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Appendix A. Methodology

The aim is to quantify the predictive power of a particular subset of variables - X - for an outcome at age 5 - Y . Other variables that predict Y but that are not of immediate interest are collected in the vector Z .

Suppose we estimate the following least squares regression using data on $i = 1, \dots, N$ children.

$$Y_i = X_i\beta_X + Z_i\beta_Z + \varepsilon_i \quad (1)$$

The predicted value of Y for child i is calculated as a weighted sum of her observed characteristics

$$\hat{Y}_i = X_i\hat{\beta}_X + Z_i\hat{\beta}_Z \quad (2)$$

The weights applied to the observed characteristics are the vectors of estimated parameters, β_X and β_Z from (1), each of which gives the predicted difference in the value of Y associated with a unit difference in the associated variable, holding other observed characteristics constant.

Method 1. The proportion of variation in the outcome explained by X

One way to assess the predictive power of X is to assess its power to explain the variance of Y . The R-squared for regression (1) is the quantity

$$R^2 = \frac{\text{Variance of } \hat{Y}_i}{\text{Variance of } Y_i} \quad (3)$$

It expresses the variation in the scores predicted on the basis of X and Z as a percentage of the total variation in the observed scores. The R-squared takes values between 0 and 1, with higher values indicating a closer 'fit' between the predicted and actual scores.

Our analysis uses the adjusted R-squared, a version that takes account of the number of predictors used in the model and increases only if the additional predictors improve the fit of the model more than would be predicted by chance¹.

The method assesses the increase in the proportion of variation explained when each set of predictors is added individually to a common baseline model. It tells us how much of the variation in the outcome would be predicted if X and the baseline characteristics were the only things we could observe about child i . A higher adjusted R-squared indicates greater predictive power.

¹ Formally $AdjR^2 = 1 - \frac{(1 - R^2)(N - 1)}{(N - k - 1)}$ where N is the number of observations and k the number of predictors.

We contrast two cases depending on whether outcomes at age 3 are observed as part of the baseline or not.

Method 2. Simulations of the predicted outcome with varying levels of the drivers

The method outlined above assesses the predictive power of different variables in a broad sense. The simulations are designed to give an estimate of the predicted change in the outcome associated with varying the predictors by some pre-determined amount.

As noted above, the β_x and β_z coefficients gives the predicted change in the value of Y associated with a unit increase in the associated variable, holding other observed characteristics constant. It follows that multiplying the β coefficient by some specified amount gives the predicted change in Y associated with the specified change in the predictor, leaving other predictors unchanged.

The linear additive formulation used in equation (1) has certain implications. The predicted change in Y associated with a specified change in X is the same for all individuals, regardless of their other observed or unobserved characteristics. It follows from this that the predicted effect of varying a subset of predictors simultaneously is simply the sum of the effects of varying each predictor individually. The lack of interaction terms between predictors in the model means that the effect of changing one predictor is independent of any changes in other predictors.

Care must be taken when interpreting the β associated with any single variable in a model containing a large number of measurements of closely related predictors. The effect of changing one predictor while holding all the rest constant is something that may have little counterpart in reality if groups of predictors tend to move together. For example, suppose maternal depression is measured in three consecutive years and in general mothers tend to have either high or low levels of symptoms at all three dates. The effect of an improvement in Year 1, leaving symptoms in Years 2 and 3 unchanged, is a hypothetical effect and of less interest than the impact of an improvement that is sustained over all three years. For this reason, the sum of the effects of changing a set of related predictors is more amenable to interpretation than the effect of changing just one in isolation.

The above discussion implies that if we select the magnitude of a change in each predictor, weight each change by its β coefficient and sum the resulting terms, the predicted change in the outcome variable will apply to all individuals. The question is then to select a) the magnitude of the changes in the predictors in which we are interested, and b) the initial level of child's outcome prior to the specified changes in predictors. Any values can be chosen for these, resulting in different simulations. For example, we might simulate the outcome of the child with an average outcome score after a 10% improvement in all the predictors. However, a 10% improvement may equate to an implausibly large change in one predictor in real terms, but a very small change in another predictor in real terms.

The simulations we conduct select the average outcome of a child in the bottom fifth of the income distribution as the baseline, and we vary each predictor by the average difference in its value between

families in the bottom fifth of the income distribution and those in the higher four-fifths. Hence the simulations estimate the outcome of the average low-income child if the level of the predictor among low-income children were raised to its level among higher-income children, effectively eliminating the income gap in the predictor of interest.

Formally, we define X_{GAP} as $\bar{X}_{HIGHER} - \bar{X}_{LOW}$ where a bar above a variable indicates its sample mean, the *HIGHER* subscript denotes children in families with incomes above the 20th percentile and the *LOW* subscript denotes those in families with incomes at the 20th percentile or below. The simulated score for an average low-income child when the income gap in predictor X is eliminated (Y_{LOW}^{SIMX}) is given by:

$$Y_{LOW}^{SIMX} = \bar{Y}_{LOW} + X_{GAP} \hat{\beta}_X \quad (4)$$

Of course, the results of a simulation of this type depend crucially on the association of income with the predictors in the underlying population. If a predictor varies little between low- and higher-income families on average, so that X_{GAP} is small, it will have little impact in the simulations, even if $\hat{\beta}_X$ is large and the predictor is very consequential for the outcome of interest.

Estimation details

All regressions were estimated in Stata with robust standard errors. The MCS regressions and descriptive statistics (used to calculate the ‘income gap’ in each variable) use Wave 3 (age five) weights to adjust for the clustered stratified survey design and non-ransom attrition. No weights are provided with ALSPAC so regressions and statistics using the ALSPAC data are unweighted.

Regressions are estimated on the maximum available sample for each outcome so the sample size remains constant for all model specifications with a given outcome. Missing covariate values are replaced with the mean (for continuous variables) or with zero (for binary variables) and a separate missing dummy for each is included in the regression. Descriptive statistics for all variables, and the calculation of the income gaps, are conducted over non-missing values only.

Appendix B. Descriptive statistics and detailed regressions

Table B1. Descriptive statistics and income gaps for MCS predictors

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap
Baseline controls									
Female	15255	0.0%	0.49	0.50	0	1	0.48	0.49	0.01
Child's age in mths	15255	0.0%	62.58	2.95	53	74	62.70	62.56	-0.15
Single parent W1	14719	3.5%	0.14	0.35	0	1	0.43	0.07	-0.36
Single parent W2	13821	9.4%	0.17	0.37	0	1	0.49	0.09	-0.39
Single parent W3	15255	0.0%	0.20	0.40	0	1	0.52	0.12	-0.40
Mother's age at birth									
Mother <20 at birth	14710	3.6%	0.08	0.27	0	1	0.23	0.04	-0.19
Mother 20-24 at birth	14710	3.6%	0.17	0.37	0	1	0.29	0.13	-0.16
Mother 25-29 at birth	14710	3.6%	0.28	0.45	0	1	0.22	0.30	0.07
Mother 30-34 at birth	14710	3.6%	0.30	0.46	0	1	0.15	0.34	0.19
Mother 35 or more at birth	14710	3.6%	0.17	0.38	0	1	0.10	0.19	0.09
Parental education qualifications									
Mother no qualifications	15215	0.3%	0.11	0.31	0	1	0.30	0.07	-0.23
Mother overseas qualification	15215	0.3%	0.03	0.16	0	1	0.06	0.02	-0.04
Mother NVQ1	15215	0.3%	0.08	0.27	0	1	0.14	0.06	-0.07
Mother NVQ2	15215	0.3%	0.29	0.45	0	1	0.30	0.28	-0.02
Mother NVQ3	15215	0.3%	0.15	0.35	0	1	0.11	0.15	0.05
Mother NVQ4/5	15215	0.3%	0.36	0.48	0	1	0.11	0.42	0.31
Father no qualifications	11337	25.7%	0.10	0.30	0	1	0.32	0.08	-0.24
Father overseas qualification	11337	25.7%	0.04	0.19	0	1	0.10	0.03	-0.07
Father NVQ1	11337	25.7%	0.06	0.24	0	1	0.09	0.06	-0.04
Father NVQ2	11337	25.7%	0.26	0.44	0	1	0.26	0.26	0.01
Father NVQ3	11337	25.7%	0.15	0.35	0	1	0.12	0.15	0.03

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap
Father NVQ4/5	11337	25.7%	0.39	0.49	0	1	0.11	0.42	0.31
Home learning environment									
Home safe/clean/light/uncluttered	12656	17.0%	0.87	0.34	0	1	0.76	0.89	0.13
Teaching score W2	13724	10.0%	13.20	5.35	0	21	12.60	13.33	0.73
Freq mother reads to child W2	13725	10.0%	5.29	2.38	0	7	4.25	5.53	1.29
Freq mother reads to child W3	15181	0.5%	5.11	2.26	0	7	4.69	5.22	0.52
Freq father reads to child W2	9576	37.2%	3.28	2.52	0	7	2.32	3.38	1.06
Freq father reads to child W3	10525	31.0%	3.13	2.33	0	7	2.51	3.20	0.69
Freq mother creative activities W3	15173	0.5%	8.40	5.05	0	21	8.98	8.26	-0.72
Freq father creative activities W3	10518	31.1%	6.06	4.72	0	21	6.84	5.97	-0.87
Freq mother play activities W3	15170	0.6%	6.91	4.44	0	21	7.13	6.86	-0.27
Freq father play activities W3	10520	31.0%	7.14	4.47	0	21	7.15	7.14	-0.01
Library visits per month W2	13725	10.0%	0.66	1.12	0	4	0.46	0.71	0.24
Library visits per month W3	15184	0.5%	1.03	1.73	0	8	1.00	1.04	0.04
Weekly sports activity W3	15183	0.5%	0.53	0.50	0	1	0.28	0.60	0.32
Places of interest in last year W3	15185	0.5%	3.55	1.40	0	6	2.69	3.77	1.08
Parental warmth and sensitivity									
Mother Pianta scale	12371	18.9%	48.91	7.09	15	60	46.61	49.37	2.77
Father Pianta scale	9183	39.8%	47.12	6.80	12	60	44.89	47.35	2.46
Int obs pos interactions: <9	11440	25.0%	0.08	0.27	0	1	0.19	0.06	-0.13
Int obs pos interactions: 9	11440	25.0%	0.10	0.30	0	1	0.15	0.09	-0.06
Int obs pos interactions: 10	11440	25.0%	0.27	0.44	0	1	0.31	0.26	-0.05
Int obs pos interactions: 11	11440	25.0%	0.55	0.50	0	1	0.36	0.59	0.24
Mother ch-rearing attitudes	14287	6.3%	16.58	1.99	0	20	16.22	16.66	0.44
Father ch-rearing attitudes	10672	30.0%	16.77	1.80	5	20	16.46	16.80	0.34
Authoritative parenting									
Regular bedtimes W2	13725	10.0%	0.80	0.40	0	1	0.68	0.83	0.15
Regular bedtimes W3	15183	0.5%	0.90	0.30	0	1	0.83	0.92	0.09

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap
Regular mealtimes W2	13725	10.0%	0.92	0.28	0	1	0.83	0.93	0.10
Regular mealtimes W3	15181	0.5%	0.93	0.25	0	1	0.87	0.95	0.08
Non-violent discipline W2	12055	21.0%	6.62	2.60	0	12	6.44	6.65	0.21
Non-violent discipline W3	14417	5.5%	6.17	2.14	0	12	6.01	6.20	0.20
Harsh discipline W2	12055	21.0%	5.02	2.42	0	12	4.87	5.05	0.19
Harsh discipline W3	14417	5.5%	4.33	1.93	0	12	4.22	4.35	0.13
Enforces obedience W3	14254	6.6%	0.84	0.37	0	1	0.75	0.86	0.11
> than 3 hrs TV per day W2	13725	10.0%	0.17	0.38	0	1	0.30	0.14	-0.16
> than 3 hrs TV per day W3	15178	0.5%	0.15	0.36	0	1	0.22	0.13	-0.09
> than 1 hr comp games per day W3	15178	0.5%	0.23	0.42	0	1	0.31	0.21	-0.11
Mental health and wellbeing									
Mother Malaise score W1	14215	6.8%	1.62	1.72	0	9	2.07	1.52	-0.54
Mother Kessler 6 score W2	11112	27.2%	3.23	3.69	0	24	4.69	2.96	-1.73
Mother Kessler 6 score W3	13850	9.2%	3.13	3.79	0	24	4.54	2.83	-1.72
Mother diagnosed depression	15176	0.5%	0.39	0.49	0	1	0.49	0.37	-0.13
Father Malaise score W1	10649	30.2%	1.37	1.55	0	9	1.94	1.30	-0.63
Father Kessler 6 score W2	8608	43.6%	2.86	3.08	0	24	4.03	2.75	-1.28
Father Kessler 6 score W3	9701	36.4%	2.93	3.31	0	24	4.10	2.82	-1.29
Father diagnosed depression	10524	31.0%	0.14	0.35	0	1	0.24	0.13	-0.11
Mother self-esteem score W1	12506	18.0%	12.79	2.73	0	18	12.35	12.88	0.53
Mother locus of control W1	14279	6.4%	5.15	1.41	0	6	4.45	5.32	0.86
Mother life satisfaction W1	14276	6.4%	7.78	1.77	1	10	7.24	7.90	0.66
Mother life satisfaction W2	11966	21.6%	7.85	1.76	1	10	7.09	8.00	0.91
Mother life satisfaction W3	14224	6.8%	7.48	1.96	1	10	6.85	7.61	0.77
Mother social support W1	14288	6.3%	9.36	2.10	0	12	8.47	9.57	1.10
Health behaviours									
Birth weight (kg)	14677	3.8%	3.35	0.60	0.39	7.23	3.23	3.38	0.15
Gestation length (weeks)	14556	4.6%	39.53	2.09	23	42.29	39.47	39.54	0.08

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap
Special Care Unit at birth	14719	3.5%	0.10	0.30	0	1	0.09	0.10	0.00
Never breast fed	14690	3.7%	0.30	0.46	0	1	0.47	0.26	-0.20
Breast fed less than 6 months	14690	3.7%	0.46	0.50	0	1	0.39	0.48	0.08
Breast fed 6 months or more	14690	3.7%	0.23	0.42	0	1	0.14	0.26	0.12
No prenatal care 1st trimester	14360	5.9%	0.19	0.40	0	1	0.31	0.17	-0.14
Lacking immunizations	14532	4.7%	0.03	0.18	0	1	0.07	0.03	-0.04
Smoking in same room as child W1	14706	3.6%	0.13	0.34	0	1	0.26	0.10	-0.16
Smoking in same room as child W2	13732	10.0%	0.17	0.38	0	1	0.35	0.13	-0.22
Smoking in same room as child W3	15172	0.5%	0.14	0.35	0	1	0.28	0.11	-0.17
Mother never smoked in pregnancy	14675	3.8%	0.78	0.41	0	1	0.60	0.83	0.23
Mother smoked <10 a day in preg	14675	3.8%	0.12	0.32	0	1	0.22	0.10	-0.12
Mother smoked >=10 a day in preg	14675	3.8%	0.10	0.30	0	1	0.19	0.08	-0.11
Mother drinks alc >=3 times/wk W1	14707	3.6%	0.15	0.36	0	1	0.04	0.18	0.14
Mother drinks alc >=3 times/wk W2	13732	10.0%	0.18	0.39	0	1	0.07	0.21	0.14
Mother drinks alc >=3 times/wk W3	15174	0.5%	0.20	0.40	0	1	0.07	0.23	0.15
Mother 1 symptom prob drinking	12910	15.4%	0.08	0.27	0	1	0.06	0.08	0.02
Mother 2+ symptoms prob drinking	12910	15.4%	0.05	0.21	0	1	0.05	0.04	-0.01
Mother used recreational drugs	14544	4.7%	0.06	0.24	0	1	0.10	0.05	-0.05
Mother overweight (BMI>=25)	11514	24.5%	0.52	0.50	0	1	0.56	0.51	-0.05
Mother obese (BMI>=30)	10581	30.6%	0.22	0.41	0	1	0.28	0.21	-0.08
Father drinks alc >=3 times/wk W1	11011	27.8%	0.35	0.48	0	1	0.19	0.37	0.17
Father drinks alc >=3 times/wk W2	9581	37.2%	0.34	0.48	0	1	0.16	0.36	0.20
Father drinks alc >=3 times/wk W3	10522	31.0%	0.36	0.48	0	1	0.18	0.38	0.21
Father 1 symptom prob drinking	9418	38.3%	0.17	0.38	0	1	0.11	0.18	0.07
Father 2+ symptoms prob drinking	9418	38.3%	0.12	0.32	0	1	0.12	0.12	0.00
Father used recreational drugs	11280	26.1%	0.12	0.32	0	1	0.18	0.11	-0.08
Father overweight (BMI>=25)	9172	39.9%	0.77	0.42	0	1	0.79	0.77	-0.03
Father obese (BMI>=30)	7487	50.9%	0.27	0.44	0	1	0.37	0.26	-0.11

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap
Housing conditions									
>1 rooms per person	13134	13.9%	0.84	0.37	0	1	0.61	0.89	0.28
Access to garden	14775	3.1%	0.87	0.33	0	1	0.73	0.91	0.18
Central heating	13133	13.9%	0.86	0.34	0	1	0.78	0.88	0.11
No damp in home	13122	14.0%	0.71	0.45	0	1	0.53	0.75	0.22
Safe local play area	14509	4.9%	0.65	0.48	0	1	0.51	0.69	0.18
Preschool education									
Attended nursery class/school	15183	0.5%	0.60	0.49	0	1	0.69	0.58	-0.11
Attended playgroup	15183	0.5%	0.32	0.47	0	1	0.26	0.34	0.08
Attended preschool	15183	0.5%	0.25	0.43	0	1	0.14	0.28	0.14
Attended childminder	15183	0.5%	0.13	0.33	0	1	0.05	0.15	0.10
Attended day nursery	15183	0.5%	0.16	0.36	0	1	0.10	0.17	0.07
Age started early education	14393	5.7%	3.08	1.27	0	5	3.21	3.04	-0.17
Age started child minder	15150	0.7%	4.57	1.24	0	5	4.87	4.50	-0.37
Age started day nursery	15143	0.7%	4.49	1.28	-0.08	5	4.74	4.43	-0.31
Attended early education full-time	14461	5.2%	0.16	0.37	0	1	0.20	0.15	-0.05
Family characteristics									
Log average hhold income	15255	0.0%	9.70	0.72	6.31	11.58	8.67	9.96	1.28
White ethnicity	15255	0.0%	0.87	0.34	0	1	0.73	0.91	0.18
Pakistani	15255	0.0%	0.03	0.17	0	1	0.09	0.01	-0.08
Bangladeshi	15255	0.0%	0.01	0.10	0	1	0.03	0.00	-0.03
Indian	15255	0.0%	0.02	0.13	0	1	0.02	0.02	0.00
Other Asian	15255	0.0%	0.01	0.08	0	1	0.01	0.01	0.00
Black African	15255	0.0%	0.02	0.13	0	1	0.03	0.01	-0.02
Black Caribbean	15255	0.0%	0.01	0.10	0	1	0.02	0.01	-0.01
Mixed race/ethnicity	15255	0.0%	0.03	0.18	0	1	0.05	0.03	-0.02
Other race/ethnicity	15255	0.0%	0.01	0.08	0	1	0.01	0.01	-0.01
Mother born outside UK	13454	11.8%	0.10	0.30	0	1	0.16	0.08	-0.08

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap
Father born outside UK	9645	36.8%	0.10	0.29	0	1	0.25	0.08	-0.18
Foreign language spoken in home	15254	0.0%	0.06	0.24	0	1	0.15	0.04	-0.11
Mother has longstanding illness	15174	0.5%	0.24	0.43	0	1	0.27	0.24	-0.03
Mother has limiting illness	15172	0.5%	0.14	0.34	0	1	0.18	0.13	-0.05
Father has longstanding illness	10518	31.1%	0.24	0.43	0	1	0.33	0.23	-0.10
Father has limiting illness	10516	31.1%	0.12	0.33	0	1	0.23	0.11	-0.12
Ever lived in social housing	14200	6.9%	0.32	0.47	0	1	0.74	0.22	-0.52
Always lived in social housing	13183	13.6%	0.17	0.37	0	1	0.43	0.11	-0.33
Wales	15255	0.0%	0.05	0.21	0	1	0.05	0.05	0.00
Scotland	15255	0.0%	0.09	0.29	0	1	0.08	0.09	0.01
Northern Ireland	15255	0.0%	0.04	0.19	0	1	0.04	0.04	0.00
North East	15255	0.0%	0.04	0.19	0	1	0.05	0.03	-0.02
North West	15255	0.0%	0.10	0.31	0	1	0.15	0.09	-0.05
Yorkshire and the Humber	15255	0.0%	0.09	0.28	0	1	0.12	0.08	-0.04
East Midlands	15255	0.0%	0.07	0.25	0	1	0.05	0.07	0.02
West Midlands	15255	0.0%	0.08	0.27	0	1	0.09	0.08	-0.02
East of England	15255	0.0%	0.09	0.29	0	1	0.06	0.10	0.04
London	15255	0.0%	0.13	0.34	0	1	0.15	0.13	-0.02
South East	15255	0.0%	0.15	0.35	0	1	0.10	0.16	0.06
South West	15255	0.0%	0.08	0.27	0	1	0.06	0.08	0.03
IMD decile 1 (most deprived)	15254	0.0%	0.11	0.32	0	1	0.30	0.07	-0.24
IMD decile 2	15254	0.0%	0.10	0.30	0	1	0.20	0.08	-0.12
IMD decile 3	15254	0.0%	0.10	0.30	0	1	0.14	0.09	-0.05
IMD decile 4	15254	0.0%	0.09	0.29	0	1	0.09	0.09	0.00
IMD decile 5	15254	0.0%	0.10	0.30	0	1	0.09	0.10	0.01
IMD decile 6	15254	0.0%	0.09	0.29	0	1	0.06	0.10	0.04
IMD decile 7	15254	0.0%	0.10	0.29	0	1	0.05	0.11	0.06
IMD decile 8	15254	0.0%	0.09	0.29	0	1	0.03	0.11	0.08

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap
IMD decile 9	15254	0.0%	0.10	0.30	0	1	0.03	0.12	0.09
IMD decile 10	15254	0.0%	0.11	0.32	0	1	0.02	0.14	0.12
Age three outcomes									
Age 3 Naming Vocabulary	13007	14.7%	74.45	17.10	10	141	65.98	76.29	10.31
Age 3 Bracken SRA	12403	18.7%	25.77	13.54	0	88	18.76	27.30	8.54
Age 3 SDQ Behaviour score	9132	40.1%	8.89	4.94	0	30	11.64	8.39	-3.25
Age 3 Body Mass Index	12711	16.7%	16.76	1.65	9.1	36.5	16.72	16.77	0.05

W1, W2 and W3 refer to the first, second and third waves of the MCS respectively (at roughly 9 months, 3 years and 5 years). % missing refers to the percent of the 15,255 maximum possible sample without a valid observation. The income gap is the mean for families in the higher 80% of the income distribution minus the mean among those in the lowest 20%. See Appendix C for full details of variable construction.

Table B2. Age five MCS outcome regressions

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
Baseline controls								
Female	0.157	0.082	-0.715	-0.545	-0.064	-0.057	-0.027	0.086
	[0.018]***	[0.017]***	[0.085]***	[0.081]***	[0.016]***	[0.017]***	[0.036]	[0.031]***
Child's age in mths	0.072	0.073	-0.048	-0.052	-0.007	-0.007	0.002	-0.002
	[0.004]***	[0.004]***	[0.022]**	[0.021]**	[0.004]	[0.004]*	[0.010]	[0.009]
Child's age in mths squared	-0.001	-0.001	0.000	0.001	-0.001	-0.001	0.000	0.001
	[0.001]	[0.001]	[0.004]	[0.003]	[0.001]*	[0.001]*	[0.002]	[0.001]
Child's age in mths cubed	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	[0.000]	[0.000]	[0.001]	[0.001]	[0.000]	[0.000]	[0.000]	[0.000]
Single parent W1	-0.022	-0.027	0.185	0.252	0.010	0.015	-0.054	-0.065
	[0.037]	[0.035]	[0.189]	[0.183]	[0.036]	[0.036]	[0.077]	[0.068]
Single parent W2	-0.103	-0.078	0.267	0.178	0.013	0.010	0.242	0.166
	[0.041]**	[0.038]**	[0.214]	[0.206]	[0.041]	[0.041]	[0.090]***	[0.077]**

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
Single parent W3	0.015	0.002	0.231	0.277	-0.008	-0.003	0.182	0.135
	[0.052]	[0.050]	[0.286]	[0.272]	[0.052]	[0.052]	[0.108]*	[0.090]
Mother's age at birth								
Mother <20 at birth	-0.072	-0.071	0.222	0.172	0.021	0.020	-0.042	0.016
	[0.041]*	[0.038]*	[0.218]	[0.212]	[0.041]	[0.041]	[0.081]	[0.068]
Mother 20-24 at birth	-0.049	-0.042	0.195	0.081	0.005	0.002	-0.051	-0.024
	[0.027]*	[0.026]	[0.149]	[0.142]	[0.026]	[0.026]	[0.058]	[0.049]
Mother 25-29 at birth	Omitted reference category							
Mother 30-34 at birth	-0.006	-0.001	-0.193	-0.169	0.011	0.013	-0.021	-0.033
	[0.022]	[0.021]	[0.105]*	[0.100]*	[0.021]	[0.021]	[0.044]	[0.037]
Mother 35 or more at birth	-0.004	0.008	-0.200	-0.233	-0.002	-0.003	0.034	0.017
	[0.026]	[0.024]	[0.127]	[0.121]*	[0.025]	[0.025]	[0.056]	[0.045]
Parental education qualifications								
Mother no qualifications	-0.172	-0.144	0.483	0.514	-0.017	-0.020	0.042	0.006
	[0.036]***	[0.034]***	[0.187]***	[0.182]***	[0.034]	[0.034]	[0.077]	[0.065]
Mother overseas qualification	0.017	0.009	0.130	0.078	0.020	0.020	0.188	0.158
	[0.053]	[0.050]	[0.344]	[0.331]	[0.056]	[0.057]	[0.132]	[0.110]
Mother NVQ1	-0.124	-0.106	0.154	0.084	0.000	-0.003	-0.008	-0.076
	[0.036]***	[0.033]***	[0.198]	[0.190]	[0.034]	[0.034]	[0.067]	[0.053]
Mother NVQ2	Omitted reference category							
Mother NVQ3	-0.009	-0.021	-0.072	-0.050	-0.022	-0.019	-0.031	-0.041
	[0.028]	[0.026]	[0.130]	[0.125]	[0.026]	[0.025]	[0.055]	[0.046]
Mother NVQ4/5	0.098	0.061	-0.319	-0.158	-0.026	-0.019	0.029	-0.038
	[0.023]***	[0.022]***	[0.113]***	[0.109]	[0.022]	[0.022]	[0.048]	[0.040]
Father no qualifications	-0.061	-0.043	-0.112	-0.001	0.014	0.018	-0.027	-0.067
	[0.038]	[0.036]	[0.203]	[0.189]	[0.036]	[0.036]	[0.072]	[0.057]
Father overseas qualification	-0.106	-0.083	0.027	0.097	-0.032	-0.033	0.291	0.197

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
Father NVQ1	[0.056]*	[0.052]	[0.287]	[0.270]	[0.051]	[0.051]	[0.126]**	[0.095]**
	-0.085	-0.077	-0.244	-0.218	0.081	0.082	-0.023	-0.044
Father NVQ2	[0.046]*	[0.043]*	[0.213]	[0.203]	[0.045]*	[0.045]*	[0.091]	[0.075]
	Omitted reference category							
Father NVQ3	0.024	0.009	-0.179	-0.111	-0.019	-0.016	-0.021	0.006
	[0.030]	[0.028]	[0.146]	[0.139]	[0.028]	[0.028]	[0.057]	[0.045]
Father NVQ4/5	0.098	0.065	-0.160	-0.094	-0.003	0.001	-0.009	0.013
	[0.025]***	[0.024]***	[0.127]	[0.122]	[0.024]	[0.024]	[0.054]	[0.045]
Home learning environment								
Home safe/clean/light/tidy	0.027	0.001	-0.293	-0.216	0.001	0.005	0.008	0.027
	[0.029]	[0.027]	[0.152]*	[0.144]	[0.027]	[0.027]	[0.062]	[0.051]
Teaching score W2	0.007	0.001	0.004	0.011	0.000	0.001	0.005	0.006
	[0.002]***	[0.002]	[0.009]	[0.008]	[0.002]	[0.002]	[0.004]	[0.003]*
Freq mother reads to child W2	0.013	0.001	-0.050	-0.039	-0.001	0.000	0.005	0.010
	[0.005]***	[0.004]	[0.024]**	[0.023]*	[0.004]	[0.004]	[0.009]	[0.008]
Freq mother reads to child W3	0.001	0.000	-0.009	-0.011	0.006	0.007	0.010	0.006
	[0.004]	[0.004]	[0.022]	[0.021]	[0.004]	[0.004]*	[0.008]	[0.007]
Freq father reads to child W2	0.019	0.008	0.064	0.075	0.003	0.004	-0.001	-0.002
	[0.004]***	[0.004]*	[0.022]***	[0.021]***	[0.004]	[0.004]	[0.009]	[0.007]
Freq father reads to child W3	0.005	0.004	-0.038	-0.038	-0.001	-0.001	0.008	0.004
	[0.005]	[0.004]	[0.024]	[0.022]*	[0.004]	[0.004]	[0.010]	[0.008]
Freq moth creative activities W3	-0.006	-0.004	-0.010	-0.007	0.001	0.001	0.004	0.003
	[0.002]***	[0.002]**	[0.010]	[0.010]	[0.002]	[0.002]	[0.004]	[0.003]
Freq father creative activities W3	0.001	0.000	-0.009	-0.010	0.000	0.000	-0.001	0.001
	[0.002]	[0.002]	[0.012]	[0.011]	[0.002]	[0.002]	[0.005]	[0.004]
Freq mother play activities W3	0.003	0.004	0.016	0.011	-0.006	-0.007	0.010	0.008
	[0.002]	[0.002]**	[0.012]	[0.011]	[0.002]***	[0.002]***	[0.005]*	[0.004]*
Freq father play activities W3	-0.004	-0.003	0.006	0.009	-0.003	-0.003	-0.002	0.003

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
Library visits per month W2	[0.003]	[0.002]	[0.012]	[0.012]	[0.002]	[0.002]	[0.005]	[0.004]
	0.019	0.007	-0.081	-0.029	0.003	0.005	-0.024	-0.024
Library visits per month W3	[0.008]**	[0.008]	[0.039]**	[0.037]	[0.008]	[0.008]	[0.016]	[0.014]*
	0.003	0.004	0.033	0.029	0.000	0.000	0.008	0.009
Weekly sports activity W3	[0.005]	[0.005]	[0.025]	[0.025]	[0.005]	[0.005]	[0.011]	[0.010]
	0.053	0.038	-0.297	-0.240	-0.050	-0.047	0.040	0.032
Places of interest in last year W3	[0.019]***	[0.018]**	[0.094]***	[0.089]***	[0.018]***	[0.018]***	[0.039]	[0.032]
	0.048	0.035	-0.205	-0.148	-0.021	-0.018	0.033	0.025
	[0.007]***	[0.007]***	[0.038]***	[0.036]***	[0.007]***	[0.007]**	[0.015]**	[0.012]**
Parental warmth & sensitivity								
Mother Pianta scale	0.009	0.003	-0.181	-0.100	-0.006	-0.003	-0.004	0.000
	[0.002]***	[0.002]*	[0.009]***	[0.009]***	[0.002]***	[0.002]**	[0.003]	[0.003]
Father Pianta scale	0.000	-0.003	-0.035	-0.022	-0.003	-0.002	-0.001	0.003
	[0.002]	[0.002]*	[0.008]***	[0.008]***	[0.002]*	[0.002]	[0.003]	[0.003]
Int obs pos interactions: <9	Omitted reference category							
Int obs pos interactions: 9	0.090	0.029	-0.437	-0.391	0.035	0.041	-0.089	-0.073
	[0.048]*	[0.044]	[0.246]*	[0.236]*	[0.045]	[0.045]	[0.101]	[0.091]
Int obs pos interactions: 10	0.177	0.088	-0.291	-0.154	0.013	0.022	-0.176	-0.068
	[0.042]***	[0.039]**	[0.215]	[0.208]	[0.039]	[0.039]	[0.088]**	[0.075]
Int obs pos interactions: 11	0.236	0.097	-0.296	-0.128	0.024	0.035	-0.118	-0.080
	[0.041]***	[0.038]**	[0.210]	[0.204]	[0.038]	[0.038]	[0.085]	[0.074]
Mother ch-rearing attitudes	-0.005	-0.005	0.003	-0.006	-0.011	-0.011	0.008	0.008
	[0.005]	[0.004]	[0.023]	[0.022]	[0.004]***	[0.004]**	[0.010]	[0.008]
Father ch-rearing attitudes	0.009	0.009	-0.002	0.003	0.004	0.004	0.015	0.001
	[0.005]	[0.005]*	[0.026]	[0.025]	[0.005]	[0.005]	[0.011]	[0.009]
Authoritative parenting								
Regular bedtimes W2	0.054	0.033	-0.164	-0.054	-0.072	-0.067	-0.017	-0.036
	[0.025]**	[0.023]	[0.129]	[0.124]	[0.023]***	[0.023]***	[0.051]	[0.040]

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
Regular bedtimes W3	0.085 [0.035]**	0.087 [0.032]***	-0.945 [0.178]***	-0.847 [0.170]***	-0.025 [0.030]	-0.024 [0.030]	-0.172 [0.070]**	-0.119 [0.055]**
Regular mealtimes W2	0.067 [0.036]*	0.052 [0.034]	-0.330 [0.196]*	-0.181 [0.192]	-0.092 [0.035]***	-0.087 [0.034]**	0.097 [0.078]	0.047 [0.063]
Regular mealtimes W3	0.094 [0.038]**	0.075 [0.036]**	-0.534 [0.214]**	-0.467 [0.208]**	-0.076 [0.035]**	-0.074 [0.035]**	-0.006 [0.080]	-0.014 [0.067]
Non-violent discipline W2	0.014 [0.004]***	0.008 [0.004]**	-0.076 [0.023]***	-0.084 [0.022]***	-0.009 [0.004]**	-0.008 [0.004]*	-0.022 [0.009]**	-0.023 [0.008]***
Non-violent discipline W3	-0.015 [0.005]***	-0.011 [0.005]**	0.357 [0.026]***	0.325 [0.025]***	0.007 [0.005]	0.006 [0.005]	0.003 [0.010]	0.005 [0.009]
Harsh discipline W2	0.004 [0.005]	0.004 [0.004]	-0.070 [0.024]***	-0.101 [0.024]***	-0.011 [0.005]**	-0.012 [0.005]***	0.025 [0.010]**	0.022 [0.009]***
Harsh discipline W3	0.003 [0.006]	-0.001 [0.005]	0.318 [0.030]***	0.301 [0.028]***	0.002 [0.005]	0.001 [0.005]	0.004 [0.011]	-0.002 [0.009]
Enforces obedience W3	0.058 [0.024]**	0.041 [0.023]*	-0.471 [0.123]***	-0.365 [0.117]***	-0.046 [0.023]**	-0.042 [0.023]*	-0.003 [0.051]	0.020 [0.046]
> than 3 hrs TV per day W2	0.080 [0.024]***	0.064 [0.023]***	0.162 [0.135]	0.115 [0.128]	0.012 [0.024]	0.009 [0.024]	-0.041 [0.054]	-0.017 [0.047]
> than 3 hrs TV per day W3	-0.059 [0.025]**	-0.071 [0.024]***	0.222 [0.129]*	0.175 [0.123]	0.064 [0.025]***	0.065 [0.025]***	0.095 [0.051]*	0.054 [0.045]
> than 1 hr comp games a day W3	0.009 [0.020]	0.020 [0.019]	-0.217 [0.106]**	-0.238 [0.101]**	0.026 [0.020]	0.025 [0.020]	0.052 [0.046]	0.053 [0.039]
Mental health & wellbeing								
Mother Malaise score W1	0.010 [0.006]	0.006 [0.006]	0.110 [0.037]***	0.096 [0.035]***	0.006 [0.006]	0.006 [0.006]	-0.010 [0.014]	0.000 [0.012]
Mother Kessler 6 score W2	0.005 [0.004]	0.005 [0.003]	-0.017 [0.019]	-0.034 [0.019]*	0.000 [0.003]	-0.001 [0.003]	-0.016 [0.007]**	-0.009 [0.006]
Mother Kessler 6 score W3	-0.006 [0.003]**	-0.006 [0.003]**	0.190 [0.018]***	0.187 [0.017]***	0.011 [0.003]***	0.011 [0.003]***	0.007 [0.006]	0.006 [0.005]

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
Mother diagnosed depression	-0.015 [0.019]	-0.008 [0.018]	-0.047 [0.097]	-0.106 [0.092]	0.052 [0.019]***	0.049 [0.019]***	-0.027 [0.040]	-0.011 [0.034]
Father Malaise score W1	-0.010 [0.007]	-0.015 [0.007]**	-0.012 [0.035]	-0.005 [0.034]	0.004 [0.006]	0.005 [0.006]	-0.009 [0.015]	-0.003 [0.012]
Father Kessler 6 score W2	0.000 [0.004]	-0.001 [0.004]	-0.020 [0.021]	-0.014 [0.019]	0.008 [0.004]*	0.008 [0.004]*	0.001 [0.008]	0.010 [0.007]
Father Kessler 6 score W3	-0.002 [0.004]	-0.002 [0.003]	0.001 [0.019]	0.001 [0.018]	0.000 [0.004]	0.000 [0.004]	0.000 [0.007]	0.002 [0.006]
Father diagnosed depression	-0.002 [0.032]	-0.012 [0.030]	0.080 [0.161]	0.057 [0.152]	-0.022 [0.030]	-0.021 [0.029]	-0.059 [0.061]	-0.092 [0.050]*
Mother self-esteem score W1	0.000 [0.004]	0.001 [0.004]	-0.016 [0.020]	-0.006 [0.019]	-0.011 [0.004]***	-0.011 [0.004]***	0.002 [0.009]	0.001 [0.008]
Mother locus of control W1	0.005 [0.008]	0.005 [0.008]	-0.113 [0.045]**	-0.116 [0.043]***	0.009 [0.008]	0.010 [0.008]	-0.024 [0.016]	-0.018 [0.013]
Mother life satisfaction W1	-0.009 [0.006]	-0.008 [0.006]	-0.002 [0.032]	-0.007 [0.031]	-0.007 [0.006]	-0.007 [0.006]	-0.004 [0.014]	-0.005 [0.012]
Mother life satisfaction W2	-0.009 [0.006]	-0.005 [0.006]	0.054 [0.034]	0.045 [0.033]	-0.010 [0.007]	-0.011 [0.006]	-0.008 [0.014]	-0.015 [0.012]
Mother life satisfaction W3	0.001 [0.006]	0.001 [0.005]	-0.033 [0.030]	-0.026 [0.029]	-0.013 [0.005]**	-0.013 [0.005]**	0.000 [0.012]	0.007 [0.012]
Mother social support W1	0.005 [0.005]	0.001 [0.004]	-0.093 [0.025]***	-0.063 [0.024]***	-0.003 [0.005]	-0.002 [0.004]	-0.027 [0.011]**	-0.023 [0.009]**
Health behaviours								
Birth weight (kg)	0.092 [0.019]***	0.076 [0.018]***	-0.082 [0.095]	-0.074 [0.092]	-0.053 [0.018]***	-0.049 [0.018]***	0.640 [0.040]***	0.303 [0.038]***
Gestation length (weeks)	0.002 [0.006]	-0.002 [0.005]	-0.040 [0.028]	-0.035 [0.027]	-0.008 [0.005]	-0.008 [0.005]	-0.061 [0.012]***	-0.034 [0.010]***
Special Care Unit at birth	-0.026 [0.032]	-0.016 [0.030]	0.183 [0.168]	0.079 [0.162]	0.065 [0.031]**	0.059 [0.031]*	0.095 [0.064]	0.041 [0.054]

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
Never breast fed	Omitted reference category							
Breast fed less than 6 months	0.080 [0.021]***	0.068 [0.020]***	-0.097 [0.109]	0.011 [0.105]	-0.005 [0.021]	-0.001 [0.021]	0.003 [0.045]	0.018 [0.038]
Breast fed 6 months or more	0.085 [0.027]***	0.071 [0.025]***	-0.230 [0.127]*	-0.076 [0.122]	-0.012 [0.024]	-0.006 [0.024]	-0.098 [0.053]*	-0.053 [0.046]
No prenatal care 1st trimester	0.030 [0.022]	0.029 [0.021]	-0.109 [0.110]	-0.068 [0.105]	0.018 [0.021]	0.020 [0.021]	0.055 [0.046]	0.025 [0.039]
All immunizations	-0.102 [0.045]**	-0.081 [0.043]*	0.053 [0.284]	-0.064 [0.272]	0.064 [0.048]	0.063 [0.048]	-0.053 [0.104]	-0.017 [0.085]
Smoking in same room as ch W1	0.009 [0.030]	0.014 [0.028]	0.099 [0.166]	0.142 [0.160]	0.054 [0.031]*	0.055 [0.030]*	-0.045 [0.061]	-0.037 [0.053]
Smoking in same room as ch W2	-0.021 [0.029]	0.008 [0.027]	0.091 [0.159]	-0.042 [0.151]	-0.032 [0.028]	-0.036 [0.028]	0.052 [0.061]	0.055 [0.050]
Smoking in same room as ch W3	0.003 [0.028]	0.010 [0.027]	0.024 [0.165]	0.053 [0.160]	-0.088 [0.029]***	-0.089 [0.029]***	0.102 [0.067]	0.089 [0.056]
Mother never smoked in preg	Omitted reference category							
Mother smoked <10 a day in preg	0.031 [0.029]	0.006 [0.028]	0.204 [0.157]	0.303 [0.151]**	0.028 [0.029]	0.034 [0.029]	0.273 [0.062]***	0.140 [0.053]***
Mother smked >=10 a day in preg	0.037 [0.034]	0.019 [0.033]	0.148 [0.185]	0.196 [0.178]	0.065 [0.034]*	0.070 [0.034]**	0.294 [0.070]***	0.165 [0.059]***
Moth drinks alc >=3 times/wk W1	0.014 [0.028]	0.022 [0.026]	0.105 [0.142]	0.046 [0.134]	0.009 [0.028]	0.008 [0.028]	0.053 [0.057]	0.043 [0.046]
Moth drinks alc >=3 times/wk W2	0.001 [0.029]	0.000 [0.027]	-0.341 [0.142]**	-0.279 [0.133]**	-0.006 [0.027]	-0.004 [0.027]	-0.076 [0.059]	-0.033 [0.048]
Moth drinks alc >=3 times/wk W3	0.019 [0.025]	0.007 [0.024]	0.011 [0.129]	0.032 [0.121]	-0.036 [0.024]	-0.034 [0.024]	0.005 [0.050]	-0.022 [0.041]
Moth 1 symptom prob drinking	-0.039	-0.038	-0.029	-0.073	-0.021	-0.024	0.054	0.009

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
	[0.036]	[0.034]	[0.174]	[0.163]	[0.032]	[0.032]	[0.067]	[0.053]
Moth 2+ symptoms prob drinking	0.010	0.015	0.275	0.315	-0.036	-0.036	0.028	-0.008
	[0.044]	[0.043]	[0.251]	[0.244]	[0.042]	[0.042]	[0.095]	[0.086]
Mother used recreational drugs	0.092	0.069	0.117	0.155	-0.050	-0.047	0.153	0.155
	[0.037]**	[0.035]**	[0.202]	[0.189]	[0.038]	[0.038]	[0.083]*	[0.070]**
Mother overweight (BMI>=25)	-0.059	-0.045	0.000	-0.037	0.004	0.003	0.313	0.162
	[0.024]**	[0.022]**	[0.114]	[0.108]	[0.022]	[0.022]	[0.050]***	[0.042]***
Mother obese (BMI>=30)	0.040	0.042	0.161	0.167	0.000	0.002	0.451	0.323
	[0.029]	[0.027]	[0.144]	[0.137]	[0.028]	[0.027]	[0.066]***	[0.054]***
Fath drinks alc >=3 times/wk W1	-0.036	-0.032	0.133	0.095	-0.035	-0.036	-0.060	-0.099
	[0.024]	[0.023]	[0.119]	[0.114]	[0.024]	[0.024]	[0.051]	[0.041]**
Fath drinks alc >=3 times/wk W2	0.035	0.029	-0.216	-0.251	0.002	0.000	0.026	0.071
	[0.026]	[0.025]	[0.134]	[0.125]**	[0.026]	[0.026]	[0.055]	[0.044]
Fath drinks alc >=3 times/wk W3	0.048	0.040	-0.007	0.060	0.039	0.042	0.011	-0.007
	[0.024]**	[0.023]*	[0.123]	[0.116]	[0.024]	[0.024]*	[0.049]	[0.040]
Fath 1 symptom prob drinking	0.006	-0.002	0.073	0.084	-0.047	-0.047	-0.116	-0.108
	[0.029]	[0.027]	[0.137]	[0.130]	[0.026]*	[0.026]*	[0.054]**	[0.041]***
Fath 2+ symptoms prob drinking	-0.035	-0.038	-0.113	-0.173	-0.073	-0.074	-0.101	-0.070
	[0.034]	[0.032]	[0.157]	[0.147]	[0.030]**	[0.030]**	[0.062]	[0.052]
Father used recreational drugs	0.040	0.020	0.053	0.138	-0.022	-0.020	-0.012	-0.056
	[0.030]	[0.028]	[0.166]	[0.157]	[0.029]	[0.029]	[0.066]	[0.053]
Father overweight (BMI>=25)	-0.050	-0.030	0.105	0.040	-0.018	-0.019	0.323	0.172
	[0.023]**	[0.022]	[0.116]	[0.110]	[0.022]	[0.022]	[0.045]***	[0.037]***
Father obese (BMI>=30)	0.025	0.019	0.306	0.304	0.050	0.051	0.398	0.307
	[0.027]	[0.025]	[0.126]**	[0.119]**	[0.025]**	[0.025]**	[0.058]***	[0.046]***
Housing conditions								
>1 rooms per person	0.044	0.013	0.178	0.216	0.040	0.041	0.069	0.083
	[0.029]	[0.027]	[0.151]	[0.143]	[0.028]	[0.028]	[0.060]	[0.051]
Access to garden	0.019	0.046	-0.131	-0.156	0.024	0.022	0.037	0.063

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
Central heating	[0.030]	[0.029]	[0.161]	[0.155]	[0.028]	[0.028]	[0.063]	[0.055]
	-0.005	-0.009	-0.108	-0.058	-0.034	-0.034	-0.097	-0.048
No damp in home	[0.027]	[0.025]	[0.145]	[0.139]	[0.026]	[0.026]	[0.058]*	[0.049]
	0.028	0.019	-0.066	-0.038	-0.020	-0.018	0.052	0.009
Safe local play area	[0.021]	[0.019]	[0.105]	[0.100]	[0.020]	[0.020]	[0.042]	[0.035]
	0.009	0.012	-0.221	-0.199	-0.038	-0.037	-0.006	-0.032
	[0.019]	[0.018]	[0.094]**	[0.090]**	[0.018]**	[0.018]**	[0.038]	[0.032]
Preschool education								
Attended nursery class/school	-0.014	-0.016	-0.029	-0.025	0.042	0.043	0.008	0.005
	[0.026]	[0.024]	[0.124]	[0.120]	[0.023]*	[0.023]*	[0.049]	[0.041]
Attended playgroup	-0.010	-0.015	-0.080	-0.085	0.042	0.041	-0.008	0.012
	[0.023]	[0.022]	[0.113]	[0.108]	[0.022]*	[0.022]*	[0.045]	[0.037]
Attended preschool	-0.015	-0.025	0.029	0.043	0.090	0.091	-0.039	-0.013
	[0.023]	[0.022]	[0.110]	[0.104]	[0.021]***	[0.021]***	[0.044]	[0.036]
Attended childminder	-0.026	-0.057	-0.298	-0.320	-0.103	-0.108	0.076	0.138
	[0.057]	[0.052]	[0.284]	[0.285]	[0.054]*	[0.054]**	[0.189]	[0.172]
Attended day nursery	-0.034	0.008	0.336	0.160	0.032	0.027	-0.036	-0.001
	[0.061]	[0.059]	[0.354]	[0.331]	[0.065]	[0.065]	[0.168]	[0.142]
Age started early education	0.013	0.007	-0.010	0.003	0.010	0.011	0.015	0.005
	[0.010]	[0.009]	[0.046]	[0.044]	[0.009]	[0.009]	[0.019]	[0.016]
Age started child minder	-0.008	-0.014	-0.063	-0.074	-0.029	-0.030	0.015	0.030
	[0.015]	[0.014]	[0.074]	[0.074]	[0.014]**	[0.014]**	[0.048]	[0.043]
Age started day nursery	-0.013	0.001	0.066	-0.003	0.004	0.001	-0.019	0.008
	[0.016]	[0.016]	[0.095]	[0.089]	[0.017]	[0.017]	[0.048]	[0.041]
Attended early educ full-time	0.061	0.054	0.033	0.071	-0.043	-0.042	0.152	0.060
	[0.024]**	[0.023]**	[0.124]	[0.119]	[0.023]*	[0.023]*	[0.052]***	[0.045]
Family characteristics								
Log average hhold income	0.047	0.010	-0.019	0.119	-0.039	-0.033	0.030	0.034
	[0.021]**	[0.019]	[0.096]	[0.092]	[0.018]**	[0.018]*	[0.039]	[0.032]

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
White ethnicity	Omitted reference category							
Pakistani	-0.258 [0.062]***	-0.205 [0.058]***	0.769 [0.347]**	0.597 [0.343]*	0.336 [0.060]***	0.326 [0.060]***	-0.299 [0.133]**	0.001 [0.110]
Bangladeshi	-0.028 [0.103]	0.022 [0.100]	-0.221 [0.527]	-0.178 [0.487]	0.242 [0.079]***	0.233 [0.079]***	0.264 [0.240]	0.314 [0.213]
Indian	0.009 [0.073]	0.024 [0.071]	0.141 [0.386]	-0.001 [0.368]	0.191 [0.066]***	0.181 [0.066]***	-0.424 [0.141]***	-0.014 [0.105]
Other Asian	0.024 [0.099]	0.033 [0.090]	0.535 [0.799]	0.440 [0.738]	-0.011 [0.105]	-0.024 [0.106]	-0.504 [0.212]**	-0.152 [0.167]
Black African	-0.272 [0.074]***	-0.276 [0.070]***	-1.071 [0.417]**	-0.928 [0.401]**	-0.079 [0.071]	-0.076 [0.071]	0.610 [0.216]***	0.620 [0.195]***
Black Caribbean	-0.035 [0.082]	0.053 [0.083]	0.493 [0.453]	0.502 [0.439]	-0.003 [0.090]	-0.011 [0.089]	0.697 [0.266]***	0.552 [0.206]***
Mixed race/ethnicity	-0.054 [0.055]	-0.046 [0.053]	0.380 [0.242]	0.333 [0.237]	0.059 [0.051]	0.051 [0.051]	0.053 [0.140]	0.057 [0.121]
Other race/ethnicity	-0.049 [0.122]	-0.037 [0.117]	0.041 [0.606]	0.073 [0.593]	0.115 [0.095]	0.104 [0.096]	-0.041 [0.225]	0.034 [0.152]
Mother born outside UK	0.022 [0.037]	0.059 [0.035]*	-0.160 [0.180]	-0.041 [0.169]	-0.025 [0.032]	-0.026 [0.032]	-0.012 [0.074]	-0.005 [0.058]
Father born outside UK	0.042 [0.039]	0.066 [0.036]*	0.020 [0.196]	0.042 [0.187]	0.041 [0.035]	0.041 [0.035]	0.019 [0.088]	0.046 [0.068]
Foreign language spoken in home	-0.177 [0.049]***	-0.063 [0.047]	-0.215 [0.262]	-0.420 [0.254]*	-0.033 [0.044]	-0.046 [0.044]	0.114 [0.100]	-0.028 [0.079]
Mother has longstanding illness	-0.012 [0.026]	-0.005 [0.025]	0.320 [0.134]**	0.290 [0.127]**	0.079 [0.026]***	0.078 [0.026]***	-0.043 [0.059]	-0.021 [0.051]
Mother has limiting illness	-0.013 [0.034]	-0.014 [0.032]	-0.075 [0.182]	-0.044 [0.173]	0.101 [0.035]***	0.101 [0.034]***	-0.013 [0.073]	-0.029 [0.061]
Father has longstanding illness	-0.007	-0.010	-0.011	0.035	0.071	0.071	-0.055	0.005

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
Father has limiting illness	[0.031]	[0.029]	[0.146]	[0.138]	[0.029]**	[0.029]**	[0.056]	[0.044]
	0.035	0.033	0.072	0.076	-0.053	-0.054	0.100	0.020
Ever lived in social housing	[0.041]	[0.039]	[0.216]	[0.205]	[0.040]	[0.040]	[0.084]	[0.067]
	-0.027	-0.012	0.105	-0.055	0.034	0.029	0.024	0.041
Always lived in social housing	[0.033]	[0.031]	[0.178]	[0.168]	[0.032]	[0.032]	[0.070]	[0.060]
	-0.020	-0.006	-0.152	-0.086	-0.053	-0.052	0.082	0.020
Wales	[0.037]	[0.034]	[0.204]	[0.195]	[0.036]	[0.036]	[0.079]	[0.063]
	-0.044	-0.041	0.403	0.402	-0.089	-0.088	0.087	-0.019
Scotland	[0.033]	[0.031]	[0.168]**	[0.161]**	[0.032]***	[0.032]***	[0.069]	[0.058]
	-0.102	-0.139	0.099	0.124	-0.085	-0.082	0.038	-0.054
Northern Ireland	[0.035]***	[0.033]***	[0.166]	[0.157]	[0.032]***	[0.032]**	[0.065]	[0.055]
	0.134	0.135	-0.211	-0.223	-0.055	-0.058	0.037	0.010
North East	[0.042]***	[0.040]***	[0.192]	[0.185]	[0.036]	[0.036]	[0.078]	[0.066]
	-0.100	-0.091	0.354	0.162	-0.045	-0.051	0.130	0.025
North West	[0.050]**	[0.047]*	[0.276]	[0.264]	[0.050]	[0.050]	[0.095]	[0.071]
	0.048	0.079	0.237	0.142	-0.072	-0.077	-0.060	-0.099
Yorkshire and the Humber	[0.036]	[0.034]**	[0.188]	[0.177]	[0.035]**	[0.035]**	[0.072]	[0.062]
	-0.069	-0.026	0.321	0.121	-0.029	-0.037	0.048	-0.047
East Midlands	[0.038]*	[0.036]	[0.203]	[0.194]	[0.038]	[0.038]	[0.082]	[0.068]
	0.046	0.079	0.218	0.144	-0.064	-0.067	-0.035	-0.097
West Midlands	[0.040]	[0.037]**	[0.203]	[0.194]	[0.039]*	[0.039]*	[0.077]	[0.063]
	-0.076	-0.080	0.436	0.307	0.011	0.005	0.065	0.046
East of England	[0.038]**	[0.036]**	[0.196]**	[0.189]	[0.038]	[0.038]	[0.075]	[0.060]
	-0.122	-0.109	0.363	0.289	-0.026	-0.030	-0.047	-0.037
London	[0.038]***	[0.035]***	[0.181]**	[0.173]*	[0.035]	[0.035]	[0.070]	[0.057]
	-0.022	0.009	0.008	-0.072	-0.011	-0.015	-0.041	-0.082
South East England	[0.037]	[0.034]	[0.186]	[0.176]	[0.033]	[0.034]	[0.075]	[0.060]

Omitted reference category

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
South West	-0.082	-0.117	0.293	0.290	-0.045	-0.043	0.071	0.002
	[0.039]**	[0.036]***	[0.188]	[0.177]	[0.038]	[0.038]	[0.082]	[0.069]
IMD decile 1 (most deprived)	-0.095	-0.059	0.025	-0.021	0.053	0.049	0.071	0.056
	[0.042]**	[0.040]	[0.209]	[0.200]	[0.040]	[0.040]	[0.084]	[0.073]
IMD decile 2	-0.114	-0.081	0.261	0.116	0.048	0.042	0.107	0.100
	[0.040]***	[0.038]**	[0.200]	[0.190]	[0.038]	[0.038]	[0.080]	[0.070]
IMD decile 3	-0.093	-0.060	0.039	-0.009	0.121	0.116	0.144	0.104
	[0.038]**	[0.036]*	[0.193]	[0.186]	[0.037]***	[0.037]***	[0.085]*	[0.075]
IMD decile 4	-0.093	-0.081	-0.224	-0.241	0.036	0.034	0.177	0.120
	[0.038]**	[0.036]**	[0.183]	[0.172]	[0.035]	[0.035]	[0.079]**	[0.065]*
IMD decile 5	-0.154	-0.111	-0.005	-0.099	0.094	0.089	0.082	0.013
	[0.039]***	[0.037]***	[0.168]	[0.163]	[0.035]***	[0.035]**	[0.072]	[0.060]
IMD decile 6	-0.074	-0.035	-0.138	-0.190	0.033	0.030	0.103	0.095
	[0.037]**	[0.035]	[0.174]	[0.165]	[0.035]	[0.034]	[0.072]	[0.058]
IMD decile 7	-0.128	-0.097	-0.199	-0.274	0.095	0.089	-0.102	-0.105
	[0.037]***	[0.035]***	[0.170]	[0.161]*	[0.034]***	[0.034]***	[0.067]	[0.053]**
IMD decile 8	-0.015	0.012	0.076	-0.022	0.037	0.033	0.000	0.014
	[0.036]	[0.034]	[0.167]	[0.156]	[0.033]	[0.033]	[0.071]	[0.057]
IMD decile 9	-0.120	-0.081	-0.013	-0.061	0.027	0.024	0.032	0.023
	[0.036]***	[0.034]**	[0.154]	[0.147]	[0.032]	[0.032]	[0.067]	[0.056]
IMD decile 10	Omitted reference category							
Age three outcomes								
Age 3 Naming Vocabulary		0.011		-0.009		-0.001		0.002
		[0.001]***		[0.003]***		[0.001]		[0.001]*
Age 3 Bracken SRA		0.014		-0.010		0.000		-0.004
		[0.001]***		[0.004]**		[0.001]		[0.001]***
Age 3 SDQ Behaviour score		-0.006		0.329		0.011		0.000
		[0.002]**		[0.014]***		[0.003]***		[0.004]

	Cognitive z-score		SDQ behavior score		General ill-health		BMI	
	Levels	VA	Levels	VA	Levels	VA	Levels	VA
Age 3 Body Mass Index		0.002 [0.006]		0.013 [0.027]		-0.004 [0.005]		0.654 [0.029]***
Constant	-1.972 [0.351]***	-1.887 [0.344]***	20.119 [1.769]***	11.859 [1.777]***	3.774 [0.321]***	3.545 [0.336]***	15.934 [0.711]***	4.688 [0.712]***
Observations	14903	14903	11732	11732	15179	15179	14997	14997
Adjusted R-squared	0.258	0.338	0.369	0.425	0.109	0.113	0.092	0.364

Weighted estimates. Numbers shown are linear regression coefficients with robust standard errors in brackets. ***, **, * indicate significance at the 1%, 5% and 10% levels respectively. The levels model excludes age three outcomes from the predictors; the value-added (VA) model includes age three outcomes. W1, W2 and W3 refer to the three waves of the MCS. Dummies indicating missing values for all variables are included but not shown. See Appendix C for full details of variable construction.

Table B3. ALSPAC descriptive statistics, income gaps and GCSE regression coefficients

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap	GCSE regression coef
Baseline controls										
Year of birth: 1991	8517	0.0%	0.40	0.49	0	1	0.39	0.40	0.01	Omitted
Year of birth: 1992	8517	0.0%	0.59	0.49	0	1	0.60	0.59	-0.01	0.837 [0.231]***
Year of birth: 1993	8517	0.0%	0.01	0.08	0	1	0.01	0.01	0.00	0.208 [1.381]
Month of birth: Jan	8517	0.0%	0.06	0.23	0	1	0.06	0.06	-0.01	Omitted
Month of birth: Feb	8517	0.0%	0.05	0.22	0	1	0.06	0.05	-0.01	-0.837 [0.639]
Month of birth: Mar	8517	0.0%	0.06	0.23	0	1	0.05	0.06	0.01	-1.316

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap	GCSE regression coef
Month of birth: Apr	8517	0.0%	0.08	0.27	0	1	0.07	0.08	0.01	[0.613]** -0.927
Month of birth: May	8517	0.0%	0.09	0.29	0	1	0.09	0.09	0.00	[0.578] -0.776
Month of birth: Jun	8517	0.0%	0.09	0.29	0	1	0.09	0.09	0.01	[0.567] -0.590
Month of birth: Jul	8517	0.0%	0.10	0.30	0	1	0.10	0.10	0.00	[0.572] -1.037
Month of birth: Aug	8517	0.0%	0.10	0.29	0	1	0.09	0.10	0.00	[0.557]* -1.994
Month of birth: Sep	8517	0.0%	0.10	0.30	0	1	0.11	0.10	-0.01	[0.568]*** 1.296
Month of birth: Oct	8517	0.0%	0.10	0.30	0	1	0.10	0.10	0.01	[0.567]** 1.583
Month of birth: Nov	8517	0.0%	0.09	0.29	0	1	0.10	0.09	-0.01	[0.562]*** 1.048
Month of birth: Dec	8517	0.0%	0.08	0.28	0	1	0.08	0.09	0.00	[0.576]* 0.399
Female	8517	0.0%	0.49	0.50	0	1	0.49	0.49	0.01	[0.583] 2.563
Single parent 8 mths	7986	6.2%	0.07	0.25	0	1	0.25	0.02	-0.22	[0.214]*** -0.128
Single parent 33 mths	7863	7.7%	0.09	0.29	0	1	0.38	0.02	-0.35	[0.617] -0.444
Single parent 47 mths	7730	9.2%	0.10	0.30	0	1	0.38	0.03	-0.34	[0.568] -0.741
Mother's age at birth										[0.547]

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap	GCSE regression coef
Mother's age: <20	8517	0.0%	0.03	0.18	0	1	0.10	0.01	-0.09	-0.349 [0.642]
Mother's age: 20-24	8517	0.0%	0.16	0.37	0	1	0.30	0.13	-0.17	0.151 [0.314]
Mother's age: 25-29	8517	0.0%	0.40	0.49	0	1	0.35	0.42	0.07	Omitted
Mother's age: 30-34	8517	0.0%	0.30	0.46	0	1	0.18	0.33	0.15	0.183 [0.255]
Mother's age: 35+	8517	0.0%	0.10	0.30	0	1	0.07	0.11	0.04	0.755 [0.377]**
Parental educational qualifications										
Mother: No quals	8210	3.6%	0.04	0.19	0	1	0.09	0.02	-0.07	-3.309 [0.587]***
Mother: CSE	8210	3.6%	0.13	0.34	0	1	0.25	0.10	-0.15	-1.453 [0.350]***
Mother: Voc/O-level	8210	3.6%	0.47	0.50	0	1	0.49	0.47	-0.03	Omitted
Mother: A-level	8210	3.6%	0.24	0.43	0	1	0.14	0.26	0.13	1.540 [0.282]***
Mother: Degree	8210	3.6%	0.12	0.33	0	1	0.03	0.14	0.12	2.763 [0.428]***
Father: No quals	7929	6.9%	0.06	0.23	0	1	0.13	0.04	-0.09	-2.363 [0.497]***
Father: CSE	7929	6.9%	0.18	0.38	0	1	0.35	0.14	-0.21	-1.301 [0.338]***
Father: Voc/O-level	7929	6.9%	0.32	0.47	0	1	0.32	0.32	0.00	Omitted
Father: A-level	7929	6.9%	0.27	0.45	0	1	0.16	0.30	0.14	0.867

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap	GCSE regression coef
Father: Degree	7929	6.9%	0.17	0.38	0	1	0.04	0.20	0.16	[0.280]*** 3.258 [0.388]***
Home learning environment										
Teaching score 30 mths	7830	8.1%	5.39	0.89	0	6	5.27	5.42	0.15	0.716 [0.131]***
Teaching score 42 mths	7801	8.4%	5.62	0.95	0	6	5.49	5.65	0.16	0.403 [0.125]***
Library visits 42 mths	7782	8.6%	0.83	1.18	0	4	0.71	0.85	0.15	0.143 [0.099]
Library visits 57 mths	7430	12.8%	0.94	1.23	0	4	0.91	0.94	0.03	-0.032 [0.097]
Places of interest 57 mths	7409	13.0%	1.46	1.62	0	8	1.13	1.54	0.41	-0.052 [0.072]
Mother's reading to ch 42 mths	7785	8.6%	4.94	1.59	0	6	4.72	5.00	0.28	-0.023 [0.076]
Father's reading to ch 42 mths	7269	14.7%	3.30	2.16	0	6	2.61	3.42	0.81	0.108 [0.061]*
Mother's reading to ch 57 mths	7465	12.4%	9.29	1.46	0	10	9.10	9.34	0.23	0.127 [0.086]
Father's reading to ch 57 mths	6913	18.8%	7.84	2.48	0	10	6.82	8.02	1.20	0.157 [0.060]***
Freq moth creative activities 57 mths	7444	12.6%	7.70	1.70	0	10	7.61	7.72	0.10	0.076 [0.085]
Freq mother play activities 57 mths	7437	12.7%	7.47	1.62	1.11	10	7.52	7.46	-0.06	-0.184 [0.089]**
Freq father creative activities 57 mths	6898	19.0%	5.60	2.24	0	10	5.25	5.66	0.41	0.089 [0.069]

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap	GCSE regression coef
Freq father play activities 57 mths	6895	19.0%	7.21	1.94	0	10	6.82	7.28	0.46	-0.149 [0.079]*
Weekly sporting activity 57 mths	7470	12.3%	0.49	0.50	0	1	0.34	0.52	0.18	0.424 [0.230]*
Parental warmth and sensitivity										
Maternal bonding score	7731	9.2%	27.60	3.88	3	33	27.36	27.66	0.30	-0.021 [0.033]
Child-rearing beliefs	7878	7.5%	12.92	1.54	6	15	12.62	12.99	0.36	0.185 [0.071]***
Authoritative parenting										
Non-violent discipline 42 mths	7386	13.3%	7.30	2.30	0	12	7.36	7.29	-0.07	-0.118 [0.055]**
Harsh discipline 42 mths	7386	13.3%	6.51	2.43	0	12	6.69	6.47	-0.22	0.009 [0.053]
Regular bedtimes 42 mths	7745	9.1%	0.92	0.27	0	1	0.88	0.93	0.06	0.917 [0.434]**
Regular bedtimes 57 mths	7438	12.7%	0.94	0.23	0	1	0.91	0.95	0.05	1.820 [0.521]***
Regular mealtimes 38 mths	7855	7.8%	0.74	0.44	0	1	0.71	0.75	0.04	-0.005 [0.250]
Parent wins battle of wills 57 mths	7392	13.2%	0.63	0.48	0	1	0.64	0.63	-0.02	0.174 [0.231]
>2 hrs TV per day 38 mths	7800	8.4%	0.26	0.44	0	1	0.34	0.24	-0.10	0.379 [0.261]
>2 hrs TV per day 65 mths	7028	17.5%	0.12	0.32	0	1	0.20	0.10	-0.11	-0.029 [0.369]
Computer games > once a week	7363	13.5%	0.20	0.40	0	1	0.21	0.20	-0.02	-0.624 [0.279]**

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap	GCSE regression coef
Parental mental health and wellbeing										
Mother EPDS scale 8 mths	7934	6.8%	5.29	4.58	0	29	6.31	5.05	-1.26	0.031 [0.029]
Mother EPDS scale 33 mths	7794	8.5%	6.25	5.00	0	30	7.59	5.94	-1.64	-0.033 [0.030]
Mother EPDS scale 61 mths	7123	16.4%	7.02	3.91	0	27	7.85	6.83	-1.02	-0.101 [0.033]***
Mother Self esteem 33 mths	7688	9.7%	29.28	6.35	0	40	27.80	29.62	1.82	-0.047 [0.022]**
Mother Locus of control (preg)	7113	16.5%	4.28	2.13	0	12	5.46	3.99	-1.47	-0.255 [0.060]***
Mother Social support 8 mths	7502	11.9%	19.95	5.09	0	30	18.40	20.26	1.86	0.031 [0.025]
Health behaviours										
Gestation length (weeks)	8517	0.0%	39.47	1.84	24	44	39.45	39.47	0.02	-0.145 [0.071]**
Birth weight (kg)	8424	1.1%	3.41	0.55	0.645	5.64	3.35	3.43	0.08	0.451 [0.234]*
Special Care Unit at birth	8139	4.4%	0.07	0.25	0	1	0.08	0.06	-0.01	0.162 [0.470]
Breast fed: Never	8139	4.4%	0.26	0.44	0	1	0.39	0.23	-0.17	Omitted
Breast fed: < 6 mths	8252	3.1%	0.41	0.49	0	1	0.37	0.42	0.04	0.926 [0.269]***
Breast fed: 6 mths or more	8252	3.1%	0.33	0.47	0	1	0.23	0.35	0.12	1.613 [0.303]***
Attended antenatal classes	8048	5.5%	0.61	0.49	0	1	0.53	0.63	0.10	0.977 [0.226]***

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap	GCSE regression coef
Smoking in room with child 6 mths	8052	5.5%	0.37	0.48	0	1	0.60	0.32	-0.28	-0.016 [0.271]
Smoking in room with child 38 mths	7824	8.1%	0.43	0.49	0	1	0.67	0.37	-0.30	-0.528 [0.301]*
Smoking in room with child 65 mths	7050	17.2%	0.38	0.49	0	1	0.61	0.33	-0.28	-0.603 [0.305]**
Mother did not smoke in preg	8030	5.7%	0.75	0.44	0	1	0.52	0.80	0.29	Omitted
Mother smoked <10 a day in preg	8030	5.7%	0.09	0.29	0	1	0.14	0.08	-0.06	-0.614 [0.385]
Mother smoked 10+ a day in preg	8030	5.7%	0.16	0.37	0	1	0.35	0.12	-0.23	-1.514 [0.332]***
Mother drinks 3+ times pwk 8 mths	7996	6.1%	0.12	0.32	0	1	0.06	0.13	0.08	0.138 [0.395]
Mother drinks every day 33 mths	7866	7.6%	0.10	0.29	0	1	0.05	0.11	0.06	0.584 [0.448]
Mother drinks every day 61 mths	7177	15.7%	0.15	0.36	0	1	0.08	0.17	0.09	-0.012 [0.379]
Mother overweight (BMI>=25)	7673	9.9%	0.21	0.41	0	1	0.25	0.21	-0.05	-0.454 [0.300]
Mother obese (BMI>=30)	7673	9.9%	0.06	0.23	0	1	0.08	0.05	-0.03	-0.592 [0.524]
Housing conditions										
Less than 1 person per room	7330	13.9%	0.82	0.38	0	1	0.66	0.86	0.20	0.751 [0.321]**
Central heating	7462	12.4%	0.81	0.39	0	1	0.70	0.84	0.14	0.718 [0.289]**
Home free of damp	7163	15.9%	0.34	0.47	0	1	0.27	0.35	0.08	-0.799

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap	GCSE regression coef
Access to garden	7486	12.1%	0.87	0.33	0	1	0.66	0.92	0.26	[0.243]*** -0.444 [0.387]
Preschool education										
Attended nursery	7073	17.0%	0.48	0.50	0	1	0.48	0.48	0.00	0.039 [0.304]
Attended playgroup	7044	17.3%	0.41	0.49	0	1	0.30	0.43	0.13	0.615 [0.291]**
Attended childminder	7045	17.3%	0.12	0.32	0	1	0.04	0.13	0.10	-0.405 [0.550]
Attended early education full-time	6976	18.1%	0.13	0.33	0	1	0.12	0.13	0.01	-0.522 [0.378]
Age first attended early education	7072	17.0%	3.56	0.74	0.04	4.5	3.68	3.53	-0.14	-0.269 [0.212]
Age first attended childminder	7002	17.8%	4.32	0.67	0.125	4.5	4.46	4.29	-0.16	-0.237 [0.257]
Family characteristics										
Log household income age 3/4	8517	0.0%	5.58	0.52	4.38	6.36	4.77	5.79	1.03	1.306 [0.289]***
Child is non-white	8055	5.4%	0.04	0.19	0	1	0.07	0.03	-0.05	0.557 [0.578]
Mother born outside UK	7564	11.2%	0.04	0.19	0	1	0.04	0.04	0.00	1.391 [0.573]**
Hhold member has disabling condition	7673	9.9%	0.09	0.29	0	1	0.12	0.09	-0.03	-1.034 [0.377]***
Child ever lived in social housing	7053	17.2%	0.21	0.41	0	1	0.65	0.10	-0.55	-2.740 [0.538]***
Child always lived in social housing	6512	23.5%	0.08	0.28	0	1	0.35	0.03	-0.32	-0.819

Variable	Valid obs	% missing	Mean	SD	Min	Max	Mean poorest 20%	Mean richest 80%	Income gap	GCSE regression coef
Constant										[0.615] 28.652 [3.907]***
Observations										8517
Adjusted R-squared										0.316

% missing refers to the percent of the 8517 maximum possible sample without a valid observation. The income gap is the mean for families in the higher 80% of the income distribution minus the mean among those in the lowest 20%. Numbers in the final column are coefficients from a single regression on average points per GCSE (capped at 8), with robust standard errors in brackets. ***, **, * indicate significance at the 1%, 5% and 10% levels respectively. Dummies indicating missing values for all variables are included but not shown. See Appendix C for full details of variable construction.

Appendix C. Variable construction

Variables	MCS definition	ALSPAC definition
Baseline controls		
Child's gender	Female dummy	Female dummy
Child's age at assessment	Age in months at W3. Linear, quadratic and cubic terms (3 variables)	Month of birth (12 categories) Year of birth (3 categories)
Number of parents in household	One parent in household at W1, W2 and W3 (3 dummies)	One parent in household at 8, 33 and 47 months (3 dummies)
Mother's age at birth	<20; 20-24;25-29; 30-34; 35+	<20; 20-24;25-29; 30-34; 35+
Parental education qualifications	Separately for mothers and resident fathers. 6 categories: None; Overseas qualifications only; NVQ1 (GCSE D-G); NVQ2 (GCSE A-C); NVQ3 (A-level); NVQ4/5 (Degree). Measured W3.	Separately for mother and mother's partner. 5 categories: None; CSE; Vocational/O-level; A-level; Degree. Measured in pregnancy.
Home learning environment		
Interviewer's observation of the home	Dummy variable equal to 1 if interviewer responded positively at W2 to all four statements: Child's in-home play environment is safe. E.g., without things such as uncovered rotary fan, boards with nails sticking out, pot handles sticking over the stove, exposed electrical outlets, falling plaster, peeling paint, rodents, poisons and cleaning materials. The interior of the home is dark or perceptually monotonous. All visible rooms of house/apartment are reasonably clean All visible rooms of house/flat are reasonably uncluttered	Not available
Help with learning	Sum of 3 items at W2 (1 variable)	Derived from the sum of 6 binary items at 30 and

Variables	MCS definition	ALSPAC definition
	<p>How often does someone help <child> to learn the ABC or the alphabet?</p> <p>How often does someone at home try to teach <child> numbers or counting?</p> <p>How often does someone at home try to teach <child> any songs, poems or nursery rhymes?</p> <p>Each coded: Never (0); Occasionally or less than once a week (1); 1 – 2 days per week (2); 3 times a week (3); 4 times a week (4); 5 times a week (5); 6 times a week (6); 7 times a week/constantly (7)</p>	<p>42 months (2 variables).</p> <p>Do you try to teach your child? If yes, which things do you try to teach?</p> <p>Colours; Alphabet; Numbers; Nursery rhymes; Songs; Shapes and sizes</p>
Freq parent reads to child	<p>Asked separately to mothers and fathers at W2 and W3 (4 variables).</p> <p>How often do you read to <child>?</p> <p>Every day (7); Several times a week (4.5); Once or twice a week (1.5); Once or twice a month (0.375); Less often (0.125); Not at all (0).</p>	<p>Asked to mother about herself and her partner at 42 and 57 months (4 variables).</p> <p>How often do you (your partner) read stories to your child [or show him pictures in a book (42 months only)]?</p> <p>42 months coding: Nearly every day (6); 3-5 times a week (4); 1-2 times a week (1.5); Less than once a week (0.25); Never (0).</p> <p>57 months coding: Often (10); Sometimes (6.66); Rarely (3.33); Never (0).</p>
Freq parent does creative activities with child	<p>Derived as sum of 3 items asked separately to mothers and fathers at W3 (2 variables).</p> <p>Items: How often do you..</p> <p>..tell stories to <child> not from a book?</p> <p>..play music, listen to music, sing songs or nursery rhymes, dance or do other musical activities with <child>?</p> <p>..draw, paint or make things with <child>?</p> <p>Items coded: Every day (7); Several times a week (4.5); Once or twice a week (1.5); Once or twice a month (0.375); Less often (0.125); Not at all (0).</p>	<p>Derived as average of 3 items asked to mother about herself and her partner at 57 months (2 variables).</p> <p>Items: How often do you (your partner) do the following activities with <child>..</p> <p>..sing to her?</p> <p>..make things with her?</p> <p>..draw or paint with her?</p> <p>Often (10); Sometimes (6.66); Rarely (3.33); Never (0).</p>
Freq parent does play activities	<p>Derived as sum of 3 items asked separately to</p>	<p>Derived as average of 3 items asked to mother</p>

Variables	MCS definition	ALSPAC definition
with child	<p>mothers and fathers at W3 (2 variables). Items: How often do you.. .. play sports or physically active games outdoors or indoors with <child>? .. play with toys or games indoors with <child>? take <child>to the park or to an outdoor playground? Items coded: Every day (7); Several times a week (4.5); Once or twice a week (1.5); Once or twice a month (0.375); Less often (0.125); Not at all (0).</p>	<p>about herself and her partner at 57 months (2 variables). Items: How often do you (your partner) do the following activities with <child>.. ..plays with toys? ..active play (e.g. ball games, hide-and-seek)? ..take her to a park or playground? Often (10); Sometimes (6.66); Rarely (3.33); Never (0).</p>
Library visits	<p>Different items at W2 and W3 (2 variables) W2: How often does someone at home take <child> to the library? Never (0); On special occasions (0.25); Once a month (1); Once a fortnight (2); Once a week(4) W3: Over the past 12 months, how often has <child> been to the library? Every day or almost every day (8); Several times a week (8); Once or twice a week (6); At least once a month (1.5); Every few months (0.4); At least once a year (0.1); Less often or never (0)</p>	<p>At 42 and 57 months (2 variables). About how often is <child> taken to the library? 42 month coding: Nearly every day (4); Once a week (4); Once a month (1); Few times a year (0.25); Never (0) 57 month coding: Every day (4); 2-6 times a week (4); Once a week (4); Once a month (1); Few times per year (0.25); Not at all (0).</p>
Sporting activities	<p>One dummy variable at W3. On average how many days a week does <child> go to a club or class to do sport or any other physical activity like swimming, gymnastics, football, dancing etc? One to five coded (1); Less often or not at all coded (0).</p>	<p>One dummy variable derived from two items at 57 months. Equal to 1 if child goes swimming or goes to special classes or clubs for some activity (e.g. dancing, judo, sports) once a week or more.</p>
Visits to places of interest	<p>Sum of 6 binary items at W3 (1 variable). Over the past 12 months which, if any, of the places on this card has <child> been to? ..Play, pantomime, music concert, circus or other</p>	<p>Sum of two items at 57 months (1 variable). About how often does <child> go to.. ..places of interest (e.g. zoo, museum)? ..places of entertainment (e.g. funfair)?</p>

Variables	MCS definition	ALSPAC definition
	live show ..Art gallery, museum or historical site ..Zoo, aquarium, wildlife reserve or farm ..Theme park or funfair ..Cinema ..Professional sporting event as a spectator	Nearly every day (4); 2-5 times per week (4); Once a week (4); Once a month (1); Few times a year (0.25); Never (0)
Parental warmth and sensitivity		
Parent-child relationship	Pianta Parent-Child Relationship Scale. Sum of 15 items at W2. Separately for mother and father (2 variables). Please think about how far each of the statements currently apply to your relationship with <child>.. ..I share an affectionate, warm relationship with <child> .. <child> and I always seem to be struggling with each other .. <child> will seek comfort from me .. <child> is uncomfortable with physical affection or touch from me ..<child> values his/her relationship with me ..When I praise <child>, he/she beams with pride .. <child> spontaneously shares information about himself/herself .. <child> easily becomes angry at me ..It is easy to be in tune with what <child> is feeling .. <child> remains angry or is resistant after being disciplined ..Dealing with <child> drains my energy ..When <child> wakes up in a bad mood, I know we're in for a long and difficult day .. <child>'s feelings towards me can be unpredictable or can change suddenly	Maternal bonding score. Sum of 11 items at 33 months. Mother only (1 variable). The following statements are about how you feel about the study child.. ..I really enjoy this child .. I would have preferred that we had not had this child when we did ..I feel confident with my child ..I dislike the mess that surrounds my child .. It is a great pleasure to watch my child develop .. I really cannot bear it when the child cries .. I feel constantly unsure if I'm doing the right thing for my child ..I feel I should be enjoying my child but am not ..I feel I have no time to myself ..Having this child has made me feel more fulfilled ..children are fun Responses: This is exactly (3); often (2); sometimes (1); never (0) how I feel. Coding reversed for negatively-phrased items.

Variables	MCS definition	ALSPAC definition
	<p>.. <child> is sneaky or manipulative with me</p> <p>.. <child> openly shares his/her feelings and experiences with me</p> <p>Responses: Definitely does not apply (0); Not really (1); Neutral (2); Applies sometimes (3); Definitely applies (4); Can't say (2). Coding reversed for negatively-phrased items.</p>	
<p>Interviewer observations of mother-child interactions</p>	<p>9 binary items completed by the interviewer after the W2 visit. Each coded 1 for a positive interaction and summed. Finally variable divided into 4 categories: 8 or fewer; 9; 10; or 11 positive interactions observed.</p> <p>..When speaking of or to the child, mother's voice conveys positive feeling.</p> <p>..Mother converses with child at least twice during visit (scolding and degrading comments are not counted).</p> <p>..Mother answers child's questions or requests verbally.</p> <p>..Mother spontaneously praises child's qualities or criticizes twice during the visit.</p> <p>..Mother caresses, kisses or cuddles child at least once during the visit.</p> <p>..Mother introduces interviewer to the child.</p> <p>..Mother scolded (shouted) or made derogatory comments to child more than once during the visit.</p> <p>..Mother used physical restraint, grabbed, or pinched child during the visit.</p> <p>..Mother slapped or spanked child during visit.</p> <p>..Parents provided toys for child during the visit.</p> <p>..Parent kept child in visual range when the child was not cared for by someone else; looked often at</p>	<p>Not available</p>

Variables	MCS definition	ALSPAC definition
	him/her.	
Attitudes to child-rearing	Sum of 5 items at W1. Separately for mother and father (2 variables). How much do you agree or disagree that... ...babies should be picked up whenever they cry. ...it is important to develop a regular pattern of feeding and sleeping with a baby. ...babies need to be stimulated if they are to develop well. ...talking, even to a young baby, is important. ...cuddling a baby is very important. Responses coded: Strongly agree (4); Agree (3); Neither agree nor disagree (2); Disagree (1); Strongly disagree (0); Can't say (2).	Sum of 5 items at 8 months. Mother only (1 variable). How much do you agree or disagree that... ...babies should be picked up whenever they cry. ...it is important to develop a regular pattern of feeding and sleeping with a baby. ...babies need to be stimulated if they are to develop well. ...talking, even to a young baby, is important. ...cuddling a baby is very important. Responses coded: Yes, I agree (3); I'm unsure but probably agree (2); I'm unsure but probably disagree (1); No, I disagree (0).
Authoritative parenting		
Regular bedtimes	Asked W2 and W3. (2 dummy variables). Does <child> go t bed at regular times ["on weekdays during term-time" included at W3] ? Coded: Usually/Always (1); Never or almost never/Sometimes (0)	Asked at 42 and 57 months (2 dummy variables). Does your child have a regular sleeping routine? Yes (1); No (0).
Regular mealtimes	Asked W2 and W3. (2 dummy variables). Does <child> have meals at regular times? Coded: Usually/Always (1); Never or almost never/Sometimes (0)	Dummy variable at 38 months. In the past year has <child> been difficult to get into an eating routine? Yes (0); No (1)
Non-violent discipline	Sum of 3 items at W2 and W3 (2 variables). How often do you do the following when <child> is naughty.. ..Send him to his bedroom, naughty chair, etc ..Take away treats ..Tell him off Items coded: Never (0); Rarely (1); Once a month	Sum of 3 items at 42 months (1 variable). How often do you do the following when <child> is naughty.. ..Send him to his bedroom, naughty chair, etc ..Take away treats ..Tell him off Items coded: Never (0); Rarely (1); Once a month

Variables	MCS definition	ALSPAC definition
	(2); Once a week or more (3); Daily (4); Cant say (2).	(2); Once a week (3); Daily (4)
Harsh discipline	Sum of 3 items at W2 and W3 (2 variables). How often do you do the following when <child> is naughty.. ..Ignore him ..Smack him ..Shout at him Items coded: Never (0); Rarely (1); Once a month (2); Once a week or more (3); Daily (4); Cant say (2).	Sum of 3 items at 42 months (1 variable). How often do you do the following when <child> is naughty.. ..Ignore him ..Smack him ..Shout at him Items coded: Never (0); Rarely (1); Once a month (2); Once a week (3); Daily (4)
Enforcement of obedience	One dummy variable at W3. When you give <child> an instruction or make a request to do something, how often do you make sure that he/she does it? Never/almost never; Less than half the time; About half the time (0) More than half the time; All the time (1)	One dummy variable coded from two questions at 57 months. Do you ever have a battle of wills with your child? Never (0) [If yes] Who most often wins? Parent (1); Child (0); Neither of us (0); About even (0)
TV watching	Two dummy variables at W2 and W3. W2: Typically, how many hours a day does <child> watch television or videos? Not at all/ Up to one hour/ More than 1 hour, less than 3 hours (0); More than 3 hours (1) W3: On a normal week day during term time, how many hours does <child> spend watching television, videos or DVDs? None; Less than an hour; 1 hour to less than 3 hours (0) 3 hours to less than 5 hours; 5 hours to less than 7 hours; 7 hours or more (1)	Two dummy variables derived from questions at 38 and 65 months. 38 months: How much time does <child> spend on average on a weekday watching TV? Not at all (0); < 1 hr (0); 1-2 hrs (0); 2 hrs or more (1) 65 months: How much time does child spend each day during term-time watching TV? Not at all (0); <1 hr (0); 1-2 hrs (0); 3 or more hrs (1)
Computer games	One dummy variable at W3.	One dummy variable at 57 months.

Variables	MCS definition	ALSPAC definition
	<p>On a normal weekday during term time, how many hours does <child> spend using a computer or playing electronic games outside school lessons? None; Less than an hour (0) 1 hour to less than 3 hours; 3 hours to less than 5 hours; 5 hours to less than 7 hours; 7 hours or more (1)</p>	<p>About how often does your child play computer games? Every day (1); 2-6 times a week (1); Once a week (0); Once a month (0); Not at all (0)</p>
Mental health and wellbeing		
<p>Parental depression/ psychological distress</p>	<p>Mother and father Malaise score at W1. Mother and father Kessler 6 score at W2 and W3. (6 variables total). Malaise score: sum of 9 binary items The next questions are about how you are feeling generally. Do you feel tired most of the time? Do you often feel miserable or depressed? Do you often get worried about things? Do you often get into a violent rage? Do you often suddenly become scared for no good reason? Are you easily upset or irritated? Are you constantly keyed up and jittery? Does every little thing get on your nerves and Does your heart often race like mad? Kessler 6 score: sum of 6 items During the last 30 days, about how often did you feel.. ..so depressed that nothing could cheer you up? ..hopeless? ..restless or fidgety? ..that everything was an effort? ..worthless?</p>	<p>Edinburgh Postnatal Depression Scale (EPDS) at 8, 33 and 61 months. Mother only. Sum of 10 items (3 variables) Your feelings in the past week. ..I have been able to laugh and see the funny side of things: As much as I always could (0); Not quite so much now (1); Definitely not so much now (2); Not at all (3) ..I have looked forward with enjoyment to things: As much as I ever did (0); Rather less than I used to (1); Definitely less than I used to (2); Hardly at all (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); No never (0) ..I have been anxious or worried for no good reason: No, not at all (0); Hardly ever (1); Yes, sometimes (2); Yes, often (3) ..I have felt scared or panicky for no very good reason: Yes, quite a lot (3); Yes, sometimes (2); No, not</p>

Variables	MCS definition	ALSPAC definition
	<p>..nervous? All of the time (4); Most of the time (3); Some of the time (2); A little of the time (1); None of the time (0).</p>	<p>much (1); No, not at all ..Things have been getting on top of me: Yes, most of the time I haven't been able to cope (3); Yes, sometimes I haven't been coping as well as usual (2); No, most of the time I have coped quite well (1); No, I have been coping as well as ever (0) ..I have been so unhappy that I have had difficulty sleeping: Yes, most of the time (3); Yes, sometimes (2); Not very often (1); No, not at all (0). ..I have felt sad or miserable: Yes, most of the time (3); Yes, quite often (2); Not very often (1); No, not at all (0) ..I have been so unhappy that I have been crying: Yes, most of the time (3); Yes, quite often (2); Only occasionally (1); No, never (0) The thought of harming myself has occurred to me: Yes, quite often (3); Sometimes (2); Hardly ever (1); Never (0)</p>
Parent diagnosed depression	<p>Dummy variables for mother and father at W3 (2 variables). Parent ever diagnosed by a doctor with depression or anxiety.</p>	Not available
Mother self-esteem score	<p>Modified Rosenberg Self-Esteem score at W1 (1 variable). Sum of 6 items: Please say how much you agree or disagree with each of the following statements. ..on the whole, I am satisfied with myself. ...at times I think I am no good at all. ...I am able to do things as well as most other</p>	<p>Bachman Self-Esteem scale at 33 months (1 variable). Sum of 10 items: Below are some statements. Please say how true they are of you. ..I feel that I am a person of worth, at least equal to others ..I feel I have a number of good qualities.</p>

Variables	MCS definition	ALSPAC definition
	<p>people. ...I certainly feel useless at times. ...All in all, I am inclined to feel that I am a failure. ...I take a positive attitude toward myself. Coded: Strongly agree (3); Agree (2); Disagree (1); Strongly disagree (0). Negatively-phrased items reverse coded.</p>	<p>..I am able to do things as well as most other people. ..I feel I do not have much to be proud of. ..I take a positive attitude towards myself. ..Sometimes I think I am no good at all. ..I am a useful person to have around. ..I feel I cannot do anything right. ..When I do a job I do it well. ..I feel that my life is not very useful. ..I am unlucky. Coded: Almost always true (4); Often true (3); Sometimes true (2); Seldom true (1); Never true (0). Negatively-phrased items reverse coded.</p>
Mother's locus of control	<p>Sum of 3 binary items at W1 (1 variable). Please enter the number next to the statement which is most true for you. I never really seem to get what I want out of life (0); or I usually get what I want out of life (1) I usually have a free choice and control over my life (1); or Whatever I do has no real effect on what happens to me (0) Usually I can run my life more or less as I want to (1); or I usually find life's problems just too much for me (0)</p>	<p>Adult-Nowicki Strickland Locus of Control scale. Asked in pregnancy. Sum of 12 binary items (1 variable). ..Did getting good marks at school mean a great deal to you? ..Are you often blamed for things that just aren't your fault? ..Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway? ..Do you feel that if things start out well in the morning that it's going to be a good day no matter what you do? ..Do you believe that whether or not people like you depends on how you act? ..Do you believe that when bad things are going to happen they are just going to happen no matter what you try to do to stop them?</p>

Variables	MCS definition	ALSPAC definition
Mother's life satisfaction	<p>At W1, W2 and W3 (3 variables) Here is a scale from 1-10 where '1' means that you are completely dissatisfied and '10' means that you are completely satisfied. Please enter the number which corresponds with how satisfied or dissatisfied you are about the way your life has turned out so far.</p>	<p>..Do you feel that when good things happen they happen because of hard work? ..Do you feel that when someone doesn't like you there's little you can do about it? ..Did you usually feel that it was almost useless to try in school because most other children were cleverer than you? ..Are you the kind of person who believes that planning ahead makes things turn out better? ..Most of the time, do you feel that you have little to say about what your family decides to do? ..Do you think it's better to be clever than to be lucky?</p>
Mother's social support	<p>Sum of 3 items at W1 (1 variable). Please say how much you agree or disagree with each of the following statements. ..I have no one to share my feelings with. ..There are other parents I can talk to about my experiences. ..If I had financial problems, I know my family would help if they could. Strongly agree (4); Agree (3); Neither agree nor disagree (2); Disagree (1); Strongly disagree (0)</p>	<p>Sum of 10 items at 8 months (1 variable). The following statements are about the help and support you have. ..I have no one to share my feelings with ..My partner provides the emotional support I need ..There are other mothers with whom I can share my experiences ..I believe in moments of difficulty my neighbours would help me ..I'm worried that my partner might leave me ..There is always someone with whom I can share</p>

Variables	MCS definition	ALSPAC definition
		<p>my happiness and excitement about my baby ..If I feel tired I can rely on my partner to take over ..If I was in financial difficulty I know my family would help if they could ..If I was in financial difficulty I know my friends would help if they could ..If all else fails I know the state will support and assist me Coded: This is exactly how I feel (3); This is often how I feel (2); This is sometimes how I feel (1); This is never how I feel (0). Negatively-phrased items reverse coded.</p>
Health behaviours		
Health at birth	Birth weight (kg) Gestation length (weeks) Child placed in Special Care Unit (dummy variable)	Birth weight (kg) Gestation length (weeks) Child placed in Special Care Unit (dummy variable)
Breast feeding	3 categories: Never; Yes, but less than 6 months; 6 months or more	3 categories: Never; Yes, but less than 6 months; 6 months or more
Health care utilization	2 dummy variables. Mother received prenatal care in first trimester of pregnancy. Child not had all immunizations by 9 months.	1 dummy variable. Attended antenatal classes
Maternal smoking in pregnancy	3 categories. Mother smoked in pregnancy: Never; Yes, but always less than 10 per day; Yes, sometimes 10 a day or more.	3 categories. Mother smoked in pregnancy: Never; Yes, but always less than 10 per day; Yes, sometimes 10 a day or more.
Passive smoking	Dummy variables at W1, W2 and W3 (3 variables). Does anyone smoke in the same room as <child> nowadays?	Dummy variables at 6, 38 and 65 months (3 variables). How often child is in a room or enclosed space where people are smoking? Not at all coded (0); all other responses coded (1).

Variables	MCS definition	ALSPAC definition
Parental alcohol consumption	<p>Mother and father. Dummy variables at W1, W2 and W3 (6 variables total). Which of these best describes how often you usually drink alcohol? Every day/ 5-6 times per week /3-4 times per week (1); 1-2 times per week/ 1-2 times per month/ Less than once a month /Never (0).</p> <p>Separately for mothers and fathers at W2. Dummy variables for one symptom; two or more symptoms of the following four (4 variables total). ..Have you ever felt you should cut down on your drinking? ..Have people annoyed you by criticizing your drinking? ..Have you ever felt bad or guilty about your drinking? ..Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover (eye opener)?</p>	<p>Mother only. Dummy variables at 8, 33 and 61 months (3 variables). How much alcohol do you drink? Never drink alcohol/ Very occasionally (less than one glass a week) /Occasionally (at least once or twice a week): coded (0) Sometimes (between 3 & 6 times a week): coded (1) [option at 8 mths only] Drink 1-2 glasses nearly every day /Drink 3-9 glasses every day /Drink at least 10 glasses a day: coded (1)</p>
Parental recreational drug use	<p>Mother and father. Derived from questions at W2 and W3. (2 dummy variables). As you know many people have experimented with drugs at some time. During the past year have you used any recreational drugs like cannabis, cocaine or ecstasy? Coded (1) if Occasionally or Regularly at W2 or W3; coded (0) otherwise.</p>	Not available
Parental overweight/obesity	<p>Mother and father (4 dummy variables). Indicator for parent overweight at W2 or W3 (BMI\geq25) Indicator for parent obese at W2 or W3 (BMI\geq30)</p>	<p>Derived from mother's pre-pregnancy self-reported height and weight (2 dummy variables). Indicator for parent overweight (BMI\geq25) Indicator for parent obese (BMI\geq30)</p>

Variables	MCS definition	ALSPAC definition
Housing conditions		
Rooms per person	Derived from number of rooms per person at W1, W2 and W3. Dummy variable equal to 1 if at least one room per person at both dates; equal to 0 if ever less than one room per person.	Derived from number of rooms per person at 8 and 33 months. Dummy variable equal to 1 if at least one room per person at both dates; equal to 0 if ever less than one room per person.
Access to garden	Dummy variable. Household has sole use of a garden at W1, W2 and W3.	Dummy variable. Household has sole use of a garden at both 8 and 33 months.
Central heating	Dummy variable. Central heating in home at W1, W2 and W3.	Dummy variable. Central heating or storage heaters used in living room or child's bedroom at both 8 and 33 months.
No damp in home	Dummy variable. Home has no damp or condensation on walls at W1, W2 and W3.	Dummy variable. Never any damp, condensation or mould in home at both 8 and 33 months.
Safe local play area	Dummy variable at W1. Are there any places in your area where children can play safely? Yes (1); No (0).	Not available.
Preschool education		
Early education	From information at W3. Child ever attended nursery school/nursery class; preschool; playgroup (3 dummy variables). Age at which child first attended any of the above (coded 5 years if not attended by 5 th birthday). Child ever attended any of the above full-time (a full day on four or more day per week)	From information at 54 months. Child ever attended nursery; playgroup (2 dummy variables). Age at which child first attended either of the above (coded 4.5 years if not attended by 54 months). Child ever attended either of the above full-time (more than 15 hours per week)
Childminder	Child ever attended childminder. Age at which child first attended childminder (coded 5 years if not attended by 5 th birthday).	Child ever attended childminder. Age at which child first attended childminder (coded 4.5 years if not attended by 54 months).
Day nursery/creche	Child ever attended day nursery/creche. Age at which child first attended day nursery creche (coded 5 years if not attended by 5 th	Not available.

Variables	MCS definition	ALSPAC definition
	birthday).	
Family characteristics		
Log average household income	Average equivalized disposable household income at W1, W2 and W3 in 2008 prices. (See Section 2.7.)	Average weekly take-home family income at 33 and 47 months. Five categories at each date, converted to continuous values and expressed in constant 2008 prices.
Child's race/ethnicity	9 categories: White; Pakistani; Bangladeshi; Indian; Other Asian; Black African; Black Caribbean; Mixed race/ethnicity; Other race/ethnicity	Child is non-white (1 dummy)
Parental place of birth	Mother and father born outside UK (2 dummies)	Mother born outside UK (1 dummy)
Foreign language spoken in home	Dummy variable at W3. Is English the language usually spoken at home? English only/ Mostly English and sometimes other language coded (0); About half English and half other language/ Mostly other language and sometimes English /Other language(s) only coded (1)	Not available
Parental disability/longstanding illness	Mother and father. Derived from information at W3. (4 dummy variables total) Do you have a longstanding illness, disability or infirmity? By longstanding I mean anything that has troubled you over a period of time or that is likely to affect you over a period of time? Coded: Yes (1); No (0) Does this (do these) illness(es) or disability/ies limit your activities in any way? Coded: Yes (1); No (0); No longstanding illness (0).	One dummy variable at 47 months. Do any of the people living in your household, including yourself and your children have a long lasting disorder, illness or disabling condition? (e.g. asthma, epilepsy, arthritis, depression, alcoholism)
Residence in social housing	Two dummy variables. Ever in social housing: Equals 1 if parents rent home from local authority or housing association at any of W1, W2 or W3.	Two dummy variables. Ever in social housing: Equals 1 if parents rent home from council or housing association at any of 8, 33 and 61 months.

Variables	MCS definition	ALSPAC definition
	Always in social housing: Equals 1 if parents rent home from local authority or housing association at all of W1, W2 and W3.	Always in social housing: Equals 1 if parents rent home from council or housing association at all of 88, 33 and 61 months.
Country and region	Government office region at W1. Wales; Scotland; Northern Ireland; North East; North West; Yorkshire and the Humber; East Midlands; West Midlands; East of England; London; South East; South West	Not applicable
Local deprivation	Decile group of the country-specific Index of Multiple Deprivation (IMD) for ward of residence at W3. 10 categories.	Not available

W1, W2 and W3 refer to the three waves of the MCS respectively (at roughly 9 months, 3 years and 5 years).