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EARLY YEARS
RESEARCH REVIEW 1

Narrowing the gap in outcomes for young children through effective practices in the early years

Centre for Excellence and Outcomes in Children and Young People's Services

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- Disability
- Vulnerable Children (particularly children in care)
- Parents, Carers and Families
- Youth
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1 Summary

This report presents findings from a rapid review of research and national data on the impact of certain background characteristics on outcomes for children in the early years. It seeks to identify the approaches that are most effective in reducing educational disadvantage and promoting positive outcomes. The review focused on children from birth to seven years of age and included evidence published since 2000. A total of 465 items of literature were identified and considered for inclusion in this review.

What does the evidence tell us about outcomes for young children from different backgrounds?

The review considered Every Child Matters (ECM) outcomes (DCSF 2008b) for children with different characteristics, in particular children living in poverty, children from ethnic minorities and children with English as an additional language (EAL).

- Poverty has the greatest influence on children's outcomes in the early years. Poverty affects at least 2.9 million children and young people in the UK.
- Child poverty affects certain ethnic groups in particular. In 2006/07, the majority of Pakistani and Bangladeshi and black non-Caribbean children and young people were living in poverty, compared with around a quarter of white children.
- Young children in poverty have poorer health. More families from low socio-economic status (SES) bands have children with a low birthweight. At age five, children from poor families have poorer general health and more specific health problems.
- Staying safe is negatively related to child poverty, with higher admissions to Accident and Emergency departments and fewer poor families feeling that the area in which they live is safe.
- Poor children also do worse academically and make less progress in learning throughout the early years. The differences between poor children and others are greatest for communication, language and literacy; mathematical development; and personal, social and emotional development.
- A mother's level of education (especially being educated to degree level) is associated with positive learning and development outcomes for children throughout the early years.
- Children with EAL have poorer academic and social outcomes in the early years but they catch up as their English language skills improve.
- Most of the associations between ethnicity and child outcomes are related to poverty and having English as an additional language. Once these factors are taken into account, there are few remaining differences in attainment between ethnic groups at age five and none at age seven.
- Children with a positive home learning environment (HLE) achieve better in the early years and throughout primary school, and this can really help counter the effects of poverty on children's learning and development.

What works

The evidence is clear that implementing well focused and sustained system-level strategies for remediating child and family poverty will significantly improve the range of ECM outcomes for young children.

Strategies that work are those that

For mothers and families generally:

- Seek to boost a mother's education and pass on positive learning behaviours to their young children.
- Provide culturally sensitive outreach and family support and so help parents engage in simple educational activities with their children and contribute to the quality of the home learning environment.

For young children:

- Help them through the transition into pre-school and then into mainstream schooling. Poor children, those from certain ethnic backgrounds and those with language difficulties need most support.
- Provide effective English language support to help children with EAL to catch up on language skills quickly, improve their social skills and behaviour and so achieve better.
- Provide secure and stable families, neighbourhoods and schools to help poor children feel safe and able to fulfil their potential.

How can early learning environments be strengthened to respond to diversity?

Learning environments include both the home and the range of pre-school settings. Children benefit from early years provision that is sensitive to their needs, helps to introduce different experiences and provides culturally relevant learning opportunities.

What works

- **Well designed and implemented outreach work and other interventions by trained professionals** which help strengthen home environments and support parents' involvement in learning activities with their children, improve engagement between early years practitioners and families from disadvantaged and minority groups and increase uptake of pre-school provision by these families

- **Strategies and procedures that help children to make a positive transition to pre-school** since it can pose particular challenges for young children from minority ethnic backgrounds and those with EAL. Again effective home-school liaison is vital in ensuring a smooth transition.
- **Strategies which make greater use of well led and trained bilingual staff**. Young children from minority ethnic groups can find cultural activities in pre-school to be challenging. A lack of shared experiences between children and staff can marginalise these children. Children from minority ethnic backgrounds may adopt different identities in order to fit into the dominant culture.
- **Training for mainstream early years professionals in working with children who have EAL** who face particular communication challenges. Group activities can be especially alienating for these children and staff can misinterpret their needs. Children's communication difficulties can have a negative impact on relationships with teachers and other children, lead to frustration and undermine their confidence and achievement.
- **Provision of routinely high-quality pre-school provision.** Early childhood learning environments can help children from all backgrounds to settle in and make good progress. Understanding of cultural differences and use of culturally appropriate materials are helpful, as are strategies to improve interaction for children with EAL.

What works in helping children from all backgrounds to access the curriculum and make good progress?

- **Targeted interventions which provide literacy and language support**. These can improve outcomes for children at risk of low attainment, especially those living in poverty and children with EAL.
- **Ensuring that children from the most disadvantaged and poor families take up places at pre-schools.** Attending pre-school benefits children from all backgrounds, especially those living in poverty.
- **Ensure routinely high quality of the pre-school provision** across all kinds of setting, since this can make a real difference to children's outcomes. Effective pre-schools are characterised by a focus on individual children's needs, both in terms of learning and social development.
- **Provide sufficient free play** because it enables children to explore their own interests and take responsibility for their own learning. In effective pre-schools, children spend two-thirds of their time in child-initiated activities.
- **Provide sufficient opportunities for, and train early years professionals in 'sustained shared thinking'.** This is a key educational technique in helping young children to learn. It involves adults interacting with children and extending their thinking, for example by asking open-ended questions.
- Ensure that there is: **strong leadership in curriculum and planning, high staff qualifications, low turnover and opportunities for professional development**. All these are characteristics of effective pre-schools.

- **Support the development of effective home learning environments** through regular communications with parents and outreach programmes which are tailored to the needs of particular individuals and groups.

What's missing from the evidence base?

The review highlighted a numbers of areas that would benefit from more data and research. These include:

- More evidence from national indicators on young children's enjoyment (both in and out of school) and on their safety.
- A greater range of evidence on young children's emotional and social development and how this can be supported, including research on children's own views and experiences.
- More research on effective practice for improving children's outcomes in childminding.
- Evaluation studies of initiatives designed to improve outcomes for children from diverse backgrounds in the early years.

2 Purpose and scope of the review

This section describes the review's purpose, focus and remit.

The evidence base for each priority is provided by a research review, which involves a sequence of activity, rather than being a one-off event. Each research review will bring together a unique, quality-assured blend of:

- the best research evidence from the UK – and where relevant from abroad – on what works in improving services and outcomes for children and young people
- the best quantitative data on a thematic priority with which to establish baselines and assess progress in improving outcomes
- the best validated local experience and practice on the strategies and interventions that have already proved to be the most powerful in helping services improve outcomes, and why this is so.

This main review builds on a scoping study (Coghlan *et al* 2008) which assessed the nature and strength of the evidence base and provided an initial overview of trends in the literature. It will be followed by a knowledge review, which will include examples of local validated practice and be informed by a range of stakeholder views. It is one of three reviews about the early years. The other two focus on the family involvement and the impact of integrated early years services.[1]

The remit was set by the C4EO Theme Advisory Group (a group of experts in early childhood policy, research and practice). They posed three questions for this review:

1. What is the evidence of different outcomes for children from diverse backgrounds and with different characteristics (for example, in terms of their cultural background, ethnicity, language, poverty/deprivation and other relevant factors)?
2. In what ways do early years learning environments impact on children's sense of identity and understanding of diversity?
3. What is the evidence to support specific approaches that help children from all backgrounds and with diverse characteristics to access the curriculum and make good progress in the early years?

The following definitions and parameters were agreed by the Theme Advisory Group:

- Early years learning environments are defined as all of the forms of group provision available for children aged seven years and under, outside of their own homes. Although childminding was not specifically searched for, consideration was given to all types of early childhood settings (including childminding) identified in the searches.

[1] Readers may be interested to read a companion review (Springate *et al* 2008) which is also focused on outcomes for children in the early years. It was completed as part of the Narrowing the Gap programme and has informed all three reviews for the C4EO.

- Inclusion is defined as being a process of identifying, understanding and breaking down the barriers to participation and belonging. (This definition was developed by the Early Childhood Forum in 2003 (National Children's Bureau 2008).)
- The term 'outcomes' is interpreted broadly in relation to the five Every Child Matters outcomes: be healthy, stay safe, enjoy and achieve, make a positive contribution and achieve economic wellbeing.
- Curriculum is defined in the widest sense to refer to the content of activities and interactions experienced by children in early years environments. These may either be adult-initiated or initiated by children, and extended by adults for learning and development. The definition also includes aspects of the environment, equipment and materials used for learning.
- Children between birth and seven years of age are considered, although some longitudinal studies extending beyond this age range were included by the review team.
- All literature had to be available in English. The geographical areas covered are: England, Scotland, Wales, Northern Ireland, Republic of Ireland, Australia, New Zealand, USA and Canada. The main focus was on studies carried out in the UK, especially England.
- The cross-cutting issues of child poverty, and equality and diversity are considered.
- Literature published from 2000 onwards was included in the searches.

3 Main review methods

This section outlines the methods used in the study. The study began by establishing key questions to be addressed and determining the parameters for identifying material relevant to the study topic. Parameters were used to identify exclusion and inclusion criteria, for example, associated with publication date and country of publication.

The study used a broad range of sources to identify relevant material:

- searches of bibliographic databases (containing literature on education, social sciences, psychology and health)
- web searches
- current research
- recommendations from the Theme Advisory Group
- 'reference harvesting' (following up items cited in other documents identified in the review).

Searches were carried out using the above sources of information. The search results were screened to remove duplicates and material that did not fit within the parameters. (Details of the search strategy can be found in Appendix 1.)

The review team used a 'best evidence' approach to select literature of the greatest relevance and quality for the review. This entailed identifying:

1. The items of greatest relevance to the review questions.
2. The items that came closest to providing an ideal design to answer the review questions.
3. The quality of the research methods, execution and reporting.

The team reviewed all priority items and summarised their findings in relation to the review questions. The reviewer also assessed the quality of the evidence in each case. In judging the quality of studies, the team was guided by principles established to assess quantitative research (Farrington *et al* 2002) and qualitative studies (Spencer *et al* 2003).

On 20 per cent of the summaries, quality assurance checks were carried out by a member of the team who had not been involved in the original assessment.

4 Assessment of the evidence base

This section provides an overview of the extent of the evidence base. Of all the studies identified, eight were considered highly relevant to the first review question, 10 were relevant to the second question and 20 were relevant to the third review question.

Two studies were particularly important to all three questions in this review: the Effective Preschool and Primary Education (EPPE) study and the National Evaluation of Sure Start. These studies are well-designed and comprehensive, and use high-quality measures and sophisticated analysis.

- EPPE is a large-scale study of the progress of approximately 2,800 children through pre-school and primary school. It has assessed children at different ages, using a variety of research approaches.
- The National Evaluation of Sure Start has provided a very comprehensive evaluation of Sure Start Local Programmes, focusing on a sample of 5,883 children and comparing their outcomes to children not living in Sure Start areas.

Most of the sources of evidence for Question 1 were recommended by the Theme Advisory Group. Information for this question was fairly comprehensive and robust, although there were some clear gaps in the evidence base.

The evidence for Question 2 was drawn from mainly small-scale qualitative studies, using methods such as observations and interviews. Such studies were considered by the team to be best suited to understanding the experiences, views and feelings about the impact of the early years environment of children from different backgrounds. However, the evidence was somewhat thin in places.

A wide range of research methods was used in the studies reviewed in relation to Question 3, including both large-and small-scale studies. A number of studies combined quantitative and qualitative methods, offering robust and holistic insights.

Strengths of the review include:

- identifying the best available evidence from research and national datasets to inform specific questions
- comprehensive and documented searching for relevant information
- an analysis of the quality and strength of evidence
- guidance from an advisory group on the issues of greatest importance in early childhood research, policy and practice.

Limitations of the review include:

- the very short time in which this review was carried out, which limited the ability of the team to extend and develop the evidence base

- searches were limited, particularly for the second review question. Time was limited for reference harvesting and hand searching
- the original search strategy was not explicitly organised around the five Every Child Matters outcomes, although the evidence on outcomes is presented this way
- the review was limited to English-speaking countries only.

Although all of the evidence was assessed for robustness of design, some quantitative studies do not provide insights into the causes of the findings and some of the qualitative studies provide limited evidence of effectiveness. It was difficult to relate the research findings on successful interventions for children with diverse characteristics to the evidence on children's sense of identity and understanding of diversity.

5 What does the evidence tell us about outcomes for young children from different backgrounds?

Evidence presented in this section is drawn from large-scale surveys and datasets. We focused on data collected in England wherever possible, but we have also used data from the UK. Two key sources were the Millennium Cohort Study (MCS) and the Effective Provision of Pre-School Education (EPPE) project. The MCS is a longitudinal study of a sample of 18,818 children born in the UK in the year 2000/01. It provides evidence on children aged nine months to five years (see Hansen and Joshi 2008). The EPPE study is described in Section 4.

Both the MCS and the EPPE studies are high-quality, comprehensive and large-scale programmes of research following a cohort of children over time. They sampled higher proportions of children living in poverty and from minority ethnic backgrounds than are present in the general population. This ensures that there are sufficient numbers in each group to provide robust statistical analyses of the influence of different background characteristics. We also drew on national statistics and conducted some additional analysis of the Foundation Stage Profile.

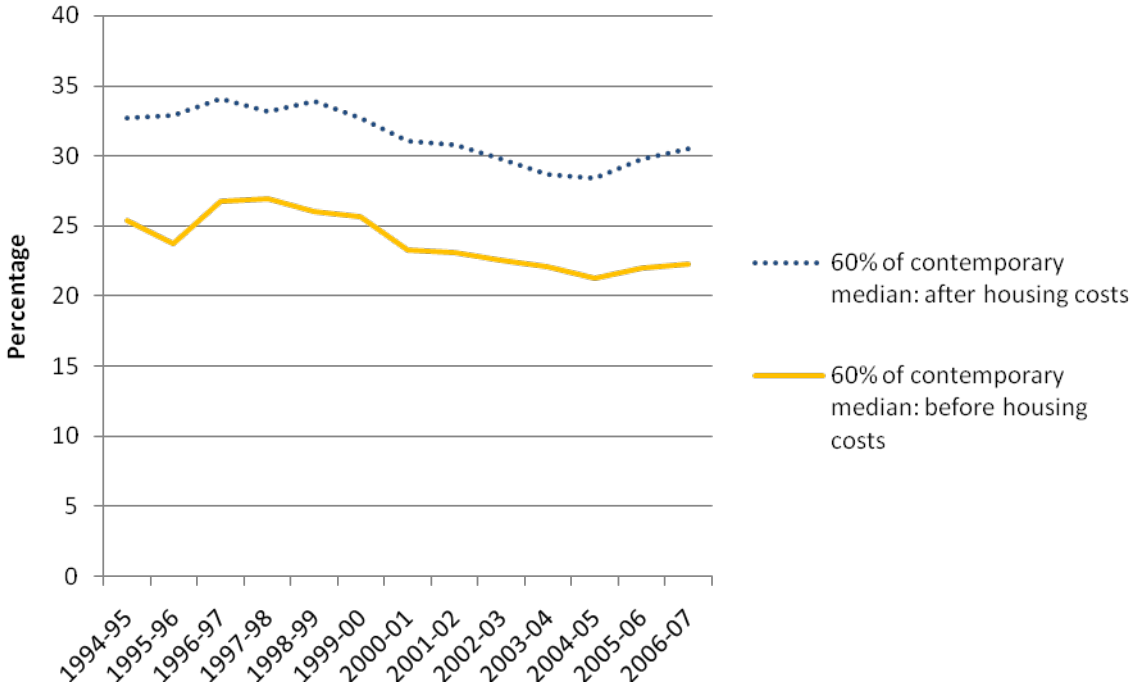
We have interpreted the term 'different backgrounds' broadly, to include children's ethnicity, language, poverty/deprivation and other relevant factors such as maternal education. We have not focused on differences in children's outcomes related to individual characteristics, such as a child's sex, relative age or special educational needs.

Achieving economic wellbeing

In 1999, the government set a target of ending child poverty by 2020; with an interim target of halving child poverty by 2010. Progress towards meeting this target is shown in Figure 1. It includes the proportion of children[2] in poverty in the UK (defined as 60 per cent of the median household income) both before and after taking account of housing costs.

[2] A child is defined as an individual aged under 16, or an unmarried 16- to 18-year-old in full-time education.

Figure 1. Trends in the proportion of children in poverty, 1994/95–2006/07



Source: Brewer *et al* 2008.[3]

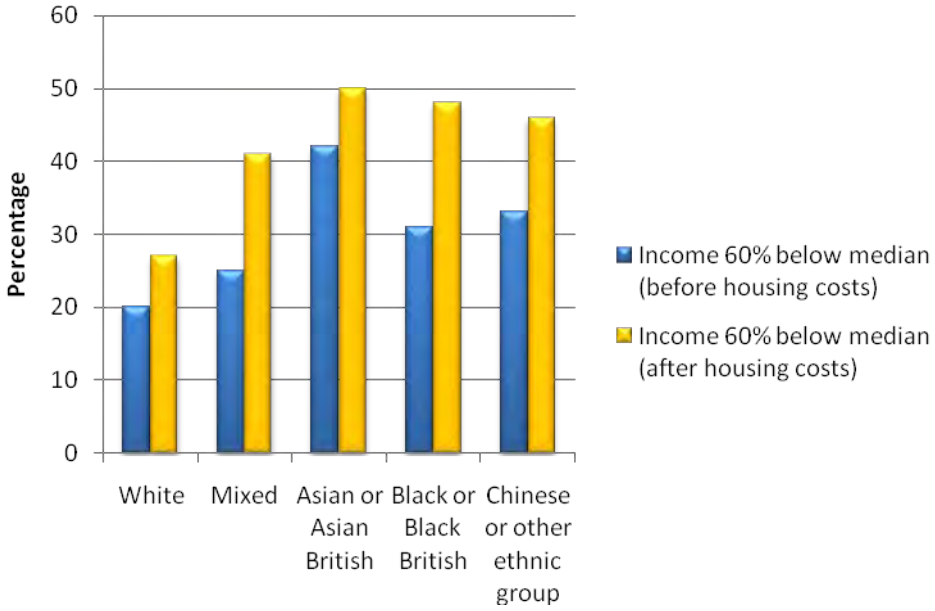
Figure 1 shows that in 2006/07 just under a quarter (22 per cent) of UK children were living in poverty (using the measure before housing costs, which is the measure used for official targets). This represents 2.9 million children (Adams *et al* 2008). Child poverty has decreased by 600,000 children (17 per cent) since 1998/1999, when the target was set. However, there was a slight rise in the number of children in poverty in 2006/07 compared with the previous two years. Taking 2007 as the starting point, a further 1.2 million children need to be lifted out of poverty for the 2010 target to be met. This would mean reducing the number of children in poverty by 300,000 per year for the next four years (in comparison with an average reduction of 70,000 per year achieved over the past eight years).

The Government targets are based on the definition of poverty before housing costs. As housing costs represent a large proportion of the income of poor families, the number of UK children in poverty in 2006/07 jumps to 3.9 million (around 31 per cent of all children) once housing costs[4] are taken into account.

Children from minority ethnic families are particularly likely to be living in poverty, as shown in Figures 2 and 3.

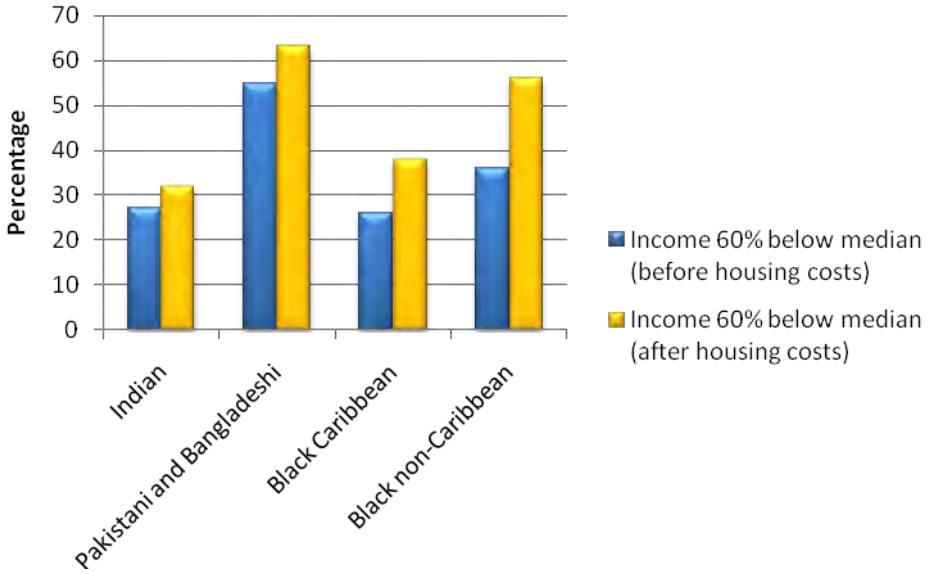
[3] Data from 2002/03 onwards is for the UK, earlier data is for Great Britain (available at www.ifs.org.uk/projects_research.php?heading_id=8, accessed 24 November 2008)
[4] Housing costs include rent, mortgage payments and community/council water charges, but not power or community charges.

Figure 2. Risk of being in poverty by ethnicity in 2006/07, United Kingdom



Source: Households Below Average Income 2006/07 (Adams *et al* 2008)

Figure 3. Risk of being in poverty by ethnicity in 2006/07: by Asian and black minority ethnic groups



Source: Households Below Average Income 2006/07 (Adams *et al* 2008)

Figure 3 shows that Pakistani and Bangladeshi, and black non-Caribbean children are at a particularly high risk of living in poverty (Adams *et al* 2008). After housing costs, 27 per cent of white children were living in poverty in 2006/07. In contrast, the majority (63 per cent) of Pakistani and Bangladeshi children were living in poverty, as were over half (56 per cent) of children from black non-Caribbean families.

Enjoying and achieving

There is more evidence available on enjoyment and achievement than for any of the other four ECM areas. But we were unable to find any national statistics on young children's enjoyment (relating to aspects such as enjoying school and recreation) so the evidence in this section is exclusively related to children's achievement.

There is evidence on young children's achievement in terms of their performance in teacher assessment and tests, including the Foundation Stage Profile, Key Stage 1 national curriculum assessments and other cognitive tests. Cognitive tests measure skills such as literacy and numeracy, and non-verbal reasoning skills.

Family background has an influence on children's achievement throughout the early years. Achievement is influenced positively by the mother's level of education and negatively by living in poverty. Children's achievement in the early years is also influenced by having English as an additional language.

Of all of the background characteristics, maternal education is the most influential in determining children's achievement in the early years. The EPPE research team found that a mother's education, as measured by her highest qualification, is a very powerful predictor of achievement for her children from ages three to seven (Sammons *et al* 2004). Young children whose mothers have degrees do better than children whose mothers do not. Sylva *et al* (2009) also found that the mother's education had a powerful influence on children's later attainment in Key Stage 2 national assessments, when they reached the age of 11.

Poverty has a negative influence on children's academic achievement throughout the pre-school years (Sylva *et al* 2004). National data shows that poor children (those living in the most deprived wards in England) have much lower attainment in the Foundation Stage Profile than children who are living in less deprived areas. In 2006, the gap in attainment on the Foundation Stage Profile (FSP) between poor children and those living in the rest of England was 17 per cent (Department for Children, Schools and Families (DCSF) 2008c). This narrowed slightly to 16 per cent in 2007 (DCSF 2008d).

The FSP records each child's progress and learning needs at the end of the Foundation Stage. Profiles must be completed in any government-funded setting in which children complete the Foundation Stage. For most children, this is at the end of the reception year in primary school. The FSP is based on early childhood practitioners' observations and assessments in six areas of learning: personal, social and emotional (PSE) development; communications, language and literacy (CLL); mathematical development; knowledge and

understanding of the world; physical development; and creative development. Staff must complete summary profiles for each child reaching the end of the Foundation Stage, four weeks before the end of the summer term (when children are four to five years old).

NFER carried out some additional analysis especially for this review, looking at results of 521,995 children who reached the end of the Foundation Stage in 2007 (further details of this analysis can be found in Appendix 2).

We should explain that some variables that are predictors of achievement at other key stages are not yet available on the FSP dataset. These include:

- speakers of languages other than English (EAL); information on the languages children speak was collected during the Annual Schools Census, but is not recorded in the anonymised dataset released for analysis. Such information may be available in future years.
- data on attendance at pre-school/school during the Foundation Stage, which was not on the dataset released for analysis (the collection of such data is not included in the census for nursery schools).

The NFER constructed a multi-level model to take account of the fact that some variables are interrelated and clustered together. Characteristics in the model included the child's age, sex, special educational needs (SEN) status, whether receiving free school meals and whether he or she lived in an area of high deprivation. It also included school-level variables, such as school type and size.

Overall, 45.7 per cent of children achieved the threshold considered to indicate a 'good level of overall achievement' (78 or more points, including at least six points in each of the PSE and CLL measures). The child's age and sex emerged as the dominant factors in predicting the probability of good development. For every month over the average age (of four years and five and a half months), the probability of achieving the threshold increased. Girls outperformed boys in every measure and children with special educational needs had lower scores than their peers with the same characteristics.

Children's background characteristics are of particular interest to this review. The analysis found a relationship between FSP results and ethnic background, with children from Gypsy Roma, Irish traveller, Bangladeshi, and Pakistani ethnic groups achieving lower scores[5] (see Appendix 2). Deprivation is associated with lower levels of development. For example, receiving free school meals[6] is associated with a significantly lower probability of achieving the threshold for a good standard of development. Children receiving free school meals are only half as likely as their classmates to achieve the threshold. While differences in scores are statistically significant for all six learning areas, the differences

[5] It is possible that some of these differences may be related to children speaking a first language other than English, but we are unable to estimate the extent of this because children's language status was not included in the dataset for analysis.

[6] FSM is only a partial measure of poverty in Key Stage 1. This is because young children are more likely than older children to have packed lunches (Sylva *et al* 2004).

are greatest for communication, language and literacy; mathematical development; and personal, social and emotional development.

The impact of certain background characteristics can be illustrated by comparing the probabilities of children with different characteristics attaining a good level of achievement (at least 78 points across the six areas of learning).

The probability of a white boy of average age living in an area with average deprivation levels having a good level of achievement in the FSP is 43.2 per cent. By comparison:

- a white girl with the same characteristics has a probability of 62.9 per cent
- a Bangladeshi boy has a probability of 29.2 per cent
- a white boy receiving free school meals has a probability of 27.3 per cent.

The lowest probability of achieving a good level of achievement in the FSP is found in children from Irish traveller (10.5 per cent) and Gypsy/Roma backgrounds(8.6 per cent).

It is interesting to consider how trends in attainment change as children progress from pre-school to school. The EPPE study found that socio-economic status (SES) has a strong influence on child outcomes throughout the early years from the age of three (Melhuish *et al* 2001). Children from lower SES backgrounds made less progress through pre-school than children of professional parents, and had lower achievement at age five (Sammons *et al* 2002). At age seven, children of parents working in professional and other non-manual jobs did better in their Key Stage 1 assessments than children from all other groups. The largest gap was between children of parents with professional jobs and children of semi-skilled or unskilled manual workers (Sammons *et al* 2004).

The EPPE study also used eligibility for free school meals (FSM) as an indicator of poverty. At age five, children who are eligible for FSM had lower literacy and numeracy achievement (Sammons *et al* 2002). At age seven, children who are eligible for FSM had lower achievement at Key Stage 1. However, FSM proved to be a less important indicator of achievement than the influence of mother's highest qualification or socio-economic status (Sammons *et al* 2002).

In 2007/08, around 15 per cent of English five-year-olds had English as an Additional Language (EAL) (DCSF 2008a). Not surprisingly, children with EAL tend to have lower attainment in the early years. The EPPE study found that at age three, children with EAL had lower overall achievement in tests of verbal skills, but they were achieving as expected in non-verbal reasoning skills (Melhuish *et al* 2001). At age five, children with EAL attained much lower scores in language, and lower scores in numeracy, than children with English as a first language (Sammons *et al* 2002). Similarly, the Millennium Cohort Study (Hansen and Joshi 2008) found five-year-olds with EAL were 28 months behind on verbal reasoning (Jones and Schoon 2008). Interestingly, they were also between two and six months behind on non-verbal reasoning. At age seven, the EPPE study found that children with EAL had lower Key Stage 1 scores in both literacy and maths than children with English as a first language, although the difference was relatively small (Sammons *et al* 2004). But overall, the EPPE study showed the impact of EAL on achievement reduces

considerably between the ages of three and seven, reflecting improvements in English fluency as children progress through pre-school and school (Sylva *et al* 2004).[7]

Ethnicity is associated with some differences in early literacy and numeracy achievement, but the picture is not a straightforward one. While five-year-olds from white UK, Pakistani and mixed ethnicity groups achieved as predicted by their other characteristics, children from black Caribbean and black African ethnic groups attained higher than expected in literacy and lower than expected in numeracy (Sammons *et al* 2002). Children from Indian, Bangladeshi and other ethnic groups attained higher than expected scores in both literacy and numeracy (Sylva *et al* 2009). Ethnicity was not a good predictor of achievement at age seven (Sammons *et al* 2004). The only relationship between ethnicity and achievement was that white European children had lower attainment in reading at Key Stage 1. Ethnicity is not a good predictor of achievement at age 11 (Sylva *et al* 2009, forthcoming).

A closer examination of the relationship between ethnicity and achievement demonstrates that poverty, combined with having English as an additional language, is largely responsible for the relationship between belonging to a black or minority ethnic group and poorer achievement in the early years (Melhuish *et al* 2001).

One of the main explanations for the relationships between poverty, maternal education and achievement is the influence of the home learning environment (HLE) on young children (Sylva *et al* 2004). The HLE is a measure of the extent to which parents take part in learning activities with their children. These include:

- reading to children
- playing with letters and numbers
- taking children to the library
- painting and drawing
- teaching children nursery rhymes and songs
- taking children on visits
- arranging for children to play with their friends at home.

Children with a positive HLE achieve better in the early years and throughout primary school. While the effect of background characteristics on reading and maths achievement diminishes as children grow older, the impact of the quality of the HLE still has very strong effects on academic outcomes, at the ages of seven (Sammons *et al* 2004) and it is still influential at age eleven (Sylva *et al* 2009).

The HLE is associated with social class. There is a pattern of professional groups having a higher quality HLE than middle social class groups, who have a higher quality HLE than low social class groups (Sylva *et al* 2009). But the EPPE study found that the quality of the HLE has a greater influence on a child's intellectual and social development than parental

[7] The latest phase of the EPPE study (Sylva *et al* 2009, forthcoming) asked parents to report on whether there was a need for EAL support; this is a slightly different measure of EAL than that used in preceding phases.

occupation, education or income (Sylva *et al* 2004). The key message is that what parents do is more important that who they are, and a home environment that is supportive of learning can counteract the effects of disadvantage in the early years.

Being healthy

Most of the evidence for this section comes from the Millennium Cohort Study. The evidence demonstrates that poverty has the greatest impact on young children's health, although there are also some differences in health outcomes related to ethnic background.

Health outcomes are affected by poverty from birth onwards. Having a low birthweight[8] is often used as a measure in studies of social inequality. This is because it is associated with poorer health outcomes, in both the short and long term, including infant death (Moser *et al* 2008). National data from England and Wales (Office for National Statistics (ONS) and Department of Health (DH) 2008) shows that babies born from poorer, manual social backgrounds are more likely to have a low birthweight than babies from non-manual social backgrounds. Similar findings were reported in the Millennium Cohort Study (Dezateux *et al* 2004), which found that on average, professional parents have the heaviest babies, while parents with semi-routine and routine jobs have the lightest babies.

The Millennium Cohort Study found that at age five, children in poor families fare much worse in terms of both their reported general health, and also specific health conditions. Specific health conditions suffered by higher proportions of children from poor backgrounds include speech and eyesight problems, toothache, asthma and Attention Deficit Hyperactivity Disorder (ADHD) (Sullivan and Joshi 2008). Obesity is also related to poverty, with a higher proportion of children below the poverty line categorised as obese (6.6 per cent) when compared with children above the poverty line (4.7 per cent) (Sullivan and Joshi 2008).

There is a complex pattern of differences in health outcomes for children from different ethnic groups. In terms of birthweight, there are clear trends for babies from white backgrounds to be heavier. National data from England and Wales in 2005 shows that white British babies were the heaviest, followed by white non-British babies (Moser *et al* 2008). The percentage of babies of low birthweight was almost double in the Caribbean and all three Asian groups (ranging from 10.9 to 9.8 per cent) than that in the white groups (5.6 per cent). Babies from Indian and Bangladeshi backgrounds weighed 300g less than White babies, on average. Similarly, the Millennium Cohort Study found that babies of Pakistani, Indian, Bangladeshi, black and mixed origin mothers weigh less than babies of white mothers (Dezateux *et al* 2004).

By age five, white children are over twice as likely as Pakistani and Bangladeshi children to be reported to be in excellent health. But children from Pakistani/Bangladeshi, Indian and black backgrounds are less likely to have a long-standing health condition than white children (Sullivan and Joshi 2008). This may be because mothers from Pakistani and Bangladeshi backgrounds are less likely to smoke in pregnancy, and are more likely to breast-feed their babies (Sullivan and Joshi 2008). While over a third of white mothers in

[8] A low birthweight is defined as less than 2,500 grams (around five and a half pounds).

the Millennium Cohort Study reported smoking at some point during pregnancy, less than five per cent of mothers from Pakistani and Bangladeshi backgrounds reported doing so (Dezateux *et al* 2004). Children of black ethnic origin are the most likely to be obese (Sullivan and Joshi 2008).

Staying safe

The aims for 'staying safe' (DCSF 2008b) include:

- avoiding accidental injury and death
- safety from crime and anti-social behaviour
- security, stability and good standard of care.

We found quite limited national indicators for these aspects.

The available evidence suggests that staying safe is negatively related to child poverty. In England, the proportion of children aged between three and five years old admitted to Accident and Emergency departments is five per cent higher in disadvantaged areas (Sullivan and Joshi 2008). At age five, workless families are less likely to think that the area they live in is safe, or to consider it an excellent area for raising children (Ketende and McDonald 2008).

In contrast with poverty, ethnicity does not appear to have a consistent link with the few indicators we were able to find for 'staying safe'. Fewer children aged between three and five are admitted to Accident and Emergency departments in areas with a high proportion of people from minority ethnic backgrounds (Sullivan and Joshi 2008). Families from white or Indian ethnic backgrounds are more likely than families from Pakistani/Bangladeshi or mixed ethnic backgrounds to think that their area is an excellent place to raise children. On the other hand, families from white, Pakistani or Indian backgrounds are more likely to feel that the area they live in is very safe than are families with black, mixed or other ethnic origins (Ketende and McDonald 2008).

Making a positive contribution

Aims of the Every Child Matters framework (DCSF 2008b) relating to this outcome include:

- children engaging in positive behaviours in and out of school
- children developing positive relationships with others
- children developing the self-confidence to be able to deal with life changes.

The EPPE study measured child behaviour through questionnaires completed by pre-school staff and primary school teachers. Various social behaviours were measured including cooperation (such as following rules in games), positive social behaviours (such as sharing with other children, being kind to others), anti-social behaviours (such as temper tantrums, bullying and stealing) and anxious behaviours (such as easily scared, often unhappy).

The EPPE study found that a mother's education is related to child social behaviours. At age five, less well-educated mothers were more likely to have children reported to be anti-social, and less likely to have children reported as being cooperative or independent (Sammons *et al* 2003). There was a similar trend at age seven, with a higher level of maternal education being related to lower levels of reported anti-social behaviour, and to more positive social behaviours and self-control (Sammons *et al* 2004). Children with young mothers (aged 18 or under when they gave birth) were also more likely to be reported as being anti-social at age three (Melhuish *et al* 2001). The study found that poverty did not have a strong relationship with anti-social behaviours in pre-school although at age three, children of professional parents were reported as more confident than other children (Melhuish *et al* 2001).

There was a relationship between poverty and anti-social behaviour as children progressed to primary school. At age five, children of professional parents were reported as more sociable (Sammons *et al* 2003). Children who were eligible for free school meals were less likely to be reported by their teachers as being independent and cooperative, and more likely to be reported as being anti-social. At age seven, poor children were again reported as displaying fewer positive behaviours, having less self-control and as being more anti-social (Sammons *et al* 2004).

The EPPE study found a few differences in reported social behaviour among children from different ethnic groups. At age three, children of black Caribbean, black African and mixed ethnic backgrounds were reported as showing more anti-social and anxious behaviours (Melhuish *et al* 2001). At age five, black African children showed more cooperation than children from white UK backgrounds (Sammons *et al* 2003). Pakistani children were reported to be less sociable, but also less anti-social than white UK children. The EPPE study found no evidence of ethnicity having any relationship with staff ratings of child behaviour at age seven (Sammons *et al* 2004). Interestingly, there was a stronger negative relationship between staff ratings of behaviour and EAL than for ethnicity. At age three, children with EAL were reported as being less cooperative, less sociable with their peers, and less confident (Melhuish *et al* 2001). At age five, children with EAL were reported as being less cooperative and less independent than children who had English as a first language (Sammons *et al* 2003). At age seven, having EAL was not found to be related to child social behaviours (Sammons *et al* 2004).

Social behaviours were strongly related to the quality of the home learning environment (HLE). The HLE was found to be more important in influencing child social behaviours than either mother's education or child poverty. For five-year-olds, a higher quality HLE was related to being reported as being more independent, cooperative and sociable and less anti-social (Sammons *et al* 2003). Similarly at age seven, having a higher quality HLE was related to positive behaviour and sociability (Sammons *et al* 2004).

Summary of Early Childhood Matters outcomes for young children from different backgrounds

We examined the achievement of children with different characteristics in relation to the five ECM outcomes.

- For **economic wellbeing**, we examined child poverty data. In 2006/07, just under a quarter of children and young people in the UK are living in poverty (before housing costs).
- Children from BME families are at high risk of living in poverty. For example, whereas 27 per cent of white children are living in poverty (after housing costs), over 63 per cent of Pakistani and Bangladeshi children and young people are affected.
- There is a much information about children's **achievement**, but none on enjoyment. Children's achievement is influenced positively by their mother's level of education and negatively by living in poverty. Children whose mothers have degrees do better throughout pre-school and primary school than children whose mothers do not.
- Socio-economic status has a strong influence on children's attainment throughout the early years. Children from lower socio-economic status (SES) backgrounds make less progress throughout pre-school.
- Young children who have EAL do less well, especially in tests of verbal skills. Children with EAL perform better in non-verbal tests. The gap reduces between the ages of three and seven as children's fluency in English improves.
- Ethnicity is associated with a few differences in early literacy and numeracy achievement up to age five. Most apparent differences between children from different ethnic groups are due to poverty and EAL.
- The home learning environment has a greater influence on a child's intellectual and social development than parental occupation, education or income. What parents do is more important than who they are, and a home environment that is supportive of learning can counteract the effects of disadvantage in the early years.
- Young children's **health** is negatively affected by living in poverty. Living in poverty is associated with a low birthweight, suffering from poor general health and specific health conditions (such as speech and eyesight problems). There is a complex pattern of differences in health outcomes for children from different ethnic groups.
- The limited evidence on **staying safe** suggests that young children's safety is negatively related to living in poverty.
- The evidence on **making a positive contribution** is based on staff assessments of children's social behaviour. Sociability and independence are positively associated with the quality of the home learning environment. They are also related positively to a mother's level of education and negatively to living in poverty.
- More negative behaviours are associated with living in poverty and having a younger mother.

- There were stronger negative relationships between staff ratings of children's behaviour and EAL than ethnicity at ages three and five. There was no association between EAL and negative behaviour at age seven.

6 How do early learning environments impact on children's sense of identity and understanding of diversity?

Most of the studies included in this section focused on children whose home environment differs from the majority population in terms of culture and language. The evidence is mainly qualitative in nature and studies were small in scale, using methods such as observation and interviews.

The transition between the home environment and early years settings is potentially stressful for all children. But children from minority backgrounds also have to cope with a culture and language that is unfamiliar to them. It is therefore not surprising that children from minority backgrounds are at a greater risk of demonstrating poorer behaviour and adjustment on entry to pre-school (Melhuish *et al* 2001).

Certain experiences that are difficult for children from different cultural backgrounds include eating unfamiliar food and relating to curriculum content focused on traditions and norms in the dominant culture. Children with EAL face additional communication challenges. For example, Barron (2007) observed children from Pakistani backgrounds in an English nursery. These children were highly engaged with visual and sensory experiences (such as dressing up or looking at displays) but story sessions without bilingual support failed to keep their attention. Ethnic differences seemed most marked when there was least understanding of children's conventions, practices and languages in the nursery setting, creating boundaries and barriers for those children who were not familiar with the majority culture. For example, the children with least English found it hard to understand Christmas celebrations. The lack of appreciation by staff of what was not shared in terms of experience and understanding led to marginalisation for these children (Barron 2007).

As noted previously, the EPPE study found that staff reported children with EAL to be less cooperative, less sociable with their peers, and less confident than children with English as their first language (Melhuish *et al* 2001). Evidence from the US found that English-only language interactions between Spanish-speaking children and English-speaking pre-school teachers were significantly related to behaviour and learning problems, and these children were much less able to tolerate frustration (Chang *et al* 2007).

Children's language skills play a vital role in their ability to form relationships with their teacher. In one recent study, teachers said that they felt less close to children with poorer levels of spoken English (Fumoto *et al* 2007). An Australian study (Sims and Hutchins 2001) looked at the transition from home to child care for children from culturally and linguistically diverse backgrounds. This study includes an example of a child who repeatedly asked to go to the toilet, but was misunderstood and given drinks instead. He became very angry and refused to allow anyone to help him. A positive finding from this study was that bilingual support workers played an important role in helping children adjust to pre-school. They provided information, encouraged good relationships and helped other

staff to understand both the nature and the scale of the changes that the children were experiencing.

Evidence from other studies suggests that the link between home and the early years setting can become disrupted when children adopt very different identities at home and school. In their study of North African bilingual children, Rich and Davis (2007) found that these children attempted to conform to the dominant culture (in a primary school with a predominantly white population). For example, they refused to acknowledge their home language in school for fear of being ostracised by other children. The study concluded that such separation can reduce the school's ability to develop positive home–school partnerships.

Another study suggests that the transition from the home to early years settings may serve to reinforce stereotyping along ethnic lines (Brooker 2006). This case study of an English reception class observed that children adapted to the early years environment by conforming to one of two group identities (English or Bangladeshi). There was a misplaced assumption by staff that children's stereotypical behaviour derived from parents' cultural beliefs and practices, whereas it was actually more influenced by children's attempts to fit in. The transition to school appeared to have simplified and strengthened children's affiliations to stereotypical attributes, despite the good intentions of their teachers.

Evidence from two studies in the USA suggests that children from poorer families may experience lower quality provision in early childhood settings. For example, Stipek (2004) found that didactic teaching approaches (whereby teachers directed children's learning) were more common in classrooms with higher proportions of disadvantaged children. Another US study (McGill-Franzen *et al* 2002) found that pre-schools in socially disadvantaged areas offered a less stimulating and culturally relevant environment, with fewer and less attractive resources for children. We do not have any equivalent evidence from the UK, but this evidence underlines the importance of adequate investment in staff, training and resources in the early years.

The EPPE study carried out a number of case studies of effective practice in pre-school education (Siraj-Blatchford *et al* 2003). These showed that a key factor contributing towards quality provision was the practice of 'sustained shared thinking' (in which staff use strategies such as open-ended questioning to extend a child's learning). This encourages independence and gives children a responsibility for determining their own learning process. This approach was also found in effective teaching of children from asylum-seeking families described in Smyth (2006). Here, children developed their own learning through using and sharing pre-existing (cultural) knowledge in a collaborative and creative teaching environment:

> '[The teacher] used making games as a strategy for the children to demonstrate knowledge about the local environment and discovered that…they wanted to go much further than she had anticipated. For bilingual learners of all ages, play…enables them to bring their own cultural knowledge and understanding to bear and enables collaboration with others. The children were not passive recipients of instructions…but initiated play as a way to make sense of a new language and a new curriculum. The teachers had provided them with a stimulus

> that they then took control of and developed in ways in which the teachers could not have predicted.' (Smyth 2006, p 103)

Evidence from the EPPE study (Siraj-Blatchford *et al* 2004) suggests that early learning environments with a strong focus on both planning for individual learning needs and promoting understanding of cultural differences are effective for children's cognitive, social and behavioural development, and help to achieve better outcomes for all children.

The evidence suggests that early years staff need support and development opportunities to help them to meet the needs of children from different cultural and language backgrounds. This could include raising awareness of the verbal and non-verbal communication strategies used by children placed in an unfamiliar environment. Adults working with these children need to be able to interpret a range of cues and signals in order to meet their needs.

Bilingual staff have a particularly valuable role to play in contributing to improving outcomes for children who speak the same language. Their knowledge and experience should be developed through models of professionalism and standards (Conteh 2007). This includes support/professional development for adults working with children who do not speak English as their first language, validating bilingual staff competencies and developing the role of bilingual staff.

Summary of findings on how early learning environments impact on children's sense of identity and understanding of diversity

- The evidence suggests that transition to pre-school and school poses particular challenges for children from minority ethnic backgrounds and children with English as an additional language (EAL).
- Children from minority ethnic groups often attempt to adapt to the dominant culture by adopting different identities. Unfamiliar cultural traditions and experiences can be alienating for children.
- Children with EAL can experience communication difficulties and this can cause frustration and affect their relationships with other children and staff.
- Early years practitioners who are properly equipped to work with children from culturally and linguistically diverse backgrounds can help to improve experiences for these children.

7 What helps children from all backgrounds to access the curriculum and make good progress?

The team reviewed evidence of what works in terms of supporting children from different backgrounds to access the curriculum and make good progress. We looked at specific approaches designed to help children with particular characteristics. Most of these approaches focused on supporting young children's language and literacy development. We also looked at the characteristics of effective early years environments in general, as research shows that high-quality pre-school provision benefits all children, including those from disadvantaged backgrounds.

Specific approaches

There are a number of specific initiatives that have shown positive outcomes for children in the early years, most of which focus on language and literacy. Children's grasp of language and literacy skills during the early years is fundamental to accessing the curriculum and making good progress. These skills form the basis for early learning and achievement (Potter 2007). As noted earlier, young children from socially disadvantaged backgrounds tend to have poorer (English) language and literacy skills, as do children with EAL (Melhuish *et al* 2001).

Research suggests that specific interventions targeting language and literacy in the early years may help to narrow the gap between disadvantaged children and their peers (see Springate *et al* 2008). Two of the studies we reviewed evaluated interventions focused on improving the language and literacy of young children from disadvantaged backgrounds (D'Anguilli 2005; McIntosh *et al* 2007). The programmes involved intensive teaching of reading strategies, guided reading, home reading programmes, phonological awareness, story retelling and story writing (D'Anguilli 2005; McIntosh *et al* 2007). The introduction of a district-wide literacy programme in the USA was associated with a reduction in severe reading disabilities from 26 to four per cent (D'Anguilli 2005). McIntosh *et al* (2007) suggest that phonological awareness can improve rapidly as the result of such interventions.

There is some evidence to suggest that literacy and language initiatives may have continuing effects on children's achievement. For instance, children from low socio-economic status families who took part in the literacy programme in US kindergartens (D'Anguilli 2005) showed good progress in their later school careers. Improvements transferred to success in areas other than literacy, including numeracy and problem-solving skills.

Children with EAL can also benefit from interventions designed to improve English language and literacy (D'Anguilli 2005; Silverman 2007; Stuart 2004). Silverman (2007) found that an initiative designed to improve vocabulary in pre-school resulted in rapidly improved vocabulary among children with EAL and reduced the language and literacy gap between them and their English-only speaking peers. Stuart (2004) studied a programme to teaching phonics and phoneme awareness. The initiative improved spelling and word recognition among children with EAL, although this intervention did not make a significant difference to children's reading comprehension scores.

One of the studies we reviewed (McIntosh *et al* 2007) showed that an intervention targeting language and literacy skills can benefit from joint working between early years practitioners and speech and language therapists. Pre-school teachers implemented a programme designed by a speech therapist, who refined the intervention in response to teachers' feedback. The programme had a positive impact on language and phonological awareness among disadvantaged children.

While specific interventions may be beneficial, the quality of pedagogical approaches also plays an important part in enabling children with EAL to access the curriculum. As discussed above, effective approaches entail an interactive pedagogy, teaching which is culturally sensitive and attuned to the needs of individual children (Chang *et al* 2007; Flynn 2007; Smyth 2006). Flynn (2007) identifies the characteristics of effective literacy teaching, including carefully considered interactions and genuine dialogue with children – such as role play and paired talk – to contextualise spoken and written English. Smyth (2006) studied strategies to help children from asylum seeking families to access the curriculum. Successful strategies included encouraging children to direct their own learning, and inviting them to express their own preferences and issues. Other successful strategies helped children to develop their knowledge through creativity. Staff focused on improving communication with and between children, which encouraged children from asylum-seeking families to develop self-confidence in the class.

Whitely *et al* (2005) studied an initiative involving training US nursery school teachers to assess disadvantaged children for their level of development and risk of school failure. Staff developed appropriate activities for children in response to their individual needs. Almost all of the children who had been a cause for concern at the first screening were no longer considered to be at risk for school failure when assessed again six months later.

We identified only one study which evaluated a specific approach for improving children's behavioural and social outcomes (August *et al* 2003). The study evaluated a US programme involving intensive activities during the summer holidays, along with mentoring and monitoring by school advocates. The study found evidence of improvement among kindergarten and first grade children who showed aggressive behaviour. At the end of the programme the children showed less disruptive behaviour, increased social competence and greater adjustment to school (August *et al* 2003). However, a recent review of literature suggests that the most disadvantaged children may be the least likely to benefit from programmes designed to improve behaviour (Springate *et al* 2008). There may also be difficulties in engaging disadvantaged parents in these interventions, leading to poor attendance (August *et al* 2003).

Data from the National Evaluation of Sure Start (NESS) (2008) provides evidence of improvement in both behavioural and social outcomes. Children in Sure Start Local Programme areas showed better social development than children with similar backgrounds in other areas. Sure Start Local Programme areas were also found to have positive effects on parenting behaviour. Parents living in Sure Start Local Programme areas provided more stimulating home learning environments, and engaged in less negative parenting than parents living elsewhere. As mentioned earlier, having a more stimulating home learning environment has been identified as the most important factor in determining favourable child social outcomes (Sammons *et al* 2003; Sammons *et al* 2004).

It is therefore likely that the impact of Sure Start Local Programmes on positive child social behaviour was a result of improved parenting, including a positive HLE (NESS, 2008).

Research evidence emphasises the importance of high-quality provision. Centres which implemented Sure Start programmes in accordance with all the good practice guidelines had better parent and child outcomes (Anning *et al* 2007). These centres empower staff and users, have strong leadership and provide well-targeted services. Certain aspects of programmes were related to specific outcomes for parents and children. Centres which created an empowering environment for staff and users were associated with a more stimulating home learning environment for children.

Evidence suggests that some groups, such as lone parents and those with limited language or literacy skills, experienced barriers to accessing Sure Start Local Programmes, so effective strategies for reaching such groups are particularly important. Centres with better strategies for encouraging uptake among hard-to-reach families were associated with higher non-verbal ability among three-year-olds.

High-quality pre-schools

The EPPE study found that attending pre-school has a positive impact on children's academic and social development, and this benefit can be sustained into later schooling (Sylva *et al* 2009). Attending pre-school is therefore good for all children but it seems to be particularly helpful for children from poorer socio-economic backgrounds and those for whom English is not their first language. As a recent review of research by Springate *et al* (2008) has shown, there is considerable evidence that early years interventions can narrow the gap between disadvantaged and other children in terms of their cognitive development. This is also the case for social and behavioural development.

Evidence gathered for this review included a Canadian study (Geoffroy *et al* 2007) which shows that full-time community-based childcare services play a protective role for children of low socio-economic backgrounds. Most important of all for children's outcomes, however, is the quality of the pre-school provision. The EPPE study (Siraj-Blatchford *et al* 2003) investigated pre-schools where children achieved good or excellent outcomes. They found that such pre-schools:

- View cognitive and social development of children as complementary, and avoid prioritising one over the other.
- Provide children with a mix of learning through free play and group work initiated by staff. Free play is important because it enables children to explore their own interests and take responsibility for their own learning. In excellent pre-school settings, children spent around two thirds of their time in child-initiated activities.
- Provide opportunities for 'sustained shared thinking' between adults and children, whereby the child and the adult work together to extend and develop learning.
- Provide learning opportunities that are tailored to the needs of particular individuals and groups of children, such as those who do not speak English at home.

Warm, supportive and relaxed environments with a welcoming appearance are some of the characteristics of effective pre-schools identified in the EPPE study. These pre-schools had fairly good resources, although some had purpose-built open spaces while others were constrained by the environment they were using (Siraj-Blatchford *et al* 2003). Pre-schools promoting better academic outcomes for children (especially reading and mathematics at age six) were found to offer a balanced curriculum, including emphasising literacy, maths, science/environment, and catering for children of different genders, cultural backgrounds, abilities and interests (Sylva *et al* 2004). The type of accommodation was found to affect the activities offered to children. For example, where playgroups had to set up and dismantle equipment on a daily basis, this meant that they were less able to use certain types of equipment such as computers (Adams *et al* 2002).

As well as identifying aspects of pedagogy and environment in effective pre-schools, the EPPE study has found that children from disadvantaged backgrounds had better outcomes in pre-schools were there was a mix of children from different SES backgrounds (Sylva *et al* 2009). Research has identified the need for pre-school staff to establish positive relationships with parents and encourage them to use their services. The evaluation of outreach strategies for the two year-old pilot emphasised the importance of regular and consistent communication, having a one-to-one approach with families and using existing community resources to reach disadvantaged families (Kazimirski *et al* 2008). A welcoming and inclusive ethos helped mothers to accept Sure Start Local Programmes (Anning *et al* 2007). Parents also feel supported when provision is flexible and can cater to their needs (Toroyan *et al* 2004).

Because the home learning environment has such a strong influence on children's outcomes, effective early childhood settings are found to share learning aims with parents and support the home learning environment (Anning *et al* 2007; Kazimirski *et al* 2008; Siraj-Blatchford *et al* 2003; Toroyan *et al* 2004).

The skills, qualities and professionalism that practitioners bring to their work are central to effective practice (Adams *et al* 2002). The EPPE study showed that strong leadership in curriculum and planning, together with low staff turnover, a supportive and clear philosophy and opportunities for professional development, are all characteristics of effectiveness (Siraj-Blatchford *et al* 2003).

Summary of findings on helping children from all backgrounds to access the curriculum and make good progress

- The evidence shows that attending pre-school helps children from all backgrounds, especially those living in poverty.
- Interventions designed to develop literacy and language have been shown to improve outcomes for children at risk of low achievement, especially children living in poverty and children with EAL.
- Effective approaches to help children with EAL include an interactive pedagogy, culturally sensitive teaching and an approach tailored to meet individual learning needs.
- The quality of the provision makes a real difference to children's outcomes. A focus on individual children's needs and helping to extend children's learning through 'sustained shared thinking', are characteristic of effective pre-schools.
- Free play is important because it enables children to explore their own interests and take responsibility for their own learning. In excellent pre-schools, children spend two thirds of the time in activities they have initiated themselves.
- Effective pre-schools employ highly qualified staff, have strong leadership and provide good opportunities for professional development.

8 Conclusions and main messages

This section sets out some main messages and identifies the implications for practice, which are highlighted in bold.

What matters most for children's outcomes?

There is a very clear link between children's achievement and poverty. The gap in achievement for these children is evident when they start pre-school and they continue to make slower progress throughout the primary school. Children living in poverty also have poorer outcomes in other areas, including health and safety. There are issues with poor children's behaviour, confidence and social skills, although these only become apparent in the primary school. Poverty affects certain groups of children disproportionately. Certain minority ethnic groups are more likely to living in poverty than the population in general. Almost two thirds of Pakistani and Bangladeshi children and more than half of black non-Caribbean children were living in poverty in 2006/07. After a period of improvement, recent years have seen less progress in reducing the proportion of children living in poverty.

The policy commitment to eradicate child poverty by 2020, therefore, is of primary importance in improving young children's life chances.

Having English as an additional language influences children's achievement in the early years. Some of the research findings are based on staff ratings of children's attainment and social development. It is possible that these are influenced by staff attitudes and pre-conceptions. But the findings of these studies are consistent with information from tests and assessments: social deprivation and having English as an additional language are clearly more influential on outcomes than a child's ethnic group. Poverty continues to exert a negative influence throughout the early years, whereas children with EAL make better progress as their grasp of English improves.

Mothers' level of education is linked to better outcomes for children. The sorts of learning activities children do at home with their families (such as singing, reading stories, drawing and painting) are critical for children's outcomes in the early years. What parents do to help their young children learn can reduce the damaging influence of poverty on children's life chances.

The evidence supports initiatives aimed at improving the home learning environment for children, especially for children from disadvantaged backgrounds.

What helps children from different backgrounds to have a good experience in pre-school, and what works in improving outcomes?

Helping children to make a positive transition to pre-school and school gives them a good start in learning and social development. Children from minority backgrounds and children with EAL can experience greater challenges in adapting to a new environment and experiences.

Children benefit from early years provision that is sensitive to their needs, helps to introduce different experiences and provides culturally relevant learning opportunities. Culturally sensitive outreach work to minority groups could help to strengthen practitioners' understanding of home environments and improve communication between early years practitioners and families from minority groups.

Children who have English as an additional language face particular communication challenges. These can lead to withdrawal, frustration and poorer relationships with teachers. Effective interventions help these children to communicate, make progress and develop their English language skills. This has positive implications for attainment, social and behavioural outcomes. Bilingual staff can provide support, but this needs leadership and continuing professional development.

Early years settings can harness the skills of bilingual members of staff to help young children with EAL. Early years professionals could benefit from guidance and training on how to work effectively with children with EAL.

Effective pre-schools emphasise both social and cognitive development and focus on the needs of particular individuals and groups. Children in effective pre-schools spend two thirds of their time in child-initiated activities. Pedagogical approaches that capture children's interest and allow children to take charge of their own learning are linked to good outcomes and effective practice.

Early years settings are effective when they tailor the curriculum to meet individual needs and staff encourage children to initiate their own learning through play activities and get involved in 'sustained shared thinking'.

Given the fact that children from poor backgrounds and those with EAL have less developed language and literacy skills, the evidence suggests that these children need additional support to access the primary school curriculum.

Children can benefit from specific support with language and literacy that is appropriate for their developmental stage and tailored to meet their individual learning needs.

What's missing from the evidence base?

The review highlighted a numbers of areas that would benefit from more data and further research. These include:

- More evidence from national indicators on young children's enjoyment and safety.
- A greater range of evidence on children's emotional and social development, including evaluation of initiatives designed to improve sociability, well-being and resilience.

- A closer examination of the mechanisms, in addition to the home learning environment, that cause poverty to have such a pervasive impact on outcomes for young children.
- A focus on children's experiences, including collecting children's own views and experiences.
- Research investigating effective practice for improving children's outcomes within childminding.
- Studies of the impact of approaches designed to improve outcomes for children from diverse backgrounds.

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Appendix 1: Searching results and search strategy

This appendix contains details of the search results and strategy. The initial searches generated 259 titles. In response to feedback from the Theme Advisory Group, the main review team undertook searches of three databases of medical and health literature which yielded a further 188 relevant items. In addition, the Theme Advisory Group made 14 specific recommendations and a further four references were identified by the team from bibliographies contained in the searched items. In all, 465 items were identified and considered for inclusion in this review.

Well over half of the items identified in the searches were research reports. The remainder were policy documents, together with smaller numbers of theory papers, conference reports, opinion pieces and practice descriptions. Very few international comparative documents and literature reviews were identified through the searches. Other types of material included descriptions of ongoing research. The largest number of items identified was from the United Kingdom. A substantial number were from the US, with a smaller number from Canada, Australia and New Zealand. The research studies used a variety of designs including longitudinal, cross-sectional, case study, qualitative and mixed-methods approaches.

Items were prioritised for inclusion in the review on the basis of an initial coding. Items were then further prioritised for inclusion based on type of research design and relevance to the review questions. At this stage, references from the UK were given greater priority, although highly relevant items from other countries were also included. The robustness of the prioritised references was then considered, to determine final inclusion. This resulted in a final selection of 35 studies.

Search process

The first stage in the review process was for the Theme Lead to set the key review questions and search parameters for the initial scoping study and agree them with the National Foundation for Educational Research (NFER) team. The list of databases and sources to be searched was also agreed with the Theme Lead. Sets of keywords were selected from the British Education Index (BEI) and were supplemented with free text phrases. The sets comprised an early years set covering a range of concepts equating to the early years ‘stage’ and two sets of terms relating to diversity (such as race, religion, social class, culture and language). A set of terms relating to disability was built in order to exclude items relating to this from some searches because disability was the subject of a separate theme. Individual ethnic groups and religions were not searched for.

The keywords were adhered to as far as possible for all bibliographic databases, with closest alternatives selected where necessary. Web-based databases were searched using a more limited number of terms, enabling a simultaneous search across the three priority areas within the early years theme. A list of websites considered relevant to the search was compiled by the NFER team and supplemented by key organisations identified in the National Children’s Bureau (NCB) organisations database, the British Education Internet Resource Catalogue (BEIRC) and by others identified in the course of the bibliographic database searches. Current research was specifically searched for in the

CERUK Plus (education and children's services research) database, in the Research Register for Social Care and on the websites of key organisations. Members of the Theme Advisory Group were invited to suggest relevant documents, networks and websites.

The next stage in the process was to carry out searching across the specified databases. The database and web searches were conducted by information specialists. Initial screening was done at this stage to ensure the results conformed to the search parameters. The records selected from the searches were then loaded into a Reference Manager database and the data 'cleaned'. This included removing duplicates, checking citations and sourcing missing abstracts. The data was then transferred to an Excel spreadsheet.

At main review stage the existing searches were supplemented by the addition of three health and psychological databases, on the recommendation of the Theme Advisory Group. The new databases were Cumulative Index to Nursing and Allied Health Literature (Cinahl Plus), Medline and PsycInfo. The existing scoping study searches were replicated as far as possible, using similar keywords to those identified in British Education Index, using the MeSH thesaurus for Medline. Searches were limited to items published in the English language between 2000 and 2008.

Records selected from the searches were loaded into Eppi-Reviewer, which replaced the earlier Reference Manager and Excel software. All existing records for the scoping study were transferred into the new software.

Search strategy

The following section provides information on the keywords and search strategy for each database and web source searched. All scoping study searches were conducted by information specialists at NFER, with the exception of ChildData, which was searched by an information specialist at the National Children's Bureau. The additional searches for the main review were conducted by information specialists at the Social Care Institute for Excellence and NFER. The keywords used in the searches, together with a brief description of each of the databases searched, are outlined below. Keywords were not exploded due to time limitations, although narrower terms were used wherever possible and have been listed in the search strategy. This is denoted as (+NT). The following conventions have also been used: (ft) denotes that free-text search terms were used and mp=title, original title, abstract, name of substance word, or subject heading word. Author searches and reference harvesting (following up references cited in text) were also undertaken.

Applied Social Sciences Index and Abstracts (ASSIA)
(searched via CSA 18/07/08)

ASSIA is an index of articles from over 500 international English-language social science journals.

Early years set

#1	early childhood education
#2	early years (ft)
#3	under fives (ft)
#4	young children
#5	preschools
#6	nursery schools
#7	nursery classes
#8	kindergartens
#9	childcare
#10	childcare centres
#11	day care
#12	primary schools
#13	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12

Race, culture, language set

#14	race
#15	ethnic groups
#16	ethnic differences
#17	social integration
#18	multicultural education
#19	cultural differences
#20	ethnicity
#21	racial differences
#22	English as a second language
#23	bilingualism
#24	multilingualism
#25	religious groups
#26	religions
#27	#14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26
#28	#13 and #27

Outcomes, social class set

#29	academic achievement
#30	narrowing the gap (ft)
#31	what works
#32	free school meals (ft)
#33	poverty
#34	child poverty

#35 isolation
#36 social deprivation (ft)
#37 social exclusion (ft)
#38 socioeconomic status
#39 social background
#40 social integration
#41 #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40
#42 #13 and #41

Australian Education Index (AEI)

(searched via Dialog 09/07/08)

AEI is Australia's largest source of education information. It covers reports, books, journal articles, online resources, conference papers and book chapters.

Early years set

#1 under fives (ft)
#2 early childhood education
#3 young children
#4 preschool centres or preschool children or preschool education or preschool curriculum or preschool units
#5 kindergarten or kindergarten children
#6 nursery schools
#7 playgroups
#8 childcare
#9 day care services
#10 childrens centres (ft)
#11 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10

Race, culture, language set

#12 race
#13 ethnic groups
#14 social-integration
#15 multicultural education
#16 cultural background
#17 cultural differences
#18 ethnicity
#19 racial differences
#20 ethnic differences
#21 English-second-language
#22 bilingualism
#23 multilingualism
#24 limited-English-speaking
#25 non-English speaking background
#26 religious-cultural groups
#27 religious differences

#28 religion
#29 #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28
#30 #11 and #29

Outcomes/social class set

#31 outcomes of education
#32 educational attainment
#33 narrowing the gap (ft)
#34 what works (ft)
#35 economically disadvantaged or educationally disadvantaged or disadvantaged
#36 low income groups
#37 poverty
#38 child poverty (ft)
#39 social isolation
#40 social deprivation (ft) or social exclusion (ft)
#41 socioeconomic status or socioeconomic background
#42 social differences
#43 social background
#44 social integration
#45 #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44
#46 #11 and #45

Note: A number of the AEI ‘hits’ were blank records with the message ‘information withdrawn by the provider’.

British Education Index (BEI)

(searched via Dialog 08/07/08)

BEI provides information on research, policy and practice in education and training in the UK. Sources include over 300 journals, mostly published in the UK, plus other material including reports, series and conference papers.

Early years set

#1 early childhood education
#2 early years (ft)
#3 under fives (ft)
#4 young children
#5 preschool education
#6 preschool children
#7 preschool playgroups
#8 nurseries
#9 nursery schools
#10 nursery school curriculum
#11 nursery school education

#12 nursery classes
#13 kindergarten
#14 kindergarten children
#15 childcare
#16 playgroups
#17 day nurseries
#18 childrens centres
#19 foundation stage (ft)
#20 primary schools
#21 primary education
#*22* #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or # 15 or #16 or #17 or #18 or #19 or #20 or #21

Race, culture, language set

#23 race
#24 ethnic groups (note: individual groups not searched)
#25 social-integration
#26 multicultural education
#27 cultural background
#28 cultural differences
#29 ethnicity
#30 racial differences
#31 English-second-language
#32 bilingualism
#33 multilingualism
#34 limited English-speaking
#35 religious-cultural groups
#36 religious differences
#37 religion (note: individual religions not searched)
#38 #23 or #24 or #25 or #26 or #27 or #28 or #29 or 30# or #31 or #32 or #33 or #34 or #35 or #36 or #37

Disabilities/SEN set (created in order to exclude these from results)

#39 disabilities
#40 disability
#41 special educational needs
#42 special needs
#43 learning difficulties
#44 #39 or #40 or #41 or #42 or #43
#45 (#22 and #38) not #44

Outcomes/social class set

#46 outcomes of education
#47 educational attainment
#48 narrowing the gap (ft)
#49 what works (ft)

#50 economically disadvantaged
#51 free school meals (ft)
#52 low income groups
#53 poverty
#54 child poverty (ft)
#55 social isolation
#56 disadvantaged
#57 social deprivation (ft)
#58 social exclusion (ft)
#59 socioeconomic status
#60 educationally disadvantaged
#61 social differences
#62 social background
#63 #46 or #47 or #48 or #49 or #50 or #51 or #52 or #53 or #54 or #55 or #56 or #57 or #58 or #59 or #60 or #61 or #62
#64 (#63 and #22) not #44

British Education Internet Resource Catalogue (BEIRC)

(searched 09/07/08)

The British Education Internet Resource catalogue is a freely accessible database of information about professionally evaluated and described internet sites that support educational research, policy and practice.

#1 early childhood education or preschool education or daycare centres or kindergarten or nursery schools or nursery school curriculum or play groups or primary education or young children

CERUK Plus

(searched 22/07/08)

The CERUK Plus database provides access to information about current and recently completed research, PhD level work and practitioner research in the field of education and children's services.

#1 early childhood education or early childhood education and care or preschool education or preschool children

ChildData

(search completed 30/07/08)

ChildData is the National Children's Bureau database, containing details of around 35,000 books, reports and journal articles about children and young people.

#1 preschool children

#2	preschool education
#3	day care
#4	early childhood care and education
#5	early childhood services
#6	early primary school age
#7	children's centres
#8	nursery schools
#9	nursery classes
#10	educare (ft)
#11	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10
#12	#11 and multicultural (ft)
#13	#11 and multiethnic
#14	#11 and culture
#15	#11 and equality (ft)
#16	#11 and diversity
#17	#11 and religions
#18	#11 and poverty
#19	#11 and social exclusion

Cumulative Index to Nursing and Allied Health Literature (Cinahl Plus)

(searched via EBSCO Host 14/10/08)

Cinahl Plus is the most comprehensive resource for nursing and allied health literature.

Early years set

#1	early years (ft)
#2	under fives (ft)
#3	child, preschool
#4	schools, nursery
#5	schools, elementary or kindergarten (ft)
#6	Students, elementary
#7	playschool (ft)
#8	child day care
#9	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8

Race, culture, language set

#10	cultural diversity or cultural sensitivity or cultural values
#11	cultural competence
#12	ethnic groups (+NT)
#13	multilingualism
#14	communication barriers
#15	race relations (+NT)
#16	English as a second language
#17	#10 or #11 or #12 or #13 or #14 or #15 or #16

Outcomes, social class set

#18 academic performance (+NT)
#19 educational status
#20 socioeconomic factors (+NT)
#21 #18 or #19 or #20

Disabilities/SEN set (created in order to exclude these from results)

#22 child, disabled
#23 mental retardation (+NT)
#24 child development disorders (+NT) or child development disorders, pervasive (+NT)
#25 #22 or #23 or #24
#26 (#9 and #17) not #25
#27 (#9 and #21) not #25

Education Resources Information Center (ERIC)

(searched via Dialog 10/07/08)

ERIC is sponsored by the United States Department of Education and is the largest education database in the world. Coverage includes research documents, journal articles, technical reports, program descriptions and evaluations and curricula material.

Early years set

#1 early childhood education
#2 early years (ft)
#3 under fives (ft)
#4 young children
#5 preschool education
#6 preschool children
#7 preschool playgroups (ft)
#8 nursery schools
#9 kindergarten
#10 child-care
#11 child-care-centers
#12 primary schools
#13 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12

Race, culture, language set

#14 race
#15 ethnic groups
#16 social integration
#17 multicultural education
#18 cultural background
#19 cultural differences

#20 ethnicity
#21 racial differences
#22 English-second-language
#23 bilingualism
#24 multilingualism
#25 limited-English-speaking
#26 religious-cultural groups
#27 religion
#28 #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27

Outcomes, social class set

#29 outcomes of education
#30 educational attainment
#31 narrowing the gap (ft)
#32 what works (ft)
#33 economically disadvantaged
#34 free school meals (ft)
#35 low income groups
#36 poverty
#37 child poverty (ft)
#38 social isolation
#39 disadvantaged
#40 social deprivation (ft)
#41 social exclusion (ft)
#42 socioeconomic status
#43 educationally disadvantaged
#44 social differences
#45 socioeconomic background
#46 social integration
#47 #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46

Disabilities, SEN set

#48 disabilities
#49 special needs
#50 learning disabilities
#51 learning problems
#52 #48 or #49 or #50 or #51
#53 #28 or #47
#54 (#53 and #13) not #52

Educational Evidence Portal (EEP)
(searched 13/07/08)

EEP enables users to search for educational evidence from a range of reputable sources via a single search.

#1	early years

Making Research Count
(browsed 13/07/08)

Making Research Count is a collaborative national research dissemination network based regionally in the social work departments of nine UK universities. *Research news*, a newsletter which highlights recent or current research undertaken within the Making Research Count network, was browsed.

Medline
(searched via Ovid SP 29/09/08)

Medline is the primary source of international literature on biomedicine and health care.

#1	early years
#2	under fives
#3	schools (+NT) or nursery
#4	kindergarten mp.
#5	playschool mp.
#6	Child Day Care Centers (+NT)
#7	cultural diversity (+NT)
#8	ethnic* mp.
#9	cultural characteristics (+NT)
#10	multilingualism (+NT)
#11	communication barriers (+NT)
#12	race relations (+NT)
#13	English as a second language mp.
#14	esl mp.
#15	#13 or #14
#16	achievement (+NT)
#17	educational status (+NT)
#18	socioeconomic factors (+NT)
#19	poverty (+NT)
#20	narrowing the gap mp.
#21	education, special (+NT)
#22	learning difficulties mp.
#23	developmental disabilities (+NT)
#24	mental retardation (+NT)
#25	#22 or #23 or #24

#26	disabled children (+NT)
#27	special needs mp.
#28	#1 or #2 or #3 or #4 or #5 or #6
#29	#7 or #8 or #9 or #10 or #11 or #12 or #15
#30	#16 or #17 or #18 or #19 or #20
#31	#21 or #25 or #26 or #27
#32	(#28 and #29) not #31
#33	(#28 and #30) not #31

PyscINFO

(searched via Silverplatter 24/09/08)

PsycINFO contains references to the psychological literature including articles from over 1,300 journals in psychology and related fields, chapters and books, dissertations and technical reports.

Early childhood set

#1	child-care
#2	child-day-care
#3	kindergarten-students
#4	nursery-school students
#5	nursery-schools
#6	preschool-students
#7	preschool-education
#8	play group or playgroup (ft)
#9	young children (ft)
#10	childrens cent* (ft)
#11	foundation stage (ft)
#12	early years (ft)
#13	early childhood education (ft)
#14	under fives (ft)
#15	elementary-schools
#16	primary-school-students
#17	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16

Race, culture, language set

#18	language-proficiency
#19	bilingualism
#20	multilingualism
#21	English-as-second-language
#22	cross-cultural-differences
#23	multicultural-education

#24 racial-and-ethnic-differences
#25 religion
#26 religious-groups
#27 #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26
#28 #17 and #27

Outcomes, social class set

#29 poverty
#30 lower-income-level
#31 disadvantaged
#32 academic-achievement
#33 social differences
#34 social background
#35 free school meals (ft)
#36 child poverty (ft)
#37 disadvantaged (ft)
#38 outcomes of education (ft)
#39 narrowing the gap (ft)
#40 what works (ft)
#41 social-integration
#42 socioeconomic-status
#43 social-deprivation
#44 social-isolation
#45 #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44
#46 #17 and #45

Research in Practice

(browsed 13/07/08)

Research in Practice is the largest children and families research implementation project in England and Wales. It is a department of the Dartington Hall Trust and is run in collaboration with the Association of Directors of Children's Services, the University of Sheffield and a network of over 100 participating agencies in the UK. The EvidenceBank and publications sections were browsed.

Research Register for Social Care (RRSC)

(searched 13/07/08)

The RRSC provides access to information about ongoing and completed social care research that has been subject to independent ethical and scientific review.

#1 pre-school children or early years (ft)
#2 childcare (ft)
#3 integrated services

Note: student research excluded.

Social Care Online

(searched 13/07/08)

Social Care Online is the Social Care Institute for Excellence's database, covering an extensive range of information and research on all aspects of social care. Content is drawn from a range of sources including journal articles, websites, research reviews, legislation and government documents and service user knowledge.

#1	pre-school children
#2	integrated services and early years (ft)
#3	early years (ft) and health

Social Policy and Practice

(searched via Silverplatter 21/07/08)

Social Policy and Practice is a bibliographic database with abstracts covering evidence-based social policy, public health, social services, and mental and community health. Content is mainly from the UK, with some material from the USA and Europe.

#1	early years or preschool education or primary education
#2	under fives or early childhood education or kindergarten
#3	nursery or foundation stage or childcare
#4	#1 or #2 or #3
#5	race or ethnic groups or social integration
#6	multicultural education or cultural background or cultural differences
#7	ethnicity or racial differences or English second language
#8	bilingualism or multilingualism or religion
#9	religious groups
#10	#5 or #6 or #7 or #8 or #9
#11	#4 and #10
#12	outcomes of education or educational attainment or narrowing the gap
#13	what works or economically disadvantaged or free school meals
#14	low income groups or poverty or child poverty
#15	social isolation or disadvantaged or social deprivation
#16	social exclusion or socioeconomic status or educationally disadvantaged
#17	social differences or social background or social integration
#18	#12 or #13 or #14 or #15 or #16 or #17
#19	#4 and #18

Appendix 2: Technical details of the Foundation Stage Profile analysis

Glossary of terms

Variance

A measure of the spread of values between different objects in the same data set. It is based on the squares of the differences between individual values and the overall mean, and is always greater than or equal to 0. A variance of 0 implies that all values are identical. Multi-level models allow us to estimate variances at different levels. For example, the pupil level variance is a measure of the variability in outcomes between different pupils, and the school level variance measures the variability between the average outcomes for different schools. These variances are generally reduced by the addition of background variables for the model, which tend to 'explain' some of the variability.

Multi-level modelling

Multi-level modelling is a development of *multiple regression techniques*. Multiple regression techniques study the relationships that are identified between variables in terms of the dependency of a single variable (the dependent or *outcome variable*) on a set of other explanatory or *background variables*. In multi-level modelling, the assumption is made that the data is collected from a hierarchical system, with, for example, some data relating to individual children and some relating to schools. Random variations can occur at any of these levels (see notes on *standard error* and *residuals* below), and can be fitted in the model. The model can therefore study the relationships between outcome variables and background variables, taking into account any random variations that might occur at child or school level.

Outcome variable

A numerical measure of some desired educational outcome, computed for each individual being modelled. It is assumed to be single-valued and continuous. Thus children's outcomes, such as the development in different learning areas that is observed in the Foundation Stage Profile (FSP), must be converted to a single-valued score for use in the model.

Background variable

This is a numerical measure of some educational or social factor that is believed to be influencing the outcome variable, either positively or negatively. A number of background variables may be included in the model, and may relate to children, schools or other levels. Background variables may either be continuous or dichotomous. An example of the latter is an 'indicator' variable which has the variable 1 if the individual or unit belongs to a particular group (children in receipt of free school meals) and 0 otherwise (children not in receipt of free school meals). Most of the background variables for this study were dichotomous indicator variables.

Coefficient

One of the results of the modelling process is a coefficient, estimated for each background variable, which measures the strength of its influence on the outcome variable. It should be regarded as the rate at which the outcome variable increases per unit increase in the background variable. Indicator variables have coefficients which measure the average difference between being in the given group versus belonging to the reference (control) group. Therefore a coefficient of 0.8007 (see Table 1) for sex indicates the average difference between boys and girls for the selected outcome variable (in this case, that boys have four fifths the probability of girls of achieving 78 or more points at Foundation Stage).

Standard error

Each coefficient or variance computed by the modelling process is an estimate of its corresponding 'true' value based on the data available, and is therefore liable to be in error. The model also computes a standard error for each estimated parameter which measures the amount by which it might be in error. As a rule of thumb, coefficients less than twice their standard error in absolute value are not regarded as significantly different from zero.

Residual

The residual or error term in the model for an object at any level (for example, pupil or school) is the amount of the outcome variable which is not predicted by the overall mean or the background variables. In other words, it is what is 'left over' after the model has been fitted. Residuals sum to zero for objects at a given level, and tend to become smaller as more background variables are fitted.

Odds ratio multiplier

Logistic regression gives an *odds ratio,* which compares the odds of an event (for example achieving a certain threshold) associated with one group of pupils, with the odds for another group. An odds ratio close to one shows there is little difference between two groups, whereas an odds ratio significantly greater or less than one indicates differences between the groups.

Effect size

An effect size is a way of displaying the effect of a number of variables that may have different scales. The effect size is the percentage change in the standard deviation of the outcome, for one standard deviation change in the independent variable.

The multi-level modelling process

NFER constructed a multi-level model to take account of the fact that some variables are inter-related and clustered together. Characteristics in the model included: the child's age, sex, special educational needs (SEN) status, being in receipt of free school meals and whether he or she lived in an area of high deprivation. It also included school-level variables, such as school type and size.

Three different sets of analyses were undertaken at this stage:

1. Basic frequency analysis to provide a profile of the children in the Foundation Stage Profile (FSP) for 2007 (Figures 7 and 8).
2. Analysis of variance to assess the difference in development scores between different groups of young people (on individual learning area scores and on total FSP score).
3. Multi-level logistic regression to identify the probability of any child achieving 78 or more points, including six points in each of the Personal, Social and Emotional Development (PSE) and Communications, Language and Literacy (CLL) measures (DCSF National Indicator 72), controlling for background characteristics at pupil level (age, sex, ethnicity, receipt of free school meals, SEN status) and at school level (school size and type, for example).

The data to which the research team had access is hierarchical (variables can be identified at distinct levels – including the school and the student). This means that a multi-level modelling approach, which recognises differences at each level, can be used for the data analysis. In multi-level modelling, the process is begun by identifying an outcome variable (for example pupil development in a particular learning area) then, for each level of the data, the background variables that might be thought to influence that outcome are defined. Regardless of the outcome variables that are selected, it is expected that there will be differences of outcome at each level:

- individuals will be different from each other
- individuals within one school will be collectively different from those in other schools
- individuals within schools in a region will be collectively different from those in schools in a different region.

These differences can be measured in terms of the extent to which each outcome variable is 'conditioned' by the background variables at each level. For example, the effect that having an identified special need is having on any pupil can be assessed by comparing the mean observed difference in a pupil's development with the expected mean for all

children in the cohort, taking into account the relevant background variables at school and pupil level (including sex, ethnicity and receipt of free school meals).

By analysing the data in this way, it is possible to see the overall effects of each of the variables and identify the variables which have a significant impact. However, it should be remembered that:

- No multi-level model is likely to include every possible variable. The background variables included in the models are those available on the Foundation Stage Profile dataset and on the Schools' Annual Census and are those which are known from past and current research to be relevant to pupil outcomes.
- The model does not identify causality in a definitive way, but simply indicates significant factors which appear to bear some relationship to the outcomes. For instance, the analysis of the data indicated that young people in receipt of free school meals had lower levels of attainment than young people not in receipt of free school meals. This does not mean that being in receipt of free school meals (a proxy for socio-economic disadvantage) caused lower levels of attainment, but simply indicates that the attainment amongst such young people was lower than would have been expected by comparison with young people with the same background characteristics.
- A multi-level model is only as good as our understanding of the educational processes at work in influencing children's development.

The outcome variable

This was defined as the probability of any child achieving 78 or more points, including six points in each of the Personal, Social and Emotional Development (PSE) and Communications, Language and Literacy (CLL) measures and is based on National Indicator 72. As the variable is dichotomous (a child either did or did not achieve the score), the model chosen was a logistic one.

The background variables

Table 1 lists the range of background variables used in the models and gives the scale of the dataset in which the variable appeared (note, for example, that, although FSP data was available for 527,405 children, data on free school meals and on sex was only available for 521,909 children), the range (mostly 0 to 1), mean and standard deviation for each variable. Some children for whom only incomplete or questionable data was available had to be removed from the model. For example, one child (see below) was recorded as having an age that was 33.5 months below the average age of 53.5 months. This would have made the child only 20 months old – too young to be included in the Foundation Stage Profile. While this was probably the result of a previous transcription error, it meant the child could not be included in the dataset for analysis.

Table 1. List of variables

Label	N	Min	Max	Mean	Std. dev.
LEA number	527405	201.000	938.000	665.406	271.689
School ID	527405	1000.000	595051.000	2747.860	5796.168
Pupil ID	527405	1.000	175.000	23.330	18.700
Pupil-level background variables					
Eligibility for free school meals	521909	0.000	1.000	0.156	0.363
Female	521995	0.000	1.000	0.486	0.500
SEN – no statement	521909	0.000	1.000	0.084	0.277
SEN – with statement	521909	0.000	1.000	0.011	0.104
African	527405	0.000	1.000	0.027	0.163
Other Asian background	527405	0.000	1.000	0.012	0.109
Other black background	527405	0.000	1.000	0.006	0.076
Other	527405	0.000	1.000	0.013	0.112
Other white background	527405	0.000	1.000	0.038	0.190
Other mixed background	527405	0.000	1.000	0.015	0.120
Bangladeshi	527405	0.000	1.000	0.016	0.125
Black Caribbean	527405	0.000	1.000	0.013	0.114
Chinese	527405	0.000	1.000	0.003	0.055
Gypsy/Roma	527405	0.000	1.000	0.001	0.037
Indian	527405	0.000	1.000	0.025	0.155
Not obtained	527405	0.000	1.000	0.005	0.069
Irish	527405	0.000	1.000	0.003	0.058
Pakistani	527405	0.000	1.000	0.041	0.199
Refused	527405	0.000	1.000	0.006	0.075
Traveller of Irish heritage	527405	0.000	1.000	0.001	0.029
White & Asian	527405	0.000	1.000	0.009	0.094
White & black African	527405	0.000	1.000	0.005	0.069
White & black Caribbean	527405	0.000	1.000	0.012	0.110
White	527405	0.000	1.000	0.725	0.447
Age in months	521995	20.000	162.000	53.514	3.519
Age in months (centred)	521995	–33.514	108.486	0.000	3.519
Constant term	527405	1.000	1.000	1.000	0.000
Score	526844	0.000	1.000	0.793	0.405
IDACI (centred)	517711	–22.250	76.740	0.000	18.401
School-level background variables					
School type – Infant/First	527405	0.000	1.000	0.243	0.429
School type – Primary/Combined	527405	0.000	1.000	0.736	0.441
School type – Special school	527405	0.000	1.000	0.004	0.064
Missing school type	527405	0.000	1.000	0.012	0.109
School type – other	527405	0.000	1.000	0.005	0.071
School size – small	527405	0.000	1.000	0.334	0.472

School size – middle	527405	0.000	1.000	0.326	0.469
School size – large	527405	0.000	1.000	0.328	0.469
Missing school size	527405	0.000	1.000	0.012	0.111
Primary and middle-sized school	527405	0.000	1.000	0.235	0.424
Primary and large school	527405	0.000	1.000	0.300	0.458

The model

The sample comprised 521,995 children who had both a summary profile on the FSP and matched data on the Schools' Census for other background characteristics.[9] The logistic model of pupil outcomes presented here included data obtained from a number of sources:

- Data on young people's sex, eligibility for free school meals, special educational needs and ethnicity, obtained from the Foundation Stage Profile (FSP).
- Background data obtained from the NFER's Register of Schools (ROS). This included data on schools' location, size, age range, management type and school type (infant, primary, special.
- Data on young people's home neighbourhood using the IDACI (Income Deprivation Affecting Children Index). This is provided directly by the DCSF and already matched to the National Pupil Database. It is a measure of deprivation and shows the percentage of children living in each Super Output Area (SOA) that live in families that are income-deprived (those in receipt of Income Support, Income-based Jobseeker's Allowance, or Working Families' Tax Credit or Disabled Person's Tax Credit below a given threshold).

The analysis focused on the development outcomes for children at the end of the Foundation Stage. It should be noted that these assessments are made by teacher observation and are, therefore, somewhat subjective, even though clear guidelines for assessment are given.

The construction of the models was an iterative, stepwise process. To begin with, each model was constructed at two levels, with simple residuals at school and pupil levels. In order to identify all significant variables, a procedure was adopted whereby the models were first set up without the background variables, in order to establish the amount of variance at school and pupil level for each of the outcome variables. Subsequently, sets of the pupil-level variables were included and those that were not significant were removed. School-level variables were then fitted and all non-significant variables were removed in order to get the most 'parsimonious' overall model (that is, the model that would explain the greatest amount of variance with the removal of all non-significant variables).

During this process, a number of further strategies were introduced at each stage in order to make sure that the various derived variables and background data were not overly weighted in the models. As in all such modelling, background variables were checked to examine their interaction with other variables and, where necessary, specific interaction variables were derived for inclusion in the analysis.

[9] An additional 5,410 (one per cent of the sample) had no pupil reference number on the Schools' Census, although the FSP records their gender. The reason for the omission of some children from the Census records is not recorded, but is likely to include children who entered Foundation Stage education after the completion of the Census in January 2007.

The model outcome

Figure 4 provides the equation for the final logistic regression model. The model did not explain all of the variation in outcomes at pupil or school level, suggesting that other variables not available to the analysis (such as whether the language spoken at home was a language other than English) may have had a significant impact on children's observed outcomes.

Table 2 provides estimates of the fixed coefficients for the model, including data on the standard error and the upper and lower limits of the estimates. Table 3 provides the mean odds ratio and the comparative effect size for each coefficient.

Figure 4. Final logistic model for National Indicator 72 from data in the Foundation Stage Profile

$$GoodOV_{ijk} \sim Binomial(bcons.1_{ijk}, \pi_{ijk})$$

$$\begin{aligned}logit(\pi_{ijk}) = {} & \beta_{0jk}decons + 0.801(0.007)gend_{ijk} + -0.014(0.000)idaci\_c_{ijk} + 0.163(0.001)ageMonths\_c_{ijk} + -0.705(0.011)fsm\_07_{ijk} + -1.908(0.017)sennotstat_{ijk} + \\ & -3.530(0.080)senstat_{ijk} + -0.258(0.047)othbl_{ijk} + -0.481(0.019)othwhite_{ijk} + -0.609(0.033)bang_{ijk} + -0.219(0.059)ch_{ijk} + -2.092(0.132)gypsy_{ijk} + -0.590(0.022)pak_{ijk} + \\ & -1.870(0.163)irishtrav_{ijk} + -3.803(0.621)Special_{jk} + -0.224(0.023)af_{ijk} + -0.297(0.032)othas_{ijk} + -0.524(0.032)other_{ijk} + -0.250(0.032)carab_{ijk} + -0.297(0.054)NObt_{ijk} + \\ & -0.162(0.045)ref_{ijk} + -0.184(0.085)Size\_miss_{jk} + -0.297(0.135)OtherSch2\end{aligned}$$

$$\beta_{0jk} = -0.275(0.034) + v_{0k} + u_{0jk}$$

$$\begin{bmatrix} v_{0k} \end{bmatrix} \sim N(0, \Omega_v) : \Omega_v = \begin{bmatrix} 0.150(0.019) \end{bmatrix}$$

$$\begin{bmatrix} u_{0jk} \end{bmatrix} \sim N(0, \Omega_u) : \Omega_u = \begin{bmatrix} 0.951(0.013) \end{bmatrix}$$

$$var(GoodOV_{ijk} | \pi_{ijk}) = \pi_{ijk}(1 - \pi_{ijk})/bcons.1_{ijk}$$

Table 2. Coefficients for logistic model: 78 + points in the Foundation Stage Profile

Label	Estimate	Standard error	Sig.	Min.	Max.
Baseline	–0.2747	0.0339	*	–0.341	–0.208
Female	0.8007	0.00676	*	0.787	0.814
IDACI (centred)	–0.01436	0.000288	*	–0.015	–0.014
Age in months (centred)	0.163	0.000991	*	0.161	0.165
Eligibility for free school meals	–0.705	0.01077	*	–0.726	–0.684
SEN no statement	–1.908	0.01693	*	–1.941	–1.875
SEN with statement	–3.53	0.07991	*	–3.687	–3.373
Other black background	–0.2584	0.04678	*	–0.350	–0.167
Other white background	–0.4809	0.01918	*	–0.518	–0.443
Bangladeshi	–0.6092	0.03337	*	–0.675	–0.544
Chinese	–0.2195	0.05939	*	–0.336	–0.103
Gypsy/Roma	–2.092	0.1317	*	–2.350	–1.834
Pakistani	–0.5903	0.02244	*	–0.634	–0.546
Traveller of Irish heritage	–1.87	0.1634	*	–2.190	–1.550
School type – Special school	–3.803	0.6212	*	–5.021	–2.585
African	–0.2237	0.02339	*	–0.270	–0.178
Other Asian background	–0.2966	0.032	*	–0.359	–0.234
Other	–0.5239	0.03216	*	–0.587	–0.461
Black Caribbean	–0.2496	0.03192	*	–0.312	–0.187
Not obtained	–0.2972	0.05429	*	–0.404	–0.191
Refused	–0.1617	0.04495	*	–0.250	–0.074
Missing school size	–0.1838	0.08475	*	–0.350	–0.018
School type – Other	–0.2968	0.1349	*	–0.561	–0.032

Table 3. Odds ratios (multipliers) and comparative effect sizes for logistic model: 78 + points in the Foundation Stage Profile

Label	Odds multiplier				Comparative effect sizes		
Baseline	Lower	Mean	Upper	SD	Lower	Mean	Upper
Female	2.198	**2.227**	2.257	0.500	0.394	0.400	0.407
IDACI (centred)	0.985	**0.986**	0.986	18.401	–0.275	–0.264	–0.254
Age in months (centred)	1.175	**1.177**	1.179	3.519	0.567	0.574	0.581
Eligibility for free school meals	0.484	**0.494**	0.505	0.363	–0.263	–0.256	–0.248
SEN – no statement	0.144	**0.148**	0.153	0.277	–0.537	–0.528	–0.519
SEN – with statement	0.025	**0.029**	0.034	0.104	–0.385	–0.369	–0.352
Other black background	0.705	**0.772**	0.846	0.076	–0.026	–0.020	–0.013
Other white background	0.595	**0.618**	0.642	0.190	–0.099	–0.091	–0.084
Bangladeshi	0.509	**0.544**	0.581	0.125	–0.084	–0.076	–0.068
Chinese	0.715	**0.803**	0.902	0.055	–0.019	–0.012	–0.006
Gypsy/Romany	0.095	**0.123**	0.160	0.037	–0.087	–0.077	–0.068
Pakistani	0.530	**0.554**	0.579	0.199	–0.126	–0.117	–0.109
Traveller of Irish Heritage	0.112	**0.154**	0.212	0.029	–0.062	–0.053	–0.044
School type – Special school	0.007	**0.022**	0.075	0.064	–0.321	–0.243	–0.165
African	0.764	**0.800**	0.837	0.163	–0.044	–0.036	–0.029
Other Asian background	0.698	**0.743**	0.791	0.109	–0.039	–0.032	–0.025
Other	0.556	**0.592**	0.631	0.112	–0.066	–0.059	–0.052
Black Caribbean	0.732	**0.779**	0.829	0.114	–0.036	–0.028	–0.021
Not obtained	0.668	**0.743**	0.826	0.069	–0.028	–0.021	–0.013
Refused	0.779	**0.851**	0.929	0.075	–0.019	–0.012	–0.006
Missing school size	0.705	**0.832**	0.982	0.111	–0.039	–0.020	–0.002
School type – Other	0.571	**0.743**	0.968	0.071	–0.040	–0.021	–0.002

Figure 5. Effect size of different variables on the probability of achieving a score of 78 or more points on the Foundation Stage Profile with at least six points in each PSE and CLL area

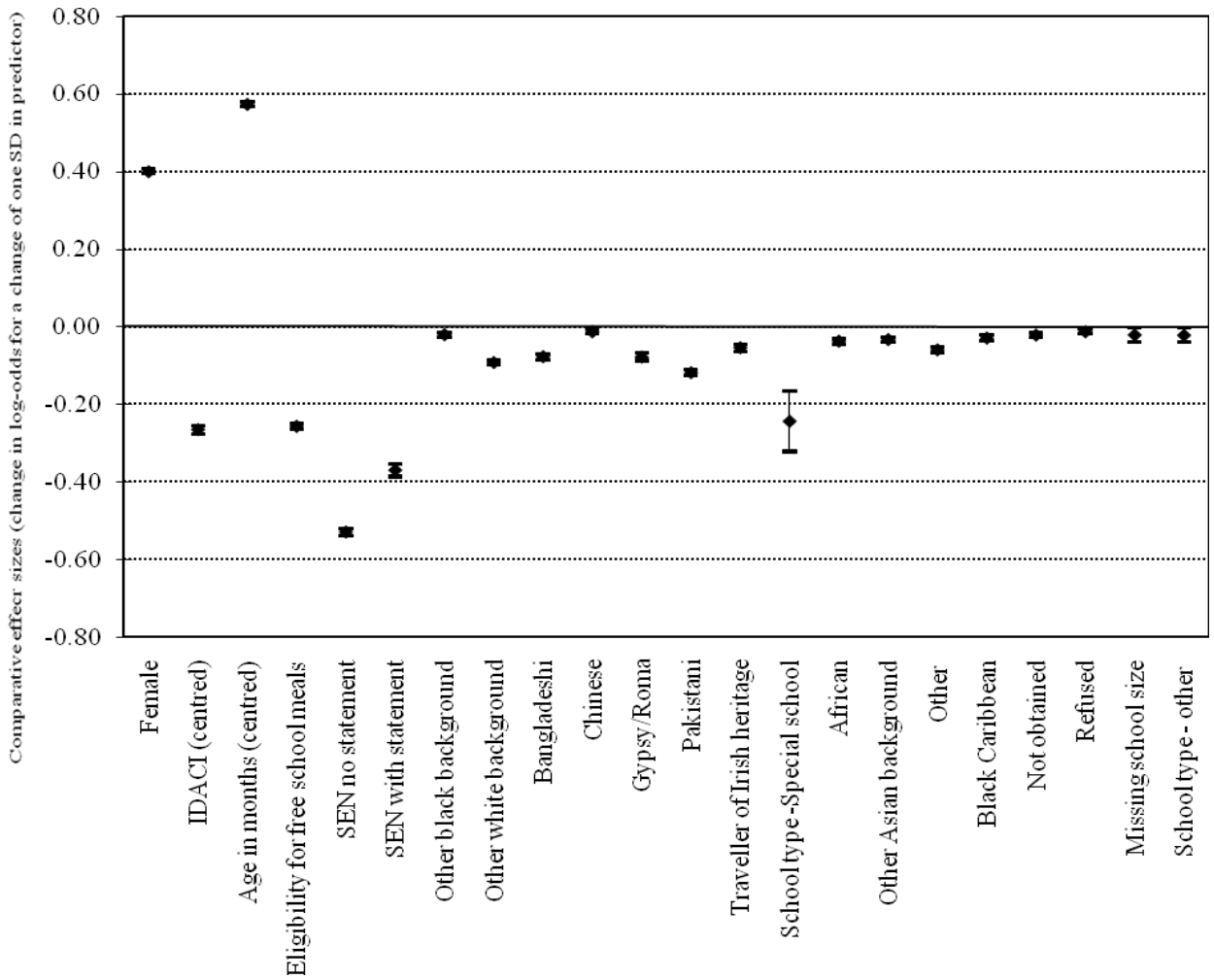


Figure 6. Odds ratios for achieving a score of 78 or more points on the Foundation Stage Profile, with at least six points in each PSE and CLL area

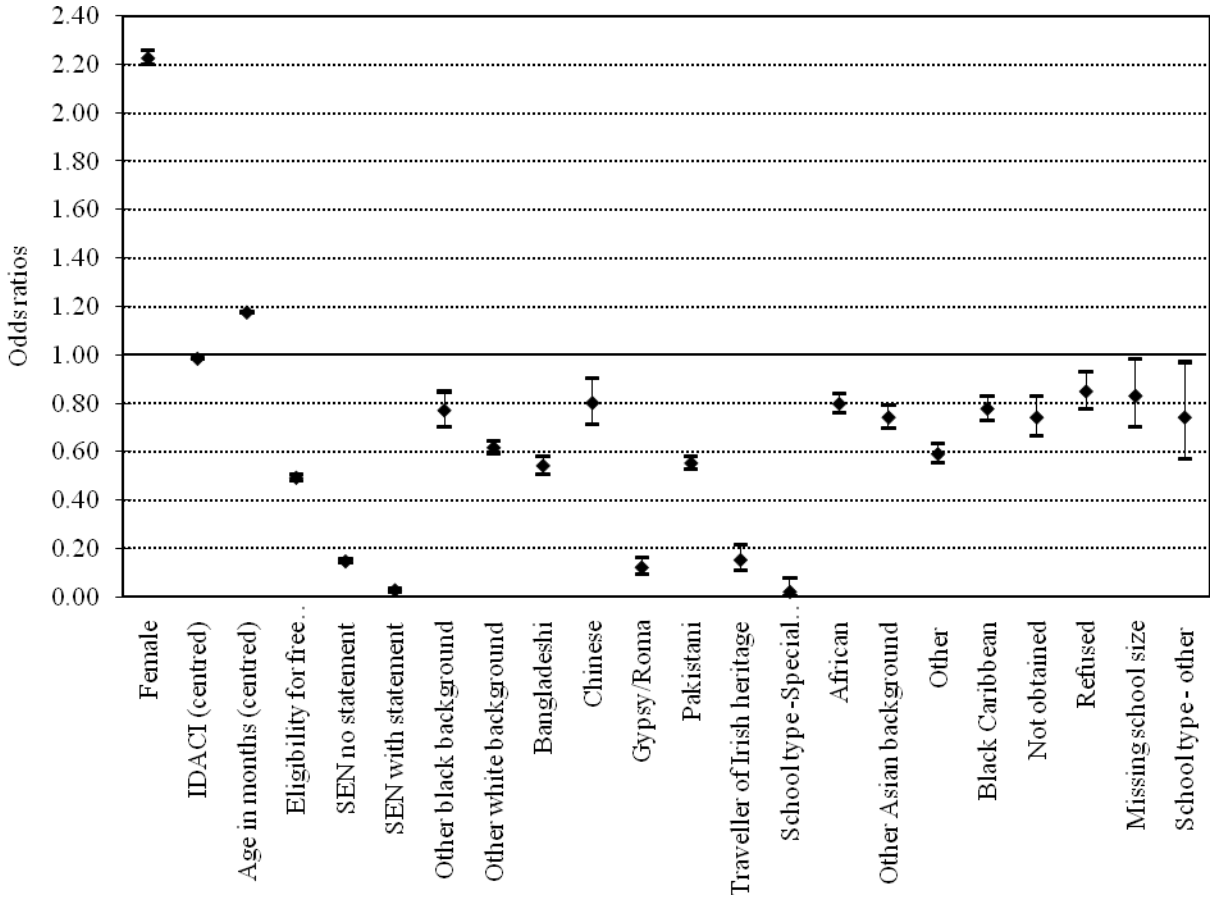


Figure 7. Probability of good achievement in the Foundation Stage Profile for a white boy with/without free school meals (FSM)

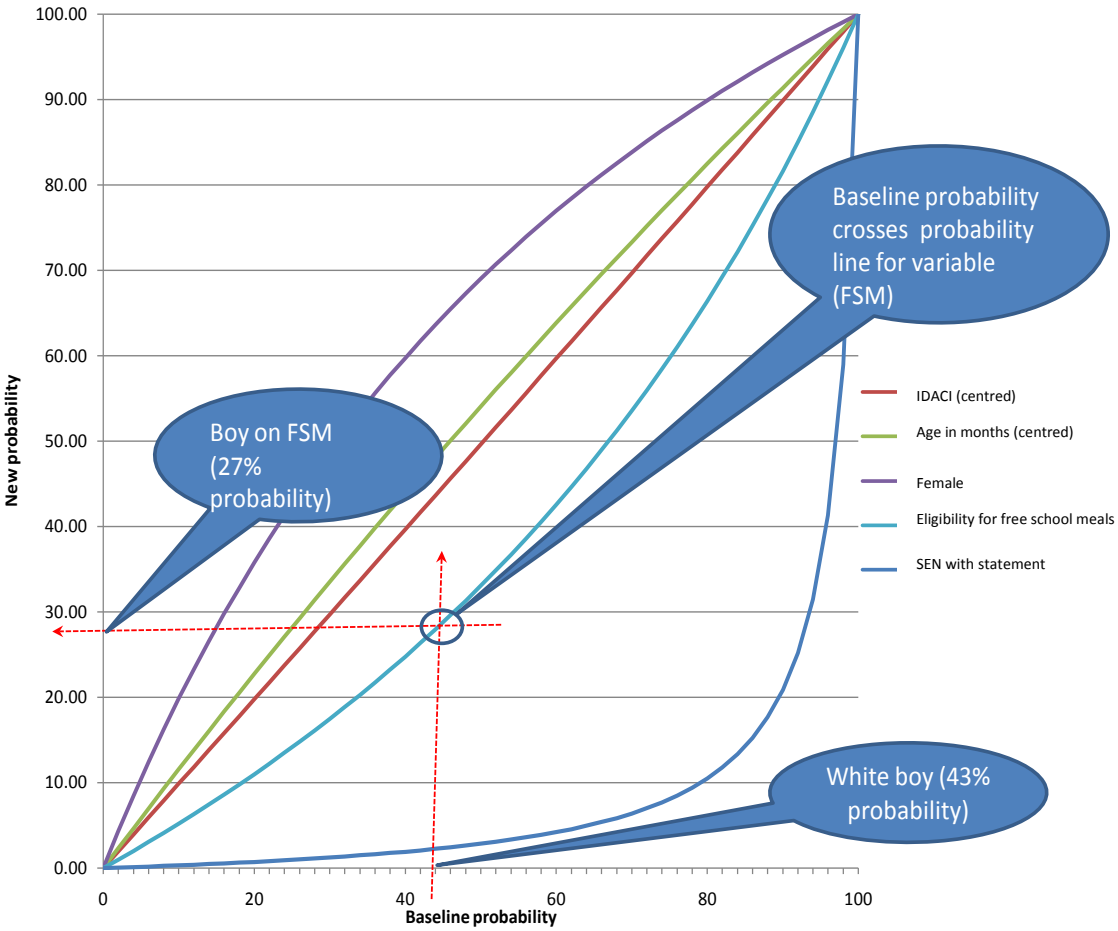


Figure 8. Probability of good achievement in the Foundation Stage Profile for a Bangladeshi boy with/without free school meals (FSM)

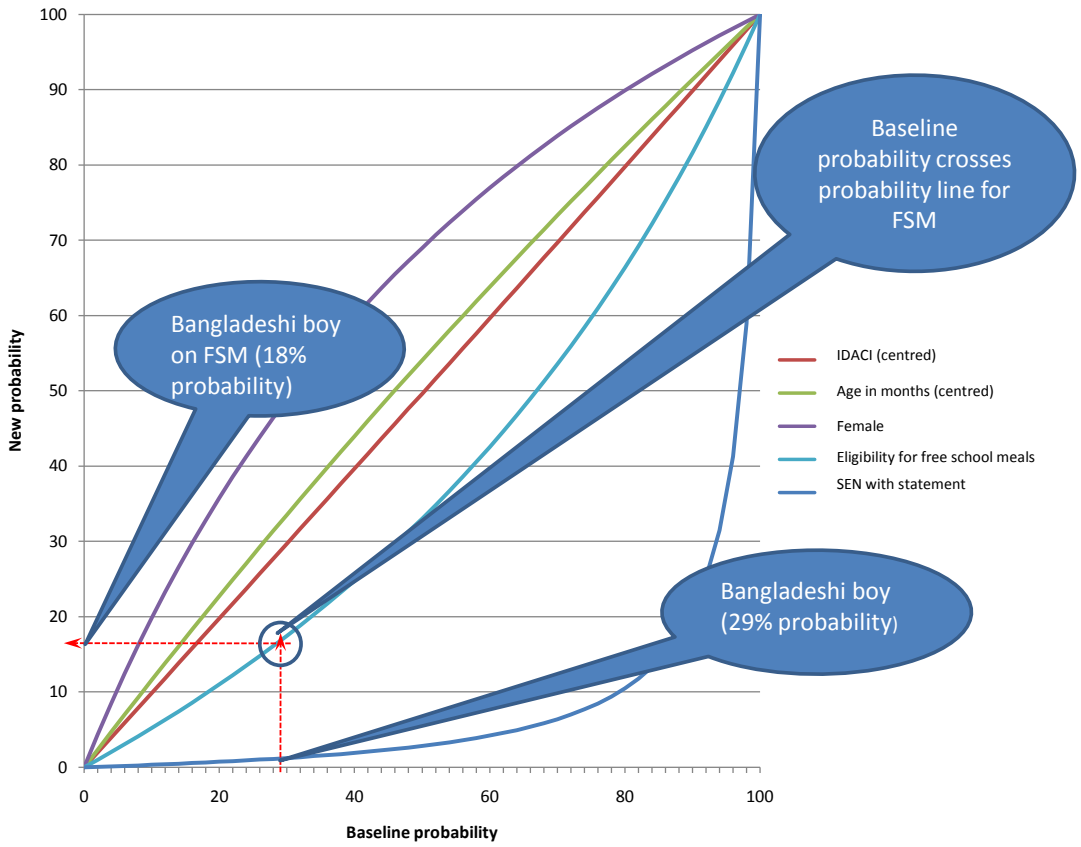


Figure 9. Profile of Foundation Stage cohort 2006/07

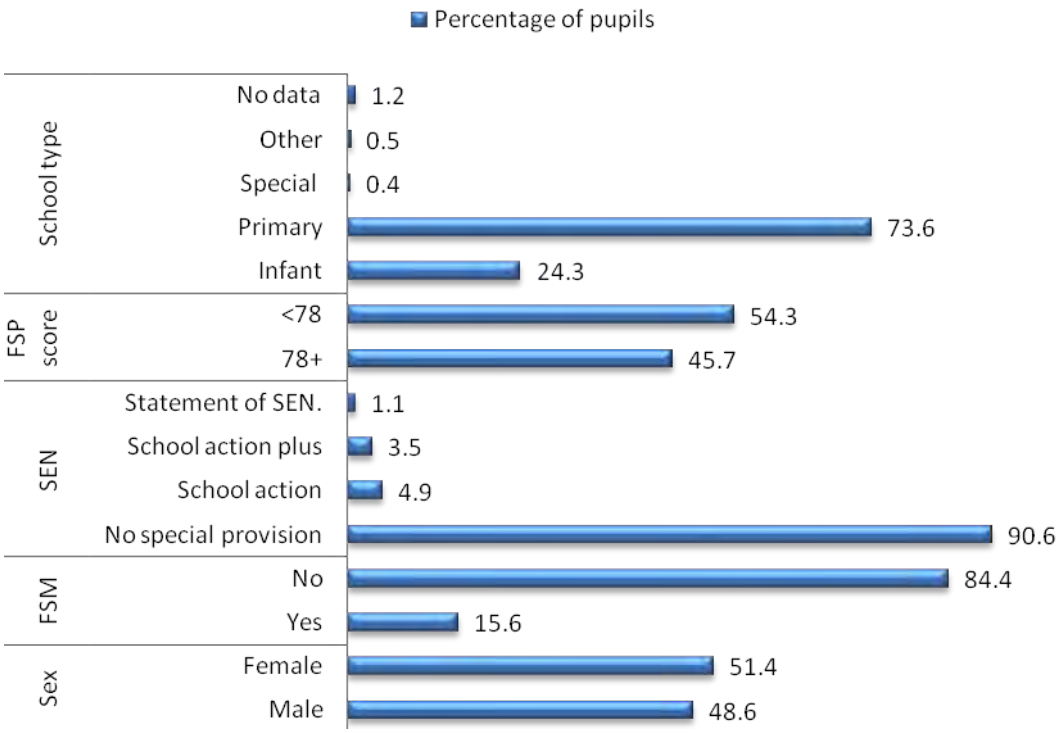


Figure 10. Profile of Foundation Stage cohort 2006/07: ethnicity (all)

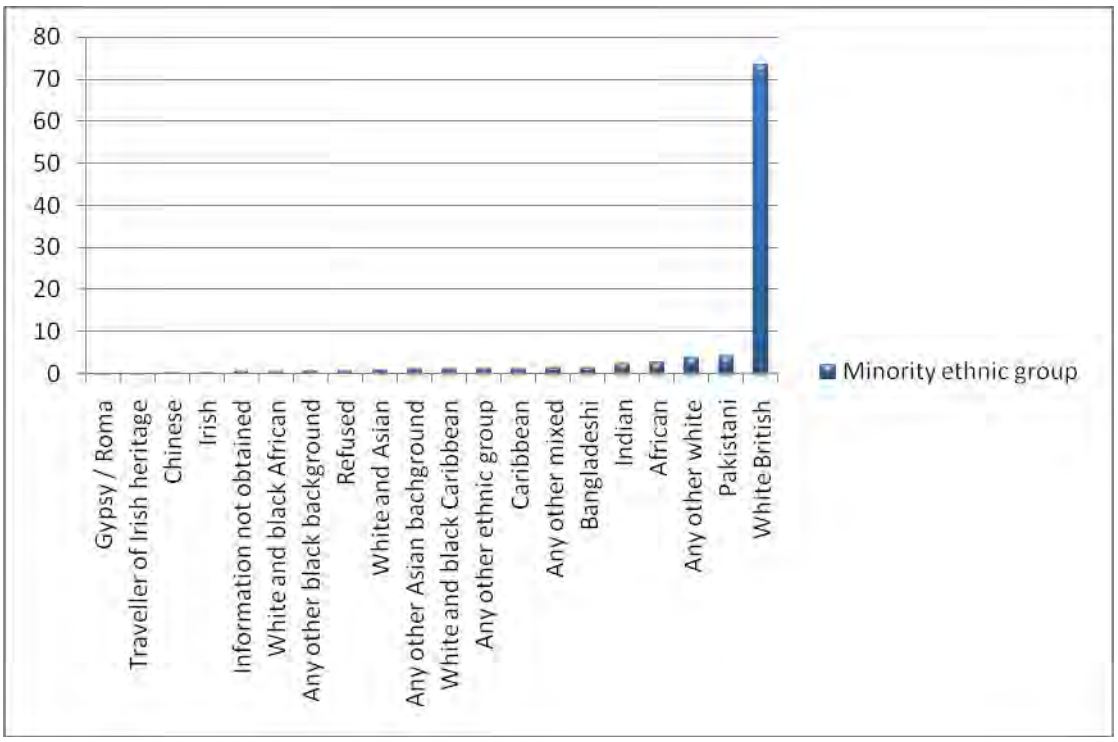
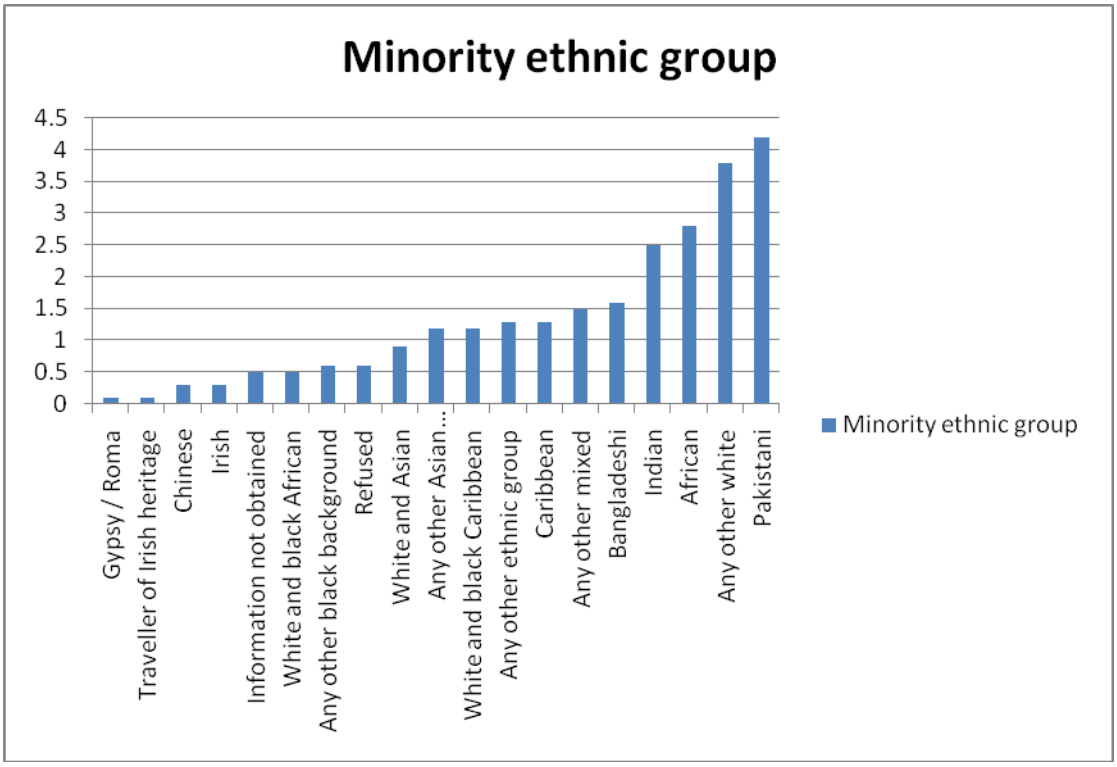


Figure 11. Profile of Foundation Stage cohort 2006/07 (percentage of minority ethnic groups only)



JANUARY 2009 **RR01V1**

Narrowing the gap in outcomes for young children through effective practices in the early years

This research review presents findings from a rapid review of research and national data on the impact of background characteristics on outcomes for children in the early years. It seeks to identify the approaches that are most effective in reducing educational disadvantage and promoting positive outcomes.

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