

EARLY LANGUAGE DEVELOPMENT AND CHILDREN'S PRIMARY SCHOOL ATTAINMENT IN ENGLISH AND MATHS: NEW RESEARCH FINDINGS

KEY FINDINGS

One child in five starts primary school in England without the language skills they need to succeed, a figure that rises to one in three of the poorest children (Department for Education 2015). This briefing paper presents new findings that show the real consequences for children who are struggling with their language skills. The findings are based on an analysis of the Millennium Cohort Study undertaken by the UCL Institute of Education for Save the Children. The analysis looks at the relationship between children's language skills at age five and their attainment in English and maths at ages seven and 11.

It shows that one in four children who struggled with language at age five did not reach the expected standard in English at the end of primary school compared with one in 25 children who had good language skills at age five. The analysis also shows that one in five children who struggled with language at age five did not reach the expected standard in maths at the end of primary school compared with one in 50 children who had good language skills at age five.

The analysis also looks at the impact of language skills on children's attainment at ages seven and 11 when other factors, such as children's experience of poverty, their parents' education and their previous attainment, are taken into consideration. Critically this shows that even when other factors are considered, children who struggle with their language skills at age five are much less likely to meet the expected standard in English and maths by the end of primary school.

The government is committed to ensuring that every child leaves primary school with secure foundations in English and maths. The findings in this briefing demonstrate the crucial role of children's early language skills in achieving the government's goal. They re-emphasise the need to invest in good quality early years services and support for parents, so that every child has the basic skills they need to succeed at school. In particular, there is strong evidence that high quality early education and childcare can help boost the early language skills of young children, especially those from disadvantaged backgrounds.

That is why the Read On. Get On. campaign – which Save the Children helped launch in 2014 along with early years organisations, professionals, teachers, literacy experts and businesses – is calling on the government to ensure that by 2020 every nursery in England is led by an early years teacher, with new investment initially focused on nurseries serving the poorest children.

The Read On. Get On. campaign

Save the Children is part of the *Read On. Get On.* campaign - a coalition of literacy experts, early years professionals, teachers and businesses working towards the ambitious goal of all children reading well by the age of 11 by 2025.

In England, one in five children cannot read well when they finish primary school, a figure that increases to one in three of the poorest children. Children who cannot read well at the end of primary school are less likely to succeed in secondary school and in adulthood are likely to earn less than their peers (Read On. Get On. 2014, Crawford & Cribb 2015).

To become good readers, children first need to become confident communicators, with clear speech, a rapidly increasing vocabulary and strong levels of comprehension. These vital language skills develop rapidly in the first few years of a child's life.

That's why the *Read On. Get On.* campaign is also working to ensure that every five-year-old has good language skills by 2020. We're calling on the government to invest in high-quality early years services and ensure that there is an early years teacher leading every nursery by 2020.

Achieving the *Read On. Get On.* goals will require us all to play a part. Parents have the most crucial role in a child's development. In August 2015 we began a sustained campaign with partners to support parents with everyday activities – such as singing, nursery rhymes, and telling stories – that help to build children's early language skills.

THE IMPORTANCE OF GOOD EARLY LANGUAGE SKILLS

Early language skills are very important to children's chances – at primary school, at secondary school and beyond. There is strong evidence to show that these early skills are closely related to:

- children's readiness for school (Roulstone et al 2011, Snowling et al 2011)
- the qualifications they gain at school (Parsons and Schoon 2011)
- their earnings, literacy skills and mental health in adulthood (Parsons & Schoon 2011, Schoon et al 2010a, Schoon et al 2010b).¹

The data and analysis presented in this briefing add to this evidence, showing a clear link between children's early language development and their attainment throughout primary school in English and maths.

¹ For a more in depth review of the evidence on the importance of the early years and children's early language development see our recent report *Ready to Read: Closing the gap in early language skills so that every child in England can read well*

The analysis in this paper uses data from the Millennium Cohort Study (MCS), which has tracked a nationally representative group of 19,000 children born in the UK in 2000. This data is then linked to records held in the National Pupil Database (NPD), which contains the education records of children from across the country.

The analysis considers the relationship between children's language skills at age five, and their attainment in English and maths at ages seven and 11. For a more detailed overview of the Millennium Cohort Study and the analysis presented in this briefing see Appendix 1.

CHILDREN'S EARLY LANGUAGE SKILLS AND ATTAINMENT IN PRIMARY SCHOOL

Table 1 shows that one child in three in the sample (37%) struggled with language skills at age five. At age seven one child in 12 (8%) and one in six (16%) had difficulties with English and maths respectively. By age 11, one child in ten (10%) was struggling with both English and maths. These findings show that while overall attainment was high, there were still worrying numbers of children falling behind at each stage.

Table 1 Children's attainment at age five, seven and 11²

Subject	Reaching the expected level (%)	Year assessment taken
Language and communication at age five	63	2005
English at age seven	92	2007
Maths at age seven	84	2007
English at age 11	90	2011
Maths at age 11	90	2011

Source: Analysis of the Millennium Cohort Study waves 3, 4 and 5, linked to the National Pupil Database, by the UCL Institute of Education

² Note that children's scores in the sample refer to the years 2005, 2007 and 2011. For the most recent figures see [Phonics screening check and key stage 1 assessments: England 2015](#) and [National curriculum assessments at key stage 2, 2015](#).

Benchmarking children's attainment at five, seven and 11

By the age of five, children should be able to speak in full sentences and use most of the everyday words that adults use. They should be asking lots of 'why?' questions to understand the world around them, and should be able to talk confidently about the past and the future. Although a minority of children have a disability or impairment that means they will never develop the language skills expected for their age, most children could get there with the right support.

In this briefing we use children's scores in the language and communication element of the Early Years Foundation Stage Profile (EYFSP) as a measure of children's language development at age five.

We assess the link between these scores and national assessments of children's attainment in English and math at ages seven (key stage 1 assessments) and 11 (key stage 2 assessments). Currently, at age seven a child is expected to reach level 2 in English and maths; and at age 11 they are expected to reach level 4.

At age seven, this means they should be able to:

- Read and write independently, speak confidently, and listen to what others have to say.
- Count, read, write and order numbers to 100 and beyond, as well as develop a range of mental calculation skills; learn about space and shape; and start to understand mathematical language.

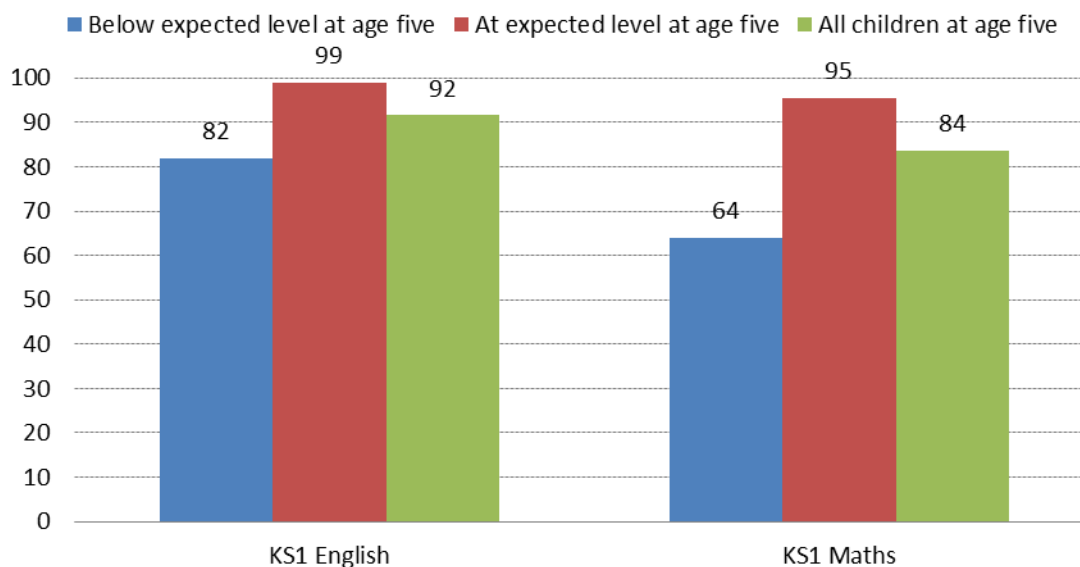
At age 11, they should be able to:

- Learn how to apply the way they speak and write to different contexts, purposes and audiences. They should also be able to read a range of texts and understand different layers of meaning in texts, as well as explore the use of language in literary and non-literary texts.
- Move away from counting to calculating, trying to tackle problems with mental methods before any other approach; use measurement skills and a wide range of mathematical language, diagrams and charts to present their reasoning.

When children's language skills at age five are compared with their attainment at ages seven and 11 the picture presented in table 2.1 changes greatly. Figure 1 compares children's language skills at age five with their English and maths scores at age seven. It shows that:

- **One in six children (18%)** who struggled with language at age five did not reach the expected standard in English at age seven
- **One in three children (36%)** who struggled with language at age five did not reach the expected standard in maths at age seven

Figure 1 Proportion of children working at the expected level at age seven in English and Maths by age five ability in language and communication

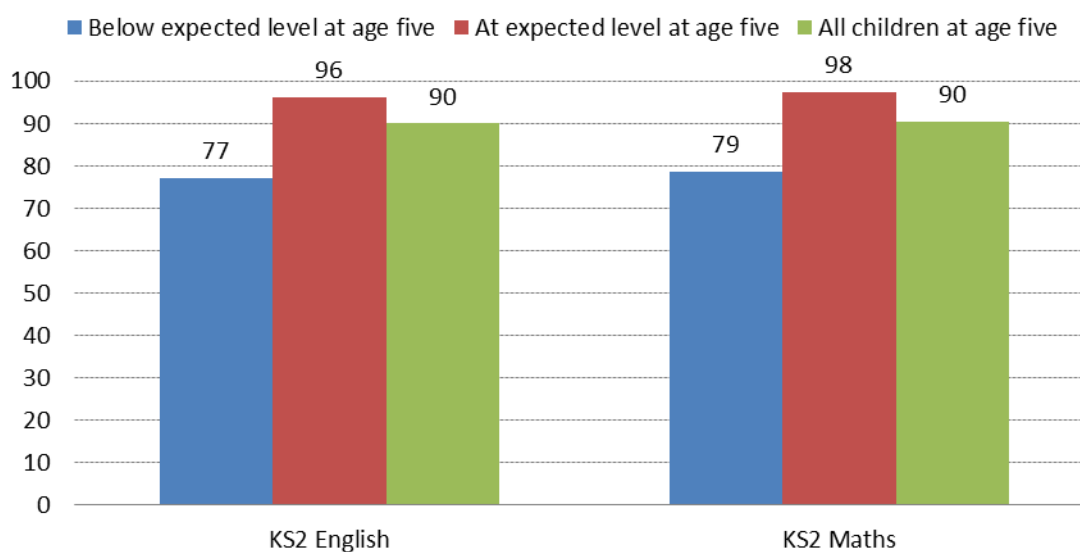


Source: Analysis of the Millennium Cohort Study waves 1, 3, 4 and 5 linked to the National Pupil Database by the UCL Institute of Education

Figure 2 shows that these differences grow greater by age 11 in English, but decline slightly in maths:

- **One in four children** (23%) who struggled with language at age five did not reach the expected standard in English at age 11.
- **One in five children** (21%) who struggled with language at age five did not reach the expected standard in maths at age 11.

Figure 2: Proportion of children working at expected level at age 11 in English and maths by age five ability in language and communication



Source: Analysis of the Millennium Cohort Study waves 1, 3, 4 and 5 linked to the National Pupil Database by the UCL Institute of Education

These figures mean that, compared with children who had reached the expected language skills when they started primary school, children who had poor language skills at age five were:

- About **six times less likely** to reach the expected standard in English and about **11 times less likely** to reach the expected standard in maths at age 11.

EARLY LANGUAGE SKILLS INFLUENCE CHILDREN'S ATTAINMENT THROUGHOUT PRIMARY SCHOOL, INDEPENDENT OF FAMILY BACKGROUND

While Figure 2 and Figure 3 look at the relationship between early language skills and children's attainment in primary school, they don't control for important factors in a child's life, such as their family income or their parents' education.

In order to test whether children's early language skills are independently associated with their attainment in primary school – regardless of family background – the analysis therefore used a more sophisticated statistical technique, which controlled for factors such as:

- children's experience of poverty
- parents' education
- the home learning environment (eg, how often parents read to children or take them to visit the library).

For a full list of the factors considered, and the results of the analysis, see the tables in Appendix 2.

The analysis of children at the age of seven shows that:

- The most important factor in reaching the expected levels in English and maths at seven was children's language skills at age five. This was greater than the link to poverty or poor parental education.
- Compared with their peers, children who struggled with language skills at age five were significantly less likely to reach the expected standards in English and maths, regardless of family background.
- Children who struggled with language skills at age five scored on average 34% worse in English and 26% worse in maths at age seven than children who had been at the expected level at age five. This was regardless of family background.

The age 11 analysis takes an additional factor into account – how well children did at age seven in English and maths, as this is likely to have a large influence on their attainment at age 11. It shows that:

- Children's attainment at age seven in English and maths is the most significant factor in their attainment in English and maths at the end of primary school.
- However, even when we control for attainment at age seven, children who struggle with language skills at age five were far less likely on average to reach the expected standard in English and maths at the end of primary school.
- Children who struggle therefore with language skills at age five score 16% worse on average in both English and maths at age 11. This was regardless of family background.

The impact of poverty and the early years

Studies show that children's experiences at home and in childcare in the early years continue to have an impact on their learning throughout primary school (Sammons et al 2008).

The analysis presented in this briefing adds to this evidence by showing the crucial role that early language skills play in children's progress through primary school.

The analysis also shows that poverty has a large impact on children's attainment throughout primary school:

- At age seven, a child who had never experienced poverty scored, on average, 23% higher in English and 17% higher in maths than a child who had experienced persistent poverty throughout their early years.
- And at 11, they scored 11% higher on average in both English and maths.

These findings show that children's early experiences of poverty can both have a significant influence on their achievement in primary school.

However, poverty should not be an excuse for educational failure. Our findings show that, if they get the support they need to develop good language skills in the first few years, children who experience poverty can do as well as their peers at school (Read On. Get On. 2015). But living in poverty can make it harder for children to get the early support they need and acts as an extra barrier to children's success in primary school.

We need a twin strategy to ensure children living in poverty get the support they need in the early years and to ensure that the root causes of poverty are tackled.

Finally, the analysis also shows that a range of other factors are closely linked to children's attainment at ages seven and 11, including:

- season born in
- birth weight
- incidence of long standing illness or disability
- experience of poverty
- home learning environment
- parents' education qualifications.

Some of these factors are affected by poverty; others are related to their early environments and to how parents and others support their children's learning in the early years.

Separately the *Read On. Get On.* campaign is working with a wide range of partners to develop supports for parents around the country to help them with their children's early language development.

These findings *do not* show that a child's attainment throughout primary school is pre-determined by age five. Through the support of their parents and teachers many children who are behind in language skills at age five can catch up with their peers and excel at primary school.

However, the findings do show that children without good early language skills are at far greater risk of struggling at primary school and leaving primary school without the basic building blocks of

learning. Ensuring that all children start school with good language skills would enable many more children to do well in primary school and beyond.

GOOD-QUALITY CHILDCARE IS KEY TO MAKING SURE EVERY CHILD GETS THE BEST SUPPORT FOR THEIR EARLY LANGUAGE DEVELOPMENT

The findings in this briefing show how critical it is that every child achieves a good level of language development by the time they start school. Parents are the most important figure in a child's early years, but there is also clear evidence that attending good quality childcare can help boost children's early language skills. The best childcare and early years services also support parents to create a language-rich environment at home (Sammons et al 2008, Mathers et al 2011, Speight et al 2015).

The government is committed to ensuring that every child leaves primary school with secure foundations in English and maths. The findings in this briefing show how critical children's early language skills are for achieving this vital goal. In other reports for the *Read On. Get On.* campaign, we have shown the impact that high-quality childcare can have on children's early learning – and the lasting benefits as they move into primary school (Read On. Get On. 2015).

We are therefore calling on the government to make raising the quality of childcare and early education a national priority, in order to deliver its goal.

There is strong evidence that teacher-led childcare and early education provide children with the best start in life, especially children from disadvantaged backgrounds (Read On. Get On. 2015). We support the government's plans to expand free childcare to working parents but we also need further action to ensure that the existing entitlement to free childcare is of high quality for every child, and especially those children growing up in poverty. Otherwise Without that, there is a major risk that the government's plans will not have the desired impact on children's early learning and life chances.

Our priority therefore is for every nursery in England to be led by an early years teacher, by 2020.

APPENDIX I

The Millennium Cohort Study is the fourth of Britain's world-renowned national longitudinal birth cohort studies. It provides detailed information on approximately 19,000 children born at the start of the new century and their families, across the United Kingdom. The cohort members were born, in England and Wales, over the 12 months period starting September 2000; in Scotland and Northern Ireland they were born over 13½ months from November 2000. The sample design allowed for disproportionate representation of families living in areas of child poverty, and in areas of England with high ethnic minority populations. Information was first collected from parents, through a home-based survey, when the cohort members were aged nine months. This first survey recorded, among other things, the circumstances of pregnancy and birth, as well as those of the early months of life, and the social and economic background of the children's families.

Subsequent surveys have taken place at ages three, five, seven, 11 and 14 (ongoing at time of writing). These surveys coincide with important moments in children's lives, including the preschool period (age 3), and the start, middle and end of primary school (ages three, seven and 11 respectively). From age three onwards, measured physical development and objective cognitive assessments have been carried out with children; surveys also include interviews with both parents (where co-resident) and, increasingly since age seven, with the cohort member. A real strength of the study is the objective measurement of different aspects of cognitive development throughout childhood, via tests administered by trained interviewers to the cohort members. Of particular interest for this briefing are the measures of language and verbal development, which have been collected at ages three, five, seven and 11 (the age 14 survey is currently being carried out), and are described next.

The new analysis presented in this briefing note uses data from the Millennium Cohort Study to test the relationship between children's language skills at age five and how their attainment in national assessments at age seven and 11. In this analysis, the National Pupil Database has been linked to the Millennium Cohort Study (England only), allowing for analysis of the relationship between test scores at different stages of school, controlling for a rich array of potentially confounding background characteristics.

In the first part of the analysis children's scores are grouped by whether or not they reached:

- the expected level in language and communication at age five
- Level 2 in English and maths at age seven
- Level 4 in English and maths at age 11

In the second part of the analysis children's scores at age five are compared individually as to whether they reached level 2 at age seven and level 4 at age 11 in English and maths.

APPENDIX 2

Standardised KS1 and KS2 English and Maths scores from earlier school performance

	English		Maths	
	KS1	KS2	KS1	KS2
< expected level FSP [age 5]	-0.87*** (0.03)	-0.12** (0.02)	-0.79*** (0.03)	-0.16*** (0.03)
standardised age seven English		0.72*** (0.02)		
standardised age seven Maths				0.79*** (0.02)
Season born in [ref: Autumn]				
Winter	-0.06* (0.03)	0.00 (0.03)	-0.11** (0.03)	0.02 (0.03)
Spring	-0.08* (0.03)	0.04 (0.03)	-0.15*** (0.04)	0.12*** (0.03)
Summer	-0.19*** (0.03)	0.07* (0.03)	-0.31*** (0.03)	0.16*** (0.03)
Female [ref: male]	0.20*** (0.02)	0.08** (0.02)	-0.11*** (0.03)	-0.11*** (0.02)
Birthweight	0.07** (0.03)	0.02 (0.02)	0.12*** (0.03)	-0.00 (0.02)
Other ethnicity [ref: white]	0.07 (0.05)	0.08 (0.05)	0.02 (0.05)	0.11 (0.06)
Gestation	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00* (0.00)
Childhood illness [ref: none]				
Long-standing illness	-0.06 (0.03)	-0.04 (0.03)	-0.09* (0.03)	0.02 (0.03)
Long-standing limiting illness	-0.16* (0.08)	-0.21** (0.08)	-0.20* (0.09)	-0.10 (0.08)
Longitudinal poverty [ref: none]				
Intermittent poverty	-0.14*** (0.03)	-0.08** (0.03)	-0.11*** (0.03)	-0.08** (0.03)
Persistent poverty	-0.24*** (0.05)	0.01 (0.05)	-0.14** (0.05)	-0.03 (0.05)
Marital status [ref: married]				
Cohabiting	-0.03 (0.03)	-0.01 (0.03)	-0.06 (0.03)	0.02 (0.03)
Single parent	-0.03 (0.05)	0.03 (0.04)	-0.07 (0.05)	0.07 (0.05)
Rented housing [ref: own]	-0.08* (0.03)	0.01 (0.03)	-0.06 (0.04)	-0.02 (0.03)
Other language spoken	0.07	0.02	0.05	0.10

	English		Maths	
	KS1	KS2	KS1	KS2
Home learning environment	(0.05) 0.01*** (0.00)	(0.05) 0.00* (0.00)	(0.06) 0.01*** (0.00)	(0.05) 0.00 (0.00)
Parents' highest qualification [ref: none]				
Overseas qualifications only	0.10 (0.11)	-0.02 (0.09)	0.21 (0.12)	-0.09 (0.09)
NVQ1	-0.00 (0.07)	-0.04 (0.07)	-0.01 (0.08)	-0.09 (0.07)
NVQ2	0.12* (0.06)	0.03 (0.06)	0.17** (0.06)	-0.07 (0.05)
NVQ3	0.16* (0.06)	0.04 (0.06)	0.20** (0.07)	-0.02 (0.06)
NVQ4+ [degree]	0.34*** (0.06)	0.15* (0.06)	0.35*** (0.06)	0.10 (0.05)
_cons	-0.87** (0.31)	-0.85*** (0.24)	-0.36 (0.29)	-0.81** (0.25)
<i>N</i>	5185	5157	5185	5166
<i>R</i> ²	0.374	0.603	0.301	0.597

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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