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On your marks: Measuring the school readiness of children in low-to-middle income families

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Executive Summary

The extent to which children start school ready and able to learn can have a long-term impact on their likelihood of success in education and employment. It is well known that children from the poorest backgrounds are already falling behind their more affluent peers at the start of school. But little is known about the school readiness of children from low to middle income families.

Analysis of a cohort of children born in 2000 finds that, at the start of school, children from low to middle income families are five months behind children from higher income families in terms of vocabulary skills – an important measure of cognitive development – and have more behaviour problems.

The characteristics of low to middle income families and higher income families are not all that dissimilar and these families do not face many of the risk issues that characterise the poorest families. But important differences exist in relation to parental education and parental income. Low to middle income parents are three times as likely to have no formal qualifications beyond GCSE and they are less than half as likely to have a degree as higher income parents. Average levels of household income, adjusted for household size, are more than twice as high in the higher income group. Do these differences affect children's development and, if so, how?

Nearly half the gap in vocabulary between the two groups, and over three-quarters of the gap in behaviour can be explained by measurable aspects of the environments in which children are raised, including how they are parented, the health and well-being of their parents and the educational opportunities they enjoy in the home. The remainder of the gaps is explained by other environmental factors associated with income, parental education and other background factors such as mother's age at childbirth.

For vocabulary, the fact that children from low to middle income families have a less rich learning environment in the home than higher income children is the most significant environmental factor in explaining the developmental gap. For behaviour, the fact that mothers of children in low to middle income families have less good mental well-being and are more socially isolated is the most significant environmental factor in explaining the gap. A large part of the influence of parental education and income feeds through these environmental factors. With parents on low to middle incomes being increasingly squeezed in terms of time and money as wages continue to stagnate and the cost of living rises, there is a risk that greater parental stress will translate into less positive environments for their children.

While the environments of low to middle income children and those in higher income families are often quite similar, small differences in a wide range of different factors add up to significant consequences for children. Narrowly focused targeting at parents who are struggling to provide the basic necessities for their children is understandable when government resources are scarce but may be short-sighted. Without attention, the future skills and economic productivity of today's children from low to middle income working families – a third of all children in this cohort - will not be as high as they potentially could be. Families who are just above the threshold to receive government services may benefit greatly from relatively modest levels of support, closing the school readiness gap between their children and those of higher income families.

Introduction

The idea that a good start in life matters for long-term social and economic success is supported by a wealth of research in psychology, economics, neuroscience, education and many other disciplines. Children who start school with high levels of cognitive development and the social and emotional skills needed to interact positively with their peers and teachers learn more effectively, end up with better qualifications and have fewer health and emotional problems than those who are less ready for school.

The consequences of early skills deficits can play out over a lifetime and often feed into poor educational attainment. Research on a cohort of adults now in their fifties showed that those who were in the bottom 25 percent for reading at age seven were almost half as less likely to have achieved an O-level (equivalent to a GCSE at grade C or above today) than those in the top 25 percent and their wages were 20 percent lower at age 33 (Currie and Thomas, 1999). Previous research from the Resolution Foundation has shown that academic attainment matters for mobility in adulthood, with those failing to achieve a degree being more likely to drop down the earnings ladder compared to their better educated peers (Savage, 2011).

It is well known that children in the poorest and most vulnerable families start school with sizeable disadvantages (Waldfogel and Washbrook, 2010, 2011, in press), and it has long been an aim of government policies such as Sure Start to improve the outcomes of children in this group. What has been less studied, however, is whether and to what extent children in low to middle income (LMI) families also suffer disadvantages on entry into school relative to their higher income peers.

In this paper we investigate the school readiness outcomes of children in LMI families relative to their more and less affluent peers. We find that LMI children are five months behind their more affluent peers on vocabulary skills when they begin school and exhibit more behaviour problems. [1] When it comes to the gap in vocabulary, differences in the home environment of children such as whether or not they are regularly read to, and other environmental differences associated with parental education, income and other demographic differences such as maternal age and family size are the most significant factors in explaining the gap. When it comes to the behaviour gap, differences in children's home learning environment are equally important but differences in maternal mental well being, maternal health and parenting style are the other most important explanatory factors. These findings suggest that LMI children have ground to make up on their more affluent peers and modest investments in their development could pay long-term dividends for the children concerned and for society as a whole.

The first section of this paper describes the data and methods used in the analysis. [2] The second section presents the gaps in schools readiness between children from different income groups. The third discusses the characteristics of families in different income groups, highlighting the differences and similarities between LMI families and those on higher incomes. The fourth section presents the findings of the decomposition analysis used in this paper. This analysis identifies the factors that best explain the developmental gaps between LMI children and children from higher income families. The first part of the decomposition analysis looks at the extent to which background family factors such as parental education and income explain the gaps. The second part adds a range of early childhood

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[1] This paper builds on work conducted for the Sutton Trust and we gratefully acknowledge their support as well as support from the Russell Sage Foundation and NICHD. See Waldfogel and Washbrook (2010, 2011, in press).
[2] Technical details of the statistical methods used and the full set of results can be found in the online appendix that accompanies this report

environmental variables into the initial analysis to test whether the influence of background family characteristics can be explained by their effect on measurable factors such as parenting behaviour and children's home environment. The decomposition analysis is followed by a concluding section.

Data and measures

The findings presented here are based on data from the Millennium Cohort Study (MCS), a nationally representative sample of around 15,000 children who were aged five in 2006. The study surveyed children and their families three points in times – at 9 months, 3 years and 5 years – and collected detailed information on family income, parental characteristics, the early care environment of the child and a number of developmental outcomes.[3]

We assign children to one of three groups of families on the basis of gross household income (adjusted for family size). Low to middle income families (LMIs) are households in income deciles 2-5 who were not in receipt of any major means-tested benefits[4]; higher income families are those with above median incomes again not supported by state benefits; and low income families are those receiving at least one of the major benefits, plus all those in income decile 1.[5] The decile boundaries we use are based on the distribution of income over the entire non-retired population including those with older children or without children. There are a larger number of families in the lowest and low to middle income groups and fewer in the higher income group in the MCS data of families with children under five than in the overall population of working-age households.[6] This reflects the fact that parents of five-year-olds are at a relatively early stage of life, with earnings profiles that would be expected to rise as they and their children age. Many families in the lowest income group will move into the LMI group in time, while many of those who are currently in the LMI group will eventually become higher income households.

We focus on two indicators of child development at age five, one cognitive and one socio-emotional. The British Ability Scales (BAS) Naming Vocabulary test is designed to assess the spoken English vocabulary of young children.[7] Early verbal skills are known to predict later reading comprehension in secondary school and later language ability builds directly on these earlier competencies (NICHD Early Child Care Research Network, 2005). Since vocabulary tests have no universally accepted scale of measurement (like, for example, weight or height), to ease interpretation we benchmark the scores against the outcome of the average child at different ages. A below average score for a child aged 62 months, for example, might correspond to the average score for a child aged 58 months. In this case, we characterize the 62-month-old child as having a cognitive delay equivalent to 4 months of development.[8]

Our second developmental indicator is the Strengths and Difficulties Questionnaire (SDQ) Total Behaviour Problems score. The SDQ provides parents with a check-list of 20 different behavioural symptoms relating to each of the four domains of hyperactivity/inattention, conduct problems, emotional symptoms and

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[3] Data from an age 7 survey have recently become available but are not used in this study.

[4] Income Support, Housing Benefit, Council Tax Benefit, Incapacity Benefit, Disability Living Allowance, and Invalid Care Allowance.

[5] 33 percent of families were missing income data at one or more waves of the survey and only 37 percent of families are classified as belonging to the same income group at all three waves. In order to assign the remaining children to a particular category, we use the category observed in two out of three waves (45 percent) or failing that the category observed in the most recent wave available (16 percent).

[6] The size of the three groups in the whole population are roughly 15 percent, 35 percent and 50 percent (moving from the lowest to the highest incomes) but make up 36 percent, 33 percent and 31 percent of the MCS cohort respectively.

[7] The BAS Naming Vocabulary test is administered to children directly by MCS staff. The test consists of a booklet of coloured pictures of objects which the child is shown one at a time and asked to name. Two other cognitive BAS tests were administered: Pattern Construction and Picture Similarities. Differences in these non-verbal skills between the income groups were still considerable but smaller than differences in the verbal skills measure. In general results using the non-verbal scales were broadly similar to those based on the Naming Vocabulary scale and for brevity are not reported here. See the online appendix for further details.

[8] See the online appendix for further details of the method used to scale the vocabulary scores.

peer problems. Parents are asked to rate their child's behaviour over the last six months by domain. Scores of 17 or above out of a total of 40 are indicative of abnormal behaviour and may be used to identify likely "cases" with mental health disorders such as Attention Deficit Hyperactivity Disorder. Scores of 0 to 13 correspond to normal behaviour, while scores of 14 to 16 are viewed as borderline between normal and abnormal.

Gaps in school readiness between income groups

Figures 1 and 2 show the average scores for children's cognitive and socio-emotional development in each of the three income groups. As has been shown in detail elsewhere, children in the lowest income group have substantially lower levels of cognitive and socio-emotional school readiness than those on middle incomes (e.g. Waldfogel and Washbrook, 2010, 2011, in press). Children in LMI families are, on average, around 8 months ahead of their low income peers in terms of vocabulary development at age five, and score 1.7 points lower on the behaviour problems scale (keeping in mind that lower scores on behaviour problems indicate better behaviour).[9] These are sizeable differences, and justify the concern of many policymakers and educators with the well-being of the most vulnerable children.

Figures 1 and 2: Mean BAS Naming Vocabulary and SDQ Total Behaviour Problems scores at age five, by income group
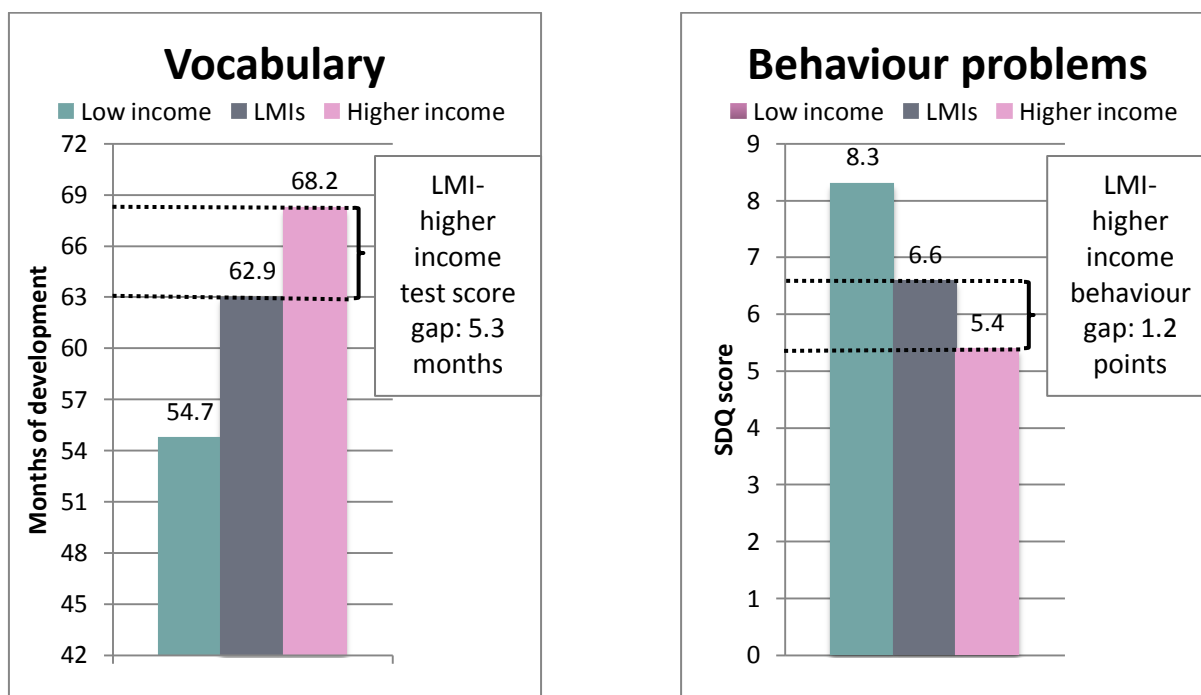
The outcome gaps between children in LMI and higher income families, though somewhat smaller than the LMI-low income gaps, are nevertheless important. LMI children are five months behind their more affluent peers on vocabulary development when they begin school and exhibit more behaviour problems of the order of 1.2 SDQ points.[10] It is certainly the case, therefore, that supporting the early development

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[9] To compare across outcomes we can normalize by the variances of the outcome variables, giving *effect sizes* of .46 and .37 respectively
[10] Effect sizes .29 and .25 respectively.

of children in LMI families has the potential to raise levels of school readiness and to better equip these children to make the most of the learning opportunities available to them in the formal education system.

Characteristics of LMI families

Documenting the gaps in early achievement between different income groups is a useful first step, but tells us little about why children in higher income families perform better. LMI families differ from both lower and higher income families along dimensions other than just income, and differences in non-financial family resources may be important in explaining the differences in school readiness shown above. Table 1 summarizes some selected characteristics of the three groups in our sample.

Table 1: Characteristics of five-year-olds born in 2001, by income group

	Low income	LMIs	Higher earners
Mean before-tax income (SD)*	10,900 (8,000)	**21,800 (6,600)**	52,600 (24,100)
Mean after-tax income (SD)*	9,900 (6,100)	**18,300 (4,900)**	39,900 (16,800)
Ethnic minority	19%	**9%**	6%
Immigrant parent	17%	**11%**	13%
Foreign language in home	14%	**7%**	5%
Parent no quals beyond GCSE	64%	**36%**	12%
Parent degree	13%	**30%**	67%
Co-resident biological parents at 5	41%	**84%**	94%
Mother<25 at birth	41%	**18%**	6%
Mother>=35 at birth	13%	**16%**	26%
2+ older siblings	27%	**20%**	10%
England	83%	**82%**	84%

*Incomes are equivalized for household size such that a couple with no children receives a unit weight, expressed in constant 2010 prices and averaged over the three MCS waves.

A number of major risk factors for early development are heavily concentrated in the low income group. Three in five children in this group did not live with both biological parents by age five and two in five had a mother aged under 25 at their birth. A sixth had a parent born outside the UK and a seventh were raised in homes in which a language other than English was commonly spoken. These sorts of risk factors are much less common among the LMI group which consists predominantly (if not exclusively) of white two parent families.

LMI families tend to have somewhat younger parents and larger families than higher income families, but these disparities are relatively minor compared to differences in levels of parental education and parental income. LMI parents are three times as likely to have no formal qualifications beyond GCSE and are less than half as likely as higher income parents to have a degree. Average levels of household income, adjusted for family size, are more than twice as high in the higher income group compared to LMI families.

Decomposing the school readiness gap: Assessing the importance of income and family factors

Which of the differences between LMI and higher income families shown in Table 1 are most predictive of the gaps in children's developmental outcomes? How much of a role is left for income when the contribution of other characteristics is taken into account? To shed light on this question we apply a decomposition technique to the LMI-high income gaps highlighted in Figures 1 and 2. The technique seeks to identify the extent to which differences in a particular factor such as maternal age explain the LMI-high income outcome gaps independent of other differences between the two groups. In essence, our method quantifies the amount of the developmental gap that can be predicted by differences in each characteristic between the income groups. A factor will only be consequential for the gap if it both differs strongly between income groups *and* is independently associated with the child outcome.[11]

The segments in Figure 3 decompose the LMI-high income gap in vocabulary (5.3 developmental months), with Figure 4 decomposing the corresponding gap in behaviour problems (1.2 SDQ points). Family characteristics used in the decomposition analysis include the variables listed in Table 1 as well as more detailed indicators of the characteristics in question.

We see that when differences in demographic characteristics are taken into account the significance of income in explaining developmental gaps falls markedly. When differences in parental education, maternal age, family composition and the other variables between the LMI and high income groups are taken into account, income only explains just under a third of the vocabulary gap and half of the behaviour gap.[12]

For both outcomes, differences in parental education play a very important role. Children of parents with high qualifications do much better than children of parents with lower qualifications, even in families that are similar in terms of income levels and demographic make-up. Of course this reflects a number of potential factors such as inherited cognitive ability and parental attitudes and aspirations, as well as the direct influence of education on parenting knowledge and practices.

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[11] The decomposition technique is essentially an accounting exercise and there are a number of reasons why caution is needed in the interpretation of the estimates. The existence of unobserved differences between families means the estimated relationships may not be causal. See the online appendix for more discussion.

[12] Note that for some characteristics we estimate a small *negative* contribution to the outcome gap. This implies that, holding all else equal, the characteristics of LMI children are protective while the relative characteristics of higher income children are adversely associated with development. Negative contributions of this kind are marked by a pie segment that is separated from the rest of the chart. An example in Figure 4 is the positive association of larger LMI family sizes with behavioural outcomes.

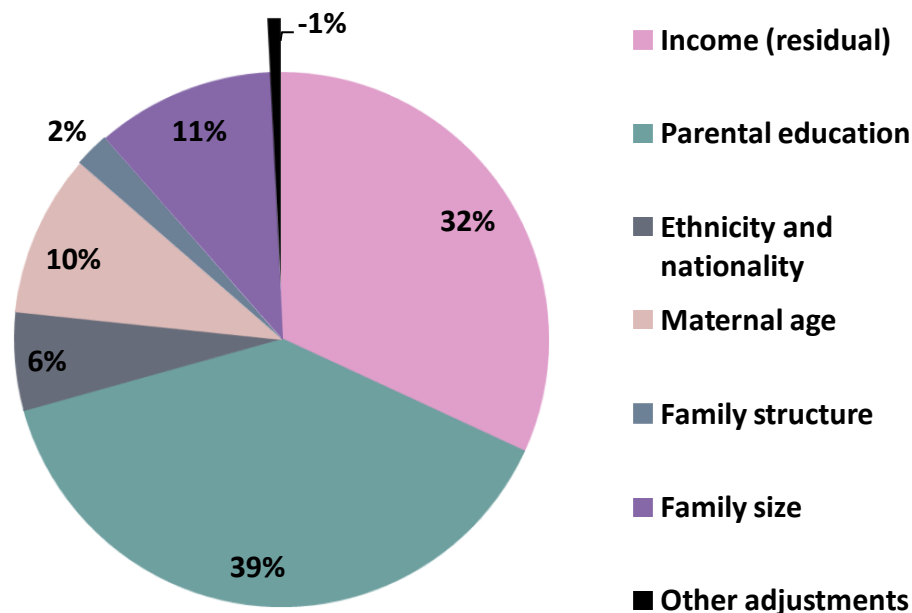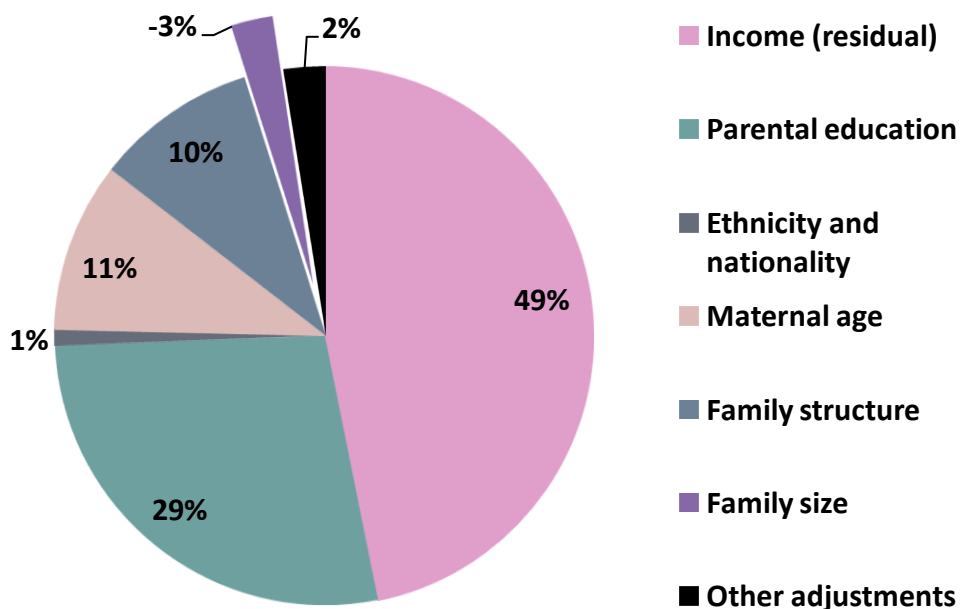**Figure 3: Contribution of differential family characteristics to the raw LMI-higher income gap in vocabulary**

- Income (residual): 32%
- Parental education: 39%
- Ethnicity and nationality: 6%
- Maternal age: 10%
- Family structure: 2%
- Family size: 11%
- Other adjustments: -1%

Figure 4: Contribution of differential family characteristics to the raw LMI-higher income gap in behaviour problems

- Income (residual): 49%
- Parental education: 29%
- Ethnicity and nationality: 1%
- Maternal age: 11%
- Family structure: 10%
- Family size: -3%
- Other adjustments: 2%

Notes: The pie in Figure 3 represents the 5.3 month gap in vocabulary developmental age between LMI and higher income children shown in Figure 1. The pie in Figure 4 represents the 1.2 SDQ point gap in behaviour problems between LMI and higher income children shown in Figure 2. Indicators used in the decomposition are: highest parental qualification is less than GCSE, GCSE, A-level, or degree (Parental education, 4 categories); mother was <20, 20-24, 25-29, 30-34, or 35 or more at birth (Maternal age, 5 categories); single mother at all 3 waves, single mother at 1 or 2 waves only, two married biological parents at age 5, two cohabiting biological parents at age 5, other family type (Family structure, 5 categories); 0, 1, or 2 or more younger siblings at age

5; 0, 1, 2, or 3 or more older siblings; twin or triplet (Family size, 3 categorical variables); child is white, Indian, Pakistani/Bangladeshi, Black/Black British, mixed, other; parent born outside UK; language other than English spoken in home at 9 months (Ethnicity and nationality, 3 categorical variables); child is female, UK government office region, missing indicators for all covariates (Other adjustments, 7 categorical variables).

Together income and education predict 70 to 80 percent of the LMI-high income outcome gaps. Maternal age is an important predictor of the remaining gaps in vocabulary and behaviour outcomes, accounting for around 10 percent in both cases. Children whose mothers are younger at the time of birth, particularly those aged under 25, tend to have lower levels of achievement holding other factors constant, so the earlier child-bearing of LMI mothers relative to their higher income counterparts is one factor underlying their children's disadvantages in school readiness.

The importance of family structure (single parenthood and the stability of parental relationships) and family size (the number of children in the household) differ noticeably between outcomes. Larger family size is independently associated with poorer vocabulary outcomes but family structure is not significant. The opposite is true for behaviour outcomes: the greater number of siblings of LMI children has little implication for their behavioural development (in fact larger families are associated with slightly better social development). But their higher rates of single parenthood are associated with poorer behavioural outcomes. Differences in ethnicity, immigration status and language independently predict only a small fraction of the vocabulary gap and virtually none of the behaviour gap.

The analysis in Figures 3 and 4 shows that while income differences alone do not drive all the attainment gaps between LMI children and the children in higher income families, financial resources do play an important role in the ability of parents to foster children's development. But what is it about higher income that matters for children's environments? And what is it that more highly educated, older parents do for their children that leads to high levels of school readiness? The next stage of our analysis sets out to provide some clues.

Early childhood environments in LMI families

The characteristics like ethnicity, income and parental education accounted for in our analysis so far can be thought of as background influences on children's development. These background factors generally influence child development by shaping the daily processes and experiences through which children develop skills and learn to make sense of the world. The influence of background factors is not always direct but feeds through in the way in which children are cared for, the resources they have at their disposal and the opportunities they enjoy. For example, children of more highly educated parents tend to be more developmentally advanced because their parents use more complex vocabulary and expose their children to books more frequently than less-educated parents. If children from less advantaged families could receive the same sorts of inputs in terms of language and reading, they might perform equally well, even if background parental qualifications remained unchanged.

The rich nature of the MCS data allows us to observe many aspects of the child's immediate environment. We organize the wealth of variables available into ten sub-groupings, listed in detail in Table 2, that broadly cover the areas of parenting behaviours, material circumstances, health-related factors and the early care environment.

Table 2: Aspects of the early childhood environment measured in the MCS

Sub-group	Example items
Home learning environment	Child read to daily; Child taught alphabet/ numbers/songs; Child taken to library; Child taken to plays/concerts; museums/galleries; zoo; Hours of TV and computer games
Parenting style	Interviewer rating of sensitivity of mother-child interactions; Regular bedtimes and mealtimes; Enforcement of rules; Smacking
Material possessions	Internet in home; car access; ownership of durables (e.g. washing machine, video, dishwasher); Unable to afford key items (e.g. coat and shoes for child; fruit/veg; holidays)
Maternal psycho-social well-being	Post-natal depression; Psychological distress; Social support; Self esteem; Locus of control; Life satisfaction
Child health	Birth weight; Gestation; Special Care Unit at birth; Mother's rating of general health
Maternal health	Breast feeding; prenatal care; smoking; alcohol; Self-rated general health; Longstanding limiting illness; Overweight/Obese
Maternal employment and child care	Employed part-time/full-time; Childminder/ day nursery at 9 mos; Type of early education centre attended
Neighbourhood conditions	Index of Multiple Deprivation; Rural location; Interviewer rating of local area, Mother's satisfaction with local area
Housing conditions	Social housing; Damp; Crowding; Access to garden; Home is clean/uncluttered/light/safe
Financial stress	Behind with bills; Difficult to manage financially; No regular savings

We add the full set of early childhood environmental variables shown in Table 2 to the decomposition along with the background variables considered previously. As in the first round of the decomposition analysis discussed above, the results show the independent contribution of each factor to the LMI-high income gap if all other factors are held constant. The extent to which the explanatory power of income and education and other background factors falls indicates how far the additional variables can 'explain' the associations between background factors and child outcomes identified above. Here we provide an overview of the key substantive findings but refer the reader to the online appendix for discussion of the more subtle issues.

Results

Figures 5 and 6 present the results of the final analysis. The first point to note is that in neither case can the added variables fully account for the observed gaps. Income, parental education and other demographic factors (the first three segments) continue to explain 53 percent of the vocabulary gap and 22 percent of the behaviour gap. Comparing Figure 3 with Figure 5, we see that around half of the income gap in vocabulary can be explained by early childhood environmental factors (32 percent drops to 15 percent) and the same for the education gap (39 percent to 19 percent). Less of the combined influence of the remaining background characteristics (maternal age, family composition, etc.) on the vocabulary gap is explained by the inclusion of early childhood environmental factors, with the proportion accounted for only falling from 28 percent to 19 percent. The early childhood environmental variables are noticeably more successful in their ability to explain the behaviour gap. Four-fifths of the original income contribution is explained (49 percent in Figure 4 compared with 10 percent in Figure 6), three-quarters of the education contribution (29 percent compared to 7 percent) and over three-quarters of the combined contribution of the other background characteristics (22 percent compared to 5 percent).

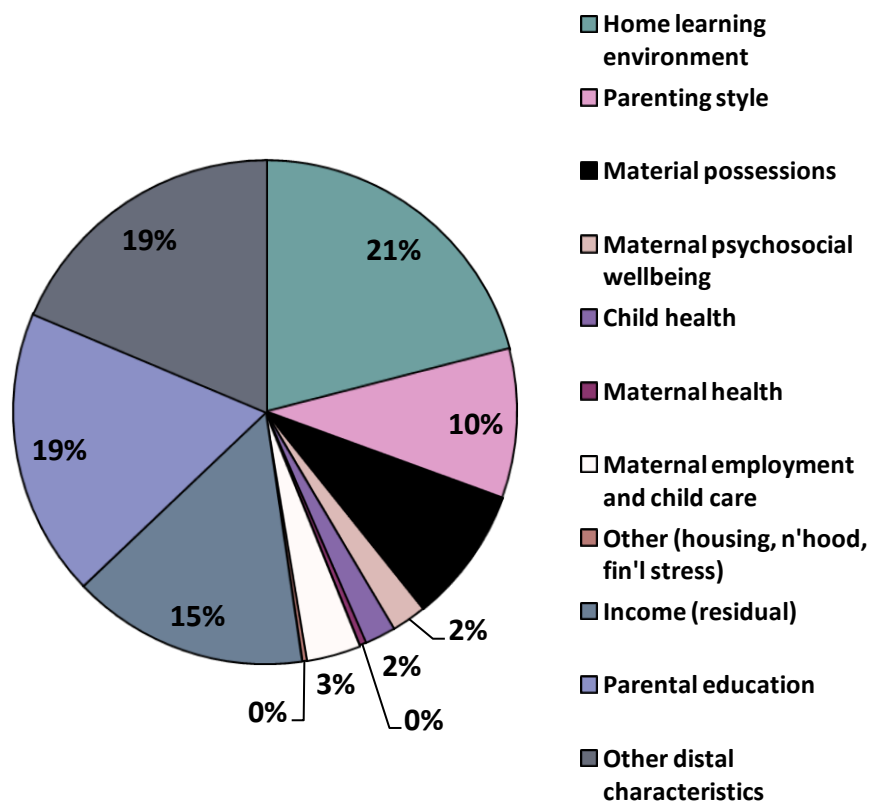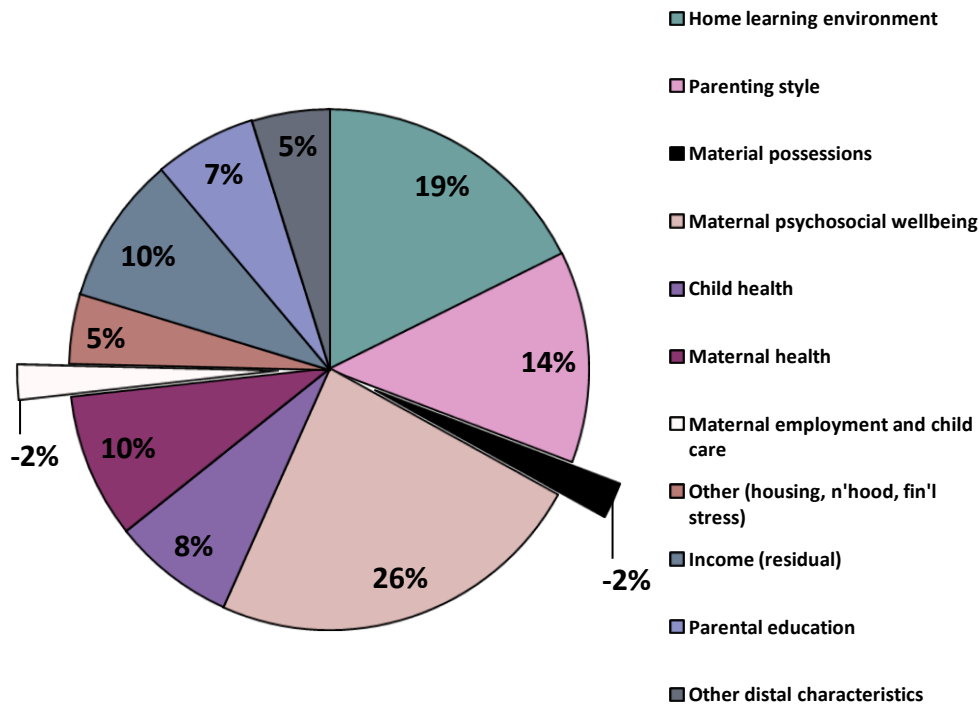**Figure 5: Contribution of differential early childhood environments to the raw LMI-higher income gap in vocabulary**

Figure 6: Contribution of differential early childhood environments to the raw LMI-higher income gap in behaviour problems

Legend:
- Home learning environment
- Parenting style
- Material possessions
- Maternal psychosocial wellbeing
- Child health
- Maternal health
- Maternal employment and child care
- Other (housing, n'hood, fin'l stress)
- Income (residual)
- Parental education
- Other distal characteristics

Notes: The pie in Figure 5 represents the 5.3 month gap in vocabulary developmental age between LMI and higher income children shown in Figure 1. The pie in Figure 6 represents the 1.2 SDQ point gap in behaviour problems between LMI and higher income children shown in Figure 2. Indicators measuring distal characteristics (the first three segments in each chart) are those listed in the notes to Figure 4. The proximal environmental variables added to the original decomposition (the remaining segments) are listed in Table 2.

Our analysis finds powerful predictive roles for many measurable aspects of children's environments. The most significant are discussed below with full details of the results provided in the online appendix.

Home learning environment: We find clear evidence that differences in home learning environments contribute to the gaps in vocabulary and behaviour, explaining around a fifth of the gap in each case. This reflects the fact that higher income children are more likely than LMI children to receive the highest levels of stimulation. Among the high income group, 75 percent of children were read to daily at age 3 compared to 62 percent of LMI children and 42 percent were taken to a library at least once a month compared with 35 percent of children in the LMI group.

Parenting style: Differences in parenting style explain 10 percent of the vocabulary gap and 14 percent of the behaviour gap. Differences in parenting style between LMI and higher income families are generally small. But some variables in this group are so strongly predictive of child outcomes that these small differences predict relatively large fractions of the gap. For example, higher income parents are a little less likely to use physical punishment than LMI parents (9 percent report smacking their child at least once a month compared with 12 percent of LMI families). Harsh discipline is very strongly associated with greater behaviour problems, although the possibility of reverse causation must be acknowledged here.

Maternal psychosocial well-being: Maternal psychosocial well-being accounts for over a quarter of the behaviour gap but for only 2 percent of the vocabulary gap. LMI mothers have poorer outcomes on a range of measures of psychosocial well-being than high income mothers: they report higher levels of psychological distress, are at greater risk of post-natal depression (12 percent compared to 8 percent at 9 months), report lower self-esteem, less sense of control over their lives and lower perceived levels of social support. All of these variables are independent predictors of children's behaviour problems several years down the line and support the contention that poor maternal psychosocial health has negative consequences for children.

Child and maternal health: Child and maternal health variables explain nearly a fifth of the overall gap in behaviour but again have little independent association with vocabulary. The average general health score for LMI children was 4.36 compared to 4.50 among children in the higher income group (effect size 0.17). LMI children were more likely to be exposed to smoke in the home at age 5 (11 percent compared to 5 percent) and less likely to be breastfed for at least six months (24 percent compared to 34 percent).

Material possessions: Differences in material possessions account for 9 percent of the vocabulary gap but have no role in the behaviour gap.[13] The two most important elements within the category of material possessions for the vocabulary gap are lack of internet access in the home (22 percent of LMIs compared to 8 percent of the higher income group in 2006) and lack of access to a car (5 percent compared to 1 percent).

Maternal employment and childcare: Most of the variables in this group were not significantly associated with either outcome. However, many aspects of children's childcare experience which are likely to still vary by income, such as quality and continuity of care, are not captured by our measures. Hence income-related differences in childcare are likely to contribute somewhat to the unexplained portion of the gaps that remain in Figures 5 and 6.

Other factors: The role of the remaining explanatory factors we examined was generally small. Virtually none of the variables in the housing and neighbourhood conditions and the financial stress groups were independently significant predictors of vocabulary or behaviour outcomes.

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[13] In fact, as we saw in the previous section with family size, material possessions make a *negative* contribution to the overall behaviour gap, albeit a very small one.

Conclusions

This study is unusual in that it has placed the outcomes of low to middle income children at centre stage rather than the outcomes of the most disadvantaged. Our analysis suggests that a large part of the importance of family income and parental education for child development can be explained by measurable environmental factors. Aspects of children's environment such as their exposure to learning opportunities, parents' approach to parenting and mothers' psychosocial and physical well-being all have a strong influence on the cognitive and socio-emotional development of children. Where parents are squeezed for resources of both time and money there is a risk that the resulting stress translates into less conscientious or sensitive parenting. Difficult economic times and a lack of affordable flexible child care are likely to exacerbate these problems for many LMI parents (Alakeson, 2011).

A large number of mechanisms predict either cognitive or socio-emotional outcomes for children to a greater or lesser extent. This suggests that improving outcomes would require a broad-based approach that fosters the multiple dimensions of children's development. So what role could policy play? One important point is that not all differences in outcomes between groups can be traced to financial resources. Parental education is an extremely powerful independent predictor of early disparities and this highlights the crucial importance of considering long-term solutions. Ultimately the well-being of future generations may be most improved by fostering the skills and achievements of young people before they become parents. There is a wealth of evidence that successful interventions exist that can improve outcomes of parents and young people in current generations and start to break the intergenerational cycle of disadvantage (see for example the recent special issue of *Science* magazine on early interventions for the latest thinking in this area). We note that something as straightforward as a high quality preschool education environment has been shown to protect children from the consequences of less than ideal home environments (Vandell et al., 2010).

While the environments of LMI children and those in higher income families are often quite similar, small differences in a wide range of different factors add up to significant consequences for children. Early childhood development is a topic of great policy and academic interest. While the focus of much government policy is understandably on the extremely poor outcomes of many of the most vulnerable children, there is substantial room for improvement in the school readiness of LMI children who, as we show, make up a third of their total cohort. Narrowly focused targeting of resources to parents who are struggling to provide the basic necessities for their children is understandable when government resources are scarce, but may be a short-sighted policy in the longer term. The future skills and economic productivity of today's LMI children will not be as high as they potentially could be, and families who are just above the threshold to receive government services may benefit greatly from relatively modest levels of support. Our analysis suggests that the needs of children in low to middle income families should not be forgotten in this debate.

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