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CLS Cohort Studies

Working Paper 2008/7

Family poverty assessed at three years old

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August 2008

FAMILY POVERTY ASSESSED AT THREE YEARS OLD

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First published in 2008 by the
Centre for Longitudinal Studies
Institute of Education, University of London
20 Bedford Way
London WC1H 0AL
www.cls.ioe.ac.uk

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1. Background

Child poverty is at the heart of the UK social policy agenda. This has been the case since the Prime Minister's announcement in 1999 that it was the government's objective to eradicate child poverty over a generation – by 2020. The Millennium Cohort is the generation referred to, born the year after the announcement and living their childhood in the years that follow. There are a number of reasons why the MCS has an important contribution to make to the analysis of the prevalence and characteristics of child poverty. The children are being surveyed repeatedly over their childhood. They constitute a very large (and disproportionately stratified) sample and the questionnaire collects a lot of data which is different to the Family Resources Survey, the main vehicle for monitoring the child poverty strategy. So the Millennium Cohort Survey (MCS) enables us to advance understanding of the prevalence and characteristics of poor children, the persistence of poverty over the waves and the factors associated with movements in and out of poverty. Poverty is also a critical contextual or explanatory variable for users of the MCS who are focussed on understanding other aspects of children's development and well-being.

The headline indicators that the government has used to monitor its child poverty strategy (in the *Opportunity for All* series[1]) have been based on income poverty – the proportion of children living in households with equivalent income less than 60 per cent of the median:

- fixed at a point in time (1998/9)
- in contemporary terms and
- over the last three years.

The first two are derived from analysis of the Family Resources Survey (FRS) and the third from the British Household Panel Survey. Since 2004/5 questions have been added to the FRS which enables an additional measure to be created which combines low income (less than 70 per cent of the median) with a prevalence weighted lack of deprivation items.

It is not possible to replicate these measures using the MCS. One reason for this is that while the MCS asks about family income, it records the responses in income bands. But even if the MCS had more elaborate income question it would still have been impossible to match the government headline indicators. The MCS is a sample of families with children born in 2000-2001 and cannot be matched to a general sample of families with children[2] and the Households Below Average Income (HBAI)[3] publications report child poverty rates in households not family poverty rates.

[1] http://www.dwp.gov.uk/ofa/

[2] Ward, K., Sullivan, A. and Bradshaw, J. (2007) Income and Poverty, in Hansen, K and Joshi, H. (2007) *Millennium Cohort Study Second Survey: A user's guide to initial findings*, Centre for Longitudinal Studies, Institute of Education, University of London.

[3] http://www.dwp.gov.uk/asd/hbai.asp

For this reason, when we were asked to contribute to the analysis of poverty in the first sweep of the MCS, we developed an alternative measure of family poverty[4]. This drew on experience derived from the Poverty and Social Exclusion Survey and the European Community Household Panel, where we had complemented income poverty with other measures of family poverty and deprivation. So the measures that we have used are as follows:

1. income poverty: family equivalent income less than 60 per cent of the national median (before housing costs)
2. dependent on income related benefits
3. lacking certain deprivation items
4. subjective poverty.

These are defined in more detail below but in the analysis we have explored the overlaps between these measures of poverty and derived what we call here reliable poverty.

So the objectives of this working paper are to:

1. describe the methods used to define poverty by each measure
2. estimate the prevalence of family poverty and the characteristics of poor families in MCS2 by each measure
3. explore the overlaps of the different measures of poverty
4. estimate the odds of a family being 'reliably' poor
5. explore how this poverty is associated with some outcomes in the MCS2
6. explore how family poverty changed between MCS1 and MCS2.

The analysis is based on the family unit as the sample used is confined to singleton births where the natural mother remained in the household and was the main respondent. In common with the MCS 2 report, it should also be noted that, although sampling weights are used for the MCS 2 analyses, no adjustment has been made for attrition in the longitudinal analyses or for item non-response throughout.

[4] Mayhew, E. and Bradshaw, J. (2005) Mothers, babies and the risks of poverty, *Poverty*, 121, 13-16. Bradshaw, J., Mayhew, E., Dex, S., Joshi, H. and Ward, K. (2005) Socioeconomic origins of parents and child poverty, in Dex, S. and Joshi, H. (eds) *Children of the 21st Century: from birth to nine months*, Bristol: Policy Press. pp 71-108.

2. The Poverty Measures

2.1 Income poverty

This is the conventional relative poverty measure. Income poverty is defined as having a net equivalent family income below 60 per cent of the national median. For the calculation of equivalent income we used the modified-OECD equivalence scale, which was also used by the government in its annual publication of Households Below Average Income since 2004/5.

The derivation of equivalent family income was problematic because of the nature of the income data collected in the MCS. In order to increase response rates – instead of asking people to reveal their actual family income – respondents were asked to specify which of 18 income bands their family income belonged to. The survey questionnaire used separate income bands for lone parents and for couples. In order to determine equivalent family income, we assigned the mid-point of the income band to all the families belonging to that particular band. For the top and bottom bands we took respectively the bottom and top thresholds as the family income. Next we applied the equivalence scale to the family income for each family type and created one aggregate income variable containing the equivalent family income of both couples and single parents.

The proportion of families in our sample living below this threshold was 25.3 per cent.

2.2 Deprivation

The measure used here follows the principle of measuring poverty as a lack of (socially perceived) necessities[5]. The MCS 1 merely asked respondents about the availability of a number of appliances in working order in the family. By the time that MCS 2 was being designed it was possible to draw on progress that had been made with indicator development and the questionnaire included a subset of the standard socially perceived necessities items. Table 1 gives the proportion lacking each of the items included in the questionnaire.

[5] Gordon, D., Adelman, L., Ashworth, K., Bradshaw, J., Levitas, R., Middleton, S., Pantazis, C., Patsios, D., Payne, S., Townsend, P. and Williams, J. (2000) *Poverty and Social Exclusion in Britain,* Joseph Rowntree Foundation: York

Table 1: Percentage lacking items in MCS 2 (n=15,006)

Item	*Percentage lacking this item in the MCS 2*
Warm waterproof coat for child	0.5
New properly fitted shoes for child	0.9
Fruit and veg once a day for child	0.9
Home contents insurance	12.8
Hobby or leisure activity	11.7
Two pairs of weatherproof shoes	5.5
Small amount of money to spend on self	18.7
Holiday once a year	25.5
Able to replace worn-out furniture	18.7

Percentages weighted by sampling weights

Table 2 gives the proportion lacking by the number of items. We took a threshold of lacking two or more items which gives us 24.1 per cent deprived.

Table 2: Number of items lacking in MCS 2

Number of items lacking	*Percentage lacking*
0	62.2
1	13.6
2	8.3
3	5.8
4	4.9
5	3.4
6	1.3
7	0.4
8	0.1
9	0.0

Weighted percentages

2.3 Subjective poverty

Subjective poverty is an indicator of respondents' own assessment of their poverty status. The question used here is: 'How well would you say you (and your partner) are managing financially these days?' The answers given are presented in Table 3. We chose those as subjectively poor who were finding it quite difficult or finding it very difficult to manage. This gives us 9.2 per cent of families in poverty.

Table 3: Subjective poverty in MCS 2

	Percentages	*Numbers*
Living comfortably	27.6	3730
Doing alright	37.9	5833
Just about getting by	25.4	3994
Finding it quite difficult	6.8	1072
Finding it very difficult	2.4	377
Total	100.0	15006

Weighted percentages. unweighted numbers

2.4 Receiving means-tested benefits

The other data that was available and is a useful indicator of living on a low income was receipt of benefits. Information was available on the receipt of Income Support, Job Seekers Allowance (JSA), Housing Benefit, Council Tax Benefit, Working Families Tax Credit (WFTC) and Disability Living Allowance (DLA) – all except contributory JSA and DLA are based on a test of means. We explored the overlap in the receipt of benefits (see Table 4) and decided to include as poor those receiving Income Support, and, in addition, those receiving either Job Seekers Allowance or Working Families Tax Credit, if they were also receiving either Housing Benefit or Council Tax Benefit – on the grounds that those with Housing Benefit/CTB are more likely to be receiving income tested JSA rather than contributory JSA and to be towards the bottom of the income distribution of those receiving Working Families Tax Credit. This gives 16.5 per cent of families in poverty.

Table 4: Overlap between means-tested benefits (row percentages) (n=14,988)

	Income Support	*Housing Benefit*	*JSA*	*WFTC*	*Council Tax Benefit*
Income Support	-	75.8	0.8	0.3	73.7
Housing Benefit	76.1	-	6.5	10.0	88.8
Job Seekers Allowance	6.6	56.4	-	10.8	61.0
WFTC	0.2	5.5	0.7	-	6.3
Council Tax Benefit	73.4	88.1	6.9	11.4	-

Weighted percentages, JSA = Job Seekers Allowance, WFTC = Working Families Tax Credit

3. Sensitivity analysis of the four poverty measures

None of the four poverty measures are by themselves entirely satisfactory. For example,

- lacking two or more necessities could be a life-style choice
- the grouped income data is not very precise and
- there is income data missing for 2390 cases (less than 100 missing cases on other measures)
- people may or may not feel poor due to 'false consciousness' or because they are living with well-off parents (we do not know household income)
- there may be confusion in the reported benefits received.

We therefore set about deriving a poverty indicator that combines the information on the separate elements to produce a more reliable and valid overall indicator. This was done using the technique of overlaps analysis[6]. Table 5 shows the relative size of our separate poverty domains. The four different measures of poverty produce different proportions of families in the poor groups.

Table 5: Percentage families defined as poor on these measures

Poverty measure	*Percentage families poor*	*Number poor*	*N*
Deprived	24.1	4043	15006
Low income poor	25.3	3999	12687
Subjectively poor	9.2	1449	15006
Receiving means tested benefits	16.5	3053	14988

Weighted percentages, unweighted numbers

Table 6 shows the degree of overlap between the measures. The most overlap is between those receiving means-tested benefits and those that are income poor, which is to be expected since the latter is the prerequisite of the former. There is relatively less overlap between the deprived and either of the two groups subjectively poor and receiving means-tested benefits - and of course, part of the reason is the lower absolute numbers in these two groups. Nevertheless over three quarters of the subjectively poor are deprived and over half are income poor.

[6] Bradshaw, J. and Finch, N. (2003) Overlaps in Dimensions of Poverty, *Jnl. Soc. Pol.*, 32, 4, 513-525.

Table 6: Overlap between the different measurements of poverty, row percentages.

	Deprived	*Low income poor*	*Subjectively poor*	*Receiving means tested benefits*	*Number*	*N*
Deprived	-	61.5	29.0	46.7	4043	15006
Low income poor	57.2	-	20.4	55.1	3999	12687
Subjectively poor	76.1	56.4	-	41.4	1449	15006
Receiving means tested benefits	68.3	87.1	23.1	-	3053	14988

Weighted percentages, unweighted numbers

Table 7 shows that 37.9 per cent were poor on at least one of the dimensions but only 3.2 per cent were poor on all the dimensions.

Table 7: Number of measures poor on (n=12,671)

Number of measures poor on	*% poor*
Poor on at least one	37.9
Poor on at least two	22.1
Poor on at least three	11.9
Poor on at least four	3.2

4. The characteristics of poor families

Table 8 presents the results of a bivariate analysis of the characteristics of poor families using each of the individual measures and also the overlaps. Included in the analysis are the stratum variables so that the analysis is undertaken on unweighted data. Families are generally more likely to be poor if

- there is only one adult
- there are three or more children (and one on some dimensions)
- there are not two natural parents
- mother's age at the birth of the child was less than 20
- ethnicity is not white (or Indian on some dimensions)
- there are not two earners
- mother's educational level is less than lower tertiary
- they are not owner occupiers.

The coefficients vary for the different dimensions. For example they are less dispersed for subjective poverty on most characteristics and generally they are more dispersed for the overlapping measures.

Table 8: Bivariate logistic regression of the odds being poor by dimensions of poverty and number of dimensions, exponentiated parameter estimates.

	Income <60%	Deprivation	Benefit	Subjective	1/4	2/4 (Reliably Poor)	3/4	4/4
Number of Adults in Household	N=12,687	N=15,006	N=14,988	N=15,006	N=12,671	N=12,671	N=12,671	N=12,671
1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	0.07***	0.12***	0.03***	0.24***	0.05***	0.05***	0.05***	0.06***
3	0.17***	0.18***	0.09***	0.44***	0.11***	0.11***	0.12***	0.14***
4+	0.33***	0.17***	0.11***	0.38***	0.16***	0.16***	0.17***	0.20***
Number of Children in Household	N=12,310	N=14,489	N=14,471	N=14,489	N=12,294	N=12,294	N=12,294	N=12,294
1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	0.77***	0.76***	0.57***	0.78***	0.78***	0.66***	0.60***	0.53***
3	1.38***	1.00 NS	0.83*	0.89 NS	1.22***	1.04 NS	0.88 NS	0.77 NS
4+	3.27***	0.34***	1.39***	1.20 NS	2.80***	1.92***	1.54***	1.44*
Household Structure	N=11,348	N=13,247	N=13,232	N=13,247	N=11,335	N=11,335	N=11,335	N=11,335
Married Natural Parents	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cohabiting Natural Parents	2.36***	2.33***	4.14***	1.46***	2.31***	3.01***	3.64***	4.18***
Natural Mother and Step-father	4.80***	3.20***	12.49***	2.23***	6.10***	6.66***	6.51***	6.30***
Lone Natural Mother	17.78***	10.32***	52.41***	4.44***	22.75***	29.15***	30.39***	31.15***
Mother's Age at Birth	N=12,682	N=14,998	N=14,980	N=14,998	N=12,666	N=12,666	N=12,666	N=12,666
35+	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
30-34	0.97 NS	0.92 NS	1.02 NS	0.86 NS	0.95 NS	0.94 NS	0.91 NS	1.18 NS
25-30	1.55***	1.39***	1.72***	1.12 NS	1.48***	1.53***	1.57***	1.41 NS
20-24	4.43***	3.13***	5.16***	1.72***	4.11***	4.53***	4.30***	3.60***
Under 20	10.15***	6.71***	14.34***	2.03***	11.75***	11.43**	9.94***	6.09***
Ethnicity	N=12,157	N=14,331	N=14,315	N=14,331	N=12,142	N=12,142	N=12,142	N=12,142
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Mixed	3.02***	2.55***	4.25***	2.19***	2.58***	3.32***	3.56***	4.18***
Indian	1.04 NS	0.96 NS	0.44***	1.28 NS	0.92 NS	0.91 NS	0.96 NS	0.90 NS
Pakistani and Bangladeshi	6.94***	1.92***	1.67***	1.72***	5.46***	3.04***	2.06***	1.63 NS
Black or Black British	2.57***	3.43***	2.79***	2.99***	2.89***	3.03***	3.19***	4.04***
Other Ethnic Groups	1.53*	1.23 NS	1.18 NS	2.09***	1.39 NS	1.53*	1.43 NS	1.59 NS
Number of Parental Earners in Family	N=12,661	N=14,947	N=14,930	N=14,947	N=12,645	N=12,645	N=12,645	N=12,645
2	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1	4.88***	2.89***	13.05***	1.92***	3.50***	5.10***	10.73***	25.06***
0	134.50***	20.60***	740.40***	6.15***	223.17***	223.39***	279.84***	412.15***
Mother's highest qualification[7]	N=11,923	N=13,998	N=13,983	N=13,998	N=11,908	N=11,908	N=11,908	N=11,908
NVQ Level 5	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
NVQ Level 4	1.31 NS	1.07 NS	1.32 NS	1.07 NS	1.08 NS	1.33 NS	1.33 NS	0.81 NS
NVQ Level 3	3.50***	2.46***	4.16***	1.57**	2.38***	3.34***	3.82***	3.19*
NVQ Level 2	5.38***	3.09***	6.95***	1.83***	3.48***	5.11***	6.93***	4.36***
NVQ Level 1	11.44***	5.55***	14.95***	1.99***	7.21***	10.65***	13.72***	5.92***
No recognised qualifications	26.59***	8.49***	26.96***	3.34***	17.24***	21.94***	26.72***	14.61***
Housing Tenure	N=12,687	N=15,006	N=14,988	N=15,006	N=12,671	N=12,671	N=12,671	N=12,671
Owner-Occupier	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Social Housing	16.84***	11.61***	53.54***	4.08***	18.74***	25.07***	39.40***	34.72***
Private Rented/Other	7.44***	4.65***	24.67***	3.11***	6.31***	10.82***	18.77***	16.24***
Stratum	N=12,687	N=15,006	N=14,988	N=15,006	N=12,671	N=12,671	N=12,671	N=12,671
England advantaged	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
England disadvantaged	3.145***	2.17***	3.26***	1.42***	2.67***	3.01***	2.81***	2.49***
England ethnic	6.86***	3.29***	4.00***	2.05***	5.62***	5.17***	4.44***	3.67***
Wales advantaged	1.31*	0.82 NS	1.08 NS	0.59**	0.98 NS	1.05 NS	1.07 NS	0.72 NS
Wales disadvantaged	3.51***	1.82***	3.57***	1.09 NS	2.50***	2.96***	2.91***	2.09***
Scotland advantaged	0.89 NS	0.75 NS	0.80 NS	0.88 NS	0.83*	0.82 NS	0.72*	0.76 NS
Scotland disadvantaged	2.46***	1.56***	2.49***	1.26 NS	2.00	2.19***	2.22***	1.91***
Northern Ireland advantaged	0.98 NS	0.46***	0.52***	0.34***	0.72***	0.50***	0.53**	0.30*
Northern Ireland disadvantaged	4.46***	1.51***	3.38***	1.01 NS	3.23***	3.06***	2.80***	2.12***

Significance *** 0.005, ** 0.01, * 0.05

Of course many of these characteristics overlap and so in Table 9 we repeat the analysis but this time using multivariate logistic regression. That is we compare the odds of being poor having controlled for the other variables. In order to minimise interaction terms we drop the number of adults and combine the number of earners and household structure. The remaining variables in the analysis may be associated with each other, but they are not a function of each other

It can be seen that the odds of being poor are higher if

- there are three or more children in the household (and on some dimensions two or more)
- a married couple has not got both parents in employment
- a cohabiting couple are not both in employment (and on two dimensions even if they are)
- a mother and stepfather are not both in employment (and on the benefit dimension even if they are)
- a lone parent whether or not they are in employment[8]
- aged under 20 at the birth of the child
- ethnicity is not white (but there is a good deal of variation in which groups are poor by the different dimension)
- they are not owner occupiers
- the mother's educational level is less than lower tertiary .

Thus these are very similar to the results derived from the bivariate analysis though the coefficients tend to be less dispersed and there are some more non significant results having controlled for the other factors.

[8] The large odds ratios seen for lone natural mothers with no earners should be treated as 'infinite maximum likelihood estimates and should therefore not be regarded as accurately estimated parameters. However, it has been noted that this is not necessarily problematic and indicates a near-perfect predictor as might be expected in this instance. (See Rindskopf, D. (2002) Infinite Parameter Estimates in Logistic Regression: Opportunities, not Problems, *Journal of Educational and Behavioural Statistics*, 27, 2, pp147-61)

Table 9: Multivariate logistic regression of the odds of being poor by dimensions of poverty and number of poverty dimensions, exponentiated parameter estimates

	Income <60%	Deprivation	Benefit	Subjective	1/4	2/4 (Reliably Poor)	3/4	4/4
	n=10,355	n=11,943	n=11,930	n=11,943	n=10,342	n=10,342	n=10,342	n=10,342
Number of Children in Household								
1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	1.78***	1.23***	1.07 NS	0.96 NS	1.60***	1.37***	1.16 NS	0.98 NS
3	2.83***	1.32***	1.26 NS	0.87 NS	2.09***	1.66***	1.06 NS	0.80 NS
4+	5.28***	1.55***	1.37 NS	0.87 NS	3.90***	2.29***	1.036 NS	0.96 NS
Combined Family Structure & Number of Parental Earners								
Married Natural Parents – 2 Earners	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Married Natural Parents – 1 Earners	2.57***	1.76***	3.92***	1.50***	1.091***	2.37***	3.70***	606**
Married Natural Parents – 0 Earners	28.62***	5.81***	91.46***	4.36***	43.98***	43.12***	42.07***	84.90***
Cohabiting Natural Parents – 2 Earners	1.15 NS	1.34*	2.01*	1.14 NS	1.19 NS	1.39 NS	0.94 NS	No Cases
Cohabiting Natural Parents – 1 Earners	3.22***	2.68***	8.99***	2.20***	2.86***	4.28***	6.36***	17.64***
Cohabiting Natural Parents – 0 Earners	32.71***	7.05***	178.03***	3.28***	39.59***	68.55***	64.63***	74.71***
Nat. Mother & Stepfather – 2 Earners	0.70 NS	1.58 NS	6.02***	2.26*	1.46 NS	1.65 NS	2.08 NS	9.38 NS
Nat. Mother & Stepfather – 1 Earners	3.79***	2.78***	22.82***	1.88 NS	5.50***	5.78***	9.38***	13.71**
Nat. Mother & Stepfather – 0 Earners	18.50***	3.27***	109.49***	3.02**	23.61***	40.38***	23.16***	51.27***
Lone Natural Mother – 1 Earner	4.94***	3.86***	16.45***	2.81***	6.10***	7.04***	8.79***	21.95***
Lone Natural Mother – 0 Earner	61.44***	8.87***	428.91***	4.96***	173.19***	136.18***	81.31***	143.90***
Mother's Age at Birth								
35+	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
30-34	1.02 NS	0.95 NS	0.84 NS	1.00 NS	1.03 NS	0.92 NS	0.87 NS	1.13 NS
25-30	1.17 NS	1.12 NS	0.90 NS	0.99 NS	1.20*	1.04 NS	1.07 NS	0.95 NS
20-24	1.79***	1.21 NS	0.98 NS	0.86 NS	1.57***	1.28 NS	1.01 NS	0.82 NS
Under 20	1.92***	1.51***	1.14 NS	0.70*	1.82***	1.41*	1.29 NS	0.84 NS
Ethnicity								
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Mixed	1.38 NS	1.11 NS	1.94 NS	0.98 NS	1.28 NS	1.49 NS	1.18 NS	1.01 NS
Indian	2.49***	1.47*	0.84 NS	1.65*	1.83***	2.89 NS	2.66**	1.77 NS
Pakistani and Bangladeshi	6.87***	1.39*	1.16 NS	1.76***	4.14***	3.30***	2.29***	1.71 NS
Black or Black British	1.18 NS	1.88***	0.72 NS	1.33 NS	1.41 NS	1.33 NS	1.32 NS	1.07 NS
Other Ethnic Groups	2.72***	2.22***	1.62 NS	2.92***	2.39***	4.31***	3.78***	2.70*
Mother's Highest Qualification								
NVQ Level 5	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
NVQ Level 4	1.22 NS	0.96 NS	1.55 NS	1.06 NS	1.03 NS	1.21 NS	1.17 NS	0.91 NS
NVQ Level 3	1.81***	1.15 NS	2.28*	1.12 NS	1.41*	1.54 NS	1.30 NS	1.20 NS
NVQ Level 2	2.32***	1.37*	2.61***	1.24 NS	1.71***	1.78**	1.79 NS	1.21 NS
NVQ Level 1	3.16***	1.58***	3.17***	1.05 NS	2.37***	2.38***	1.86 NS	0.85 NS
No recognised qualifications	3.70***	1.71***	3.34***	1.39 NS	3.37***	2.41***	2.23*	1.55 NS
Housing Tenure								
Owner-Occupier	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Social Housing	2.91***	3.26***	7.27***	1.92***	3.98***	4.30***	5.48***	3.21***
Private Rented/Other	2.21***	1.88***	5.39***	1.65***	2.14***	3.01***	3.79***	1.79*
Stratum								
England advantaged	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
England disadvantaged	1.39***	1.02 NS	1.20 NS	0.84 NS	1.30***	1.12 NS	0.76*	0.87 NS
England ethnic	1.27 NS	1.09 NS	1.32 NS	0.79 NS	1.31 NS	1.01 NS	0.85 NS	0.83 NS
Wales advantaged	1.55**	0.81 NS	0.92 NS	0.58**	0.94 NS	0.88 NS	1.01 NS	0.72 NS
Wales disadvantaged	2.03***	0.83 NS	1.61***	0.64***	1.26*	1.21 NS	0.89 NS	0.76 NS
Scotland advantaged	1.09 NS	0.88 NS	0.90 NS	0.95 NS	0.90 NS	0.95 NS	0.86 NS	0.96 NS
Scotland disadvantaged	1.75***	0.80*	1.21 NS	0.77 NS	1.17 NS	1.04 NS	0.92 NS	0.87 NS
Northern Ireland advantaged	1.34 NS	0.58***	0.78 NS	0.41***	0.86 NS	0.58*	0.79 NS	0.52 NS
Northern Ireland disadvantaged	2.90***	0.72***	1.97***	0.65**	1.73***	1.28 NS	0.81 NS	0.80 NS

Significance *** 0.005, ** 0.01, * 0.05

Having explored the permutations of the four dimensions of poverty we decided that the best – most reliable was the two out of four measure. This is certainly more reliable than any one of the single measures and produces a proportion of 22 per cent which is similar to the official child income poverty rate. Of course this measure is not absolutely reliable. Three out of four and four out of four would be better but they give us too small proportions of families.

5. How poverty is associated to some elements of psycho-social status?

In this section we explore how four outcomes are associated with poverty defined as our two out of four measures. The first two are measured by scales and therefore analysed using multiple regression. The four outcomes are:

- The behavioural development of the child. The behavioural development measure was created by EPPE/Sure Start and, as implied by its name, measures the behavioural development of the child on a 10 item, 20 point scale. A high score indicated good behavioural development[9].
- The child parent relationship. The Child-Parent Relationship measure is adapted from the Pianta[10]: Short Form Student-Teacher Relationship Scale and uses 15 items to give a 45 point scale assessing the closeness of the child-parent relationship. A high score indicates a positive relationship.
- Maternal depression. The depression measure is based on the Kessler K6 scale which is a 6-item scale used to discriminate between serious and other cases of mental illness. We classed any mother with a score of 17 or less as suffering from maternal depression. This is higher than the cut off for serious mental illness to reflect our interest in milder depression. Further information on this scale is available at http://www.hcp.med.harvard.edu/ncs/k6_scales.php
- Total difficulties score. The total difficulties is based on the Strengths and Difficulties Questionnaire which is used to assess potential mental health problems based on a score from 0 – 40. We classed any child with a score over 14 (deemed as having a borderline or abnormal profile) as at risk of future mental health problems. Further information on this scale is available at www.sdqinfo.com

The second two have been converted into binary indicators and are analysed using logistic regression.

5.1 Behavioural development

It can be seen in Table 10 that having controlled for other factors if the family is poor at age three the child has lower a lower level of behavioural development. There are also negative coefficients for cohabiting and step fathers (but interestingly not lone mothers), and social housing. The number of children and the number of earners seem to have positive associations on the child's behavioural development. There is no influence of ethnicity or the numbers of adults. The proportion of variation in behavioural development explained by these variables together is only 5 per cent.

[9] Schoon, I., Rosenberg, R. and Johnson, J. (mimeo) Psychological Inventories in the Millennium Cohort Study

[10] Pianta, R.C and Steinberg, M (1992) Teacher-child relationships and the process of adjusting to school' , *New Directions for Child Development*, 57, 61-80

5.2 Child-parent relationship

Child poverty also has a negative association with good child-parent relationships as seen in Table 10. The number of adults in the household is not significantly associated, but cohabiting parents and step fathers also show a negative relationship, as does living in an Indian family or social housing. Factors that are associated with better child-parent relationships are the number of children, mean age of mother at birth and the number of earners. But again very little of the variation in child-parent relationships is explained by these factors – only 7 per cent.

Table 10: Multiple regression of behavioural development score and child parent relationship score

	Behavioural Development (high score is positive) N=8980		Child-Parent Relationship (high score is a positive relationship) N=9,181	
	β Beta	β Beta	β Beta	Standardised β Beta
Reliably Poor (Poor = 1)	-0.31***	-0.04	-1.23***	-0.08
Number of Adults in Household	0.06 NS	0.01	1.63 NS	0.01
Number of Children in Household	0.10**	0.03	0.42***	0.06
Family Structure				
Married Natural Parents	0.00	0.00	0.00	0.00
Cohabiting Natural Parents	-0.10 NS	-0.01	-0.53*	-0.03
Natural Mother and Step-father	-0.39 NS	-0.02	-1.91***	-0.04
Lone Natural Mother	0.36**	0.05	0.53 NS	0.03
Mother's Age at Birth	0.05***	0.09	0.05***	0.05
Ethnicity				
White	0.00	0.00	0.00	0.00
Mixed	0.22 NS	0.01	0.26 NS	0.00
Indian	-0.76***	-0.03	-0.49 NS	-0.01
Pakistani and Bangladeshi	-0.55**	-0.03	-1.45**	-0.03
Black or Black British	0.54 NS	0.03	1.82***	0.04
Other Ethnic Groups	-0.22 NS	-0.01	-0.01 NS	0.00
Number of Parental Earners in Family	0.19***	0.05	0.33*	0.04
Mother's highest qualification (no quals = 0; NVQ Level 1 = 1; etc.)	0.27***	0.13	0.20***	0.04
Housing Tenure				
Owner-Occupier	0.00	0.00	0.00	0.00
Social Housing	-0.47***	-0.07	-1.32***	-0.08
Private Rented or Other	-0.06 NS	-0.01	-0.81***	-0.04
Constant	20.46***		61.45***	
Adjusted R^2	0.07		0.05	
F_{Reg}	41.14***		29.25***	

Significance *** 0.005, ** 0.01, * 0.05

5.3 Depression

Poverty is also associated with the odds of depression in Table 11. Higher scores are also associated with one earner couples, cohabiting parents with less than two earners, a stepfather with both parents earning, a lone parent not working, Indian or Pakistani/Bangladeshi ethnicity, educational level and not in owner occupation.

5.4 Mental health

The results are very similar for mental health. Having controlled for other factors poverty is still an important factor, as is education level, Indian and Bangladeshi ethnicity, cohabiting and lone parents with no employment - all associated with higher mental health risks. One difference with malaise is that the more children and the older the mother the lower the mental health risk.

Table 11: Multivariate logistic regression of depression and risk of future mental health problems, exponentiated parameter estimates

	Kessler depression score (1=Depressed) N=8,972	Child's behaviour problem (Total Difficulties Score) (1=Predicts Borderline/Abnormal Future Mental Health) N=7,075
Reliably Poor		
No	1.00	1.00
Yes	1.97***	1.47***
Number of Children in Household		
1	1.00	1.00
2	1.01 NS	0.91 NS
3	1.13 NS	0.84 NS
4+	0.92 NS	0.89 NS
Combined Family Structure & Number of Earners		
Married Natural Parents – 2 Earners		1.00
Married Natural Parents – 1 Earners	1.00	1.36***
Married Natural Parents – 0 Earners	1.31**	1.06 NS
Cohabiting Natural Parents – 2 Earners	1.32 NS	1.35*
Cohabiting Natural Parents – 1 Earners	1.26 NS	1.30 NS
Cohabiting Natural Parents – 0 Earners	1.41*	1.87*
Nat. Mother & Stepfather – 2 Earners	1.71*	1.93*
Nat. Mother & Stepfather – 1 Earners	1.91*	2.16**
Nat. Mother & Stepfather – 0 Earners	1.79*	1.66 NS
Lone Natural Mother – 1 Earner	1.19 NS	1.11 NS
Lone Natural Mother – 0 Earner	1.27 NS	1.45*
	1.53***	
Mother's Age at Birth		
35+	1.00	1.00
30-34	0.87 NS	0.99 NS
-25-29	1.09 NS	1.14 NS
20-24	1.15 NS	1.50***
Under 20	1.14 NS	1.36*
Ethnicity		
White	1.00	1.00
Mixed	0.84 NS	1.11 NS
Indian	2.21***	1.75*
Pakistani and Bangladeshi	3.06***	2.32***
Black or Black British	1.09 NS	0.99 NS
Other Ethnic Groups	1.96*	1.23 NS
Mother's highest qualification		
NVQ Level 5	1.00	1.00
NVQ Level 4	0.83 NS	1.21 NS
NVQ Level 3	0.99 NS	1.59*
NVQ Level 2	1.06 NS	2.07***
NVQ Level 1	1.11 NS	2.72***
No recognised qualifications	1.34 NS	3.59***
Housing Tenure		
Owner-Occupier	1.00	1.00
Social Housing	1.40***	1.56***
Private Rented/Other	1.22 NS	1.23 NS

*** 0.005, ** 0.01, * 0.05

6. Changes in poverty risk between Sweep 1 and 2

MCS 1 asked about appliances and MCS 2 asked about socially perceived necessities, so the deprivation dimension is not consistent over the waves. However the other three dimensions are consistent. This section uses them to observe how family poverty changed between MSC 1 and MSC 2 and also to explore why it changed. For this analysis we have selected families which were respondents in both sweeps and have used unweighted data as a first step whilst attrition weighting is being investigated separately.

Table 12 summarises the changes in poverty status for each of our dimensions of poverty. There was a good deal of turnover in the experience of poverty between these two sweeps. Defining poor on at least two dimensions measure 26 per cent of families had been poor at one time or other, 45 per cent had been poor on one of the dimensions. But there was also a good deal of movement. The income poor category was the most volatile with 8.8 per cent of all families falling into poverty and, similarly, 8.8 per cent moving out of it. Of our three measures the income poor were most likely to be persistently poor. Only 3.1 per cent were subjectively poor in both waves with a slightly higher proportion moving out of poverty than moving in. This is also the case for benefit poverty – slightly more families moved off benefits than moved in and 14.4 per cent were on benefits in both sweeps. The results for the overlaps analysis vary with the number of dimensions. On poor on all three there was no change in the small proportion in poverty and the same proportion moved out of poverty as came in. On poverty on two dimensions there is evidence of a slight fall in poverty and 13.3 per cent were poor in both waves. We take this as our reliable measure in the following exploratory analysis of why poverty status changed.

Table 12: Poverty movements MCS1 to MCS2

	Percentage Poor in both sweeps	Percentage Left poverty	Percentage Moved into poverty	Percentage Not poor in either sweep	N
Income poverty	21.3	8.8	8.8	61.1	11,407
Subjective poverty	3.1	7.3	6.2	83.4	14,343
Benefit poor	14.4	6.6	5.1	73.9	14,326
Poor on 1	26.4	9.7	9.1	54.7	11,390
Poor on 2	13.3	7.2	5.5	74.0	11,390
Poor on 3	1.1	2.8	2.8	93.4	11,390

Unweighted percentages and bases

Table 13 focuses on the relationship between changes in marital status and employment status on moving into or out of poverty between the MCS 1 and MCS 2 using poor on two dimensions.

The most common single reason for **moving out** of poverty was entering employment – 47.7 per cent of those who moved out of poverty did so because one or both parents entered employment and another 9 per cent went from a household with one earner to one with two earners. Forming partnerships was also a way out of poverty - 23.3 per cent of those who moved out of poverty did so for this reason and nearly half of them had moved into a cohabiting relationship. Of course moves out of

poverty were commonly associated with changes in family form **and** the number of earners. Thus of those who moved out of poverty as a result of increasing the number of earners 37 per cent also moved from lone parent status to couple status. Also 90 per cent of the lone parents who moved out of poverty as a result of increasing the number of earners also moved into couple households.

The most common single reason for **moving into** poverty was becoming a workless family - 44.9 per cent of those who moved into poverty were families who became workless and another 8 per cent lost one earner (out of two). The other main reason for moving into poverty was relationship breakdown – 36.5 per cent moved into poverty by becoming a lone parent and about two thirds of these were due to cohabitation breakdowns. However changes in employment and family status were associated. 56 per cent of those who became workless between the surveys had become lone parents as a result of the end of their partnerships and 82 per cent of those who had become lone parents had also become workless.

Moving into employment is not a guarantee of moving out of poverty – 9.8 per cent of those who remained in poverty did so despite one or two parents becoming employed and 2.6 per cent of those who moved into employment had a parent who became employed. Partnering or repartnering is also not a guarantee of moving out of poverty – 8.5 per cent of those who remained in poverty had repartnered and 1.8 per cent of those who moved into poverty had repartnered.

Table 13: Changes in marital status and employment status by movements in and out of poverty (defined as poor on two or more dimensions)

Row percentages

	Remained out of poverty	Moved out of poverty	Moved into poverty	Remained in poverty	Total	N
Change in marital status	*n=7482*	*n=709*	*n=581*	*n=1402*	*n=10174*	
No change	78.0	5.3	3.7	13.0	*100*	*10480*
Married natural parents to lone parent	49.0	2.8	32.4	15.8	*100*	*349*
Cohabiting parents to married parents	85.6	7.4	4.0	3.1	*100*	*672*
Lone parent to married parents	22.1	45.3	5.3	27.4	*100*	*133*
Lone parent to cohabiting parents	26.7	38.3	0.6	34.4	*100*	*252*
Lone parent to step-family	29.0	42.7	3.2	25.0	*100*	*158*
Cohabiting to lone parent	31.3	6.3	34.4	28.1	*100*	*470*
Step-family to lone parent	15.4	23.1	30.8	30.8	*100*	*15*
Change in employment status	*n=8420*	*n=814*	*n=625*	*n=1507*	*N=11366*	
No change	78.2	3.9	3.2	14.7	*100*	*10131*
0 workers to 1	15.6	56.1	2.9	25.3	*100*	*763*
0 workers to 2	18.0	73.9	0.0	8.1	*100*	*161*
1 workers to 2	90.5	6.9	1.5	1.1	*100*	*1319*
1 workers to 0	15.5	3.1	50.5	30.9	*100*	*610*
2 workers to 1	91.8	2.2	5.1	0.8	*100*	*1226*
2 workers to 0	30.7	0.0	65.3	4.0	*100*	*103*

Column percentages

	Remained out of poverty	Moved out of poverty	Moved into poverty	Remained in poverty
Change in marital status	*n=7482*	*n=709*	*n=581*	*n=1402*
No change	88.1	63.3	53.7	78.3
Married natural parents to lone parent	1.7	1.0	14.1	2.9
Cohabiting parents to married parents	6.3	5.8	3.8	1.2
Lone parent to married parents	0.3	6.1	0.9	1.9
Lone parent to cohabiting parents	0.6	9.7	0.2	4.4
Lone parent to step-family	0.5	7.5	0.7	2.2
Cohabiting to lone parent	1.5	3.2	21.7	7.3
Step-family to lone parent	0.0	0.4	0.7	0.3
Total	100	100	100	100
Change in employment status	*n=8420*	*n=814*	*n=625*	*n=1507*
No change	75.6	38.9	41.9	79.3
0 workers to 1	1.0	37.6	2.6	9.2
0 workers to 2	0.2	10.1	0.0	0.6
1 workers to 2	11.4	9.0	2.6	0.8
1 workers to 0	0.8	1.7	37.1	9.4
2 workers to 1	10.7	2.7	8.0	0.5
2 workers to 0	0.3	0.0	7.8	0.2
Total	100	100	100	100

7. CONCLUSION

This working paper summarises the results of an analysis of poverty in MCS 2 when the children were about 3 years old. It has produced child poverty rates using income poverty, deprivation, subjective poverty and benefit receipt. The reliably poor were children who were poor on two or more of those dimensions. The bivariate and multivariate odds of being reliably poor have then been estimated. Having controlled for other factors, poverty was associated with behavioural problems, parent child relationships, maternal depression and mental health problems.

Movements into and out of poverty between sweeps 1 and 2 have been explored in particular the impacts of employment and family change have been explored.

It is the intention to apply the same techniques using MCS 1, MCS 2 and MCS 3 in further work.

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