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‘Bucking the trend’: What enables those who are disadvantaged in childhood to succeed later in life?

Jo Blanden

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1 Introduction

A prime motivation behind the Government's child poverty reduction strategy is the belief that growing up in poverty leads to children experiencing poorer outcomes later in life. Several studies support this assertion, showing that poorer children have weaker educational attainment (e.g. Gregg and Machin, 1999), and are more likely to end up in poverty in adulthood (Blanden and Gibbons, 2006). However, all these studies present the difference in the average outcomes of poor and non-poor children; clearly there are many children raised in poor backgrounds who do well in later life. This report seeks to explore the characteristics of children from poor backgrounds who 'buck the trend' and go on to escape poverty and achieve economic success as adults.

The analysis will be carried out by using data from the British Cohort Study (BCS) of children born in 1970 to estimate a number of models for individuals who faced disadvantage in childhood where the dependent variable is some measure of adult success or 'bucking the trend'. The explanatory variables are drawn from the wealth of information available from questions addressed to the child, their parents and their teachers. Insights will be gained by considering the estimated group of coefficients β.

$$Success_{iadult} = \alpha + \beta X_{ichildhood} = u_i \mid \text{Childhood disadvantage=1}$$

The policy relevance of this study is extremely clear: identifying the characteristics of those who avoid poverty may help Government to design policies which help children in disadvantage achieve their maximum potential. However, we must bear in mind that identifying a link between characteristics may not indicate that a policy focused on these characteristics would be successful. For example, if we find that children do better if they are taken to museums, a policy to encourage school trips to museums will not necessarily help children if this variable is actually a proxy for parents' overall enthusiasm for education. One of the benefits of using the BCS is the richness of the dataset, meaning that not only do we have lots of potential candidates for 'bucking the trend' characteristics, but that we can also control for the importance of other variables so that different influences are not confounded.

While the data is undoubtedly rich, this is a small scale project to see if anything new can be learned from this approach. This means that I have necessarily had to focus on just a few categories of variables, a selection which is not intended to be exhaustive. In making my selection my main focus has been on factors associated with the educational attainments of children. Improving educational attainment is seen by many as one of the main routes through which children can escape a poor start in life. This belief has clearly driven many recent Government initiatives targeted towards closing the attainment gap between richer and poorer children. The research conducted in this report attempts to move beyond the result that children who do well at school are more likely to 'buck the trend' and look more closely at **why** some children manage to do well. We would expect that the opportunity for children to escape poverty is related to parental characteristics and behaviour. In this report I will also look at what it is that some parents do that helps children to do better at school and have improved outcomes later in life. I also consider the impact of early test scores, and the role of school characteristics, a particularly hot topic in light of the current discussion about the Schools White Paper.

My results show that the level of parental interest is extremely important; with father's interest having a large influence on their sons, and mother's interest most important for their daughters. Higher early test scores are also an important factor in helping children escape from poverty, and to some extent it appears that the benefits of parental interest work through improved child's test scores. Results on the characteristics of schools show that having more able children in the school is beneficial for the outcomes of poor boys; even when their own ability and educational attainment are taken into account. There is some evidence that attending a school with a more advantaged social mix can benefit poor children, but this evidence is not robust to the use of multivariate models.

In the next chapter I discuss the data used. I then begin the analysis by exploring how the group suffering childhood disadvantage should be defined. In Chapter 4 I present descriptive analysis of which characteristics are associated with greater or lesser probabilities of bucking the trend. In Chapter 5, these characteristics are revisited in a multivariate context to explore the robustness of the results, and in particular, the extent to which they are driven by the impact of interactions between different variables. Chapter 6 offers conclusions and a discussion of how the analysis here could be extended and improved.

2 Data

The BCS included all babies born in Great Britain between 4 and 11 April 1970. This was an initial sample of 18,000 individuals. Information was obtained about the sample members and their families at birth; and the individuals were subsequently traced at age 5, 10, 16 and 30. In the childhood surveys information was obtained from parents on many topics, including information on the child's behaviour and personality, parents' education, parenting activities and the material circumstances of the family.

Particularly relevant for our purposes is the information obtained about parental income at age 10 and 16; where parents are asked to place their usual total income into the appropriate band (there were seven options at age 10 and eleven at age 16). In this paper I focus on poverty at age 16. In other work (Blanden and Gibbons, 2005), this age 16 income information is used to define poverty status by fitting a Singh-Maddala distribution to the data (to make it continuous), adjusting for family size, and then comparing this with poverty lines derived from the Family Expenditure Survey (FES) (where the poverty line is defined as 60 per cent of median equivalised household income). In Blanden and Gibbons (2006) additional complications are introduced by the need to ensure comparability between the BCS and the earlier National Child Development Study cohort.

In this paper I experiment with two definitions of poverty: the one used in Blanden and Gibbons (full details on its derivation can be found in that paper) and a simpler one which allocates those whose parents report total income of less than £100 a week at age 16 as poor (the bottom two income categories). This measure has two weaknesses compared to the Blanden and Gibbons approach: First, it is based on gross rather than net income, and second it does not include an adjustment for family size. However, the obvious benefit is that it is easy to interpret. In the next chapter I also discuss how a third definition of disadvantage can be created by using regression techniques to combine information on a number of different variables.

Information on children's ability can be gathered from children's scores on a number of tests. At age 5, tests were conducted on English vocabulary (English picture vocabulary test (EPVT)), the child's copying skills, ability to draw a face in profile and ability to draw a human figure. At age 10 the child took part in a reading test, maths test and British Ability Scale test (close to an IQ test). Tests were also administered to children at age 16, but the teacher's strike in 1986 led to very poor response rates on these tests so I do not use them.

The survey at age 10 also has questionnaires completed by the child's class teacher and head teacher. The information gathered from the teacher includes variables about the child's ability and behaviour, while the head teacher provides information on the general school environment; I focus on the head teacher reported variables here. School information at age 16 is once again not used due to small samples.

Compared to this difficulty with the parental income data, using the income data reported by adult cohort members is relatively straightforward. The cohort member is asked to report recent income receipts by component and give the length of time that the payment covers. Some fairly substantial cleaning of these data was required as often the amount and pay period did not match up; the Institute for Fiscal Studies tax and benefit information was very useful in carrying out this cleaning. Bucking the trend is defined on the basis of whether the child's household is in poverty at age 30, where this is once again defined on the basis of having total income of above the FES poverty line (at 60 per cent of mean equivalised income).

3 The definition of childhood disadvantage

3.1 Descriptive approach

I begin my analysis by considering the problem of defining the vulnerable group – those who would buck the trend by avoiding adult disadvantage. Depending on the definition of poverty used, 20 to 25 per cent of the BCS cohort is poor at age 16 (about 1,000 observations). Regardless of the definition used, around 20 per cent of those who are defined as poor at 16 go on to be poor at age 30, this compares to a seven per cent poverty rate in adulthood among those who were not living in a poor household at age 16. Therefore, there is evidence of persistence of poverty across generations. However, these figures also imply that the vast majority of those who come from a poor background (80 per cent) are 'bucking the trend' according to the most simple definition. This observation clearly has important implications for the way in which the analysis is conducted. It is possible to use a definition of 'bucking the trend' where 80 per cent of the sample had bucked the trend, however, it is clear that the analysis could be more strongly focused if the definition of disadvantage led more consistently to poverty in adulthood.

In Table 3.1, I explore how the proportion 'bucking the trend' varies with alternative definitions of disadvantage. Initially I explore combinations of poverty at ages 16 and 10. The first two lines show the figures discussed above; when poverty at age 16 is defined on the FES poverty line, 83 per cent of men who are poor in childhood 'buck the trend' while 76 per cent of women do so. When poverty is defined on the £100 a week cut-off, 81 per cent of men and 74 per cent of women are not poor in adulthood. The evidence suggests that there is little to choose between the two definitions of poverty, the £100 a week cut-off predicts poverty status in adulthood slightly better than the FES poverty line; but that is likely to be because it picks up those in more severe poverty as the number classified as poor is smaller.

I also explore defining disadvantage by combining information on poverty at age 10 and age 16. We might expect that those who experienced poverty at two points

during childhood but who avoid it as adults may be very good examples of bucking the trend. In fact, this does not prove to be the case, the rates of later poverty among those who are poor at age 10 and 16 are not substantially higher than those poor at only age 16. In addition, restricting the definition in this way leads to few individuals in the target sample.

Table 3.1 Childhood disadvantage and the probability of bucking the trend

	Percentage not poor at age 30			
	Men		Women	
Definition of disadvantaged	%	Number of observations	%	Number of observations
All	91	4,314	88	4,644
Poor at age 16 (based on FES poverty line)	83	530	76	586
Poor at age 16 (<£100 a week)	81	386	74	441
Poor at age 10 (based on FES poverty line)	84	559	78	601
Poor at age 10 and age 16 (both based on FES poverty line)	83	174	71	204
Lone parent household age 16	87	295	83	333
Social housing age 16	80	208	82	349
Father not working age 16	83	213	78	281
Mother not working age 16	88	509	86	687
Neither parent working age 16	78	125	76	178
Parents low education	88	2,044	86	2,146
More than three of above disadvantages	79	144	79	224
Three of above disadvantages plus poor at 16 (FES poverty line definition)	77	86	81	118
Three of above disadvantages plus poor at 10 (FES poverty line definition)	79	43	78	81
Three of above disadvantages plus poor at 10 and 16 (FES poverty line definition)	77	31	78	50

Recent work conducted by the author for the Joseph Rowntree Foundation (Blanden and Gibbons, 2006) reveals that much of the correlation between poverty across generations is driven by other aspects of disadvantage in the teenage and childhood years. The approach of the remainder of the table is to consider the extent to which those with multiple disadvantages are at greater risk of poverty, and therefore, can be better defined as bucking the trend when they avoid it.

It is clear that this approach is somewhat better at defining the at risk group. Twenty-five per cent of women who were in a household where their parents did not work at age 16 were poor at age 30. Those who face poverty plus other disadvantages have a similarly high probability of facing poverty at later ages. The difficulty with using several variables to define disadvantage in this way is that relatively few individuals experience multiple deprivation resulting in a rather small sample size, which would not allow detailed quantitative analysis.

It is noticeable throughout Table 3.1 that women have a lower probability of avoiding poverty when they face disadvantage. This differential is larger than can be explained by higher total poverty rates among women. It is, therefore, important to undertake separate analysis for men and women.

3.2 Econometric approach

The results in Table 3.1 suggest that many aspects of childhood disadvantage are associated with higher probabilities of poverty in adulthood. However, if we select only the sample of individuals with all these characteristics we are likely to end up with prohibitively small sample sizes. It, therefore, may be more efficient to explore this using an econometric model.

If we believe that many characteristics in childhood add up to create the idea of disadvantage we are trying to pin down, then the best way of capturing this is to predict later poverty on the basis of these characteristics. Those with the highest probability of poverty at age 30 will have the highest concentration of characteristics which place them at risk of later poverty. These can then be defined as the vulnerable group. An advantage of this approach is that any number of individuals can be included in the vulnerable group, i.e. we could select the 5, 10, 15 or 20 per cent of the sample whose characteristics put them most at risk in later life.

However, there is a delicate balance here, a conceptual difference must be made between variables which lead to initial disadvantage and those which may help children escape from its damaging impacts. The first types of variables should be included in the prediction equation, while those in the second group should be used in the second stage equation to explain bucking the trend. There is a trade-off here as including variables in the prediction equation which should be excluded is likely to substantially improve its predictive power. I have, therefore, opted to only include variables here which represent aspects of the family and neighbourhood during childhood. The sample sizes here are maximised by including individuals who have missing data for variables, and including a dummy variable to control for this. A full description of the variables included in different specifications is provided in Table A.1.

Table 3.2 Probit models used to predict poverty at age 30

	Percentage not poor at age 30			
	Men		Women	
	Spec1	Spec 2	Spec1	Spec 2
Material disadvantage age 5	Yes	Yes	Yes	Yes
Material disadvantage age 10	Yes	Yes	Yes	Yes
Material disadvantage age 16	Yes	Yes	Yes	Yes
Family characteristics age 5	No	Yes	No	Yes
Family characteristics age 10	No	Yes	No	Yes
Family characteristics age 16	No	Yes	No	Yes
R-squared	.082	.101	.089	.108
Proportion not poor in top 20 per cent predicted (number of obs in parentheses)	.78 (841)	.78 (902)	.74 (975)	.72 (975)
Proportion not poor in top 15 per cent predicted (number of obs in parentheses)	.77 (690)	.76 (690)	.71 (743)	.69 (743)
Proportion not poor top 10 per cent predicted (number of obs in parentheses)	.74 (474)	.73 (474)	.67 (507)	.66 (510)
Proportion not poor top 5 per cent predicted (number of obs in parentheses)	.72 (258)	.71 (258)	.63 (278)	.60 (278)

Table 3.2 shows the results of this prediction exercise. It is clear that the r-squared in these regressions are not high, with the maximum at 11 per cent. The figures at the bottom of the table show the proportions who avoid poverty at age 30 in the disadvantaged group, where the definition of disadvantage varies from being in the top 20 per cent of predicted poverty at age 30, to being in the top five per cent. As we would expect, the proportion escaping poverty later in life reduces as the definition becomes stricter. In general, it seems that this approach works quite well compared to the methods used in Table 3.1, the proportions poor are larger in Table 3.2 relative to the size of the sample. Of 530 men who are poor at age 16, 83 per cent are non-poor, of the 474 who are in the top decile of the predicted probability using the second specification, 73 per cent are poor.

There are, therefore, three candidates for defining disadvantage, being poor at age 16 as defined using the poverty line, having a family income of less than £100 a week, or being among the most disadvantaged in terms of the predictions from the regression approach.

4 Descriptive analysis of the factors associated with children 'bucking the trend'

With my definitions of disadvantage in hand, I now begin considering the factors which help children to buck the trend. First I use a descriptive framework, reducing the sample to those who experienced childhood disadvantage and comparing their characteristics depending on their poverty status at age 30.

Table 4.1 illustrates how children who avoid later poverty differ from those who do not in terms of their own and their parents' educational attainment. The analysis is conducted for men and women together at this stage. Separate analysis is conducted for the three alternative definitions of disadvantage: poor on the Blanden and Gibbons definition; family income of less than £100 a week; and being in the top decile of predicted poverty based on specification 2 in Table 3.2.

It seems important to consider educational attainment in stages, to see if improvements at different ages can help individuals buck the trend. I, therefore, use definitions of educational achievement at age 16 as well as highest qualification obtained by age 30. The low education variable at age 16 denotes individuals who left school at the minimum leaving age with no O levels/CSE grade 1s. Alternatively, number of O levels/good CSEs can be used as a continuous variable. Highest educational qualification is a 0 to 8 categorical variable which includes both academic and vocational qualifications (0 is no qualifications, 4 is O level and 8 is a degree).

As expected, educational attainment is positively related to avoiding later disadvantage. Those who are poor at age 30 are 15 to 20 per cent more likely to have been in my low education group at 16 and have (under the first two definitions of poverty, at least) 1.6 less good O level or CSE qualifications than those who are not poor at age 30. As we would expect, there are also substantial differences in the qualification levels at age 30. The average qualification level of those not poor at age 30 is 4 (which corresponds to O levels) while those who are poor are on average in category 2 or 3 (low to mid-level vocational qualifications).

Table 4.1 Descriptive statistics on bucking the trend, basic variables

	Disadvantage defined as poor at 16 (FES poverty line)			Disadvantage defined as <£100 a week family income at 16			Disadvantage defined as top decile disadvantage from econometric prediction		
The basics	**Poor at 30**	**Not poor at 30**	**Difference (standard error)**	**Poor at 30**	**Not poor at 30**	**Difference (standard error)**	**Poor at 30**	**Not poor at 30**	**Difference (standard error)**
Low education at age 16	.447	.289	**.157 (.043)**	.279	.463	**.184 (.047)**	.636	.486	**.150 (.042)**
Number of O levels/good CSEs at 16	1.615	3.251	**-1.635 (.344)**	1.563	3.131	**-1.568 (.368)**	.848	1.435	**-.587 (.232)**
Highest educational qualification at age 30 (0-8 scale)	2.607	4.076	**-1.468 (.189)**	2.619	4.031	**-1.412 (.213)**	2.329	3.346	**-1.018 (.174)**
Mother no qualifications (measured at age 5)	.936	.856	**.080 (.025)**	.915	.875	.040 (.030)	.965	.934	.030 (.018)
Father no qualifications (measured at age 5)	.898	.793	**.105 (.014)**	.881	.802	**.079 (.040)**	.956	.918	.039 (.022)
Father in semi-skilled or unskilled occupation at age 5	.320	.279	.041 (.041)	.320	.290	.029 (.047)	.390	.345	.045 (.041)

Note: Bold figures in the final column indicate a difference significant at the 95% confidence level.

The analysis of parental education levels reveals that those children who buck the trend tend to have slightly more educated parents. Most of the parents in our disadvantaged sample have no qualifications, but this is particularly marked among children who are poor in later life. I also explore the role of the father's social class; but find that this has no significant relationship with bucking the trend. This variable will be considered once again as a useful control when I look in detail on the impact of the social class of the child's school peer group.

While the results are qualitatively similar depending on the definition of disadvantage used; it is clear that the econometric approach to defining vulnerable children does not have the strong benefits that we might have anticipated. The predictive power in the first two sets of models is very similar, but fewer variables are significant in the third set of models. In the rest of the analysis I proceed by the using the FES poverty line to define disadvantage, as in Blanden and Gibbons (2006).

As stated in the introduction, the aim of this report is to exploit some of the more unique variables in the BCS and to move beyond findings that children with better education and more educated parents tend to do better. We might suspect that the reason that children of more educated parents do better is connected with their attitudes to education. The BCS can help us to explore these effects as it asks parents in the age 5 survey to report how often children are read to and asks the teacher in the age 10 survey to indicate how interested parents are in their children's educational progress.

Table 4.2 reveals that both of these aspects are important in helping children to buck the trend. Individuals who are poor at age 30 are significantly more likely to have not been read to in the week of the age 5 survey than those who escape poverty. Also, they are more likely to have parents who are reported by the teacher to be less interested in their education.

The lower section of this table compares test scores at age 5 and 10 by adult poverty status. It is clear that those who avoid poverty later in life perform better, on average, in all the tests considered here. Particularly large differences are found on the EPVT at age 5 and the reading test at age 10, indicating that the recent Government focus on literacy may be a legitimate one.

Table 4.2 Descriptive statistics on bucking the trend, parental behaviour and children's ability

	Disadvantage defined as poor at 16 (FES poverty line)		
	Poor at 30	Not poor at 30	Difference (t-statistic)
Parental behaviour			
Age 5			
The child was not read to during the survey week	.288	.149	**.140 (.033)**
The child was read to every day in the survey week	.231	.287	**-.057 (.152)**
Age 10			
Father little or no interest in child's education	.467	.208	**.259 (.053)**
Father very interested in child's education	.173	.400	**-.227 (.022)**
Mother little or no interest in child's education	.252	.139	**.113 (.034)**
Mother very interested in child's education	.223	.475	**-.252 (.045)**
Children's test scores			
Age 5			
Copying test	-.528	-.164	**-.364 (.083)**
English picture vocabulary test	-.597	-.182	**-.415 (.081)**
Draw a profile test	-.204	-.036	**-.169 (.090)**
Age 10			
Reading test	-.607	-.202	**-.405 (.082)**
Maths test	-.531	-.133	**-.398 (.080)**
British Ability Scale	-.436	-.195	**-.241 (.083)**

Note: Test scores have been standardised to having mean 0 and standard deviation 1 in the population of all children who sat the test.

The result that ability varies by family background has been found in many studies, and differences in the data set used here have been documented by Feinstein (2002). This analysis can be extended by using the ability variables to unpick some of the other relationships discovered in this report. For example, are differences in test scores strongly associated with differences in parental interest in education? Multivariate analysis of this type will be explored in Chapter 5 although it will be difficult to conclusively establish causation here, as parents may be more interested in the education of children who they already believe to be bright.

Table 4.3 Descriptive statistics on bucking the trend and school characteristics

	Disadvantage defined as poor at 16 (FES poverty line)		
	Poor at 30	Not poor at 30	Difference (p-value)
Age 10 school characteristics – children's ability			
Relatively few high ability children (<2 per cent)	.320	.290	.030 (.038)
Relatively many high ability children (5+ per cent)	.282	.311	-.029 (.038)
Relatively few above average ability children (<10 per cent)	.419	.357	.063 (.040)
Relatively many above average ability children (>15 per cent)	.370	.450	-.080 (.041)
Relatively few low ability children (<3 per cent)	.138	.200	**-.062 (.032)**
Relatively many low ability children (>10 per cent)	.530	.427	**.103 (.041)**
Catchment area characteristics			
Some closely packed houses	.633	.682	-.048 (.039)
Relatively many council properties	.828	.776	.051 (.034)
Relatively many cheaper properties	.439	.413	.026 (.041)
Some well spaced properties	.561	.527	.034 (.042)
Some properties in rural area	.778	.729	.049 (.037)
Some large properties	.878	.854	.024 (.029)
Fathers' social class among children in the school			
Relatively few children with professional fathers (<2 per cent)	.335	.267	**.068 (.037)**
Lots of children with professional fathers (> 10 per cent)	.193	.211	-.019 (.033)
Relatively few children with clerical fathers (<5 per cent)	.467	.430	.037 (.041)
Relatively many children with clerical fathers (>20 per cent)	.219	.273	-.054 (.036)
Relatively few children with skilled manual fathers (<20 per cent)	.280	.276	.004 (.037)
Relatively many children with skilled manual fathers (> 30 per cent)	.351	.454	**-.102 (.041)**
Relatively few children with semi-skilled fathers (<5 per cent)	.066	.137	**-.071 (.027)**
Relatively many children with semi-skilled fathers (>40 per cent)	.543	.434	.110 (.041)

Table 4.3 provides descriptive results for the final set of variables considered in this report; the ability, neighbourhood and social class mix of the school attended by the child at the time of the age 10 sweep. The composition of schools is always a

controversial matter, and rarely more so than at the time of writing when there is substantial debate concerning the impact on school admissions of the proposals contained in the White Paper 'Higher Standards, Better Schools for All'. Of course it is somewhat difficult to draw current policy recommendations from the experience of children in school in 1980 but nonetheless, these findings are interesting as they consider a dimension of children's experience that is rarely captured.

The impact of peers on educational attainment is explored for the earlier 1958 National Child Development Study cohort in Robertson and Symons (2003). The authors explore the impact of family and peer groups variables on changes in test score attainment between ages 7 and 11. They find a strong impact on attainment of having a higher proportion of peers with high socio-economic status.

The descriptive results indicate that those who go on to buck the trend do tend to come from schools with a more favourable ability and social class mix. Although the difference in means is not quite significant, the results suggest that those who escape poverty have a higher proportion of peers with above average ability. The results show strongly that having fewer low average peers is associated with better adult outcomes from poor children. Of course if children sort into schools, these variables may also be serving as proxies for the child's own ability or background, I shall, therefore, control for this in the next chapter. It should be noted at this point that the categorisation of peers is based on the school head teacher's report. It could be the case that the ability variable is capturing the head teacher's outlook; a negative head teacher is likely to view their pupils as being weaker. It is difficult to know how to correct for this possible confounding effect.

The second set of variables in Table 4.3 explores the difference in means in the head teacher's reports of the types of housing in the school's catchment area, which should serve as proxies for the overall level of disadvantage experienced by pupils. Perhaps surprisingly, there is very little difference between the adult poor and non-poor on the basis of these characteristics.

The final set of results in the table considers the social class mix at school for children who buck the trend compared with those who do not. Again, significant differences emerge, children who have fewer peers from professional backgrounds and more from semi-skilled backgrounds are less likely to buck the trend, while having more peers with skilled manual fathers is beneficial. Once again, I shall consider how these results stand up to controlling for the characteristics of the child's own parents.

The descriptive results presented in this chapter point to a number of variables associated with bucking the trend. It seems that the educational achievements of the children matter and that the stronger performance of those who go on to buck the trend begins early; observable in differences in test scores as young as age 5. Parents and their behaviours are also important; those who buck the trend are more likely to have parents with some qualifications, who read to them as children and took an interest in their schooling. Finally, attending school with higher achieving or more advantaged peers seems to be associated with more chance of children bucking the trend. The next step of the analysis is to use multivariate regressions to see how all these different factors interact.

5 Regression analysis of the factors associated with children 'bucking the trend'

5.1 Parental behaviour

The earlier descriptive analysis showed that the parents of children who buck the trend are more likely to read to them and take a greater interest in their education. Table 5.1 uses probit models to explore how these variables interact with each other and with parents' education level and the child's own highest qualification. Results are shown separately for men and women, so that we can focus once more on differences by gender.

The first regression for each gender demonstrates the impact of reading to the child on adult poverty status. The results show that this is slightly more important for girls than boys, with a significant marginal effect of not being read during the survey week of -.171 for women (this means that girls who are not read to are 17 percentage points less likely to buck the trend) compared to a marginally insignificant -.16 for men.

The second column gives regression results for the impact of mother and father's interest in education on poor children's later poverty status. The gender differences here are extremely striking. For boys, the father's interest is very important whereas for girls mother's interest dominates. For boys, having a father with little or no interest in their education reduces the chances of bucking the trend by 25 percentage points, while for girls, the impact of having a mother with little or no interest reduces the chances of bucking the trend by a similar amount. Interestingly, the negative impact of having a mother with moderate interest in her education is also large for girls, indicating that poor girls benefit from the support of their mums.

Regression (3) models poverty on the reading and parental interest variables, and shows that the negative effect of not reading to the child is reduced when parental interest is also included. This implies that to an extent, not reading to young children is serving as a proxy for a lack of interest in children's education, the dominant variable.

Specification (4) controls for the educational level and social class of parents. It could be the case that the better educated among poor parents also take greater interest in their child's education and it is this, and not the interest itself that drives the relationship observed. This does not appear to be the case as while parental education is undoubtedly important, the results for parental interest remain strong. One relationship that is of interest is the fact that the mother's education dominates for sons while the father's education dominates for daughters, the opposite result to that obtained for parental interest. This is also found when parental education indicators are the only variable included in the regression, a result somewhat contrary to the literature which tends to find that the influence of the same-sex parent dominates (Thomas, 1994). Indeed, it seems that this result is only the case for this sample of poor children, and is not found when the regression is widened to all of the cohort members.

The final regressions in Table 5.1 control for the final education level of the children. We might anticipate that parental interest in education may help to prevent poverty by improving the educational attainment of children, this model tests this hypothesis. For males, the addition of highest qualification does render the father's interest variable insignificant, whereas for women, the mother's parental interest remains significant although the size of the marginal effect does fall somewhat. This impact could represent an impact of mother's interest in education on a more subtle definition of education, or it could represent an impact over and above education, for example, on self-confidence.

The relationship between parental interest in education in childhood and bucking the trend remains strong in multivariate models, and for women, is even robust to controlling for final educational attainment.

5.2 Test scores

One impact of parental behaviour which has not been considered in Table 5.1 is its relationship with the child's test scores; another set of variables which descriptive analysis showed to be strongly related to bucking the trend. Table 5.2 explores the relationship between bucking the trend and test scores, showing which test scores dominate by gender and how this relationship is related to parental education, parent interest and the child's final education level.

Table 5.1 Probit models of bucking the trend on parental behaviour regression, with controls

	Men					Women				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Age 5										
The child was not read to during the survey week	-.161 (.074)	No	-.117 (.071)	-.087 (.066)	-.100 (.070)	**-.170 (.071)**	No	-.128 (.070)	-.115 (.070)	-.109 (.069)
The child was read to one to two times during the survey week	-.098 (.065)	No	-.095 (.065)	-.075 (.061)	-.079 (.063)	.021 (.059)	No	.046 (.056)	.053 (.055)	.049 (.055)
The child was read to three to six times in the survey week	.002 (.053)	No	.004 (.051)	.018 (.048)	-.012 (.052)	.014 (.052)	No	.020 (.051)	.028 (.050)	.020 (.050)
Age 10										
Father moderate interest in child's education	No	-.119 (.094)	-.123 (.095)	-.153 (.108)	-.106 (.093)	No	078 (.072)	.084 (.070)	.106 (.066)	.080 (.070)
Father little or no interest in child's education	No	**-.262 (.133)**	-.253 (.134)	**-.341 (.155)**	-.240 (.134)	No	-.052 (.107)	-.031 (.104)	.007 (.099)	-.015 (.100)
Mother moderate interest in child's education	No	-.105 (.061)	-.096 (.060)	-.047 (.058)	-.101 (.060)	No	**-.200 (.065)**	**-.211 (.066)**	**-.200 (.067)**	**-.171 (.065)**
Mother little or no interest in child's education	No	-.055 (.087)	-.027 (.082)	.018 (.073)	.028 (.064)	No	**-.254 (.102)**	**-.242 (.104)**	**-.239 (.104)**	-.161 (.101)
Mother no qualifications	No	No	No	**-.097 (.040)**	No	No	No	No	-.019 (.064)	No
Father no qualifications	No	No	No	.015 (.055)	No	No	No	No	**-.121 (.049)**	No
Father semi- or unskilled	No	No	No	-.049 (.043)	No	No	No	No	.024 (.045)	No
Highest qualification	No	No	No	No	Yes	No	No	No	No	Yes
Pseudo r-squared	.028	.050	.068	.098	.124	.035	.046	.075	.085	.131
Sample size	530	530	530	431	530	586	586	586	586	586

Notes: Coefficients are marginal effects derived from probit models, standard errors for these are in parentheses.
The base case is a child who is read to every day during the survey week, and whose parents are very interested in his education.

Specification (1) in Table 5.2 demonstrates the relative importance of the different test scores. The descriptive analysis made it clear that children who buck the trend do better in all tests at both age 5 and age 10. When the tests are entered into a regression together it appears that the age 5 copying score dominates for boys while the age 5 vocabulary test and age 10 reading test are the most important scores for girls. As the test scores have been standardised before use in this analysis the interpretation of the marginal effect of .087 on reading for women is that a one standard deviation increase in reading test score leads to a 8.7 percentage point increase in the probability of bucking the trend. It is notable that despite the unconditional positive influence of the British Ability Scale (close to an IQ test) on poverty, this test score is negatively related to bucking the trend in models when other tests scores are included. This could indicate that high IQ does girls more harm than good when it is not coupled with high reading ability.

The marginal effects on the ability tests do fall slightly when additional variables for parental background are added, but they remain strong and significant. There is some evidence that higher parental interest in education goes hand-in-hand with ability, as the coefficient on both the ability and parental interest variables fall slightly when entered together (comparing the parental interest marginal effects with those from Table 5.1 specification (4)), but it is, nonetheless, clear that significant effects of both ability and parental interest remain. As in the previous table, the final regression controls for highest educational qualification at age 30, these results reveal an impact of ability on bucking the trend that is independent of educational qualifications for men, but shows that much of the impact of ability works through securing higher qualifications for women.

Table 5.2 Probit models of bucking the trend on children's test scores, with controls

	Men				Women			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Age 5								
Copying test	**.053 (.020)**	**.048 (.020)**	**.040 (.019)**	**.042 (.019)**	.028 (.023)	.031 (.023)	.024 (.023)	.019 (.023)
EPVT	.041 (.021)	.030 (.021)	.021 (.020)	.036 (.021)	**.059 (.025)**	**.057 (.025)**	**.063 (.026)**	.050 (.026)
Draw a profile test	-.012 (.018)	-.011 (.018)	-.011 (.018)	-.011 (.018)	.026 (.021)	.024 (.022)	.023 (.022)	.025 (.021)
Age 10								
Reading test	.025 (.028)	.023 (.030)	.015 (.030)	.015 (.027)	**.087 (.034)**	**.083 (.034)**	.065 (.034)	.060 (.034)
Maths test	.015 (.032)	.008 (.035)	.005 (.034)	-.004 (.032)	.049 (.033)	.050 (.033)	.046 (.033)	.043 (.033)
British Ability Scale	-.022 (.029)	-.012 (.031)	-.010 (.031)	-.012 (.028)	**-.081 (.035)**	**-.088 (.035)**	**-.085 (.035)**	**-.091 (.035)**
Mother no qualifications	No	**-.093 (.044)**	**-.095 (.040)**	No	No	-.038 (.060)	-.006 (.065)	No
Father no qualifications	No	-.003 (.053)	.006 (.053)	No	No	**-.119 (.047)**	**-.104 (.050)**	No
Father semi- or unskilled	No	-.033 (.043)	-.034 (.042)	No	No	.054 (.043)	.054 (.042)	No
Father moderate interest in child's education	No	No	-.113 (.103)	No	No	No	.084 (.070)	No
Father little or no interest in child's education	No	No	**-.297 (.153)**	No	No	No	.003 (.100)	No
Mother moderate interest in child's education	No	No	-.046 (.058)	No	No	No	**-.174 (.066)**	No
Mother little or no interest in child's education	No	No	.017 (.074)	No	No	No	-.186 (.104)	No
Highest qualification	No	No	No	Yes	No	No	No	Yes
Pseudo r-squared	.058	.075	.105	.103	.064	.087	.112	.115
Sample size	530	431	431	530	586	586	586	586

Notes: Coefficients are marginal effects derived from probit models, standard errors for these are in parentheses.
The base case is a child who is read to every day during the survey week, and whose parents are very interested in his education.

5.3 School characteristics

The final two tables in this report conduct multivariate analysis of the impact of school characteristics on the chances of individuals bucking the trend. I concentrate here on the impact of peer ability and social class; as neighbourhood housing characteristics showed no sign of affecting the probability of bucking the trend.

In Table 4.3, I showed that higher ability peers had a positive impact on the chances of children bucking the trend. This showed up through a positive impact of having more above average ability children in the school, a positive impact of having less low ability children in the school and a negative impact of having many low ability children. Table 5.3 gives the opportunity to explore how these effects respond to controlling for the child's own ability and the extent to which these effects are mediated through the child's final educational attainment.

The endogenous selection of peer groups is a major concern when attempting to estimate the influence of school ability or social class composition, because children may be sorted on the basis of unobservable characteristics. For example, if highly motivated parents tend to sort into schools with children of higher ability or better social class, then the peer group effect estimated may be a consequence of parental motivation rather than a pure measure of the influence of peers. The best papers which try to evaluate peer group effects do so by considering only variation in peer groups which can be regarded as truly exogenous (see Hoxby, 2000 and Gould *et al.* 2005 for examples of this). The analysis I include here is unable to rely upon exogenous variation, so the results cannot be interpreted as estimates of changing the peer groups of poor children, holding everything else constant.

I begin my investigation by including in the specification all the variables concerned with the ability mix of the school. Once again, some of the variables are likely to be picking up the same characteristics of the school (more high ability students tends to lead to less students in the other ability groups), so we might expect that not all the variables important in the descriptive analysis will matter in a multivariate model. The first specifications indicate that this is the case. The only strongly significant marginal effect is on having a large number of above average ability students for boys, this shows that boys with a relatively high number of above average peers have a 10 percentage point higher chance of bucking the trend. For women, the largest effect is the negative impact of having a large number of low ability students, although this fails to be significant.

Table 5.3 Probit models of bucking the trend on school ability mix, with controls

	Men				Women			
Age 10 school characteristics	**(1)**	**(2)**	**(3)**	**(4)**	**(1)**	**(2)**	**(3)**	**(4)**
Relatively few high ability children (<2 per cent)	-.016 (.044)	-.010 (.043)	-.012 (.048)	.009 (.042)	-.010 (.052)	.012 (.051)	.012 (.051)	-.038 (.053)
Relatively many high ability children (5+ per cent)	-.037 (.053)	-.038 (.053)	-.052 (.058)	-.036 (.052)	.044 (.050)	.044 (.050)	.043 (.050)	.053 (.048)
Relatively few above average ability children (<10 per cent)	-.052 (.050)	-.056 (.049)	-.054 (.056)	-.061 (.050)	.004 (.059)	.002 (.059)	.001 (.058)	.024 (.057)
Relatively many above average ability children (>15 per cent)	**.105 (.046)**	**.090 (.046)**	**.091 (.052)**	**.091 (.046)**	-.001 (.055)	-.038 (.056)	-.016 (.055)	-.006 (.054)
Relatively few average ability children (<40 per cent)	-.061 (.055)	-.056 (.054)	-.063 (.062)	-.046 (.053)	.037 (.054)	.034 (.054)	.039 (.054)	.011 (.054)
Relatively many average ability children (>50 per cent)	.054 (.057)	.042 (.056)	.017 (.064)	.052 (.055)	.012 (.057)	.021 (.056)	.004 (.057)	.013 (.057)
Relatively few below average ability children (<40 per cent)	.023 (.044)	.030 (.043)	.032 (.048)	.010 (.044)	.013 (.051)	-.009 (.053)	.022 (.051)	-.027 (.053)
Relatively many below average ability children (>50 per cent)	.015 (.048)	.009 (.048)	.011 (.053)	.003 (.048)	.011 (.056)	.015 (.056)	.013 (.056)	.023 (.055)
Relatively few low ability children (<3 per cent)	.033 (.050)	.026 (.049)	.042 (.050)	.028 (.048)	.042 (.057)	.029 (.058)	.029 (.058)	.041 (.056)
Relatively many low ability children (>10 per cent)	.023 (.043)	.039 (.042)	.026 (.045)	.030 (.041)	-.081 (.049)	-.045 (.049)	-.076 (.049)	-.059 (.048)
Tests scores	No	Yes	No	No	No	Yes	No	No
Mother no qualifications	No	No	**-.102 (.044)**	No	No	No	-.069 (.063)	No
Father no qualifications	No	No	-.010 (.054)	No	No	No	**-.151 (.047)**	No
Father semi- or unskilled	No	No	-.030 (.044)	No	No	No	.027 (.048)	No
Highest qualification	No	No	No	Yes	No	No	No	No
R-squared	.043	.087	.058	.094	.015	.077	.051	.084
Sample size	439	439	365	439	481	481	481	481

When controls for own ability (test scores) are added (specification 2) the impact of low ability peers disappears for girls, while the benefits of having above average peers remain very strong for boys. The marginal effect on this variable remains at .09 in all the remaining specifications; there is a strong effect even over and above highest educational attainment. This could indicate that there is a benefit of the contacts made at school; or perhaps there is an advantage of 'soft skills' and behaviours learnt from peers which operates over and above the highest qualification. There is information on these aspects in the BCS and a thorough exploration of these is on the agenda for future work.

Table 5.4 explores the results for relationship between school social class mix and children's opportunities to buck the trend. The descriptive analysis of these variables indicated a positive impact of the higher socio-economic background of peers. The first specification in Table 5.4 shows the marginal effects from the full model, by gender. There is a stark gender difference observable here: For males, having many skilled manual workers among your peers' fathers has a positive impact, while for women the result is opposite; few peers from manual backgrounds is beneficial. Surprisingly, none of the other variables are significant in these specifications. The differing importance of the number of skilled manual fathers by gender could be indicative of the opportunities available for children in later life. If the area has a large number of skilled manual jobs, this is likely to be more beneficial for the prospects of men than women. It would be useful to look in more detail at this result, perhaps considering poor children's later occupation. What does seem clear is that the results from probit models are less supportive of a strong story that going to school with children from high social class backgrounds has large benefits for poorer children.

Table 5.4 Probit models of bucking the trend on school social class mix, with controls

	Men				Women			
Age 10 school characteristics	**Spec 1**	**Spec 2**	**Spec 3**	**Spec 4**	**Spec 1**	**Spec 2**	**Spec 3**	**Spec 4**
Relatively few children with professional fathers (<2 per cent)	-.038 (.047)	-.039 (.052)	-.021 (.044)	-.018 (.045)	-.038 (.054)	-.025 (.053)	-.016 (.053)	-.050
Lots of children with professional fathers (> 10 per cent)	-.005 (.057)	-.028 (.066)	-.010 (.057)	.001 (.055)	-.072 (.065)	-.081 (.066)	-.101 (.069)	-.089 (.067)
Relatively few children with clerical fathers (<5 per cent)	-.004 (.044)	-.001 (.050)	.007 (.044)	-.023 (.044)	.057 (.052)	.044 (.052)	.059 (.052)	.063 (.051)
Relatively many children with clerical fathers (>20 per cent)	.052 (.049)	.062 (.052)	.033 (.050)	.033 (.050)	.008 (.059)	.006 (.058)	.023 (.058)	.007 (.058)
Relatively few children with skilled manual fathers (<20 per cent)	.004 (.043)	.009 (.047)	-.004 (.044)	.003 (.043)	**.102 (.047)**	**.094 (.047)**	**.096 (.047)**	.072 (.047)
Relatively many children with skilled manual fathers (> 30 per cent)	**.095 (.043)**	.073 (.048)	**.087 (.042)**	.077 (.042)	.067 (.052)	.070 (.051)	.077 (.051)	.067 (.050)
Relatively few children with semi-skilled fathers (<5 per cent)	.082 (.051)	.072 (.059)	.077 (.050)	.074 (.050)	.093 (.059)	.061 (.066)	.060 (.065)	.045 (.067)
Relatively many children with semi-skilled fathers (>40 per cent)	-.009 (.053)	.002 (.057)	-.023 (.052)	-.009 (.051)	-.055 (.062)	-.049 (.061)	-.033 (.061)	-.048 (.060)
Tests scores	No	No	Yes	No	No	No	Yes	No
Mother no qualifications	No	**-.108 (.043)**	No	No	No	-.077 (.062)	No	No
Father no qualifications	No	.009 (.058)	No	No	No	**-.157 (.046)**	No	No
Father semi or unskilled	No	-.026 (.044)	No	No	No	-..027 (.027)	No	No
Highest qualification	No	No	No	Yes	No	No	No	Yes
R-squared	.050	.052	.094	.094	.021	.055	.084	.087
Sample size	442	368	442	442	482	482	482	482

6 Conclusions and avenues for further research

This report has offered an analysis of some of the factors associated with poor children escaping poverty in later life. As anticipated, educational attainment is extremely important in determining children's later likelihood of bucking the trend. The role of attainment starts early; with bucking the trend being associated with higher tests scores at 5 years old. One of the aims of the report was to look beyond these results to try and understand why some poor children do better at school than others. The most robust result found is that parental interest in child's education is very important. This implies that parenting interventions such as Sure Start could have an important long-term effect if they encourage parents to become more involved in their children's education.

The unique data available in the BCS also enables the exploration of the association between bucking the trend and the ability and social mix of the child's school at age 10. The impact of these variables is somewhat difficult to interpret as they may be picking up observable characteristics of the child and their parents. Results indicate that going to primary school with more high ability peers is associated with a higher probability of bucking the trend for boys. There are no robust effects for school social class mix.

As stated in the introduction, this report was limited in scope and consequently many potentially important issues have been neglected. I believe there are two dimensions of this study in particular that ought to be expanded: The first is to explore the definition of 'bucking the trend' more fully. The second is to widen the variables considered to look at events that occur when disadvantaged children reach young adulthood.

Question marks remain over the definition of the group classed as 'bucking the trend'. No matter which way this is defined, the majority of the sample is 'bucking the trend' meaning the title of this project is a bit of a misnomer. Using econometric analyses to pinpoint the sample of interest has not lead to better final models than using a simple definition. It is possible that this is due not to the definition of initial

disadvantage, but is rather a consequence of the definition of later success used. Avoiding poverty in one week at age 30 may not be a good definition of success. A potential alternative would be to use the work history data, available from age 16 to 30, and define those with continuous work histories as 'bucking the trend'.

The variables currently explored in this report consider the impact of parents and early school experiences on children's chances of avoiding poverty at age 30. To provide a full picture of the variables which enable children to 'buck the trend', we would ideally like to include influences beyond age 10. This is particularly important if we wish to examine the factors which may enable disadvantaged youngsters to get a second chance. The work so far has shown educational attainment to be extremely important; a natural starting point for looking at 'second chance' variables would, therefore, be the records of lifelong learning included in the age 30 questionnaire. Using these, it is possible to see when qualifications are obtained, and consider the benefits these may have had in helping individuals avoid poverty. However, small sample sizes may limit the ability of such an analysis to identify strong effects.

The poverty measure used to define poverty at age 30 is based on household income, meaning that patterns of partnership and family formation will have a strong influence on an individual's chance of bucking the trend. The analysis presented in Table 3.1 showed poverty to be more persistent among women; this is likely to be related to the role of lone-parenthood. Indeed, Blanden and Gibbons (2006) find that lone-parenthood has a strong association with poverty at age 30 for women. It would, therefore, be interesting to include an analysis of demographic variables in future work on this topic.

It is, therefore, without doubt that this limited analysis has missed a number of interesting points. However, the literature suggests that of all the variables that could have been considered the early childhood variables are likely to be the most important. Carneiro and Heckman (2003) argue that early development of cognitive and non-cognitive skills is key in determining children's chances of success and failure, and that early interventions are much more likely to be beneficial than those aimed at giving individuals a second chance: *'The evidence points to a high return to early interventions and a low return to remedial of compensatory interventions later in the lifecycle'* (Abstract). My results appear to support the case for early interventions as ability scores taken at age 5 are a strong predictor of a child's chance of bucking the trend. In this case, it is crucial to try and understand why some children are more successful than others in early tests, the results presented here suggest that parental engagement is crucial.

Appendix Characteristics used to predict poverty

Table A.1 Characteristics used to predict poverty at age 30 in Table 3.2

	Measures of material disadvantage	Family characteristics
Age 5	Council tenants Own fridge Own car Own phone Own washing machine Own spin drier Rooms per person ratio	Mother works Father works No one works Lone parent Non-white ethnicity Social class
Age 10	Poor Rooms in home Receiving means-tested benefits Council tenants	Mother works Father works No one works Parental education (highest qualification)
Age 16	Poor Family in financial hardship in past year Receiving council tenants means-tested benefits	Lone parent Mother works Father works No one works Number of children in the household

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