlations with financial problems and income

are of equal size. The full tables of regression coefficients appear in Appendix A (Tables 4A to 7A).

## **4.1 Baseline Results**

### *4.1.1 Child Outcomes, Financial Problems and Family Income*

Our main results regarding MFP and income from the specifications in column 3 of the Appendix tables are summarised in Figure 2.

The number of mother's MFP years is significantly correlated with child-reported SWB at both ages 16 and 18 (Appendix Table 4A). The estimated coefficient is remarkably similar for child-reported (columns 1 through 6) and carer-reported well-being (columns 7 through 9), which helps address any concerns that MFP and child well-being are sometimes both reported by the carer (although up to fifteen years apart). A one standard-deviation rise in MFP reduces SWB by about 0.15 standard deviations. On the contrary, household real income is only significantly correlated with adolescent SWB in the specification without MFP. Mothers' financial problems during childhood then have persistent effects on the well-being of their children during adolescence and early adulthood, both as reported by carers and by the adolescents themselves.

MFP also significantly predicts child antisocial behaviour (reported by the mother in the DAWBA questionnaire) in Appendix Table 5A1, columns 1 to 3, with a standardised coefficient of 0.13 that does not change when we include income. The conclusions from the analysis of child conduct at age 11 from externalising SDQ in the middle panel are almost identical. Family income is then never a significant predictor of child conduct once we control for MFP. The right-hand panel of Appendix Table 5A1 turns to child emotional health at age 11 (internalising SDQ): here both MFP and income have separate significant effects.

Appendix Table 5A2 is the teacher-reported version of Appendix Table 5A1 (with all outcome variables now being measured at child age 11). The results are qualitatively similar to those for the carer-reported outcomes, but with estimated coefficients on MFP and income that are now insignificant for DAWBA antisocial behaviour at age 11.

The results for our physical health measure, BMI, appear in Appendix Table 6A. Only few variables are correlated with child BMI, one of which is mother's MFP. The effect is negative and significant for BMI at ages 13 and 16, reducing the probability of normal child BMI by about 0.1 standard deviations. Family income is not significantly correlated with child BMI.

Last, Appendix Table 7A contains our education results. As in existing UK evidence, family income is positively correlated with child educational outcomes. A one standard-deviation rise in income leads to 0.04 standard-deviation rise in average GCSE points. This effect size is somewhat higher than that of MFP, which is however related in its own right to child GCSE points. At the upper tail of the GCSE distribution (the probability of achieving Level 2), MFP and income attract similar significant estimated coefficients.<sup>7</sup> The MFP coefficients regarding education are in general smaller in size than those for the various non-cognitive outcomes discussed above.

The principal conclusion from these regression tables, as summarised in Figure 2, is that children growing up in families where the mother reports having financial problems have significantly worse cognitive and non-cognitive outcomes, controlling for family income. MFP is a stronger predictor of children's non-cognitive outcomes than is family income (the average standardised absolute-value MFP coefficient for the non-cognitive outcomes being 0.10). with family income being insignificant for most child non-cognitive outcomes. On the contrary, both family income and MFP are significantly correlated with cognitive outcomes.

#### *4.1.2 The other correlates of child outcomes*

Gender is the strongest correlate of children's SWB: boys have higher SWB by between 0.10 and 0.20 standard-deviation points, in line with existing work on adolescent mental health (e.g. Duncan *et al.*, 1985, and Nolen-Hoeksema and Girgus, 1994) where girls report more dissatisfaction and psychological problems than do boys (although adult women report both higher life satisfaction and higher stress scores than do men: Nolen-Hoeksema and Rusting, 1999). Only few other variables are significantly correlated with child SWB. While it is commonplace that parents' education affects child cognitive development, we here find only a small SWB effect of mother's education and no effect of father's education. Being first born attracts a positive coefficient for child-reported SWB, as does home ownership. Last, growing up in a single-parent household reduces carer-reported SWB at age 16, but not child-reported SWB.

There is only a small gender effect on antisocial behaviour at age 16, in contrast to some existing work suggesting that boys are worse offenders than girls (see Gregg and Machin, 2000,

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<sup>7</sup> One reason why family income is less significant for achieving Level 2 is that one of our controls, home ownership, is the strongest predictor of both educational outcomes. Excluding home ownership produces an estimated family-income coefficient of 0.038 for achieving Level 2, with the MFP coefficient being unaffected.

for contacts with the police), although this behavioural gender gap seems to fall with age (Cohen *et al.*, 1993). Parental separation is associated with more antisocial behaviour, while this latter falls with father's (but not mother's) education. Home ownership and private school at KS3 are associated with better child behaviour.

We find no gender effect on emotional health at age 11, while boys have worse conduct. Mother's education has a positive effect on child emotional health at age 11, while father's education matters more for child conduct (as was the case for DAWBA antisocial behaviour at age 16). The presence of other children in the household improves both emotional health and behaviour, as does childcare. Last, mother's years of work leads to better child emotional health.

More variables are significant in the teacher-reported version of the behaviour and emotional health table (Table 5A2). Boys again have worse conduct as well as (to a lesser extent) worse emotional health. White children also have lower emotional health. The first-born have better behaviour but worse emotional health. Home ownership and parental education are associated with better teacher-reported outcomes for almost all measures, while parental separation produces worse outcomes. As for the carer-reported outcomes, mother's employment is positively related to child emotional health but not antisocial behaviours and conduct.

Apart from MFP, only few variables are correlated with BMI. We in particular find no gender effect. We will consider some alternative physical health measures in Section 4.2.5 below.

Home ownership is the strongest predictor of cognitive outcomes, with an effect size of about 0.12 standard deviations. Girls, children with mothers born outside Europe, the first-born, those with older mothers and better-educated parents record better educational performance; the number of siblings and parental separation are associated with lower test scores.

## **4.2 Extensions to the Baseline Results**

### *4.2.1 Channels*

The family-process channel discussed in Section 2 emphasised the mediating role of parental stress. We here try to evaluate the mediating role of mother's mental health in child development. Mother's mental health is measured in ALSPAC via the Edinburgh Post-natal Depression Scale, developed by Cox *et al* (1987). This is composed of ten items referring to the feelings of the mother over the past week (see Appendix B6). The score ranges from 0 to 30, and

is reversed so that higher values indicates better mental health. Although this measure was developed for use with puerperal women, none of the items is specifically related to the post-natal experience, and it has been validated for use during pregnancy, post-partum and early parenthood. Mother's mental health is measured at child ages of 8, 21, 33, 61, 73, 97 and 134 months.

Mother's mental health plays a significant mediating role for most non-cognitive outcomes, as summarized in Table 1. The first two columns show our baseline results (as in Figure 2) for income and financial problems; columns 3 and 4 then present these same coefficients controlling for mother's mental health, with the last two columns showing the percentage change in the two estimated coefficients.

Children whose mothers have better mental health have better outcomes on all measures bar BMI, with the correlation with the cognitive outcomes being the smallest. Controlling for mother's mental health reduces the MFP coefficient by about one-quarter to one-half for well-being, conduct and emotional health, although the estimated MFP coefficient mostly remains negative and significant in its own right.<sup>8</sup> By way of contrast, mother's mental health makes little difference to the estimated coefficients for child physical health and education. The family process channel is then more salient for non-cognitive outcomes.<sup>9</sup>

There is more than one interpretation of the role of mother's mental health here. Perhaps the most obvious is that of a mediator: income and financial problems affect mother's mental health, which in turn affects child outcomes. In this light, a quarter to a half of the effect of MFP on well-being, conduct and emotional health works via the family-process channel (from column 5 of Table 1). Alternatively, we could think that reported financial problems are themselves partly determined by mother's mental health, in the sense that more "anxious" mothers are more likely to report problems. Here the emphasis is more on the third column of the table, showing that MFP continues to have an effect conditional on mother's mental health.

There are a number of other possible channels via which MFP could affect child outcomes. Three of these are controlled for in our standard regressions: living in a single adult household, parental separation, and mother's work. To evaluate their mediating role, we have re-run the

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<sup>8</sup> The percentage fall in the MFP coefficient for antisocial behaviour at age 11 is larger, but this coefficient was not significant to start with.

<sup>9</sup> The mediating effect of mother's mental health on income in the last column is perhaps of less interest, because only few of the latter were significant to start with (see Figure 2). The inclusion of mother's mental health has only little effect on the significant income coefficients.

regressions in column 3 of each panel of the regression tables in the Appendix excluding each of these variables in turn. This exercise produces only very marginal changes in the estimated MFP coefficients: separation, single parenthood and mother's work are not behind the effect of MFP on child and adolescent outcomes.

#### 4.2.2 *Early versus late childhood*

The existing literature on the importance of early vs. late childhood has produced ambiguous results. Early-childhood deprivation can be argued to affect the development of basic cognitive skills, feeding through to later achievements; alternatively, children may be more aware of economic disadvantage in later childhood, reducing their self-esteem and thus their outcomes (see, for example, Ogbu, 1978, and Mickelson, 1990).

Duncan and Brooks-Gunn (1997) review the empirical literature on poverty and child achievement, and suggest that early-childhood economic conditions are more important for cognitive outcomes, with the relationship between income and non-cognitive outcomes being overall smaller. Guo (1998) distinguishes between ability and achievements in NLSY data. Ability is claimed to be more of a stable trait, measured by cognitive tests that do not require specialized knowledge; achievements are rather acquired skills, and are a function of ability and other factors. The timing effects differ, with the effect of poverty on ability being stronger in early childhood, while that on achievements is larger in later childhood. Duncan *et al.* (1998) use PSID data and find that income during ages 0 to 5 matters most for high-school completion and total years of completed schooling, although higher income during adolescence does positively affect college entry. Haveman *et al.* (1991) come to the opposite conclusion regarding high-school completion in PSID data: poverty affects high-school completion only if experienced in adolescence (between ages 12 and 15), and only if interacted with the receipt of welfare benefits. Wagmiller *et al.* (2006) also use PSID data, and appeal to a finite-mixture model to classify children into different economic-deprivation groups in terms of the duration, timing and sequences of poverty. They concur with Duncan *et al.* (1998), in that early poverty matters more than late poverty for high-school completion and employment at age 25. The importance of early years for cognitive achievements was emphasised in the review of the rates of return to policy interventions in Heckman (2006).



We here separately estimate the effect of economic resources between early and late childhood (ages 0 to 5 and 6 to 11 respectively). Table 2 summarises the results, and shows the t-tests for the equality of the coefficients across childhood ages (the full table of results appears in Appendix Table 8A). Almost all of the t-test statistics reject that the estimated coefficients on MFP are different in early and late childhood. The exception is child BMI, where early-childhood financial problems lead to worse BMI outcomes but those in later childhood do not (perhaps reflecting that children eat at home more often before the start of compulsory schooling). This overall pattern is repeated in regressions that condition on mother's mental health (results available on request). The effect of income in the two childhood periods does not differ statistically for any outcome.<sup>10</sup>

#### *4.2.3 Sub-group analyses*

The pattern of our results is remarkably similar when we estimate boys' and girls' outcomes separately: the differences refer to income and cognitive outcomes, and MFPs and teacher-reported conduct at age 11, both of which are only correlated for boys. Equally, there are no striking differences for children in above- and below-median income households (where income refers to the average household figure over the child's first eleven years).<sup>11</sup>

#### *4.2.4 Non-linearities*

To see whether low values of MFP are unimportant, we cut the non-zero MFP distribution at its median and created two dummy variables. From Figure 1, this median is at a value of around 1.7. We would in general expect the estimated coefficient for below-median MFPs to be smaller than that on above -median MFPs. For a number of outcomes we find that the former is insignificant. This is in particular the case for child-reported well-being, (to an extent) BMI, and both cognitive outcomes. For these variables, a small number of MFPs does not matter: the overall negative MFP coefficient listed in Table 1 rather comes from those children whose mothers experienced repeated financial problems.

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<sup>10</sup> We also experimented with decay functions, weighting MFPs at the different child ages by (child age at MFP report/child age at outcome), which gives more weight to more recent MFPs, or by the complement of this expression, giving more weight to earlier MFPs. The fit of the regressions (as measured by the R-squared) barely changed.

<sup>11</sup> Four out of 28 estimated MFP and income coefficients are significantly different between above- and below-median households.

#### *4.2.5 Alternative physical health measures*

Physical health above was measured a dummy variable for child BMI being between the 5<sup>th</sup> and 85<sup>th</sup> percentiles by age and sex. We also ran all of our analyses considering only the upper tail of the BMI distribution, i.e. a dummy for being above the 85th percentile of the specific gender-age distribution. This made no difference to the results.

We also have information on a number of child physical health symptoms at age 11 (such as stomach ache, arms/legs ache, cough at night, infection and asthma). We construct a dummy variable for the total number of symptoms being in the top 40% of the distribution (as in Propper *et al.*, 2007), and also look at the total number of symptoms. Last, we have the general health of the child as assessed by the mother, and create a dummy for this being anything less than very healthy. The results for both symptoms variables mirror those for BMI: the number of major financial problems attracts a positive estimated coefficient that is significant at the one per cent level while that on income is insignificant. Regarding child overall health at age 11, both MFP and income attract significant estimated coefficients of roughly equal size.

#### *4.2.6 Income and Wealth*

All of our results above concerning income and MFP come from regressions which condition on a range of control variables, including home ownership. This latter might be thought of as a measure of wealth. To check whether any correlation between wealth and income (or indeed between wealth and MFP) is affecting our conclusions, we have re-run our regressions dropping home ownership. This makes almost no difference to the estimated MFP coefficients that are summarised in Table 1. It also does not affect our conclusions regarding the correlation between income and child non-cognitive outcomes. Where it does make a difference is regarding income and cognitive outcomes. Home ownership is one of the strongest predictors of both educational outcomes (see Table 7A), and its exclusion from the child education regressions leads to estimated income coefficients that almost double in size relative to those in Table 1.

#### *4.2.7 Falls in income and major financial problems*

Our main results refer to financial problems and the level of household income, and we in general underline the importance of the former over the latter (at least for the non-cognitive

outcomes). Although the level of income and MFP are only correlated at 0.16, we might imagine that falls in income would play a key role as a cause of MFP. Due to the banded (and infrequent nature) of the ALSPAC income variable, we cannot observe these directly. However, we do have annual information on whether the mother reported that the household suffered a fall in income over the past year. We count the number of years with an income drop. This count is correlated with MFP at 0.5.

Regressions with income, MFP and income drops produce estimated coefficients on the first two variables that are very similar to those summarised in Figure 2. Income remains significant only for the two internalising SDQ variables at age 11, while MFP remains significant for almost all non-cognitive outcomes with estimated coefficients that are attenuated by only 10-20%. The results for the cognitive outcomes are not at all affected. The income drop variable itself is significantly correlated with all three well-being variables, both anti-social behaviour variables, and carer-reported child conduct and emotional health, with an estimated coefficient that is always smaller than that on MFP.

## **5. Conclusion**

We have here shown that MFP matters for most child outcomes, even controlling for income. The effect is not subject to contamination by mood, as the reports of MFP and child outcomes are separated by a period of up to 17 years. In addition, we find effects not only on child outcomes as reported by the mother, but also as reported by the child him/herself.

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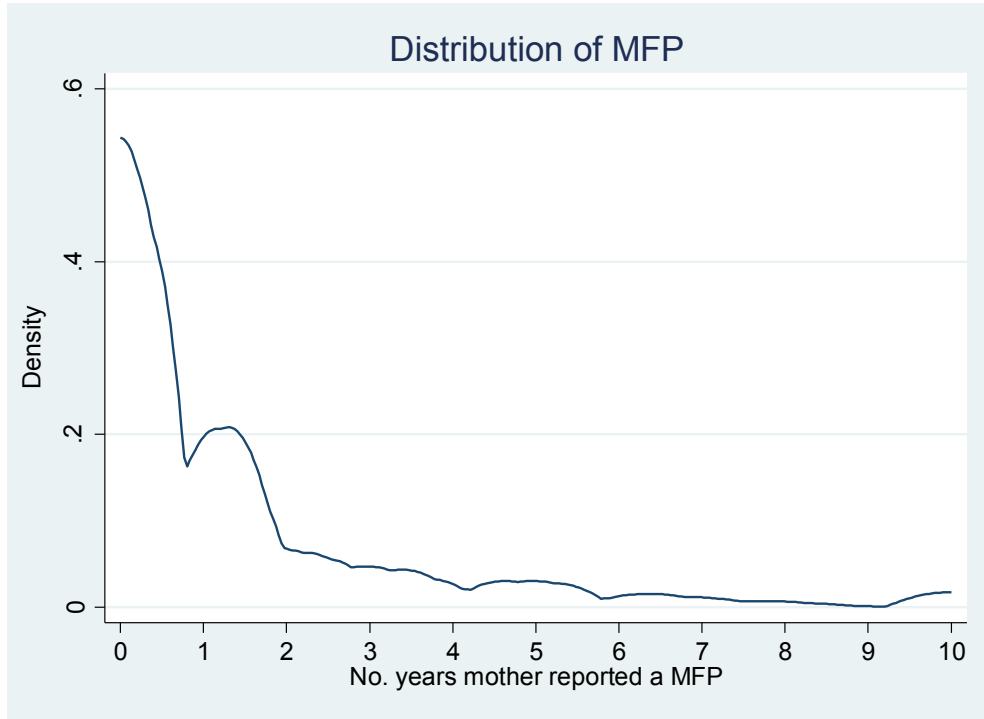
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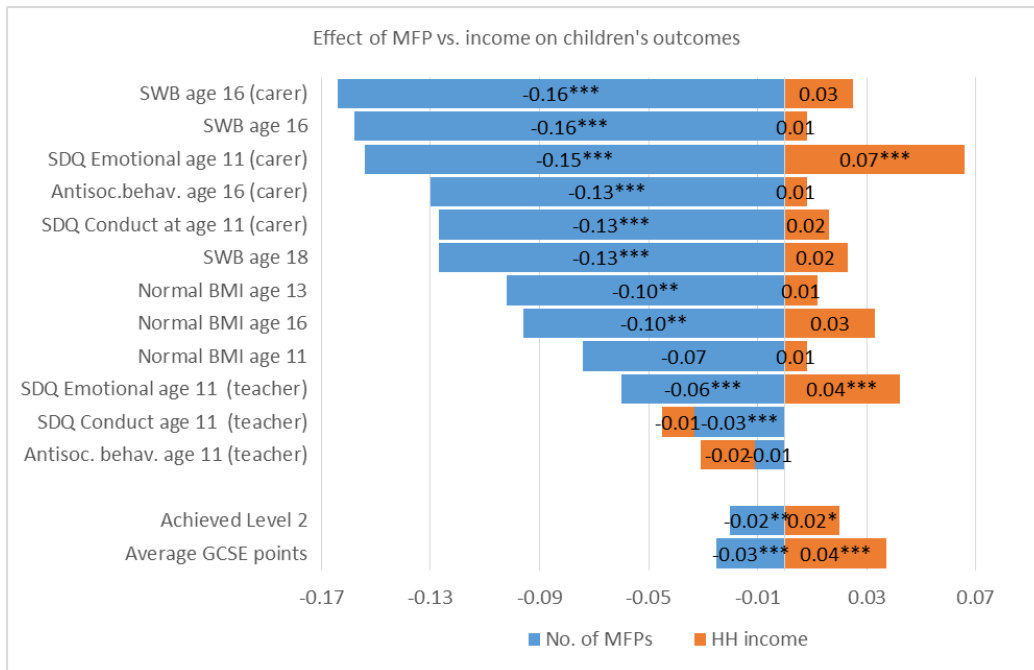
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**Figure 1 – The Distribution of MFP**



**Figure 2 –MFP, Income and Child Outcomes: Summary Figure**





**Table 1 – Summary Table for Overall Childhood**

Child's outcome	No. of MFP	Net hh income (ln)	No. of MFP   mother's MH	Net hh income   mother's MH	Effect of mother's MH as mediator for MFP	Effect of mother's MH as mediator for income
<i>Non-cognitive outcomes</i>						
<b>Table 4A</b>						
SWB at age 16 (SMFQ)	-0.158***	0.008	-0.115***	-0.003	27.2%	137.5%
SWB at age 18 (SMFQ)	-0.127***	0.023	-0.078**	0.011	38.6%	52.2%
SWB at age 16 (SMFQ, carer-reported)	-0.164***	0.025	-0.072*	0.001	56.1%	96.0%
<b>Table 5A1 (Carer-reported)</b>						
Antisocial behaviours at age 16	0.130***	-0.008	0.102***	-0.003	21.5%	62.5%
SDQ conduct at age 11	-0.127***	0.016	-0.059**	0.003	53.5%	81.3%
SDQ emotional at age 11	-0.154***	0.066***	-0.074***	0.050**	51.9%	24.2%
<b>Table 5A2 (Teacher-reported)</b>						
Antisocial behaviours at age 11	0.011	0.020	0.004	0.022	63.6%	-10.0%
SDQ conduct at age 11	-0.033**	-0.012	-0.023*	-0.014	30.3%	-16.7%
SDQ emotional at age 11	-0.060***	0.042***	-0.049***	0.039**	18.3%	7.1%
<b>Table 6A</b>						
Normal BMI at age 11	-0.074	0.008	-0.066	0.006	10.8%	25.0%
Normal BMI at age 13	-0.102**	0.012	-0.109**	0.013	-6.9%	-8.3%
Normal BMI at age 16	-0.096**	0.033	-0.108**	0.036	-12.5%	-9.1%
<i>Cognitive outcomes</i>						
<b>Table 7A</b>						
Achieved Level 2	-0.020**	0.020*	-0.016	0.018*	20.0%	10.0%
Average GCSE points	-0.025***	0.037***	-0.022**	0.036***	12.0%	2.7%

Notes: The dependent variable appears in the first column, and the results refer to the specification including both MFP and household income in Tables 4A through 7A. Significance levels: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$ . These are weighted estimates using IPW. All the models include controls and missing values flags. Controls: gender, child's ethnicity, mother born outside Europe, first born, mother's age at birth, parents' education, single-adult household, no. children in the household, no. years the mother worked, no. house moves, parents divorced or separated, parental childcare, home ownership and private school. The results in columns 3 and 4 show the estimates when we control also for mother's mental health, and the figures in column 5 (6) the percentage change between the estimated coefficients in columns 1 and 3 (2 and 4).

**Table 2 – Summary Table Distinguishing Between Early and Late Childhood**

Child's outcome	No. of MFP		T-test (p-value)	Net household income (ln)		T-test (p-value)
	Age 0-5	Age 6-11		Age 0-5	Age 6-11	
<i>Non-cognitive outcomes</i>						
SWB at age 16 (SMFQ)	-0.104***	-0.041	<b>0.253</b>	-0.024	0.032	<b>0.323</b>
SWB at age 18 (SMFQ)	-0.088***	-0.029	<b>0.228</b>	0.045	-0.003	<b>0.408</b>
SWB at age 16 (SMFQ, carer)	-0.053*	-0.128***	<b>0.176</b>	0.032	-0.004	<b>0.507</b>
Antisoc. behav. age 16 (Carer)	0.059***	0.075**	<b>0.686</b>	-0.013	-0.005	<b>0.833</b>
SDQ conduct age 11 (Carer)	-0.078***	-0.044**	<b>0.228</b>	0.021	0.005	<b>0.408</b>
SDQ emotional age 11 (Carer)	-0.082***	-0.062***	<b>0.575</b>	0.038	0.003	<b>0.821</b>
Antisoc. behav. age 11 (Teacher)	-0.003	0.036**	<b>0.081</b>	0.003	0.018	<b>0.627</b>
SDQ conduct age 11 (Teacher)	-0.018	-0.026**	<b>0.675</b>	0.003	-0.011	<b>0.581</b>
SDQ emotional age 11 (Teacher)	-0.035**	-0.023	<b>0.600</b>	0.040**	0.022	<b>0.548</b>
Normal BMI age 11	-0.083**	0.036	<b>0.060</b>	0.023	0.013	<b>0.895</b>
Normal BMI age 13	-0.074**	-0.003	<b>0.264</b>	0.06	-0.03	<b>0.201</b>
Normal BMI age 16	-0.106***	0.043	<b>0.015</b>	-0.015	0.036	<b>0.448</b>
<i>Cognitive outcomes</i>						
Achieved Level 2	-0.008	-0.024**	<b>0.325</b>	0.007	0.014	<b>0.750</b>
Average GCSE points	-0.013	-0.006	<b>0.643</b>	0.041***	0.035***	<b>0.736</b>

Notes: The dependent variable appears in the first column. Significance levels: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$ . Weighted estimates using IPW. All of the models include controls and missing values flag. Controls: gender, child's ethnicity, mother born outside Europe, first born, mother's age at birth, parents' education, single-adult household, no. children in the household, no. years the mother worked, no. house moves, parents divorced or separated, parental childcare, private school, and home ownership. Columns 8 and 9 report the estimates controlling also for mother's mental health.

## Appendix A

**Table 2A – Children’s outcomes – Summary statistics**

	N	Mean	Std. Dev.	Min.	Max.
<i>Non-cognitive outcomes</i>					
SWB at age 16 (SMFQ)	4784	20.11	5.62	0	26
SWB at age 18 (SMFQ)	3193	19.21	5.90	0	26
SWB at age 16 (SMFQ, carer-reported)	5238	23.88	3.40	0	26
Antisocial behaviour at age 16 (DAWBA, carer-reported)	4516	0.71	1.57	0	16
Emotional health at age 11 (SDQ, carer-reported)	7019	17.43	2.73	3	20
Conduct at age 11 (SDQ, carer-reported)	7013	16.04	3.16	0	20
Antisocial behaviour at age 11(DAWBA, teacher-reported)	7202	0.58	1.79	0	22
Emotional health at age 11 (SDQ, teacher-reported)	7206	16.43	3.25	0	19
Conduct at age 11 (SDQ, teacher-reported)	7202	16.75	3.95	0	20
Normal BMI at age 11 (%)	4152	79.87	0.40	0	1
Normal BMI at age 13 (%)	4143	79.56	0.40	0	1
Normal BMI at age 16 (%)	3686	79.65	0.40	0	1
<i>Cognitive outcomes</i>					
Achieved Level 2 (%)	11543	53.05	0.50	0	1
Average GCSE points	11393	38.40	9.98	0	64

**Table 2A – Net Household Income per week**

<b>Ages 3, 4, 7, 8 (mean)</b>		<b>Age 11</b>	
ALSPAC Band	Observed value from FRS	ALSPAC Band	Observed value from FRS
< £100	62.77	< £120	72.94
£100 - £199	153.38	£120-189	156.51
£200 - £299	248.03	£190 -239	215.69
£300 - £399	347.74	£240 -289	265.64
£400+	679.48	£290 -359	324.25
		£360 -429	394.95
		£430 -479	453.94
		£480 -559	520.91
		£560 -799	667.22
		£800+	1130.13

**Table 3A – Control variables – Summary statistics**

	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>
No. years mother had a MFP	1.17	2.02	0	10
Net household income	424.37	149.63	60	896
Net household income (log)	5.92	0.41	4	7
Male	0.52	0.50	0	1
Child ethnicity (White)	0.95	0.20	0	1
Mother not born in Europe	0.03	0.16	0	1
First born	0.33	0.46	0	1
Mother's age at birth	28.00	4.96	15	44
Mother's education	2.97	1.22	1	5
Father's education	3.02	1.34	1	5
Ever in single adult household	0.10	0.22	0	1
No. children	2.14	0.81	0	12
No. location moves	1.95	2.58	0	63
Parents divorced/separated	0.24	0.40	0	1
Early childcare	12.86	1.65	1	18
Pre-school childcare	15.64	2.81	4	26
In-school childcare	22.93	3.38	2	37
No. years mother worked	6.34	3.71	0	11
Private school KS1	0.39	0.30	0	1
Private school KS2	0.37	0.28	0	1
Private school KS3	0.21	0.36	0	1
Home owner	0.77	0.36	0	1
Mother's mental health	23.0	4.09	0	30

**Table 4A - SWB at age 16 and 18**

	SWB at age 16			SWB at age 18			SWB at age 16 (carer-reported)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
No. years mother had a MFP		-0.160*** (0.0340)	-0.158*** (0.0347)		-0.133*** (0.0335)	-0.127*** (0.0342)		-0.170*** (0.0430)	-0.164*** (0.0435)
Net household income (ln)	0.032 (0.0239)		0.008 (0.0241)	0.042* (0.0246)		0.023 (0.0251)	0.050* (0.0258)		0.025 (0.0256)
Male	0.204*** (0.0192)	0.202*** (0.0191)	0.202*** (0.0191)	0.165*** (0.0199)	0.163*** (0.0198)	0.164*** (0.0198)	0.101*** (0.0202)	0.098*** (0.0201)	0.099*** (0.0201)
Child ethnicity (White)	0.031 (0.0208)	0.033 (0.0208)	0.033 (0.0208)	0.021 (0.0267)	0.023 (0.0264)	0.022 (0.0264)	-0.021 (0.0208)	-0.018 (0.0206)	-0.018 (0.0205)
Mother not born in Europe	0.028 (0.0173)	0.027 (0.0176)	0.028 (0.0177)	0.025 (0.0162)	0.023 (0.0159)	0.024 (0.0159)	0.010 (0.0162)	0.007 (0.0164)	0.008 (0.0164)
First born	0.039* (0.0214)	0.036* (0.0213)	0.035* (0.0213)	-0.010 (0.0228)	-0.013 (0.0226)	-0.013 (0.0226)	0.012 (0.0220)	0.007 (0.0219)	0.007 (0.0220)
Mother's age at birth	-0.030 (0.0253)	-0.021 (0.0251)	-0.022 (0.0252)	-0.049* (0.0270)	-0.041 (0.0269)	-0.043 (0.0270)	-0.042 (0.0261)	-0.030 (0.0256)	-0.032 (0.0258)
Mother's edu (Ref.: CSE/None)	-	-	-	-	-	-	-	-	-
Vocational	0.106 (0.1181)	0.134 (0.1188)	0.132 (0.1189)	0.033 (0.1192)	0.059 (0.1195)	0.054 (0.1196)	-0.056 (0.1194)	-0.021 (0.1164)	-0.027 (0.1167)
O-level	0.121 (0.0936)	0.144 (0.0918)	0.142 (0.0921)	0.061 (0.0931)	0.084 (0.0921)	0.078 (0.0923)	-0.017 (0.0866)	0.011 (0.0851)	0.006 (0.0854)
A-level	0.148 (0.0962)	0.177* (0.0941)	0.172* (0.0952)	0.152 (0.0951)	0.184** (0.0937)	0.172* (0.0942)	0.010 (0.0907)	0.046 (0.0891)	0.034 (0.0904)
Degree	0.164 (0.1038)	0.179* (0.1006)	0.173* (0.1022)	0.174* (0.1017)	0.195* (0.0998)	0.181* (0.1007)	-0.003 (0.0976)	0.022 (0.0952)	0.007 (0.0962)
Father's edu (Ref.: CSE/None)	-	-	-	-	-	-	-	-	-
Vocational	0.091 (0.0958)	0.099 (0.0959)	0.099 (0.0960)	-0.059 (0.1126)	-0.052 (0.1128)	-0.051 (0.1127)	-0.106 (0.1203)	-0.103 (0.1210)	-0.102 (0.1212)
O-level	-0.008 (0.0808)	-0.003 (0.0798)	-0.005 (0.0799)	-0.068 (0.0867)	-0.062 (0.0856)	-0.067 (0.0859)	-0.049 (0.0772)	-0.041 (0.0760)	-0.046 (0.0761)
A-level	0.014 (0.0783)	0.028 (0.0774)	0.026 (0.0778)	-0.055 (0.0820)	-0.040 (0.0812)	-0.046 (0.0815)	-0.049 (0.0744)	-0.029 (0.0732)	-0.035 (0.0734)
Degree	-0.008 (0.0850)	-0.003 (0.0833)	-0.007 (0.0841)	0.009 (0.0882)	0.021 (0.0860)	0.008 (0.0876)	-0.048 (0.0848)	-0.032 (0.0838)	-0.046 (0.0845)
Ever in single adult household <sup>†</sup>	-0.034 (0.0383)	-0.041 (0.0358)	-0.038 (0.0373)	-0.013 (0.0358)	-0.025 (0.0342)	-0.015 (0.0355)	-0.118** (0.0489)	-0.132*** (0.0486)	-0.121** (0.0478)
No. children <sup>†</sup>	0.007 (0.0273)	0.008 (0.0271)	0.008 (0.0271)	-0.003 (0.0276)	-0.001 (0.0273)	-0.002 (0.0274)	0.030 (0.0302)	0.030 (0.0303)	0.029 (0.0302)
No. location moves	0.011 (0.0305)	0.024 (0.0299)	0.023 (0.0301)	0.009 (0.0311)	0.023 (0.0311)	0.019 (0.0312)	-0.037 (0.0408)	-0.024 (0.0412)	-0.027 (0.0415)
Parents divorced/separated <sup>†</sup>	-0.020 (0.0266)	-0.002 (0.0263)	-0.003 (0.0264)	-0.058** (0.0285)	-0.043 (0.0285)	-0.043 (0.0286)	0.028 (0.0288)	0.045 (0.0287)	0.045 (0.0287)
No. years mother worked	-0.005	0.006	0.005	-0.026	-0.016	-0.018	-0.010	0.001	-0.001

Private school KS1	(0.0235) 0.042** (0.0212)	(0.0231) 0.043** (0.0210)	(0.0232) 0.043** (0.0210)	(0.0240) -0.001 (0.0212)	(0.0235) 0.001 (0.0211)	(0.0239) 0.001 (0.0211)	(0.0229) -0.000 (0.0201)	(0.0227) 0.001 (0.0202)	(0.0228) 0.001 (0.0202)
Private school KS2	-0.040* (0.0204)	-0.036* (0.0202)	-0.036* (0.0203)	-0.014 (0.0203)	-0.010 (0.0200)	-0.012 (0.0202)	-0.020 (0.0213)	-0.015 (0.0212)	-0.017 (0.0213)
Private school KS3	-0.007 (0.0191)	-0.006 (0.0191)	-0.006 (0.0191)	-0.009 (0.0207)	-0.007 (0.0208)	-0.008 (0.0208)	0.021 (0.0188)	0.021 (0.0187)	0.021 (0.0187)
Home owner	0.015 (0.0359)	0.021 (0.0348)	0.018 (0.0357)	0.075* (0.0389)	0.086** (0.0381)	0.077** (0.0389)	-0.003 (0.0396)	0.008 (0.0373)	-0.002 (0.0395)
Early childcare	-0.016 (0.0288)	-0.016 (0.0290)	-0.016 (0.0290)	0.001 (0.0299)	0.001 (0.0299)	0.001 (0.0299)	0.045 (0.0325)	0.046 (0.0329)	0.046 (0.0329)
Pre-school childcare	0.039* (0.0235)	0.038 (0.0235)	0.039 (0.0235)	0.020 (0.0256)	0.019 (0.0256)	0.020 (0.0256)	0.008 (0.0242)	0.008 (0.0243)	0.008 (0.0242)
In-school childcare	0.012 (0.0243)	0.010 (0.0244)	0.010 (0.0244)	0.050** (0.0251)	0.048* (0.0251)	0.048* (0.0251)	0.038 (0.0262)	0.034 (0.0265)	0.034 (0.0265)
Missing flag income	0.004 (0.0385)		-0.002 (0.0383)	0.014 (0.0396)		0.013 (0.0397)	0.033 (0.0401)		0.022 (0.0399)
Missing flag MFP		-0.036 (0.0327)	-0.036 (0.0329)		-0.049 (0.0322)	-0.049 (0.0325)		0.029 (0.0369)	0.028 (0.0369)
Constant	-0.195 (0.1218)	-0.253** (0.1196)	-0.247** (0.1208)	0.050 (0.1106)	-0.011 (0.1097)	0.008 (0.1108)	0.025 (0.1256)	-0.043 (0.1222)	-0.021 (0.1263)
Missing values Flag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2220	2220	2220	2220	2220	2220	2220	2220	2220
R <sup>2</sup>	0.07	0.08	0.08	0.06	0.07	0.07	0.04	0.06	0.06

Notes: Linear models. Standardized coefficients. Significance levels: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$ . Std. errors in parentheses. † indicates that the variable is averaged over the entire childhood (0-11).

**Table 5A1 - Carer-reported antisocial behaviours at age 16 and SDQ at age 11**

	Antisocial behaviours at age 16 (DAWBA)			Conduct at age 11 (SDQ Internalising)			Emotional health at age 11 (SDQ Externalising)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
No. years mother had a MFP		0.132*** (0.0312)	0.130*** (0.0309)		-0.130*** (0.0226)	-0.127*** (0.0229)		-0.168*** (0.0268)	-0.154*** (0.0276)
Net household income (ln)	-0.028 (0.0198)		-0.008 (0.0188)	0.037* (0.0191)		0.016 (0.0193)	0.091*** (0.0200)		0.066*** (0.0204)
Male	0.023 (0.0145)	0.023 (0.0144)	0.023 (0.0144)	-0.136*** (0.0150)	-0.135*** (0.0149)	-0.135*** (0.0149)	0.002 (0.0162)	0.002 (0.0162)	0.003 (0.0161)
Child ethnicity (White)	-0.032 (0.0258)	-0.032 (0.0252)	-0.031 (0.0251)	0.003 (0.0172)	0.003 (0.0172)	0.002 (0.0171)	-0.005 (0.0176)	-0.004 (0.0178)	-0.006 (0.0177)
Mother not born in Europe	-0.002 (0.0149)	0.001 (0.0144)	0.000 (0.0145)	0.015 (0.0137)	0.012 (0.0137)	0.013 (0.0138)	0.004 (0.0148)	-0.000 (0.0146)	0.001 (0.0147)
First born	-0.018 (0.0146)	-0.015 (0.0145)	-0.015 (0.0146)	-0.004 (0.0159)	-0.008 (0.0159)	-0.007 (0.0159)	-0.022 (0.0187)	-0.025 (0.0185)	-0.026 (0.0186)

Mother's age at birth	-0.013 (0.0191)	-0.019 (0.0190)	-0.019 (0.0191)	0.012 (0.0196)	0.020 (0.0195)	0.019 (0.0195)	-0.013 (0.0212)	-0.002 (0.0212)	-0.006 (0.0213)
Mother's edu (Ref.: CSE/None)	-	-	-	-	-	-	-	-	-
Vocational	0.074 (0.0843)	0.061 (0.0844)	0.062 (0.0845)	0.059 (0.0779)	0.074 (0.0774)	0.071 (0.0775)	0.090 (0.0819)	0.114 (0.0816)	0.103 (0.0818)
O-level	0.067 (0.0640)	0.051 (0.0640)	0.054 (0.0642)	0.075 (0.0615)	0.094 (0.0610)	0.088 (0.0610)	0.165*** (0.0634)	0.197*** (0.0625)	0.180*** (0.0628)
A-level	0.059 (0.0667)	0.033 (0.0652)	0.038 (0.0665)	0.068 (0.0664)	0.099 (0.0654)	0.089 (0.0660)	0.146** (0.0681)	0.206*** (0.0665)	0.170** (0.0678)
Degree	0.053 (0.0745)	0.031 (0.0722)	0.037 (0.0736)	0.112 (0.0719)	0.141** (0.0710)	0.128* (0.0717)	0.032 (0.0795)	0.094 (0.0782)	0.050 (0.0791)
Father's edu (Ref.: CSE/None)	-	-	-	-	-	-	-	-	-
Vocational	-0.077 (0.0794)	-0.076 (0.0794)	-0.076 (0.0793)	0.160** (0.0749)	0.157** (0.0748)	0.156** (0.0746)	-0.003 (0.0705)	-0.002 (0.0701)	-0.007 (0.0699)
O-level	-0.137** (0.0601)	-0.136** (0.0605)	-0.134** (0.0602)	0.181*** (0.0574)	0.181*** (0.0565)	0.178*** (0.0569)	-0.006 (0.0558)	0.004 (0.0548)	-0.010 (0.0550)
A-level	-0.113* (0.0592)	-0.117* (0.0598)	-0.115* (0.0591)	0.130** (0.0561)	0.138** (0.0552)	0.132** (0.0558)	-0.068 (0.0537)	-0.045 (0.0526)	-0.066 (0.0530)
Degree	-0.167** (0.0656)	-0.164** (0.0657)	-0.158** (0.0657)	0.175*** (0.0649)	0.179*** (0.0633)	0.168*** (0.0648)	-0.057 (0.0634)	-0.024 (0.0615)	-0.067 (0.0630)
Ever in single adult household†	0.036 (0.0297)	0.043 (0.0292)	0.041 (0.0292)	-0.010 (0.0272)	-0.021 (0.0260)	-0.015 (0.0270)	0.017 (0.0279)	-0.011 (0.0260)	0.011 (0.0272)
No. children†	0.022 (0.0184)	0.020 (0.0186)	0.020 (0.0186)	0.043** (0.0178)	0.044** (0.0175)	0.044** (0.0175)	0.078*** (0.0239)	0.083*** (0.0231)	0.080*** (0.0232)
No. location moves	0.043 (0.0284)	0.030 (0.0276)	0.032 (0.0283)	-0.029 (0.0234)	-0.017 (0.0231)	-0.020 (0.0233)	-0.019 (0.0234)	0.002 (0.0231)	-0.007 (0.0234)
Parents divorced/separated†	0.072*** (0.0221)	0.059*** (0.0215)	0.059*** (0.0216)	-0.009 (0.0201)	0.004 (0.0201)	0.003 (0.0201)	-0.018 (0.0191)	-0.005 (0.0188)	-0.003 (0.0189)
No. years mother worked	0.002 (0.0184)	-0.006 (0.0186)	-0.004 (0.0185)	-0.022 (0.0180)	-0.013 (0.0176)	-0.018 (0.0180)	0.050** (0.0209)	0.067*** (0.0207)	0.057*** (0.0210)
Private school KS1	0.026 (0.0166)	0.027* (0.0165)	0.027* (0.0165)	-0.003 (0.0157)	-0.004 (0.0156)	-0.003 (0.0156)	-0.016 (0.0169)	-0.017 (0.0168)	-0.017 (0.0168)
Private school KS2	-0.009 (0.0164)	-0.013 (0.0165)	-0.013 (0.0164)	0.003 (0.0146)	0.007 (0.0146)	0.007 (0.0146)	-0.018 (0.0168)	-0.010 (0.0166)	-0.013 (0.0167)
Private school KS3	-0.022* (0.0134)	-0.023* (0.0133)	-0.023* (0.0133)	-0.005 (0.0144)	-0.006 (0.0143)	-0.005 (0.0143)	0.005 (0.0161)	0.005 (0.0161)	0.006 (0.0160)
Home owner	-0.054* (0.0305)	-0.052* (0.0292)	-0.049 (0.0304)	-0.005 (0.0269)	-0.005 (0.0258)	-0.010 (0.0268)	-0.007 (0.0269)	0.011 (0.0256)	-0.013 (0.0265)
Early childcare	-0.023 (0.0231)	-0.025 (0.0228)	-0.025 (0.0229)	0.079*** (0.0226)	0.082*** (0.0224)	0.081*** (0.0224)	0.016 (0.0238)	0.016 (0.0237)	0.018 (0.0237)
Pre-school childcare	-0.045*** (0.0166)	-0.042** (0.0165)	-0.042** (0.0165)	0.075*** (0.0177)	0.072*** (0.0177)	0.073*** (0.0177)	0.074*** (0.0188)	0.071*** (0.0189)	0.071*** (0.0189)
In-school childcare	-0.004 (0.0174)	-0.003 (0.0173)	-0.003 (0.0173)	0.001 (0.0176)	0.001 (0.0175)	-0.000 (0.0176)	0.039** (0.0198)	0.040** (0.0197)	0.038* (0.0198)
Missing flag income	0.010		0.015	-0.044		-0.051*	-0.010		-0.018

Missing flag MFP	(0.0286)		(0.0282)	(0.0307)		(0.0302)	(0.0323)		(0.0320)
		-0.011	-0.011		0.050**	0.051**		0.035	0.033
		(0.0207)	(0.0207)		(0.0227)	(0.0227)		(0.0231)	(0.0231)
Constant	0.076	0.101	0.098	-0.094	-0.116*	-0.114	-0.106	-0.171***	-0.132*
	(0.0694)	(0.0680)	(0.0688)	(0.0735)	(0.0706)	(0.0725)	(0.0685)	(0.0657)	(0.0677)
Missing values Flag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	3829	3829	3829	3829	3829	3829	3829	3829	3829
R <sup>2</sup>	0.05	0.06	0.06	0.07	0.08	0.08	0.04	0.05	0.05

Notes: Linear models. Standardized coefficients. Significance levels: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$ . Std. errors in parentheses. <sup>†</sup> indicates that the variable is averaged over the entire childhood (0-11).

**Table 5A2 - Teacher-reported antisocial behaviours and SDQ at age 11**

	Antisocial behaviours at age 11 (DAWBA)			Conduct at age 11 (SDQ Externalising)			Emotional health at age 11 (SDQ Internalising)		
	(1)	(2)	(3)	(5)	(6)	(7)	(9)	(10)	(11)
No. years mother had a MFP		0.010	0.011		-0.032**	-0.033**		-0.063***	-0.060***
		(0.0140)	(0.0141)		(0.0131)	(0.0131)		(0.0150)	(0.0152)
Net household income (ln)	0.019		0.020	-0.009		-0.012	0.048***		0.042***
	(0.0144)		(0.0145)	(0.0136)		(0.0137)	(0.0152)		(0.0153)
Male	0.147***	0.147***	0.147***	-0.313***	-0.313***	-0.312**	-0.064***	-0.064***	-0.064***
	(0.0104)	(0.0104)	(0.0104)	(0.0108)	(0.0108)	(0.0108)	(0.0121)	(0.0121)	(0.0121)
Child ethnicity (White)	0.004	0.004	0.004	-0.017	-0.018	-0.018	-0.037***	-0.039***	-0.039***
	(0.0121)	(0.0121)	(0.0121)	(0.0123)	(0.0123)	(0.0123)	(0.0128)	(0.0128)	(0.0128)
Mother not born in Europe	-0.015*	-0.016*	-0.015*	0.017*	0.018*	0.017*	-0.010	-0.012	-0.010
	(0.0084)	(0.0084)	(0.0084)	(0.0091)	(0.0091)	(0.0091)	(0.0128)	(0.0128)	(0.0128)
First born	-0.023**	-0.023**	-0.022**	0.033***	0.032***	0.032***	-0.035**	-0.038***	-0.037***
	(0.0113)	(0.0113)	(0.0112)	(0.0121)	(0.0121)	(0.0121)	(0.0138)	(0.0137)	(0.0137)
Mother's age at birth	-0.048***	-0.049***	-0.048***	0.018	0.019	0.019	-0.060***	-0.057***	-0.057***
	(0.0132)	(0.0132)	(0.0132)	(0.0139)	(0.0139)	(0.0139)	(0.0167)	(0.0167)	(0.0167)
Mother's edu (Ref.: CSE/None)	-	-	-	-	-	-	-	-	-
Vocational	-0.071	-0.071	-0.072	0.114**	0.114**	0.115**	0.126**	0.128***	0.129***
	(0.0495)	(0.0496)	(0.0495)	(0.0468)	(0.0468)	(0.0468)	(0.0497)	(0.0497)	(0.0496)
O-level	-0.072*	-0.071*	-0.073*	0.133***	0.134***	0.135***	0.113***	0.121***	0.118***
	(0.0375)	(0.0377)	(0.0376)	(0.0357)	(0.0357)	(0.0357)	(0.0393)	(0.0392)	(0.0392)
A-level	-0.076**	-0.070*	-0.078**	0.155***	0.155***	0.160***	0.095**	0.118***	0.104**
	(0.0385)	(0.0379)	(0.0387)	(0.0399)	(0.0394)	(0.0399)	(0.0444)	(0.0438)	(0.0445)
Degree	-0.020	-0.010	-0.022	0.150***	0.148***	0.155***	0.047	0.077	0.055
	(0.0461)	(0.0453)	(0.0461)	(0.0499)	(0.0493)	(0.0499)	(0.0589)	(0.0582)	(0.0589)
Father's edu (Ref.: CSE/None)	-	-	-	-	-	-	-	-	-
Vocational	-0.019	-0.021	-0.020	0.055	0.059	0.058	-0.010	-0.004	-0.003
	(0.0444)	(0.0445)	(0.0446)	(0.0458)	(0.0459)	(0.0459)	(0.0508)	(0.0509)	(0.0508)
O-level	-0.068*	-0.065*	-0.069*	0.106***	0.105***	0.107***	0.007	0.016	0.008
	(0.0351)	(0.0352)	(0.0352)	(0.0364)	(0.0363)	(0.0363)	(0.0390)	(0.0389)	(0.0390)
A-level	-0.060*	-0.055	-0.060*	0.128**	0.126**	0.129**	0.002	0.015	0.004



Degree	(0.0349) -0.130***	(0.0351) -0.115***	(0.0349) -0.128***	(0.0354) 0.220***	(0.0353) 0.209***	(0.0355) 0.216***	(0.0390) 0.049	(0.0388) 0.069	(0.0390) 0.042
Ever in single adult household <sup>†</sup>	(0.0368) 0.047**	(0.0368) 0.042**	(0.0367) 0.047**	(0.0429) -0.041**	(0.0425) -0.037**	(0.0429) -0.040**	(0.0493) 0.023	(0.0484) 0.012	(0.0491) 0.023
No. children <sup>†</sup>	(0.0188) 0.040**	(0.0178) 0.040**	(0.0188) 0.039**	(0.0161) -0.030**	(0.0156) -0.029**	(0.0161) -0.029**	(0.0176) 0.017	(0.0170) 0.020	(0.0175) 0.018
No. location moves	(0.0157) -0.005	(0.0157) -0.004	(0.0158) -0.006	(0.0134) -0.007	(0.0134) -0.006	(0.0134) -0.005	(0.0157) -0.007	(0.0155) -0.001	(0.0156) -0.004
Parents divorced/separated <sup>†</sup>	(0.0190) 0.028**	(0.0187) 0.025*	(0.0192) 0.026**	(0.0141) -0.060**	(0.0141) -0.055**	(0.0142) -0.056**	(0.0144) -0.078**	(0.0142) -0.073**	(0.0143) -0.070**
No. years mother worked	(0.0127) -0.012	(0.0130) -0.011	(0.0128) -0.013	(0.0131) -0.002	(0.0132) -0.001	(0.0131) 0.000	(0.0153) 0.054**	(0.0153) 0.060**	(0.0153) 0.056**
Private school KS1	(0.0117) 0.009	(0.0117) 0.009	(0.0118) 0.009	(0.0121) -0.008	(0.0121) -0.008	(0.0121) -0.008	(0.0139) -0.002	(0.0139) -0.002	(0.0140) -0.002
Private school KS2	(0.0102) -0.000	(0.0102) 0.000	(0.0102) -0.000	(0.0109) -0.011	(0.0109) -0.011	(0.0109) -0.010	(0.0127) -0.006	(0.0127) -0.004	(0.0127) -0.006
Private school KS3	(0.0092) 0.014	(0.0093) 0.014	(0.0092) 0.014	(0.0093) -0.029**	(0.0093) -0.029**	(0.0093) -0.029**	(0.0109) -0.027**	(0.0109) -0.027**	(0.0109) -0.027**
Home owner	(0.0103) -0.091***	(0.0103) -0.086***	(0.0103) -0.090***	(0.0108) 0.081***	(0.0108) 0.076***	(0.0108) 0.079***	(0.0124) 0.108***	(0.0124) 0.114***	(0.0124) 0.104***
Early childcare	(0.0183) 0.002	(0.0176) 0.001	(0.0184) 0.001	(0.0160) 0.013	(0.0156) 0.014	(0.0161) 0.014	(0.0180) -0.035**	(0.0177) -0.032**	(0.0180) -0.032**
Pre-school childcare	(0.0151) -0.024*	(0.0152) -0.023*	(0.0152) -0.023*	(0.0141) 0.037***	(0.0141) 0.035***	(0.0142) 0.035***	(0.0155) 0.046***	(0.0155) 0.043***	(0.0155) 0.042***
In-school childcare	(0.0124) 0.016	(0.0126) 0.016	(0.0125) 0.015	(0.0129) -0.029**	(0.0129) -0.028**	(0.0129) -0.028**	(0.0148) 0.003	(0.0148) 0.004	(0.0148) 0.004
Missing flag income	(0.0128) -0.010	(0.0127) 0.012	(0.0127) 0.014	(0.0119) 0.004	(0.0118) 0.007	(0.0119) 0.007	(0.0140) -0.011	(0.0140) -0.011	(0.0140) -0.008
Missing flag MFP	(0.0161)		(0.0163)	(0.0164)		(0.0165)	(0.0182)		(0.0183)
Constant	0.122*** (0.0347)	0.116*** (0.0339)	0.123*** (0.0349)	-0.224*** (0.0327)	-0.222*** (0.0323)	-0.227*** (0.0327)	-0.091** (0.0363)	-0.111*** (0.0356)	-0.096*** (0.0363)
Missing values Flag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	6290	6290	6290	6290	6290	6290	6290	6290	6290
R <sup>2</sup>	0.10	0.10	0.10	0.20	0.20	0.20	0.05	0.05	0.06

Notes: Linear models. Standardized coefficients. Significance levels: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$ . Std. errors in parentheses. <sup>†</sup> indicates that the variable is averaged over the entire childhood (0-11).

**Table 6A – Normal BMI (>5th and <85th percentile) at ages 11, 13 and 16**

	Normal BMI at age 11			Normal BMI at age 13			Normal BMI at age 16		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
No. years mother had a MFP		-0.078*	-0.074		-0.106**	-0.102**		-0.104**	-0.096**
		(0.0456)	(0.0463)		(0.0440)	(0.0446)		(0.0472)	(0.0475)
Net household income (ln)	0.018		0.008	0.024		0.012	0.045		0.033
	(0.0332)		(0.0340)	(0.0320)		(0.0328)	(0.0326)		(0.0327)
Male	0.012	0.010	0.011	0.013	0.011	0.012	0.009	0.007	0.007
	(0.0257)	(0.0257)	(0.0257)	(0.0244)	(0.0244)	(0.0245)	(0.0245)	(0.0244)	(0.0245)
Child ethnicity (White)	-0.015	-0.015	-0.014	-0.037	-0.036	-0.036	-0.023	-0.023	-0.023
	(0.0281)	(0.0278)	(0.0281)	(0.0264)	(0.0267)	(0.0266)	(0.0255)	(0.0255)	(0.0254)
Mother not born in Europe	0.015	0.014	0.015	0.003	0.002	0.002	0.005	0.003	0.004
	(0.0199)	(0.0197)	(0.0200)	(0.0213)	(0.0215)	(0.0215)	(0.0197)	(0.0198)	(0.0198)
First born	-0.006	-0.007	-0.006	0.012	0.012	0.012	-0.034	-0.033	-0.034
	(0.0291)	(0.0291)	(0.0291)	(0.0278)	(0.0277)	(0.0278)	(0.0302)	(0.0301)	(0.0302)
Mother's age at birth	-0.008	-0.002	-0.004	0.030	0.037	0.036	0.008	0.013	0.010
	(0.0345)	(0.0345)	(0.0347)	(0.0355)	(0.0357)	(0.0358)	(0.0345)	(0.0345)	(0.0346)
Mother's edu (Ref.: CSE/None)	-	-	-	-	-	-	-	-	-
Vocational	0.033	0.043	0.040	0.011	0.023	0.021	0.057	0.061	0.058
	(0.1374)	(0.1384)	(0.1379)	(0.1369)	(0.1371)	(0.1376)	(0.1472)	(0.1472)	(0.1473)
O-level	-0.062	-0.065	-0.057	-0.032	-0.031	-0.025	0.136	0.140	0.138
	(0.1066)	(0.1062)	(0.1065)	(0.1033)	(0.1028)	(0.1031)	(0.1101)	(0.1109)	(0.1110)
A-level	-0.062	-0.065	-0.057	-0.004	-0.001	0.003	0.144	0.157	0.148
	(0.1123)	(0.1107)	(0.1123)	(0.1070)	(0.1059)	(0.1069)	(0.1150)	(0.1150)	(0.1158)
Degree	-0.003	-0.015	-0.003	0.068	0.060	0.067	0.235*	0.243*	0.232*
	(0.1284)	(0.1262)	(0.1284)	(0.1226)	(0.1207)	(0.1229)	(0.1285)	(0.1275)	(0.1293)
Father's edu (Ref.: CSE/None)	-	-	-	-	-	-	-	-	-
Vocational	0.001	0.015	0.015	-0.071	-0.053	-0.053	-0.255*	-0.232	-0.234
	(0.1429)	(0.1421)	(0.1428)	(0.1344)	(0.1335)	(0.1337)	(0.1459)	(0.1465)	(0.1466)
O-level	0.051	0.058	0.055	-0.006	0.004	0.001	0.051	0.068	0.061
	(0.1061)	(0.1048)	(0.1060)	(0.1010)	(0.1003)	(0.1010)	(0.1002)	(0.0993)	(0.1003)
A-level	0.142	0.154	0.153	0.101	0.119	0.116	0.112	0.139	0.128
	(0.1002)	(0.0997)	(0.1004)	(0.0931)	(0.0927)	(0.0931)	(0.0953)	(0.0944)	(0.0952)
Degree	0.180	0.194*	0.186	0.095	0.112	0.103	0.040	0.071	0.048
	(0.1150)	(0.1127)	(0.1149)	(0.1071)	(0.1056)	(0.1070)	(0.1099)	(0.1075)	(0.1096)
Ever in single adult household <sup>†</sup>	-0.005	-0.008	-0.004	0.012	0.008	0.014	-0.001	-0.013	0.001
	(0.0477)	(0.0446)	(0.0474)	(0.0458)	(0.0433)	(0.0460)	(0.0444)	(0.0425)	(0.0448)
No. children <sup>†</sup>	0.054	0.054	0.055	0.066*	0.067*	0.068*	0.029	0.034	0.032
	(0.0385)	(0.0385)	(0.0383)	(0.0345)	(0.0346)	(0.0345)	(0.0410)	(0.0411)	(0.0412)
No. location moves	0.021	0.027	0.027	0.038	0.046	0.046	0.035	0.048	0.044
	(0.0386)	(0.0381)	(0.0384)	(0.0386)	(0.0390)	(0.0392)	(0.0388)	(0.0393)	(0.0395)
Parents divorced/separated <sup>†</sup>	-0.033	-0.026	-0.025	-0.019	-0.010	-0.009	0.008	0.019	0.019
	(0.0349)	(0.0353)	(0.0353)	(0.0339)	(0.0343)	(0.0343)	(0.0336)	(0.0342)	(0.0340)
No. years mother worked	0.020	0.020	0.023	0.028	0.030	0.032	0.009	0.017	0.015

	(0.0305)	(0.0303)	(0.0306)	(0.0288)	(0.0284)	(0.0288)	(0.0295)	(0.0293)	(0.0295)
Private school KS1	0.027	0.029	0.026	0.029	0.030	0.028	0.010	0.010	0.010
	(0.0262)	(0.0261)	(0.0261)	(0.0251)	(0.0250)	(0.0251)	(0.0266)	(0.0265)	(0.0265)
Private school KS2	0.003	0.005	0.005	0.008	0.011	0.010	0.044*	0.049*	0.048*
	(0.0265)	(0.0265)	(0.0265)	(0.0261)	(0.0259)	(0.0259)	(0.0262)	(0.0262)	(0.0263)
Private school KS3	0.006	0.008	0.006	-0.011	-0.009	-0.011	-0.008	-0.009	-0.009
	(0.0257)	(0.0257)	(0.0257)	(0.0244)	(0.0243)	(0.0244)	(0.0243)	(0.0243)	(0.0243)
Home owner	0.032	0.035	0.029	0.094*	0.096**	0.090*	0.074	0.086*	0.072
	(0.0505)	(0.0490)	(0.0505)	(0.0496)	(0.0486)	(0.0498)	(0.0489)	(0.0473)	(0.0491)
Early childcare	-0.014	-0.013	-0.012	-0.039	-0.036	-0.035	-0.002	-0.001	0.001
	(0.0398)	(0.0399)	(0.0398)	(0.0386)	(0.0386)	(0.0386)	(0.0374)	(0.0374)	(0.0375)
Pre-school childcare	0.009	0.005	0.005	-0.016	-0.021	-0.021	-0.009	-0.014	-0.015
	(0.0315)	(0.0316)	(0.0315)	(0.0318)	(0.0319)	(0.0319)	(0.0306)	(0.0304)	(0.0304)
In-school childcare	-0.054*	-0.054*	-0.055*	-0.038	-0.039	-0.040	-0.022	-0.022	-0.022
	(0.0299)	(0.0299)	(0.0298)	(0.0282)	(0.0283)	(0.0282)	(0.0285)	(0.0284)	(0.0283)
Missing flag income	0.086*		0.082*	0.069		0.063	0.032		0.032
	(0.0461)		(0.0466)	(0.0436)		(0.0444)	(0.0488)		(0.0496)
Missing flag MFP		0.004	-0.002		0.006	0.001		-0.047	-0.050
		(0.0403)	(0.0406)		(0.0368)	(0.0372)		(0.0370)	(0.0376)
Constant	-0.144	-0.175	-0.166	-0.109	-0.150	-0.140	-0.109	-0.158	-0.135
	(0.1330)	(0.1320)	(0.1327)	(0.1350)	(0.1327)	(0.1348)	(0.1365)	(0.1374)	(0.1379)
Missing values Flag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1561	1561	1561	1561	1561	1561	1561	1561	1561
R <sup>2</sup>	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04

Notes: Linear models. Standardized coefficients. Significance levels: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$ . Std. errors in parentheses. † indicates that the variable is averaged over the entire childhood (0-11).

**Table 7A - Educational outcomes at age 16**

	Achieved Level 2			Average GCSE points		
	(1)	(2)	(3)	(4)	(5)	(6)
No. years mother had a MFP		-0.022** (0.0102)	-0.020** (0.0102)		-0.028*** (0.0089)	-0.025*** (0.0089)
Net household income (ln)	0.022** (0.0109)		0.020* (0.0109)	0.039*** (0.0096)		0.037*** (0.0096)
Male	-0.102*** (0.0090)	-0.102*** (0.0090)	-0.102*** (0.0090)	-0.131*** (0.0078)	-0.130*** (0.0078)	-0.130*** (0.0078)
Child ethnicity (White)	-0.010 (0.0099)	-0.010 (0.0099)	-0.011 (0.0099)	-0.008 (0.0095)	-0.009 (0.0094)	-0.009 (0.0094)
Mother not born in Europe	0.007 (0.0101)	0.006 (0.0101)	0.007 (0.0101)	0.022** (0.0091)	0.021** (0.0091)	0.021** (0.0091)
First born	0.028*** (0.0102)	0.027*** (0.0103)	0.027*** (0.0103)	0.028*** (0.0092)	0.027*** (0.0092)	0.027*** (0.0091)

Mother's age at birth	0.059*** (0.0116)	0.060*** (0.0116)	0.060*** (0.0116)	0.056*** (0.0101)	0.057*** (0.0102)	0.057*** (0.0102)
Mother's edu (Ref.: CSE/None)	-	-	-	-	-	-
Vocational	0.040 (0.0378)	0.042 (0.0379)	0.041 (0.0379)	0.071** (0.0334)	0.075** (0.0334)	0.073** (0.0334)
O-level	0.230*** (0.0293)	0.234*** (0.0293)	0.232*** (0.0293)	0.237*** (0.0257)	0.244*** (0.0257)	0.240*** (0.0257)
A-level	0.387*** (0.0335)	0.397*** (0.0333)	0.391*** (0.0335)	0.412*** (0.0288)	0.428*** (0.0287)	0.416*** (0.0288)
Degree	0.422*** (0.0398)	0.435*** (0.0395)	0.424*** (0.0398)	0.602*** (0.0367)	0.624*** (0.0362)	0.604*** (0.0366)
Father's edu (Ref.: CSE/None)	-	-	-	-	-	-
Vocational	0.026 (0.0403)	0.028 (0.0403)	0.028 (0.0403)	0.054 (0.0333)	0.057* (0.0333)	0.057* (0.0333)
O-level	0.247*** (0.0310)	0.251*** (0.0309)	0.248*** (0.0309)	0.223*** (0.0258)	0.230*** (0.0257)	0.223*** (0.0257)
A-level	0.282** (0.0305)	0.287** (0.0304)	0.282** (0.0305)	0.271*** (0.0255)	0.280*** (0.0254)	0.271*** (0.0255)
Degree	0.426*** (0.0363)	0.435*** (0.0359)	0.424*** (0.0363)	0.565*** (0.0316)	0.583*** (0.0313)	0.563*** (0.0316)
Ever in single adult household†	-0.003 (0.0123)	-0.008 (0.0120)	-0.003 (0.0123)	-0.013 (0.0112)	-0.021** (0.0109)	-0.012 (0.0112)
No. children†	-0.043*** (0.0109)	-0.042*** (0.0109)	-0.043*** (0.0109)	-0.072*** (0.0097)	-0.069*** (0.0097)	-0.071*** (0.0097)
No. location moves	-0.002 (0.0112)	0.001 (0.0113)	-0.001 (0.0113)	0.013 (0.0095)	0.018* (0.0095)	0.015 (0.0095)
Parents divorced/separated†	-0.038*** (0.0109)	-0.036*** (0.0109)	-0.035*** (0.0110)	-0.050*** (0.0094)	-0.048*** (0.0094)	-0.047*** (0.0094)
No. years mother worked	-0.000 (0.0103)	0.003 (0.0103)	0.001 (0.0104)	-0.017* (0.0092)	-0.010 (0.0092)	-0.015 (0.0092)
Private school KS1	0.009 (0.0099)	0.009 (0.0099)	0.009 (0.0099)	0.006 (0.0087)	0.006 (0.0087)	0.006 (0.0087)
Private school KS2	0.001 (0.0098)	0.002 (0.0098)	0.001 (0.0098)	0.015* (0.0085)	0.016* (0.0085)	0.015* (0.0085)
Private school KS3	0.018** (0.0079)	0.018** (0.0079)	0.018** (0.0079)	0.016** (0.0074)	0.016** (0.0074)	0.016** (0.0074)
Home owner	0.111*** (0.0124)	0.114*** (0.0122)	0.110*** (0.0124)	0.127*** (0.0114)	0.133*** (0.0112)	0.125*** (0.0114)
Early childcare	0.032*** (0.0110)	0.032*** (0.0110)	0.032*** (0.0110)	0.040*** (0.0099)	0.040*** (0.0099)	0.040*** (0.0099)
Pre-school childcare	0.022** (0.0106)	0.022** (0.0106)	0.021** (0.0106)	0.007 (0.0093)	0.006 (0.0093)	0.006 (0.0093)
In-school childcare	-0.033*** (0.0102)	-0.033*** (0.0102)	-0.033*** (0.0102)	-0.033*** (0.0091)	-0.031*** (0.0091)	-0.032*** (0.0091)
Missing flag income	-0.011		-0.010	-0.025**		-0.021*

Missing flag MFP	(0.0140)		(0.0141)	(0.0117)	(0.0117)
		-0.007	-0.006		-0.031**
		(0.0146)	(0.0147)		(0.0128)
Constant	-0.400***	-0.410***	-0.403***	-0.375***	-0.391***
	(0.0255)	(0.0253)	(0.0256)	(0.0235)	(0.0234)
Missing values Flag	Yes	Yes	Yes	Yes	Yes
N	9902	9902	9902	9902	9902
R <sup>2</sup>	0.19	0.19	0.19	0.37	0.37

Notes: Linear models. Standardized coefficients. Significance levels: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$ . Std. errors in parentheses. † indicates that the variable is averaged over the entire childhood (0-11).

**Table 8A - Child outcomes distinguishing between early and late childhood**

	SWB			Conduct (carer-reported)			Conduct (teacher-reported)			Normal BMI			Education	
	Age 16	Age 18	Age 16 (carer)	Age 16 (DAWBA)	Age 11 (SDQ External.)	Age 11 (SDQ Internal.)	Age 11 (DAWBA)	Age 11 (SDQ External.)	Age 11 (SDQ Internal.)	Age 11	Age 13	Age 16	Achieved Level 2	Average GCSE pts
No. years mother had a MFP (0-5)	-0.104***	-0.088***	-0.053*	0.059***	-0.078***	-0.082***	-0.003	-0.018	-0.035**	-0.083**	-0.074**	-0.106***	-0.008	-0.013
	(0.0301)	(0.0293)	(0.0304)	(0.0210)	(0.0188)	(0.0219)	(0.0118)	(0.0122)	(0.0149)	(0.0391)	(0.0372)	(0.0383)	(0.0100)	(0.0086)
No. years mother had a MFP (6-11)	-0.041	-0.029	-0.128***	0.075**	-0.044**	-0.062***	0.036**	-0.026**	-0.023	0.036	-0.003	0.043	-0.024**	-0.006
	(0.0352)	(0.0309)	(0.0407)	(0.0311)	(0.0216)	(0.0237)	(0.0166)	(0.0133)	(0.0152)	(0.0385)	(0.0411)	(0.0401)	(0.0099)	(0.0092)
Net household income (ln) (0-5)	-0.024	0.045	0.032	-0.013	0.021	0.038	0.003	0.003	0.040**	0.023	0.060	-0.015	0.007	0.041***
	(0.0322)	(0.0337)	(0.0317)	(0.0236)	(0.0235)	(0.0251)	(0.0150)	(0.0156)	(0.0180)	(0.0417)	(0.0392)	(0.0388)	(0.0129)	(0.0113)
Net household income (ln) (6-11)	0.032	-0.003	-0.004	-0.005	0.005	0.047**	0.018	-0.011	0.022	0.013	-0.030	0.036	0.014	0.035***
	(0.0318)	(0.0317)	(0.0309)	(0.0222)	(0.0215)	(0.0232)	(0.0187)	(0.0154)	(0.0181)	(0.0457)	(0.0416)	(0.0382)	(0.0128)	(0.0108)
Male	0.204***	0.162***	0.102***	0.022	-0.133***	0.006	0.148***	-0.314***	-0.064***	0.011	0.013	0.010	-0.103***	-0.130***
	(0.0192)	(0.0199)	(0.0201)	(0.0145)	(0.0149)	(0.0162)	(0.0105)	(0.0108)	(0.0121)	(0.0258)	(0.0247)	(0.0245)	(0.0091)	(0.0079)
Child ethnicity (White)	0.033	0.018	-0.019	-0.033	0.001	-0.008	0.003	-0.018	-0.040***	-0.018	-0.035	-0.026	-0.009	-0.013
	(0.0215)	(0.0269)	(0.0200)	(0.0252)	(0.0173)	(0.0180)	(0.0121)	(0.0123)	(0.0127)	(0.0283)	(0.0266)	(0.0259)	(0.0101)	(0.0095)
Mother not born in Europe	0.027	0.027*	0.006	0.003	0.011	0.002	-0.015*	0.017*	-0.011	0.017	0.004	0.005	0.006	0.021**
	(0.0180)	(0.0160)	(0.0167)	(0.0144)	(0.0138)	(0.0150)	(0.0085)	(0.0091)	(0.0128)	(0.0204)	(0.0216)	(0.0201)	(0.0103)	(0.0094)
First born	0.039*	-0.023	0.004	-0.018	-0.001	-0.028	-0.024**	0.031**	-0.035**	-0.024	0.000	-0.045	0.018*	0.025***
	(0.0223)	(0.0233)	(0.0228)	(0.0145)	(0.0161)	(0.0180)	(0.0115)	(0.0123)	(0.0143)	(0.0305)	(0.0289)	(0.0318)	(0.0107)	(0.0095)
Mother's age at birth	-0.013	-0.031	-0.012	-0.018	0.015	0.012	-0.048***	0.020	-0.052***	0.008	0.028	0.021	0.070***	0.072***
	(0.0268)	(0.0287)	(0.0275)	(0.0199)	(0.0206)	(0.0223)	(0.0140)	(0.0146)	(0.0171)	(0.0376)	(0.0383)	(0.0368)	(0.0121)	(0.0107)
Mother's edu (Ref.: CSE/None)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vocational	0.133	0.057	-0.040	0.064	0.075	0.108	-0.079	0.121***	0.144***	0.065	0.017	0.108	0.042	0.071**
	(0.1207)	(0.1201)	(0.1161)	(0.0847)	(0.0777)	(0.0814)	(0.0496)	(0.0468)	(0.0496)	(0.1382)	(0.1393)	(0.1450)	(0.0376)	(0.0336)
O-level	0.144	0.077	-0.014	0.045	0.096	0.177***	-0.075**	0.135***	0.123***	-0.081	-0.051	0.126	0.228***	0.239***
	(0.0923)	(0.0926)	(0.0850)	(0.0644)	(0.0612)	(0.0624)	(0.0380)	(0.0359)	(0.0394)	(0.1072)	(0.1040)	(0.1100)	(0.0293)	(0.0259)
A-level	0.176*	0.173*	0.011	0.029	0.098	0.168**	-0.071*	0.152***	0.103**	-0.078	-0.026	0.135	0.376***	0.420***
	(0.0953)	(0.0944)	(0.0898)	(0.0673)	(0.0660)	(0.0672)	(0.0391)	(0.0402)	(0.0447)	(0.1130)	(0.1079)	(0.1151)	(0.0337)	(0.0293)

Degree	0.194*	0.187*	-0.013	0.021	0.145**	0.047	-0.005	0.138***	0.051	-0.036	0.019	0.210	0.400***	0.608***
Father's edu (Ref.: CSE/None)	(0.1036)	(0.1010)	(0.0965)	(0.0726)	(0.0720)	(0.0782)	(0.0467)	(0.0502)	(0.0594)	(0.1297)	(0.1231)	(0.1287)	(0.0407)	(0.0369)
Vocational	0.092	-0.043	-0.113	-0.068	0.155**	-0.003	-0.029	0.066	0.000	0.006	-0.058	-0.251*	0.033	0.058*
O-level	(0.0969)	(0.1133)	(0.1208)	(0.0795)	(0.0748)	(0.0704)	(0.0452)	(0.0459)	(0.0508)	(0.1414)	(0.1334)	(0.1460)	(0.0402)	(0.0334)
A-level	-0.014	-0.063	-0.048	-0.127**	0.169***	-0.013	-0.075**	0.109***	0.006	0.037	-0.000	0.042	0.244***	0.216***
Degree	(0.0803)	(0.0864)	(0.0763)	(0.0604)	(0.0570)	(0.0548)	(0.0351)	(0.0364)	(0.0391)	(0.1057)	(0.1007)	(0.0988)	(0.0310)	(0.0259)
Ever in single adult household (0-5)	0.021	-0.037	-0.044	-0.111*	0.124**	-0.061	-0.065*	0.126***	0.000	0.133	0.105	0.106	0.271***	0.267***
Ever in single adult household (6-11)	(0.0779)	(0.0823)	(0.0734)	(0.0598)	(0.0562)	(0.0530)	(0.0352)	(0.0355)	(0.0392)	(0.1000)	(0.0937)	(0.0930)	(0.0306)	(0.0258)
No. children (0-5)	-0.011	0.021	-0.062	-0.160**	0.161**	-0.054	-0.130***	0.208**	0.028	0.158	0.084	0.009	0.391***	0.563***
No. children (6-11)	(0.0839)	(0.0887)	(0.0845)	(0.0660)	(0.0654)	(0.0631)	(0.0371)	(0.0432)	(0.0497)	(0.1148)	(0.1082)	(0.1081)	(0.0370)	(0.0322)
No. location moves (0-5)	-0.097**	-0.059	-0.077*	0.032	-0.056**	-0.005	0.056***	-0.053***	0.013	0.022	-0.003	-0.076	-0.016	-0.007
No. location moves (6-11)	(0.0377)	(0.0366)	(0.0465)	(0.0296)	(0.0275)	(0.0275)	(0.0188)	(0.0166)	(0.0169)	(0.0448)	(0.0487)	(0.0474)	(0.0122)	(0.0118)
Parents divorced/separated (0-5)	0.034	0.019	-0.060	0.019	0.026	0.004	-0.004	0.015	0.012	-0.025	0.016	0.026	0.010	0.001
Parents divorced/separated (6-11)	(0.0332)	(0.0324)	(0.0397)	(0.0265)	(0.0245)	(0.0244)	(0.0164)	(0.0149)	(0.0159)	(0.0434)	(0.0413)	(0.0397)	(0.0117)	(0.0105)
No. years mother worked (0-5)	0.004	-0.045	-0.025	0.007	0.045**	0.017	0.025	-0.028*	0.003	-0.056	-0.002	-0.035	-0.071***	-0.083***
No. years mother worked (6-11)	(0.0350)	(0.0348)	(0.0358)	(0.0170)	(0.0173)	(0.0183)	(0.0191)	(0.0167)	(0.0203)	(0.0481)	(0.0440)	(0.0524)	(0.0138)	(0.0127)
Parents divorced/separated (0-5)	0.002	0.027	0.053**	0.017	-0.002	0.060***	0.015	-0.003	0.028*	0.078**	0.051	0.040	0.028**	0.001
Parents divorced/separated (6-11)	(0.0265)	(0.0268)	(0.0257)	(0.0170)	(0.0172)	(0.0186)	(0.0145)	(0.0135)	(0.0162)	(0.0357)	(0.0345)	(0.0353)	(0.0113)	(0.0102)
No. years mother worked (0-5)	0.015	-0.008	-0.028	0.036	-0.012	-0.008	-0.005	0.002	0.001	0.024	0.037	0.044	-0.007	0.019**
No. years mother worked (6-11)	(0.0264)	(0.0288)	(0.0350)	(0.0254)	(0.0216)	(0.0212)	(0.0133)	(0.0128)	(0.0144)	(0.0340)	(0.0348)	(0.0324)	(0.0110)	(0.0089)
Private school KS1	0.011	0.026	-0.001	-0.005	0.002	0.006	0.007	-0.013	-0.015	0.005	0.024	0.012	0.003	0.007
Private school KS2	(0.0188)	(0.0177)	(0.0192)	(0.0138)	(0.0138)	(0.0155)	(0.0163)	(0.0125)	(0.0130)	(0.0285)	(0.0247)	(0.0262)	(0.0097)	(0.0083)
Private school KS3	-0.005	0.011	0.016	0.018	0.014	0.035	0.011	-0.041***	-0.036**	-0.010	-0.008	0.035	-0.009	-0.011
Home owner (0-5)	(0.0296)	(0.0330)	(0.0331)	(0.0263)	(0.0217)	(0.0213)	(0.0142)	(0.0142)	(0.0164)	(0.0360)	(0.0355)	(0.0334)	(0.0116)	(0.0102)
Home owner (6-11)	0.004	-0.053**	0.035	0.040*	-0.014	-0.016	0.025*	-0.034***	-0.038***	-0.012	-0.029	-0.002	-0.027***	-0.044***
Home owner (0-5)	(0.0245)	(0.0254)	(0.0255)	(0.0207)	(0.0174)	(0.0168)	(0.0128)	(0.0124)	(0.0143)	(0.0337)	(0.0318)	(0.0321)	(0.0100)	(0.0088)
Home owner (6-11)	0.006	-0.024	-0.027	0.043***	-0.054***	0.010	-0.012	-0.022*	0.005	-0.023	-0.007	-0.016	-0.018*	-0.040***
Home owner (0-5)	(0.0245)	(0.0246)	(0.0242)	(0.0160)	(0.0178)	(0.0199)	(0.0119)	(0.0129)	(0.0144)	(0.0307)	(0.0295)	(0.0285)	(0.0108)	(0.0094)
Home owner (6-11)	-0.012	-0.006	0.025	-0.050**	0.038**	0.053**	-0.001	0.019	0.057***	0.055*	0.052*	0.036	0.022**	0.013
Home owner (0-5)	(0.0249)	(0.0257)	(0.0245)	(0.0197)	(0.0187)	(0.0212)	(0.0132)	(0.0130)	(0.0155)	(0.0328)	(0.0313)	(0.0299)	(0.0110)	(0.0102)
Home owner (6-11)	0.045**	-0.002	0.007	0.029*	-0.003	-0.015	0.010	-0.010	-0.005	0.036	0.032	0.012	0.009	0.006
Home owner (0-5)	(0.0212)	(0.0211)	(0.0206)	(0.0169)	(0.0157)	(0.0168)	(0.0102)	(0.0109)	(0.0127)	(0.0255)	(0.0245)	(0.0259)	(0.0100)	(0.0088)
Home owner (6-11)	-0.038*	-0.004	-0.022	-0.014	0.011	-0.009	0.001	-0.012	-0.006	-0.007	0.007	0.041	-0.006	0.021**
Home owner (0-5)	(0.0200)	(0.0198)	(0.0210)	(0.0162)	(0.0145)	(0.0166)	(0.0091)	(0.0092)	(0.0109)	(0.0261)	(0.0254)	(0.0254)	(0.0098)	(0.0085)
Home owner (6-11)	-0.009	-0.013	0.022	-0.021	-0.006	-0.000	0.013	-0.029***	-0.027**	0.000	-0.014	-0.011	0.021***	0.010
Home owner (0-5)	(0.0191)	(0.0207)	(0.0187)	(0.0132)	(0.0142)	(0.0161)	(0.0103)	(0.0108)	(0.0123)	(0.0259)	(0.0245)	(0.0244)	(0.0079)	(0.0074)
Home owner (6-11)	-0.022	0.060	0.029	-0.034	-0.014	-0.007	-0.065***	0.067***	0.087***	0.062	0.124*	-0.010	0.080***	0.110***
Home owner (0-5)	(0.0452)	(0.0452)	(0.0496)	(0.0453)	(0.0325)	(0.0367)	(0.0233)	(0.0205)	(0.0218)	(0.0618)	(0.0640)	(0.0566)	(0.0154)	(0.0141)
Home owner (6-11)	0.038	0.002	-0.037	-0.008	0.005	-0.009	-0.021	0.011	0.005	-0.034	-0.031	0.090*	0.026**	0.010
Home owner (0-5)	(0.0389)	(0.0385)	(0.0412)	(0.0408)	(0.0299)	(0.0347)	(0.0209)	(0.0186)	(0.0210)	(0.0549)	(0.0525)	(0.0521)	(0.0144)	(0.0132)
Home owner (6-11)	-0.015	0.009	0.045	-0.027	0.084***	0.020	0.000	0.014	-0.030*	-0.016	-0.039	0.005	0.033***	0.039***
Home owner (0-5)	(0.0292)	(0.0304)	(0.0332)	(0.0227)	(0.0226)	(0.0238)	(0.0152)	(0.0142)	(0.0155)	(0.0398)	(0.0388)	(0.0374)	(0.0111)	(0.0100)
Home owner (6-11)	0.036	0.013	0.009	-0.040**	0.068***	0.070***	-0.020	0.033**	0.044***	0.005	-0.017	-0.015	0.021**	0.004
Home owner (0-5)	(0.0238)	(0.0255)	(0.0237)	(0.0165)	(0.0178)	(0.0190)	(0.0123)	(0.0130)	(0.0149)	(0.0315)	(0.0316)	(0.0307)	(0.0108)	(0.0094)
Home owner (6-11)	0.010	0.046*	0.033	-0.005	0.004	0.040**	0.012	-0.025**	0.003	-0.053*	-0.040	-0.021	-0.033***	-0.029***

Missing flag MFP (0-5)	(0.0247) -0.099	(0.0253) -0.168***	(0.0265) 0.051	(0.0173) -0.043	(0.0177) 0.044	(0.0198) 0.092**	(0.0126) -0.008	(0.0118) 0.040	(0.0142) 0.013	(0.0297) 0.060	(0.0283) 0.027	(0.0282) -0.051	(0.0103) 0.035	(0.0093) 0.007
Missing flag MFP (6-11)	(0.0634) 0.006	(0.0636) 0.026	(0.0604) -0.001	(0.0345) 0.032	(0.0408) 0.045*	(0.0390) 0.035	(0.0239) 0.031**	(0.0253) -0.026	(0.0269) 0.006	(0.0834) 0.002	(0.0686) -0.001	(0.0751) 0.050	(0.0216) 0.001	(0.0194) -0.020
Missing flag income (0-5)	(0.0400) 0.012	(0.0370) 0.019	(0.0429) 0.040	(0.0238) 0.019	(0.0255) 0.006	(0.0259) -0.016	(0.0150) -0.012	(0.0172) 0.011	(0.0200) 0.010	(0.0490) 0.053	(0.0469) 0.033	(0.0459) 0.011	(0.0154) 0.020	(0.0134) 0.015
Missing flag income (6-11)	(0.0423) -0.068	(0.0440) -0.020	(0.0425) -0.097*	(0.0315) -0.042	(0.0329) -0.103**	(0.0380) 0.031	(0.0163) 0.005	(0.0177) -0.005	(0.0195) 0.002	(0.0518) 0.080	(0.0506) 0.133**	(0.0502) -0.010	(0.0145) -0.026	(0.0126) -0.020
Constant	(0.0575) -0.191	(0.0576) -0.003	(0.0573) -0.156	(0.0366) 0.228**	(0.0417) -0.203**	(0.0421) -0.194**	(0.0223) 0.117***	(0.0212) -0.219***	(0.0252) -0.097***	(0.0702) -0.200	(0.0580) -0.192	(0.0723) -0.247	(0.0202) -0.342***	(0.0170) -0.417***
Missing values Flag	(0.1350) Yes	(0.1259) Yes	(0.2036) Yes	(0.0916) Yes	(0.0858) Yes	(0.0892) Yes	(0.0346) Yes	(0.0320) Yes	(0.0359) Yes	(0.1628) Yes	(0.2036) Yes	(0.2084) Yes	(0.0249) Yes	(0.0234) Yes
N	2220	2220	2220	3829	3829	3829	6290	6290	6290	1561	1561	1561	9902	9902
R <sup>2</sup>	0.09	0.08	0.07	0.07	0.08	0.05	0.10	0.20	0.06	0.04	0.05	0.06	0.19	0.36

Notes: Linear models. Standardized coefficients. Significance levels: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$ . Std. errors in parentheses.

## Appendix B – Questionnaires

### B1. Major Financial Problems (MFP)

The question on major financial problem is part of a list of life events that could happen to the mother since a certain age of the child. The question is: *“Listed below are a number of events which may have brought changes in your life. Have any of these occurred since your study child’s XXX birthday?”* One of these events is our variable of interest: *“You had a major financial problem”*. The question is asked at the following child ages: 8 months, 1y9m, 2y9m, 3y11m, 5y1m, 6y1m, 9y2m, 11y2m.

In the first 6 waves (from 8m to 6y1m) the question asks whether the mother had a MFP and how much she was affected by it. The possible answers are *“Yes, and affected me a lot”*, *“Yes, moderately affected”*, *“Yes, mildly affected”*, *“Yes, but didn’t affect me”* and *“No”*. In the analyses we created a dummy variable for each wave taking value 1 if the mother reported to have had a MFP (from *Yes, affected a lot* to *Yes, but didn’t affect me*).

In the waves corresponding to child’s age 9y2m and 11y2m, the questions asks only whether a MFP occurred, but it refers not only to the previous year but also to the last two years. Specifically the answers to the question at age 9y2m are: *“Yes, when the study child was 6 or 7”*, *“Yes, since the child’s 8<sup>th</sup> birthday”*, *“Yes, both when the study child was 6/7 and 8+”*, *“No, didn’t happen in the past 3 years”*. And similarly at age 11y2m: *“Yes, when the study child was 9 or 10”*, *“Yes, since the child’s 11<sup>th</sup> birthday”*, *“Yes, both when the study child was 9/10 and 11+”*, *“No, didn’t happen in this period”*. From the answer at age 9y2m and 11y2m we can derive information on whether the mother had a MFP when the child was 6/7 and 9.

For each child’s age from 8 months to age 11 we have a dummy taking value 1 if the mother had a MFP in the previous year (from child’s birth in the case of the questionnaire at 8 months). The final measure of financial insecurity is the number of year from child’s birth to age 11 in which the mother reported a MFP.



## B2. Short Moods and Feeling Questionnaire (SMFQ)

*These questions are about how you may have been feeling or acting recently. For each question, please say how much you have felt or acted this way in the past two weeks.*

<b>In the past two weeks:</b>	<b>NOT TRUE</b>	<b>SOMETIMES</b>	<b>TRUE</b>
1. I felt miserable or unhappy.	2	1	0
2. I didn't enjoy anything at all.	2	1	0
3. I felt so tired I just sat around and did nothing.	2	1	0
4. I was very restless.	2	1	0
5. I felt I was no good anymore.	2	1	0
6. I cried a lot.	2	1	0
7. I found it hard to think properly or concentrate.	2	1	0
8. I hated myself.	2	1	0
9. I was a bad person.	2	1	0
10. I felt lonely.	2	1	0
11. I thought nobody really loved me.	2	1	0
12. I thought I could never be as good as other kids.	2	1	0
13. I felt I did everything wrong.	2	1	0
<b>Total Subjective well-being score: 0-26</b>			

### B3. Antisocial behaviours at age 16 (DAWBA) – Carer-reported

*We're now going to ask about behaviour that sometimes gets children into trouble, including dangerous, aggressive or antisocial behaviour. Please answer according to how s/he has been over the last year.*

<b>As far as you know, over the last 12 months...</b>	<b>NO</b>	<b>PERHAPS</b>	<b>DEFINATELY</b>
Has s/he often told lies in order to get things or favours from others, or to get out of having to do things s/he is supposed to do?	0	1	2
Has s/he often started fights? (Other than with brothers and sisters)	0	1	2
Has s/he often bullied or threatened people?	0	1	2
Has s/he often stayed out after dark much later than s/he was supposed to?	0	1	2
Has s/he stolen from the house, or from other people's houses, or from shops or school? (This doesn't include very minor thefts, e.g. stealing his/her brother's pencil or food from the fridge)	0	1	2
Has s/he run away from home more than once, or ever stayed away all night without your permission?	0	1	2
Has s/he often played truant (bunked off) from school?	0	1	2

*We're now going to ask you about a list of less common but potentially more serious behaviours. We have to ask all people all questions even when they are not likely to apply.*

<b>As far as you know, over the last 12 months...</b>	<b>NO</b>	<b>YES</b>
Has s/he used a weapon or anything that could seriously hurt someone? (e.g. a bat, brick, broken bottle, knife, gun)	0	1
Has s/he really hurt someone or been physically cruel to them? (e.g. has tied up, cut or burned someone)	0	1
Has s/he been really cruel on purpose to animals and birds?	0	1
Has s/he deliberately started a fire? (This is only if s/he intended to cause severe damage.)	0	1
Has s/he deliberately destroyed someone else's property?	0	1
Has s/he been involved in stealing on the streets, e.g. snatching a handbag or mugging?	0	1
Has s/he broken into a house, any other building or a car?	0	1
Has your teenager's ever been in trouble with the police?	0	1

**Total Antisocial behaviours score: 0-22**

#### **B4. Antisocial behaviours at age 11 (DAWBA) – Teacher-reported**

*In the past school year how much to your knowledge has his/her behaviour been like the following:*

<b>As far as you know, he/she:</b>	<b>NOT TRUE</b>	<b>SOMEWHAT TRUE</b>	<b>CERTAINLY TRUE</b>
Lies or cheats	0	1	2
Starts fights	0	1	2
Bullies others	0	1	2
Plays truant	0	1	2
Uses weapons when fighting	0	1	2
Has been physically cruel, has really hurt someone	0	1	2
Has been deliberately cruel to animals	0	1	2
Sets fire deliberately	0	1	2
Steals things	0	1	2
Vandalises property or destroys things belonging to others	0	1	2
Shows unwanted sexual behaviour towards others	0	1	2
Has been in trouble with the law	0	1	2
<b>Total Antisocial behaviours score: 0-22</b>			

## B5. Strengths and Difficulties Questionnaire (SDQ)

*Please think about this child's behaviour over the last 6 months if you can:*

This child:	NOT TRUE	SOMEWHAT TRUE	CERTAINLY TRUE
<b>Emotional health:</b>			
Often complains of headaches, stomachaches or sickness	0	1	2
Has many worries, often seems worried	0	1	2
Is often unhappy, down-hearted or tearful	0	1	2
Is nervous or clingy in new situations, easily loses confidence	0	1	2
Has many fears, is easily scared	0	1	2
Total emotional health score: 0-10			
<b>Conduct problems:</b>			
Has temper tantrums or hot tempers	0	1	2
Is generally obedient, usually does what adults request	2	1	0
Often fights with other children or bullies them	0	1	2
Often lies or cheats	0	1	2
Steals from home/school/elsewhere	0	1	2
Total conduct problems score: 0-10			
<b>Hyperactivity/Inattention:</b>			
Is restless, overactive, cannot stay still for long	0	1	2
Constantly fidgets or squirms	0	1	2
Is easily distracted, concentration wandered	0	1	2
Thinks things out before acting	2	1	0
Sees tasks through to the end, good attention span	2	1	0
Total hyperactivity score: 0-10			
<b>Peer relationship problems:</b>			
Is rather solitary, tends to play alone	0	1	2
Has at least one good friend	2	1	0
Is generally liked by other children	2	1	0
Is picked on or bullied by other children	0	1	2
Gets on better with adults than with other children	0	1	2
Total peer relationship problems score: 0-10			
<b>Total Internal difficulties score = emotional + peer relationship (0-20)</b>			
<b>Total External difficulties score = conduct + hyperactivity (0-20)</b>			

## B6. Edinburg Post-natal Depression Scale

*Your feelings in the past week.*

1. I have been able to laugh and see the funny side of things	As always (0)	Not as much (1)	Definitely not so much (2)	Not at all (3)
2. I have looked forward with enjoyment to things	As always (0)	Less than usual (1)	Definitely less than usual (2)	Hardly at all (3)
3. I have blamed myself unnecessarily when things went wrong	Yes, most of the time (3)	Yes, some of the time (2)	Not very often (1)	Never (0)
4. I have been anxious or worried for no good reason	Not at all (0)	Hardly ever (1)	Sometimes (2)	Often (3)
5. I have felt scared or panicky for no very good reason	Yes, quite a lot (3)	Sometimes (2)	Not much (1)	Not at all (0)
6. Things have been getting on top of me	Yes, most of the time (3)	Yes, some of the time (2)	Hardly ever (1)	Never (0)
7. I have been so unhappy that I have had difficulty sleeping	Yes, most of the time (3)	Yes, some of the time (2)	Not very often (1)	Not at all (0)
8. I have felt sad or miserable	Yes, most of the time (3)	Yes, quite often (2)	Not very often (1)	Never (0)
9. I have been so unhappy that I have been crying	Yes, most of the time (3)	Yes, quite often (2)	Only occasionally (1)	Never (0)
10. The thought of harming myself has occurred to me	Yes, quite often (3)	Sometimes (2)	Hardly ever (1)	Never (0)
<b>Total EPDS score: 0-30</b>				

