Social Class and Inequalities in Early Cognitive Scores

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Abstract
Research emphasising the importance of parenting behaviours and aspirations for child outcomes has been seized on by policymakers to suggest the responsibility of the worst off themselves for low levels of social mobility. This article provides a critique of the way in which research evidence has been used to support the dominant policy discourse in this area, as well as an empirical analysis. We use the Millennium Cohort Study to interrogate the relationship between social class and attainment in the early years of schooling. We investigate the extent to which social class inequalities in early cognitive scores can be accounted for by parental education, income, family social resources and parental behaviours. We conclude that social class remains an important concept for both researchers and policymakers, and that the link between structural inequalities and inequalities in children’s cognitive scores cannot be readily accounted for in terms of individual parenting behaviours.

Keywords
education, income, longitudinal, Millennium Cohort Study, parenting, social class, test scores

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Introduction

The relationship between socio-economic disadvantage and educational outcomes, and between social origins and destinations, has been documented over many years (Feinstein, 2003; Floud et al., 1956; Halsey et al., 1980). Recently, there has been a strong policy response to research stating that intergenerational income mobility has declined among men in Britain, based on a comparison of the British cohort born in 1958 to the cohort born in 1970 (Blanden et al., 2004), though relative occupational class mobility is apparently unchanged (Goldthorpe and Jackson, 2007).

Some commentators have stated that declining mobility is due to the abolition of Grammar schools, a view challenged by Boliver and Swift (2011). However, in recent years, a policy discourse has emerged, seeking to explain educational differentials and social immobility in terms of ‘parenting’. For example, Nick Clegg, the Deputy Prime Minister, has blamed low levels of social mobility on differences in parenting (Telegraph, 2010), citing ‘the different degree to which different parents invest in and engage with their own children’s development and progress’. The Frank Field report (2010), starting from a premise that few would disagree with – that poor children are disadvantaged by more than just a lack of money – goes on to make the more controversial claim that ‘… a modern definition of poverty must take into account those children whose parents remain disengaged from their responsibilities’ (Field, 2010: 15). Field states that Britain ‘… is witnessing a rupturing in its once strong parenting tradition’ (2010: 18), and attributes this to housing estates, de-industrialisation, and the growth of single-parent families.

This article offers a critique of the way in which research evidence has been interpreted to support this dominant policy discourse and has neglected the vital concept of social class. We go on to provide an empirical assessment of the social class gap in cognitive scores in the early years of primary education, and of the extent to which this can be accounted for by ‘parenting’ and other factors.

The Link between Policy Claims and Empirical Evidence on ‘Parenting’

Evidence from the British Cohort Studies and the Effective Provision of Pre-school Education (EPPE) project has featured heavily in recent debates on educational inequalities. Sylva et al. make a strong case for the importance of parenting to early outcomes, stating that ‘what parents do with their children is more important than who they are’ (2004: 5). This claim is echoed by Graham Allen MP in a recent government report, ‘What parents do is more important than who they are. Especially in a child’s earliest years, the right kind of parenting is a bigger influence on their future than wealth, class education or any other common social factor’ (Allen, 2011: xiv). David Cameron cites ‘research evidence’ which:

… shows that the differences in child outcomes between a child born in poverty and a child born in wealth are no longer statistically significant when both are raised by ‘confident and able’ parents. It would be over the top to say that it is to social science what E=MC² was to physics … That discovery defined the laws of relativity; this one is the new law for social mobility. (Cameron, 2010)
This extraordinary claim is based on a Demos report (Lexmond and Reeves, 2009) focusing only on behavioural outcomes. The report has not had the benefit of scientific scrutiny, and its modelling strategy is questionable. Cameron’s interpretation has been challenged by scholars in the field (Kiernan, 2010). We must add that social mobility is, of course, not entirely driven by early cognitive scores, let alone by early behavioural adjustment.

Policymakers have also paid much attention to research using the ‘parental interest’ variable from the National Child Development Study (NCDS) and British Cohort Study (BCS70). Clegg (Telegraph, 2010) cited findings that parental interest in a child’s education is four times more important than socio-economic background to that child’s final educational achievements (Feinstein and Symons, 1999). Field (2010), citing Blanden (2006), states that ‘Other research has shown that the simple fact of a mother or father being interested in their children’s education alone increases a child’s chances of moving out of poverty as an adult by 25 percentage points.’ But this ‘simple fact’ is constructed through an uncritical interpretation of the data. ‘Parental interest’ refers to the teacher’s report of each parent’s level of interest at age 10 or 11. Since teachers’ contact with parents at this time was largely limited to an annual parents’ evening towards the end of the academic year, it is likely that teachers will have drawn inferences about the interest of the parents at least partly from the characteristics of the child, such as their academic performance, behaviour and social class. Hardly surprising then that this variable is predictive of academic attainment. Qualitative evidence suggests that few parents are actually uninterested, but many have difficulty in expressing their interest in ways that are recognised by teachers (Vincent, 2012).

The view that raising the aspirations of poor families is an important lever in tackling low educational attainment and raising social mobility is also prevalent in policy circles. However, the assumption of a ‘poverty of aspirations’ among disadvantaged young people and their families has been disputed by several small-scale qualitative studies (Lupton and Kintrea, 2011). Our data support this challenge to the orthodoxy. The Millennium Cohort Study mothers had almost universally high aspirations for their seven-year-olds, with 97 per cent saying that they wanted their child to attend university (Hansen and Jones, 2010). A variable with no variability cannot be predictive, although it may be universally influential, hence maternal aspirations are not included in the models we present in this article. It is, of course, likely that some mothers’ aspirations will decline as the child progresses through the school system, and realistic expectations become more apparent.

Rigorous research evidence does not back the more exaggerated claims on parenting and unequal child outcomes. Ermisch, in his analysis of children’s cognitive and behavioural outcomes at age three, states that ‘… what parents do is important’ (2008: 69) and helps to account for the income gradient in child outcomes, but by no means explains it entirely. A similar conclusion is reached for outcomes at age five by Kiernan and Mensah (2011), who estimate the proportion of the effect of childhood disadvantage which can be accounted for by parenting practices (based on a composite measure) at 40 per cent, leaving 60 per cent that cannot be explained in this way. The authors also point out that figures such as these are sensitive to what is included in the model, and are thus subject to omitted variable bias. In addition, they stress that family resources and parenting are
strongly interrelated. None of this implies that parenting is not important. Parenting, characterised by consistently applied rules and regularity has been shown to be linked to positive child outcomes (Washbrook, 2011). Qualitative research has also examined social class differences in parenting styles. Lareau (2003) draws a distinction between the middle-class mode of parenting, which she terms ‘concerted cultivation’, and the working-class mode, termed ‘the accomplishment of natural growth’. Concerted cultivation is linked to cultural capital, and includes fostering the child’s abilities through a range of organised activities including cultural and sports activities, often requiring intensive investment of time and money (Vincent and Ball, 2007).

The treatment of different aspects of parents’ interactions with their child as simply ‘parenting’ can lead to an under-theorised approach which ultimately sheds little explanatory light. While some authors acknowledge the things that working-class families do to promote their children’s educational attainment (Siraj-Blatchford, 2009), an emphasis on parenting can feed into a crude deficit view in which low-income parents are to blame for their children’s failures (Vincent et al., 2010). This disregards the impact of parents’ resources on both parenting itself and on the outcomes of parenting. Parenting is affected when parents are suffering stress and poor health (Duncan and Brooks-Gunn, 1997; Ghate and Hazel, 2004; Mortimore and Whitty, 2000; Whitty, 2002). Cultural and cognitive resources also matter; for example, a parent with limited reading skills is likely to be less able to read to their child, and if they do read to their child, their efforts may still be less effective than the efforts of a more educated parent.

Social mobility and the notion of meritocracy are used to legitimise socio-economic inequality. Therefore, if social mobility is seen to be low, the government must be seen to act. Neoliberal ideology attributes personal responsibility for a lack of social mobility to the poor, rather than to structural factors which vary between societies, including the size of the gap between rich and poor, hence the appeal of the idea that inequalities can be explained by ‘what parents do’. The parenting agenda is also supported by those from a quite different political perspective whose aim is to support early years provision. Nevertheless, the interpretation of research evidence should never be entirely driven by political agendas, whether progressive or reactionary. Both researchers and policymakers have at times been complicit in the uncritical construction and interpretation of evidence to support exaggerated claims regarding the importance of parenting in accounting for socio-economic inequality.

Why Social Class?

Researchers in the field of social and educational inequalities would, we suspect universally, agree that poverty alone cannot explain educational inequalities. Nevertheless, the fact that income is not the only factor that determines educational outcomes hardly implies that disengaged parenting among the poor is a sufficient explanation for socially structured differentials in educational outcomes.

There are problems with conceptualising social inequalities purely in terms of poverty. Current policy discourse tends to describe social inequalities almost exclusively in terms of the gap between the ‘income poor’ and everyone else, despite the fact that both educational and occupational attainment have strong gradients across the social
Spectrum, including differentials between fractions of the middle class (Savage and Egerton, 1997). This association of social inequalities only with the lowest income group, who are more likely to be workless, allows commentators to portray social inequality as a moral problem for which the poor themselves are to blame.

Sociologists have typically framed social inequalities in terms of social class rather than income. But the very idea that society is socially stratified into classes meets with scepticism from many quarters. Certain politicians and certain social theorists (Beck, 1992; Giddens, 1991) have claimed, in the teeth of overwhelming empirical evidence, that we are living in an increasingly classless society. Researchers from disciplines outside sociology, such as psychology and economics, often assume that social class simply represents a proxy for income, and will tend to use income data in preference to social class where both are available. But for sociologists, while there are of course competing perspectives on class analysis (Crompton, 2008), there is a shared understanding that social classes are categories defined not just by income, but by labour market position, power and status.

The most widely used social class schema in Britain today is the NS-SEC scale. We use this schema to maximise the comparability of the current article with other research. NS-SEC is an occupational schema, and determines class position in terms of employment relations. It reflects not just income, but longer-term economic security, stability and prospects, as reflected in a person’s labour market position. It also reflects power in terms of relationships of authority, command, control and autonomy within the workplace (Goldthorpe and McKnight, 2006). The NS-SEC schema has been criticised by advocates of the Cambridge social status scale and others (Blackburn, 1998; Prandy, 1998). One criticism is that social inequalities are not simply based on occupational categories. We acknowledge this, but support the usefulness of an analytical distinction between occupational classes and other sources of social inequality.

Sociologists have also long recognised that the intergenerational transmission of class inequalities is not due to material resources alone, but also depends on social and cultural assets. Cultural capital refers to cultural practices associated with the educated middle classes, such as reading, which linked to educational attainment (Bourdieu and Passeron, 1990[1977]; Sullivan, 2001). Social capital refers to ‘the set of resources that inhere in family relations and in community social organisation and that are useful for the cognitive or social development of a child or young person’ Coleman, 1994: 300). Single-parent families and families with large numbers of siblings, as well as families where the parents are working long hours or have physical or mental health problems, can be seen as disadvantaged in this regard. Some of the classed practices which policymakers describe as ‘parenting’ would be recognised by sociologists as reflecting cultural and social capital.

In previous work, we have found that, while social class is linked to early childhood outcomes across a range of domains, such as health and behaviour, class inequalities in the educational domain are far greater, and therefore demand particular attention (Sullivan et al., 2010a, 2010b). Other studies have decomposed the effect of social origins on the highest qualification achieved in adulthood (Bukodi and Goldthorpe, 2012; Jaeger, 2007). The current study contributes to this literature by unpacking social class effects in the early years, where the effects of social stratification on formal educational transitions (Boudon, 1974) are less salient.
Research Questions

This article assesses the relative importance of economic, social and cultural resources in explaining social class differential in children’s cognitive scores. We also address the question of the relative importance of aspects of parenting, and how these may interact with other family resources.

1 How strongly is social class linked to test scores at age seven?
2 To what extent do these social class gaps increase between the ages of five and seven?
3 To what extent is the social class ‘effect’ accounted for by measures of income and education?

If social class is essentially a proxy for income, then income should largely account for the link between social class and test scores.

If on the other hand cultural and cognitive rather than economic resources drive the link between social class and test scores, this should be reflected in a stronger ‘effect’ of parents’ education than of income.

If social class has a direct ‘effect’ which is unmediated by education or income, this could suggest the importance of class-based resources other than income and education, although we cannot rule out the possibility that social class effects could be picking up measurement error in the income and education variables.

4 To what extent is the social class ‘effect’ accounted for by the family’s social resources, e.g. neighbourhood resources and parental physical and mental health?
5 To what extent can the social class ‘effect’ be accounted for by measures of ‘parenting’, and which aspects of parenting appear to be important?

The Millennium Cohort Study (MCS)

Understanding the social conditions surrounding the first seven years of a child’s life is fundamental to the study of the whole life course. The Millennium Cohort Study (MCS) provides an opportunity to answer major questions about the prospects of children born in 2000–1 concerning wealth and poverty, the quality of family life and outcomes for children.

The sample was selected from all births in a random sample of electoral wards, disproportionately stratified to ensure adequate representation of all four UK countries, deprived areas and areas with high concentrations of black and Asian families in England. The sample design of the MCS differs from that of its predecessors (the 1946, 1958 and 1970 birth cohort studies) in that it took in a whole year’s births, and covers the whole of the United Kingdom. There have, so far, been four surveys (also known as ‘sweeps’ or ‘waves’):

- Millennium Cohort Survey (MCS1): at age nine months
- MCS2 at age three
- MCS3 at age five
- MCS4 at age seven
At each sweep there have been interviews with both resident parents, collecting a wide range of socio-economic and health data. The three most recent sweeps have included assessments of the child’s cognitive development.

**Analytical Strategy**

We have analysed outcomes at age seven in terms of indicators taken at earlier sweeps, avoiding the possible ambiguity of explaining outcomes in terms of current circumstances which could be affected by reverse causation. This also implies that we focus on the influence of home background, and not any influences via the school that may mediate it. Our analysis thereby presents an estimate of some medium-term outcomes of the children’s early circumstances and conditions of life.

We exploit the temporal dimension in the longitudinal design of the data by conditioning upon earlier observations to predict later outcomes using multiple linear regression. Age-specific test scores at age seven years are modelled controlling for the test score outcome at age five years. All analyses are appropriately weighted to account for the sample design, attrition and non-response and are carried out in STATA software (Ketende, 2010).

Three cognitive assessment scales were used in the fourth MCS sweep. They are the Pattern Construction and Word Reading subscales from the British Ability Scales (BAS) (Elliott, 1996) and the Progress in Maths assessment. All were directly administered by interviewers at the child’s home. We examine children’s scores on a scale combining these three assessments. The composite cognitive scores at ages five and seven were derived through factor analysis by Jones and Schoon (2010). It is important to acknowledge that children’s levels of motivation and compliance will affect their scores in cognitive tests. We do not interpret these tests as tests of innate intelligence, but as tests of capability to complete a particular task under given conditions.

Summary statistics for the test scores used in our analyses are provided in Table 1.

We aim to understand the impact of parents’ social class, income and education on children’s cognitive scores. To what extent are these differentials driven by economic and cultural resources respectively, and to what extent are they driven by aspects of parenting, which in practice overlap with cultural resources in particular? We are restricted by the variables that are available in the MCS data. For example, taking parents’ education as a proxy for their cultural and cognitive resources is certainly not ideal (Sullivan, 2001). The MCS lacks direct measures of the cultural and cognitive resources of parents, such as parents’ own reading behaviour. It does, however, contain measures of parental fostering of children’s cultural capital, through reading to the child, taking the child to

| Test                        | N  | Mean | Std. Dev. | Min  | Max   |
|-----------------------------|----|------|-----------|------|-------|
| Total cognitive score age 7 | 11,153 | 100.90 | 14.48 | 21.69 | 142.42 |
| Total BAS age 5             | 11,153 | 107.64 | 15.44 | 40.00 | 160.00 |
the library, etc. We have included a substantial set of measures of social resources and parental behaviours. Our aim is not to provide the most parsimonious model possible, but to provide a test of whether the social background estimates are robust, even in a very full model.

We present a series of linear regression models. Explanatory variables are captured in the first three waves of the study. We include cases with missing values on the regressors as far as possible. Where appropriate, missing values at a given wave are imputed from the value at an earlier wave, otherwise missing values are treated as a residual category, though their coefficients, generally insignificant, are not displayed.

When reporting effect sizes, we take the view that it is essential to ground these meaningfully. As such we reject the practice of using standardised coefficients and reporting their size as small, medium or large according to a set of thresholds (Cohen, 1988). Such thresholds are arbitrary, and hinder the researcher from thinking about what the results actually mean (Ellis, 2010; Glass et al., 1981). We include the child’s age in months in the model, which allows us to compare the size of our coefficients with the difference associated with one additional month in age, holding constant everything else in that particular model.

**Explanatory Variables**

**Model 1: Social Class and Ascribed Characteristics**

- Social class based on the NS-SEC categorisation, which groups occupations according to their employment relations and conditions (Goldthorpe, 1997). The most recent job is used where there is no current job. We adopt the approach of using the highest ranked of the mother’s and father’s most recent occupation reported across the first two waves of the study, treating missing values and those who have never had an occupation as a separate category.
- Child’s gender.
- Child’s ethnic group.
- Child’s age in months when tested, as there was some variation (SD= 2.9 around a mean of 87 months).
- UK Country at wave 2.

**Model 2: Model 1 + Income and Education**

- Family income at sweep 2: grouped in quintiles. Quintiles are defined by the MCS2 income distribution. The top income quintile had a weekly household income of at least £691, net of tax. The bottom quintile received up to £193 weekly. Our income variable is not adjusted for family composition, as family composition variables are included in the analysis.
- Educational level: the highest academic qualification of either parent across the first two sweeps of the study. In our initial analyses, we used the standard derived variable deposited with the dataset, which treats vocational and academic
qualifications as National Vocational Qualification (NVQ) equivalents. However, we found that this variable was substantially less predictive of child outcomes than a variable giving precedence to academic qualifications, so we changed our approach accordingly.

**Model 3: Model 2 + Social Resources**

- Age of mother at first birth: women who delay motherhood may have greater social resources.
- Numbers of older and younger siblings at wave 3: resources are spread more thinly the more siblings there are, and older siblings may be favoured above younger ones (Nisbet, 1953).
- Combined labour market status of parent(s) at wave 2: some commentators see maternal employment as potentially negative, while others stress the social value of integration into the labour market, including for single mothers. Previous work has found little effect of mother’s employment on children’s cognitive scores at age five (Hawkes and Joshi, 2011).
- Main informant’s (typically mother’s) disability or longstanding illness at wave 2.
- Main informant’s (typically mother’s) depression, measured on the Kessler scale (Kessler et al., 2002) at sweep 2: parents’ physical and mental ill-health may reduce their availability to their children and the effectiveness of their parenting.
- Local area type at the first survey. The wards MCS families were sampled in were categorised as: 1 Disadvantaged; 2 Non-disadvantaged; and 3 Minority ethnic. Different types of neighbourhood may affect the social resources available to parents.

**Model 4: Model 3 + Parents’ Behaviours**

- Breastfeeding: reflects mother’s effort, but also her circumstances and other resources, such as her own tested cognitive ability (Der et al., 2006). Recent research supports the view that breastfeeding has a positive effect on cognitive outcomes for children (Quigley et al., 2009).
- Authoritative parenting at age three: consistent and firm not harsh parenting is expected to lead to positive child outcomes. This is reflected in the following variables: regular bedtimes, regular mealtimes, family rules.
- The home learning environment at age three. These measures capture, at least to some degree, the ‘concerted cultivation’ associated with middle-class parenting: TV viewing; reading to the child; library visits; teaching the alphabet; teaching counting.

**Model 5: Model 4 + Child’s Test Scores at Age Five.** The inclusion of age five test scores in the model means that it becomes a model of how far the predictions of model 4 had already been established by age five, and how far they continued to be reflected in changes in the child’s test scores between age five and age seven. Essentially it is a model of progress, with the proviso that the tests taken at age five were not the same as those taken at seven. Coefficients in this model could also be biased if measurement error...
in the cognitive tests at age five is linked to other variables of interest (Jerrim and Vignoles, 2011). This model also includes the child’s age in months when s/he took the age five tests.

**Results**

Table 2 shows a set of linear regression models. Model 1 shows a strong social class gradient in children’s cognitive scores, controlling for the other variables in the model. The advantage accruing to the higher salariat compared to the semi-routine and routine workers class is 18.5 times larger than the benefit associated with an additional month in age. There is also an advantage for girls in this model, equivalent to 1.7 months of difference in age. This model shows a positive effect for Indian children, and a negative one for Bangladeshi and Pakistani children, compared to white children. Children in Scotland are significantly behind children in England.

Model 2 introduces income in quintiles and parents’ education. Parents’ qualifications are the most powerful predictor of children’s test scores in this model. The children of graduates have an advantage equivalent to 12.5 months in age, with an even larger coefficient for children whose parents have postgraduate degrees. A-levels and A–C GCSE passes also predict significantly higher test scores compared to no qualifications. Income is also significant, but the coefficients are more modest in size. Children in the top income quintile gained an advantage equivalent to 2.7 months in age compared to those in the bottom income quintile. In this model, the effect of social class is reduced but still substantial. The advantage of the higher salariat shrinks to the equivalent of 7.4 months in age.

Model 3 includes the family’s social resources. The effect of parents’ employment and couple status at wave 2 is not statistically significant. The age of the mother at first birth is significant, with the children of older mothers scoring higher than children of mothers of up to 20 years old. The number of younger siblings is insignificant, but having two or more older siblings is negative compared to being an only child. Two older siblings is equivalent to a 2.9 month disadvantage. Maternal physical illness was not significant, but a high score on the Kessler depression scale had a negative estimate, equivalent to a 5.4 month disadvantage. Perhaps surprisingly, the type of area that the family were sampled in was not significant, suggesting that individual families’ advantage or disadvantage is sufficient to account for neighbourhood differences.

In model 4 we bring in parental behaviours. Breastfeeding is positive, even if only carried out for up to three months, but with a larger parameter for three to six months of breastfeeding equivalent to 2.8 months in age. Regular bedtimes and regular mealtimes were both significant in the expected direction. Having rules which are ‘not very strictly enforced’ is negative compared to having strictly enforced rules. The results for TV viewing ran counter to expectations, with a positive coefficient for children who watched an hour or more of TV, and an apparently greater advantage for those who watched over three hours of TV daily, equivalent to a three-month advantage in age. More in line with our expectations, daily reading to the child, taking the child to the library and helping the child to learn the alphabet all had significant effects in the predicted directions. However, teaching counting was non-significant, all else equal.
Table 2. Regression analyses of combined cognitive scores at age seven.

| Combined Cognitive Ability Score at seven | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|------------------------------------------|---------|---------|---------|---------|---------|
| Sex of child                              | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    |
| Male                                      | 1.15    | 1.20    | 1.25    | 1.14    | 0.04    |
| Female                                    | 0.68    | 0.70    | 0.70    | 0.68    | 1.00    |
| Age at MCS4                                | 1.15    | 1.20    | 1.25    | 1.14    | 0.04    |
| Months                                    | 0.04    | 0.00    | 0.00    | 0.00    | 0.00    |
| Social class                              | 12.57   | 5.15    | 4.44    | 3.92    | 1.77    |
| Higher salariat                           | 8.97    | 3.91    | 3.23    | 2.81    | 1.56    |
| Lower salariat                            | 5.58    | 2.88    | 2.21    | 1.78    | 0.89    |
| Intermediate                              | 3.33    | 1.55    | 1.53    | 1.29    | 0.70    |
| Petty bourgeois                           | 3.16    | 1.55    | 1.53    | 1.29    | 0.70    |
| Lower supervisory and tech.               | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    |
| Semi and routine                          | 12.57   | 5.15    | 4.44    | 3.92    | 1.77    |
| Never worked                              | 8.97    | 3.91    | 3.23    | 2.81    | 1.56    |
| Ethnic group                              | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    |
| (Child)                                   | 0.38    | 0.30    | 0.30    | 0.02    | 0.03    |
| White                                     | 2.41    | 1.65    | 1.96    | 2.14    | 3.97    |
| Mixed                                     | 3.39    | -2.45   | -1.57   | -1.00   | 3.27    |
| Pakistani and Bangladeshi                 | -3.01   | -2.86   | -2.51   | -2.38   | -0.27   |
| Black or Black British                    | -1.03   | -0.98   | -0.83   | -0.63   | -0.72   |
| Other Ethnic group                        | 1.03    | 1.13    | 1.74    | 1.57    | 3.94    |
| Country                                   | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    |
| MCS2                                      | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    |
| England                                   | -1.01   | -0.98   | -0.83   | -0.63   | -0.72   |
| Wales                                     | -1.50   | -1.95   | -1.89   | -1.60   | -1.08   |
| Scotland                                  | -0.06   | -0.26   | -0.02   | 0.62    | -1.11   |
| Northern Ireland                          | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    |
| Middle                                    | 0.15    | -0.03   | 0.08    | -0.19   |         |
| Fourth                                    | 1.63    | 1.17    | 1.15    | 0.73    |         |
| Top                                       | 2.08    | 1.45    | 1.38    | 0.97    |         |
| Income quintiles                          | 2.53    | 1.89    | 1.93    | 1.21    |         |
| Bottom                                    | 10.33   | 8.85    | 6.83    | 3.93    |         |
| Second                                    | 8.78    | 7.24    | 5.18    | 2.60    |         |
| Middle                                    | 5.73    | 4.33    | 2.80    | 1.22    |         |
| Fourth                                    | 3.48    | 2.37    | 1.38    | 0.25    |         |
| Top                                       | 0.51    | -0.36   | -0.83   | -0.82   |         |
| Education                                 | 2.09    | 1.44    | 0.96    | 0.24    |         |
| Highest degree                            | 0.00    | 0.00    | 0.00    | 0.00    |         |
| First degree                              | 0.00    | 0.00    | 0.00    | 0.00    |         |
| A level or HE diploma                     | 0.00    | 0.00    | 0.00    | 0.00    |         |
| GCSE A–C                                  | 0.00    | 0.00    | 0.00    | 0.00    |         |
| GCSE D–G                                  | 0.00    | 0.00    | 0.00    | 0.00    |         |
| Other or vocational                       | 0.00    | 0.00    | 0.00    | 0.00    |         |
| None                                      | 0.00    | 0.00    | 0.00    | 0.00    |         |
(continued)
| Combined Cognitive Ability Score at seven | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|------------------------------------------|---------|---------|---------|---------|---------|
| Family/ work status                      |         |         |         |         |         |
| Main in work, partner not                | 0.00    | 0.00    | 0.00    |         |         |
| Partner in work, main not                | -0.78   | -0.65   | -0.77   |         |         |
| Both not in work                         | -0.02   | -0.10   | -0.06   |         |         |
| Lone parent in work                      | -1.34   | -1.19   | 0.09    |         |         |
| Lone parent not in work                  | 1.37    | 1.40    | 0.93    |         |         |
| Mother’s age at first birth              |         |         |         |         |         |
| 13–20                                    | 0.00    | 0.00    | 0.00    |         |         |
| 21–25                                    | 0.80    | 0.59    | 0.43    |         |         |
| 26–30                                    | 1.31*   | 0.76    | 0.00    |         |         |
| 31–35                                    | 1.45*   | 0.88    | -0.06   |         |         |
| 36+                                      | 1.78    | 1.24    | 1.03    |         |         |
| Younger siblings                         |         |         |         |         |         |
| 0                                        | 0.00    | 0.00    | 0.00    |         |         |
| 1                                        | -0.18   | -0.30   | 0.27    |         |         |
| 2                                        | -0.56   | -0.76   | 0.31    |         |         |
| 3+                                       | -2.50   | -1.85   | 0.69    |         |         |
| Older siblings                           |         |         |         |         |         |
| 0                                        | 0.00    | 0.00    | 0.00    |         |         |
| 1                                        | -0.57   | -0.51   | 0.38    |         |         |
| 2                                        | -2.04***| -1.81***| -0.80   |         |         |
| 3                                        | -2.40** | -2.06*  | -0.24   |         |         |
| 4+                                       | -3.09** | -2.67*  | -0.27   |         |         |
| Long-standing illness (mother, MCS2)     |         |         |         |         |         |
| No                                       | 0.00    | 0.00    | 0.00    |         |         |
| Yes                                      | 0.17    | 0.13    | 0.25    |         |         |
| Depression, Kessler scale (mother MCS2)  |         |         |         |         |         |
| None or low                              | 0.00    | 0.00    | 0.00    |         |         |
| Medium                                   | -0.41   | -0.28   | -0.28   |         |         |
| High                                     | -3.75***| -3.23** | -2.26*  |         |         |
| Ward type                                |         |         |         |         |         |
| Advantaged                               | 0.00    | 0.00    | 0.00    |         |         |
| Disadvantaged                            | -0.51   | -0.26   | -0.15   |         |         |
| Ethnic                                   | 1.43    | 1.71    | 1.71    |         |         |
| Breastfeeding                            | None    |         |         |         |         |
| Combined Cognitive Ability Score at seven                  | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|-----------------------------------------------------------|---------|---------|---------|---------|---------|
| MCS1           | Up to 3 months | 0.76* | 0.21 |         |         |         |
|                | 3–6 months      | 1.88** | 0.71 |         |         |         |
|                | 6 months or more| 1.81***| 1.00**|         |         |         |
| Regular bedtimes | Never, sometimes | −2.09***| −1.22***|         |         |         |
| MCS2           | Usually, always | 0.00 | 0.00 |         |         |         |
| Regular mealtimes | Sometimes     | −1.55** | −0.83 |         |         |         |
| MCS2           | Usually        | 0.55 | 0.35 |         |         |         |
|                | Always         | 0.00 | 0.00 |         |         |         |
| TV             | Up to one hour | 0.00 | 0.00 |         |         |         |
| MCS2           | > 1 hour, < 3 hours | 1.38*** | 0.84** |         |         |         |
|                | Or, more than 3 hours | 2.10*** | 1.22** |         |         |         |
| Read to child  | Daily          | 0.00 | 0.00 |         |         |         |
| MCS2           | At least weekly | −1.06** | −0.28 |         |         |         |
|                | Less often     | −1.80* | −0.60 |         |         |         |
| Library visits | Yes            | 0.00 | 0.00 |         |         |         |
| MCS2           | No             | −1.92*** | −1.08***|         |         |         |
| Teach child alphabet | Yes        | 0.00 | 0.00 |         |         |         |
|                | No             | −1.55*** | −0.72* |         |         |         |
| Teach child counting | Yes      | 0.00 | 0.00 |         |         |         |
| MCS2           | No             | −1.68 | −1.87* |         |         |         |
| Rules          | Strictly enforced | 0.00 | 0.00 |         |         |         |
| MCS2           | Not very strictly enforced | −0.93* | −0.24 |         |         |         |
|                | It varies      | −0.04 | 0.21 |         |         |         |
| BAS score MCS3 |                | 0.53*** |         |         |         |         |
| Age in months  | MCS3           | −0.15 |         |         |         |         |
| Constant       |                | 36.12*** | 31.18*** | 33.51*** | 37.22*** | −33.80*** |
| Unweighted Analysis Sample=11,153 |         |         |         |         |         |         |
| Adjusted R-squared |            | 0.13 | 0.16 | 0.17 | 0.19 | 0.41 |

Notes: * p < 0.05, ** p < 0.01, *** p < 0.001.
Does the parenting information account for the social class gradient? Not greatly, as the coefficients on parents’ education and social class are still the most powerful predictors of children’s test scores in model 4 and have only been mildly attenuated since model 3, with its fuller battery of family circumstances. Ethnicity on the other hand, having been reduced to insignificance by the introduction of family resources, remains so when parenting factors are introduced.

We investigated whether there were interactions between important variables such as gender, ethnicity and social class, and dimensions of parenting but no statistically significant interaction terms were found.

Model 5 includes the child’s test score at age five, so this model is essentially one of progress between the ages of five and seven. The influence of social class and parents’ education on the change since age five is still powerful, though reduced, but only the top income category remains significant in this model. Children of Indian, Pakistani and Bangladeshi backgrounds and those in the ‘other ethnic’ category made substantially more progress between the ages of five and seven than the white majority.

Older siblings become insignificant in this model, suggesting the disadvantage of having older siblings is established by age five. However, mothers’ depression when the child was three casts a continuing significant shadow.

Of the parenting behaviour measures from age three, regular bedtimes, TV viewing, going to the library and teaching the alphabet remain significant in this model, and teaching counting becomes significant. Each of these six significant terms adds about one month’s progress to the predicted score.

Figure 1 shows the extent to which the social class, education and income parameters are mediated by the inclusion of each additional block of variables. The coefficients are divided by the coefficient for age in months, and only statistically significant parameters are shown. Unsurprisingly, the social class parameters are substantially reduced by the inclusion of income and education in model 2. The inclusion of the family’s social resources in model 3 leads to a more modest reduction in the social class and education coefficients, but the income coefficient is reduced substantially. The inclusion of parents’ behaviours in model 4 further chips away at the social class and education coefficients, but they remain substantial despite the large number of potentially mediating variables that have been included. Finally, model 5 shows that, despite the range of controls that have been included, children whose parents have higher degrees or undergraduate degrees and those who have salariat class parents make significantly more progress between the ages of five and seven compared to (respectively) those with no qualifications and those in routine and semi-routine occupations. Summing the estimates for the top social class and education categories, the gap between children whose parents are in both these categories versus those in neither category grows by about six months between the ages of five and seven.

Conclusions

Social class categories can be seen as reflecting a wide range of resources that promote educational advantage. We have tried to unpack some of these resources in order to contribute to the understanding of social class differences in children in the early years of primary school.
Social class, education and income are the ‘holy trinity’ of indicators of parental socio-economic status. There are difficult conceptual issues in the measurement of all three indicators. The way in which they are operationalised can have important implications for research results. In the case of education, we discovered that, when using the standard derived variable which is based on NVQ ‘equivalents’, social class appeared more predictive of cognitive outcomes than education, whereas when we constructed an education variable giving precedence to academic rather than vocational qualifications, this was reversed. There are two likely reasons for this. Firstly, British vocational qualifications are confusing and respondents may be unclear of the NVQ level they have achieved, and this leads to measurement error. Secondly, academic qualifications may be a better proxy for abilities in core academic attainments such as maths and reading. Such messiness in the construction of research findings often goes unreported, but we report on it here as the standard NVQ variable is so widely used, and we believe that issues of operationalisation are fundamentally important.

We suggested earlier that, if social class is essentially a proxy for income, then income should largely account for the link between social class and children’s test scores. This hypothesis was not supported, as income tended to have a weaker link with children’s test scores than social class, at least with income measured in the five broad groups used here. The MCS is not a reliable source for details of income in the highest ranges. This suggests that models which rely exclusively on measures of income to control for social background will underestimate the effects of social background, which is likely to result
in other effects being overestimated. If parental income is a weaker predictor of life chances than social class and education, this also has implications for the debate on social mobility, tending to support the view that parental income alone is not the best indicator of the resources that parents marshal to promote their children’s chances.

We also suggested that, if cultural and cognitive rather than material resources drive the link between social class and test scores, this should be reflected in a stronger ‘effect’ of parents’ education than of income. This view was supported by our analyses, which found that parents’ educational qualifications were consistently the strongest predictor of children’s test scores. However, especially given the importance of the precise operationalisation of parents’ education to this result, we would ideally have preferred to use direct measures of parents’ cultural and cognitive resources.

We also found a direct ‘effect’ of occupational social class which is not entirely mediated by education or income, suggesting the potential importance of class-based resources other than income and education, although we cannot discount the possibility that more precise and accurate measurements of both income and education may account for some of this effect.

The importance of maternal depression highlights the link between children’s progress and their parents’ well-being. Family structure and labour market status were not substantial predictors of children’s test scores in our models, over and above income, social class and education, with which they are of course associated. The lack of a significant ‘effect’ of the type of ward families inhabited in the first wave of the study is also interesting, suggesting that our measure of neighbourhood type is not relevant once individual factors are accounted for. This is in line with previous quantitative studies which have failed to show strong ‘neighbourhood effects’ on educational and other outcomes (Cullis, 2008; Flouri et al., 2010; Ford et al., 2004; Leckie, 2009; Midouhas, 2012; Rasbash et al., 2010). Lupton (2003) points out that the failure of quantitative analyses to uncover neighbourhood effects does not imply that place does not matter. Rather, the problem may lie with flawed data, conceptualisation and measurement. By using arbitrary boundaries such as electoral wards, we may fail to adequately capture neighbourhoods. Also, by relying on straightforward measures of area-level poverty, we may fail to measure the things that really matter about neighbourhoods.

Turning to parenting behaviours, we found support for the value of authoritative parenting, that is, consistently applied rules and routines, and for the variables designed to measure the ‘home learning environment’. These variables could be seen as reflecting Lareau’s (2003) ‘concerted cultivation’. Library visits, in particular, may reflect cultural capital, of which we had few other direct measures.

We also found an unexpected positive sign for TV viewing. Allowing a child to watch TV for several hours daily could be seen as an indication of slightly detached parenting, so this result is counter-intuitive. However, other work on children’s school readiness scores at age three has found a similar positive association with TV viewing, albeit only for less educated mothers (Joshi and De la Rochebrochard, 2012). It may be that the educational potential of TV viewing has been underestimated. We are unfortunately unable to examine the type of TV watched, which may also be relevant (Sullivan, 2001). TV programme quality could even be an overlooked policy lever.
In conclusion, social class and parents’ education were directly linked to widening inequalities between the ages of five and seven as well as to absolute inequalities in test scores at age seven, and this could not be fully explained by the wide range of measures of both family social resources and parental behaviours included in our models. In fact, the links between social class and education on the one hand and children’s test scores on the other were only very modestly mediated by the inclusion of family social resources and parenting in our models. Psychologists are right to stress the importance of what parents do, and economists to stress the importance of income, but we have sought to combine their perspectives with sociological insights regarding the class basis of social inequalities. Parents’ social class and education reflect not just what parents do, but also what they have – and what they have is not just money. Other classed resources including cultural and cognitive resources matter too, and we would argue for the future inclusion of variables capturing these family resources in our most important longitudinal datasets. Finally, we reject the view that parenting is the ‘E=MC2’ of social mobility, and that the inequalities ingrained in our society can be laid at the door of poor parents.

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