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Millennium Cohort Study Briefing 6

# Teacher assessment at age 5

**Based on Chapter 12 of *Children of the 21st century (Volume 2): The first five years***

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## About these briefings

This Briefing is one of 14 that distil the key findings of the first three surveys of the Millennium Cohort Study, as collected in *Children of the 21st century (Volume 2): The first five years*.

The study has been tracking the Millennium children through their early childhood and plans to follow them into adulthood. It covers such diverse topics as parenting; childcare; school choice; child behaviour and cognitive development; child and parental health; parents' employment and education; income; housing; and neighbourhood.

It is the first of the nationwide cohort studies to over-sample areas with high densities of ethnic minorities and large numbers of disadvantaged families.

For the first survey, in 2001–2, interviewers visited the families of nearly 19,000 children aged 9 months throughout the United Kingdom. It established the circumstances of pregnancy and birth, as well as the families' social background. The second survey recorded how nearly 16,000 cohort children were developing at age 3. The third survey, when they were age 5, involved almost 15,500 children and provided a uniquely detailed account of their physical, cognitive and social development in the year they entered school.

The study is housed at the Centre for Longitudinal Studies at the Institute of Education, University of London. It was commissioned by the Economic and Social Research Council, whose funding has been supplemented by a consortium of government departments.

*Children of the 21st century (Volume 2): The first five years,* edited by Kirstine Hansen, Heather Joshi and Shirley Dex, The Policy Press, 2010, can be ordered via www.policypress.co.uk

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## Introduction

Research has shown that children's development in the early years can not only have a strong bearing on their educational attainment but help to determine the pattern of their adult lives. It can partly predict the kind of jobs they will do and the age at which they will become parents. Establishing why some children make a better start than others is therefore a crucial aspect of the drive to reduce inequalities.

This Briefing summarises an analysis of teachers' assessments of children in the Millennium Cohort Study (MCS) at age 5. These assessments complement the cognitive and behavioural development indicators described in Briefings 4, 12 and 13.

## Foundation Stage Profile and Devolved Administration Teacher Survey

Teachers in England's state schools record pupils' performance during the Nursery and Reception years to produce Foundation Stage Profile (FSP) scores. These scores are collected by the Department for Children, Schools and Families. In all, 8,671 MCS children in England were successfully matched to their FSP scores.[2] However, for children in Northern Ireland, Scotland and Wales, where FSP data were not available, the same information for the first primary school year was collected via a postal survey of teachers. The response rate was 68 per cent overall but varied by UK country (Northern Ireland 73%, Scotland 68% and Wales 63% ). For the rest of this Briefing the data will be collectively referred to as FSP scores.

The FSP reports on six areas of learning:

1) personal, social and emotional development (disposition and attitudes; social development; and emotional development);

2) communication, language and literacy (language for communicating and thinking; linking sounds and letters; reading; and writing);

3) mathematical development (numbers as labels and for counting; calculating; and shape, space and measures);

4) knowledge and understanding of the world;

5) physical development;

6) creative development (art, singing, dancing and drama).

Teachers give a child a score of 1 to 9 for each category. A '9' means their achievement is beyond what is expected during the Foundation Stage. It has the level of challenge found in level 1 of the 10-level national curriculum and sometimes level 2b (the level a child is expected to reach by age 7).

State school teachers in England are trained in FSP grading and do it for an entire class. Teacher grading of MCS children in the other UK countries was in many cases for only one cohort child. This could make it difficult to make cross-UK comparisons. However, the statistical calculations reported in this Briefing allow for this factor.

Table 1 shows the minimum and maximum scores possible for each area of learning in the FSP along with the mean and the 10th, 25th, 50th, 75th and 90th percentile points. Higher scores indicate more advanced stages of development. Mean scores are highest for physical development (7.4); followed by personal, social and emotional (7.1); maths (6.9); knowledge and understanding of the world (6.8); and creative development (6.8). Communication, language and literacy has the lowest mean (6.4).[3]

## Method of analysis

Regression analysis[4] was employed to see how the scores related to the characteristics of the children and families. This method was chosen as it permits examination of the relationship between outcomes and a number of factors in combination. For example, among the family characteristics included in the analysis were mother's ethnicity, highest educational qualification and occupation held by either parent, family income, maternal depression, whether a father was present, and whether the family lived in social housing. The parenting variables were: reading to the child, teaching the alphabet and counting; and TV viewing habits (at age 3).

The analysis also took into consideration experience of formal childcare up to age 3 (nurseries, crèches, childminders, nannies and au pairs) and whether a mother had strongly agreed with the following statements when her child was 9 months: (1) babies need to be stimulated if they are to develop well; (2) talking, even to a young baby, is important. A further set of predictors included were child's vocabulary and school readiness scores, measured at age 3.

**Table 1**
**Mean score and percentile points of Foundation Stage Profile components**

| | Max score | Mean* | 10th | 25th | 50th | 75th | 90th |
|---|---|---|---|---|---|---|---|
| Personal, social and emotional | 27 | 21.4(7.1) | 15.0 | 19.0 | 22.0 | 24.0 | 27.0 |
| Communication, language and literacy | 36 | 25.7(6.4) | 16.0 | 21.0 | 27.0 | 31.0 | 34.0 |
| Mathematics | 27 | 20.8(6.9) | 14.0 | 18.0 | 21.0 | 24.0 | 26.0 |
| Knowledge and understanding of the world | 9 | 6.8 | 4.0 | 6.0 | 7.0 | 8.0 | 9.0 |
| Physical development | 9 | 7.4 | 6.0 | 7.0 | 8.0 | 8.0 | 9.0 |
| Creative development | 9 | 6.8 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 |

* Means adjusted for the larger number of items in the first three scales are shown in brackets.

## Results

Some of the results, showing variables which proved to be significantly related, positively or negatively, to scores in the first three of these assessments (personal, social and emotional; communication; and maths) are plotted in Figures 1, 2 and 3. In each case the premium associated with a child being a month older at the end-of-year assessment is shown in black. The other estimates in these charts reflect the extent to which each score changes when each of the other variables change in turn.

Analysis of the other three sets of FSP scores – for knowledge and understanding of the world; physical development; and creative development – produced a similar picture to that shown in Figures 1 to 3.

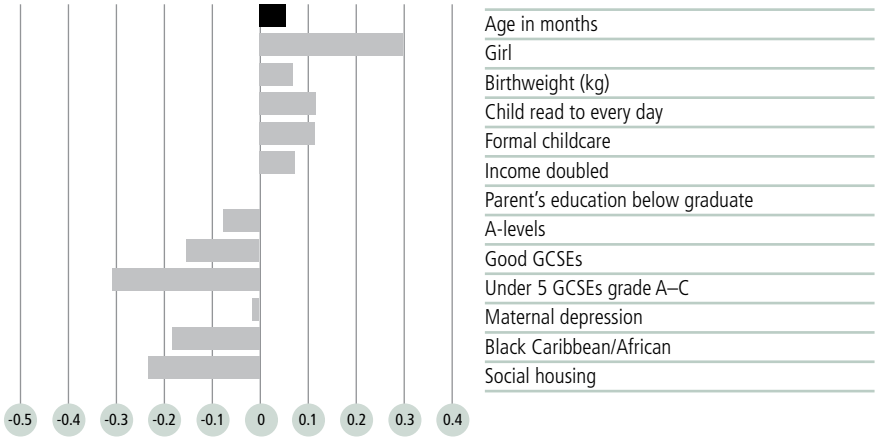
### Knowledge and understanding of the world

The difference between girls and boys in terms of their knowledge and understanding of the world is positive and significant, as are the other child characteristics – age and birthweight. In other words, girls, children who had been heavier newborns and older cohort members all have higher scores.[5] Children with more highly educated mothers also score more highly on this measure, as do those in households with higher incomes, children who are read to every day and those who have experienced formal childcare. However, children with black mothers achieve lower scores.

### Physical development

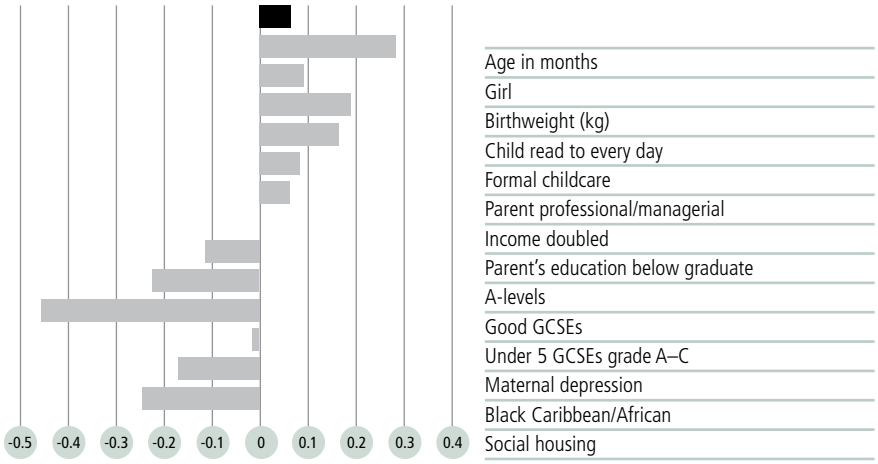
Child characteristics – female gender, birthweight and age – are all positively associated with physical development. Of the family characteristics, mother's education and household income are positively associated with physical development and social housing is negatively related. Having a black mother or a depressed mother is also negatively related to physical development whereas having a Pakistani or Bangladeshi mother has a positive association. Of the parental decision variables, only reading to the child every day and experience of formal childcare are related to physical development scores.

**Figure 1**
**Personal, social and emotional scores: contributions of selected factors**



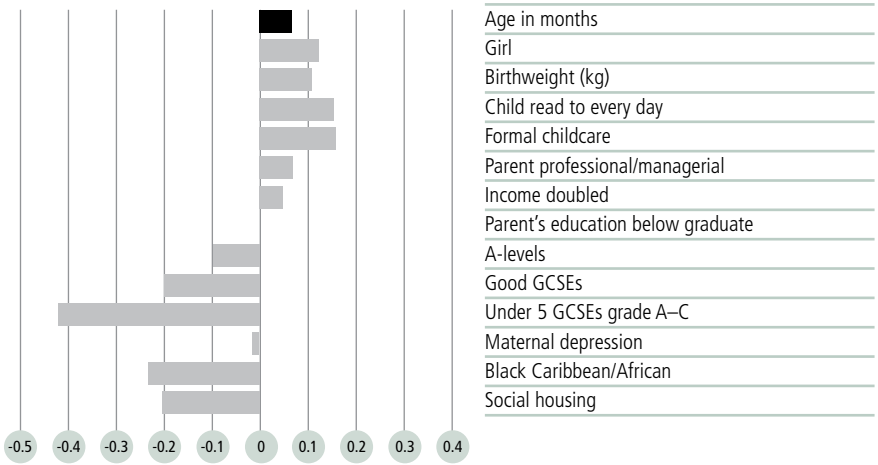

FSP score standardised – see note 3

**Figure 2**
**Communication, language and literacy scores: contributions of selected factors**




FSP score standardised – see note 3

**Figure 3**
**Maths scores: contributions of selected factors**




FSP score standardised – see note 3

**Creative development**
The child characteristics are all positively associated with creative development. Children with less educated mothers and Indian or black mothers also have lower creative development scores. Children living in households with higher incomes have higher scores while those in social housing have lower than average scores. There was little difference between the creative scores of children whose mothers have A-levels and those with degrees. Reading to children every day and experience of formal childcare are positively associated with creative development, while watching three or more hours of television every day at age 3 is associated with lower creative development scores.

## Discussion

**Factors associated with higher scores**
The factors associated with success in the different FSP areas were, in general, the same.

- Older children get higher scores than younger ones. The benefits of having been born earlier in the school year – September rather than the following summer in England – have been well documented.[6]
- Girls are doing consistently better than boys – by the equivalent of 1 to 9 months' progress, according to the outcome measures. Girls were furthest ahead of boys, on average, in their creative development.
- Children who weighed more at birth have higher scores. Low birthweight may indicate failure to thrive in gestation and can lead to long-term health problems or development delays.
- Parents who read with young children at age 3 appear to help all aspects of development measured by the FSP.
- Children who experience formal childcare at or before age 3 score higher than those who do not. The boost to their scores is approximately the same as the advantage associated with daily reading.

**Factors associated with lower scores**

- Children from lower-income families do less well than those from better-off homes. Even allowing for educational, occupational and housing differences likely to be associated with higher income, a doubling of family income was associated with children being around a month ahead in all six FSP areas of learning.
- Children with less educated parents are less advanced in their development than others. In the case of the first three scores illustrated – personal, social, emotional; communication, language and literacy; and maths – there was a gap of just over six months between the scores of children whose parents' highest qualification was 'fewer than 5 GCSEs at C grade' and those where at least one parent was a graduate. This gap widens once other background factors are included as graduates are likely to have higher incomes and own their own homes.
- Children whose mothers suffered from depression when the child was aged 3 score less highly.
- Those living in social housing score lower than other children. This remains true even after controlling for other factors, such as household income and mother's education, which may be related to the probability of living in social housing.
- The analysis on which this Briefing is based also found that children's cognitive and behavioural adjustment scores at age 3 were related to age 5 outcomes. In other words, children who were high-achieving and well-adjusted at age 3 were in most cases also successful at age 5 – and vice versa.

## Key statistics

**9 months** – the lead that five-year-old girls in England have over boys, on average, in creative development.

**1 month** – the narrowest lead that girls have over boys at age 5 (in knowledge and understanding of the world).

**6 months** – the gap between the personal, social and emotional; communication; and maths scores of children whose parents' highest qualification was fewer than 5 GCSEs at C grade and those where at least one parent was a graduate.

## Conclusions

At age 5, girls are doing better than boys. Furthermore, children from lower-income families with less highly educated parents are less advanced in their development than those with more advantaged starts to life. However, parents who read with young children appear to help all aspects of development measured by the FSP. This suggests that it is an indicator of more general parenting behaviour that benefits child development – not just vocabulary or reading. It would be worth exploring why this behaviour proves to be so helpful as this may point out some of the levers for assisting disadvantaged children's development.

1 Kirstine Hansen, Institute of Education, University of London. This text has been adapted and shortened to suit the format of these Briefings. Responsibility for any errors therefore rests with the Centre for Longitudinal Studies rather than the chapter authors
2 No comparable data were collected from children attending private schools in England (around 5% of the English sample).
3 Note that the range of possible marks in an assessment varies from 0–36 to 0–9. In this Briefing the scores have been standardised (divided through by their own standard deviation, an average of the distance of each individual score from the mean). This puts each score on a common scale.
4 Regression analysis is a technique for modelling and analysing several variables that uncovers the relationship between the dependent variable and one or more independent variables. For further information see Berk, R. (2004) *Regression Analysis: A Constructive Critique,* Sage Publications; and Freedman, D. (2005) *Statistical Models: Theory and Practice,* Cambridge University Press.
5 It should be borne in mind that in this Briefing we are comparing the average scores for different groups of children. In each group there will be individuals who score substantially above or below that average.
6 DCSF (2001) *Summary of research evidence on the age of starting school*, DCSF Research Brief No: RBX 17-01 (http://publications.dcsf.gov.uk/eOrderingDownload/RBX17-01.pdf); and Crawford, C., Dearden, L. and Meghir, C. (2007) *When you are born matters: the impact of date of birth on child cognitive outcomes in England,* Institute for Fiscal Studies (www.ifs.org.uk/publications/4073).