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Effective Pre-school and Primary Education 3-11 Project (EPPE 3-11) - Final report from the primary phase: Pre-school, school and family influences on children's development during key stage 2 (7-11)

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Abstract

The Effective Pre-school and Primary Education 3-11 project (EPPE 3-11) has studied pre-school and primary school experiences for a national sample of approximately 2,800 children in England between the ages of 3 and 11 years. This Research Brief summarises the key findings up to the end of primary school. It focuses on the relationships between child, family, home, pre-school and primary school characteristics and pupils' subsequent cognitive (Reading/English and Mathematics) and social/behavioural outcomes ('Self-regulation', 'Pro-social' behaviour, 'Hyperactivity' and 'Anti-social' behaviour) at ages 10 and 11 in Years 5 and 6 of primary school. It also reports on associations between pupils' outcomes and 'other' factors such as pupils' self-perceptions and their views of primary school at age 10, pupil mobility, out of school hours learning and season of birth. In addition, it explores the school/classroom practices and processes associated with pupil outcomes for a sub-group of pupils in 125 Year 5 classes. These findings update and extend earlier analyses of pupils' outcomes in pre-school and Key Stage 1 (see Sylva et al., 2004) and form the end point of the primary school phase of the research.

Keywords

stage, key, during, development, children, influences, family, phase, report, final, eppe, project, 11, 3, effective, education, pre, primary, 7, school, 2

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EFFECTIVE PRE-SCHOOL AND PRIMARY EDUCATION 3-11 PROJECT (EPPE 3-11)
FINAL REPORT FROM THE PRIMARY PHASE: PRE-SCHOOL, SCHOOL AND
FAMILY INFLUENCES ON CHILDREN'S DEVELOPMENT DURING KEY STAGE 2
(AGE 7 - 11)

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Introduction

The Effective Pre-school and Primary Education 3-11 project (EPPE 3-11) has studied pre-school and primary school experiences for a national sample of approximately 2,800 children in England between the ages of 3 and 11 years. This Research Brief summarises the key findings up to the end of primary school. It focuses on the relationships between child, family, home, pre-school and primary school characteristics and pupils' subsequent cognitive (Reading/English and Mathematics) and social/behavioural outcomes ('Self-regulation', 'Pro-social' behaviour, 'Hyperactivity' and 'Anti-social' behaviour) at ages 10 and 11 in Years 5 and 6 of primary school. It also reports on associations between pupils' outcomes and 'other' factors such as pupils' self-perceptions and their views of primary school at age 10, pupil mobility, out of school hours learning and season of birth. In addition, it explores the school/classroom practices and processes associated with pupil outcomes for a sub-group of pupils in 125 Year 5 classes. These findings update and extend earlier analyses of pupils' outcomes in pre-school and Key Stage 1 (see Sylva et al., 2004) and form the end point of the primary school phase of the research.

Key findings

Child, family and background effects

- Mother's highest qualification level and Early years Home Learning Environment (HLE) are still among the strongest predictors of better academic and social-behavioural outcomes at age 10 and 11, in line with findings at younger ages.
- At age 11, girls showed better 'Pro-social' behaviour and boys more 'Hyperactivity'. Boys had higher attainment in Mathematics and girls better outcomes in English. However, gender effects on social behaviour were stronger than those for academic outcomes.
- In addition, gender was the strongest predictor of 'Behavioural self-image' (girls have more positive Behavioural self-image), whereas father's highest qualification and the Early years HLE were the strongest predictors of 'Academic self-image' at age 10.
- Pupils who were eligible for free school meals (FSM) reported higher 'Enjoyment of school' than those not eligible for FSM, but tended to have slightly poorer Behavioural self-image.

- There were strong *reciprocal* relationships between pupils' self-perceptions and their academic and social/behavioural outcomes and progress/development, particularly between 'Academic self-image' and attainment and progress in Maths and Reading and between 'Behavioural self-image' and social/behavioural outcomes and development from age 6 to age 10.
- Pupils' views of primary school also predicted their cognitive and social/behavioural outcomes at age 10 and progress from age 6 to age 10. Their perceptions of Teachers' support for pupils' learning were positively related to improved 'Self-regulation' and 'Pro-social' behaviour, and perceptions of Headteacher qualities were positively related to improved 'Pro-social' behaviour and reduced 'Hyperactivity'.
- Additional child case study evidence showed that having a high Early years HLE, family attitudes that valued education as a means of improving life chances, support for learning from family members and high parental expectations helped disadvantaged pupils 'succeed against the odds'.

The age 11 effects of pre-school, including the contribution of quality

- The positive benefits of both medium and high quality pre-school education have persisted to the end of Key Stage 2 for attainment in Reading/English and Mathematics and all social/behavioural outcomes. Also attending a more effective pre-school showed long term benefits for Mathematics.
- Moreover, having attended a high quality pre-school was especially beneficial for boys, pupils with special educational needs (SEN) and those from disadvantaged backgrounds for most social/behavioural outcomes.
- High quality pre-school was especially beneficial for the most disadvantaged pupils and for those of low qualified parents in promoting better Mathematics outcomes at age 11.
- Children who had attended poor quality/less effective pre-school generally showed no significant age 11 benefits in improved outcomes compared with those who did not attend any pre-school. However, they did show better Pro-social behaviour but poorer ratings for Hyperactivity.

The contribution of primary schools to pupils' development

- The overall academic effectiveness of the primary school attended by EPPE children (independently measured using national value added indicators) had a positive influence on both English and Mathematics attainment and progress (between age 7 and 11).
- Attending a primary school high on academic effectiveness showed particular benefits for children with multiple disadvantaged backgrounds in terms of English and Mathematics attainment and also for children of low qualified mothers for Mathematics attainment.
- Primary school academic effectiveness did not have a statistically significant effect on children's social/behavioural outcomes for the whole sample, but some disadvantaged sub-groups had better social/behavioural outcomes if they attended a highly academically effective school.
- There was considerable variation in the overall *Quality of Teaching* observed in Year 5 and it was a significant predictor of better progress in both Reading and Mathematics at age 10.
- Two components of teaching quality, *The Quality of Pedagogy* and *Classroom Control*, were particularly important for progress in Mathematics and the *Quality of Pedagogy* was also predictive of better social/behavioural outcomes between age 6 and 10. However, raised levels of *Disorganisation* in class predicted poorer progress in English and Mathematics and increased 'Hyperactivity'.
- Teachers' reports of a number of features of school context and processes were also significant predictors of better academic and social/behavioural outcomes (e.g. *Use of homework and school standards*, *School communication with parents* and *Parental support of their child's learning*).
- Measures of overall school quality obtained from Ofsted inspection judgements ('effectiveness' and 'improvement since previous inspection') predicted better cognitive and social/behavioural child outcomes in Year 5.

Pre-school and primary school interactions

- The combination of attending a higher quality pre-school and an academically effective primary school had measurable benefits for pupils' cognitive development, especially in Mathematics. High quality pre-school seems

to provide some 'protection' against the disadvantage of attending an ineffective primary school.

- Attending a more academically effective primary school was most important for pupils who had not attended any pre-school or had experienced only low quality pre-school.

The EPPE 3-11 Research: Background

The original EPPE study investigated children's intellectual and social/behavioural development between the ages of 3-7 years (Sylva et al., 2004). This Research brief summarises the Key Stage 2 findings of the EPPE 3-11 study, which followed up the same sample of children to Year 6 in primary school (age 11 years, the end of Key Stage 2). The findings describe influences on the sample pupils' cognitive (Reading/English and Mathematics) and social/behavioural ('Self-regulation', 'Pro-social' behaviour, 'Hyperactivity' and 'Anti-social' behaviour) development, and the age 11 impact of child, family and the Early years Home Learning Environment (HLE) characteristics (Melhuish et al., 2008a). In addition, the research explores the overall influence of pre-schools and primary schools attended, and the combined impact of pre-school and primary school on pupils' developmental outcomes.

The study is unique in that it also visited a sub-sample of 125 schools that the EPPE 3-11 pupils attended and, through observational data and questionnaires to teachers, is able to describe Year 5 classroom practices and school processes associated with a range of outcomes for a sub-sample of 1160 pupils. The study also explores the relationship between pupil outcomes and 'other' measures of school experiences in these 125 schools (Ofsted judgements).

The EPPE technical reports and the website: www.ioe.ac.uk/projects/eppe provide further details about the research and findings.

Data and Analysis Strategy

The findings summarised here are based on analyses of measures of EPPE 3-11 pupils' cognitive outcomes derived from (Year 5) NFER tests of Reading and Mathematics, and (Year 6) Key Stage 2 National assessment scores in English and Mathematics. The analyses included 2701 pupils in over 950 primary schools. Social/behavioural outcomes (4 dimensions: 'Self-regulation', 'Hyperactivity' 'Pro-social' and 'Anti-social' behaviour) were obtained from teachers' assessments using an extended version of

Goodman's *Strengths and Difficulties Questionnaire* (1997).

Pre-school quality was measured by observation in 141 pre-school settings using the ECERS-R (Harms et al., 1998); focusing on emotional and social care and ECERS-E (Sylva et al., 2006); focusing on the pre-school curriculum. Effectiveness indicators for individual pre-school settings were calculated using value added models of children's progress during the pre-school period (Sammons et al, 2002; 2003).

Value added measures of overall primary school academic effectiveness in English and Mathematics were derived from independent statistical analyses of National assessment data sets for all pupils in all state primary schools in England in 3 successive years (2002-2004, Melhuish et al., 2006). This enabled the research team to locate each primary school attended by an EPPE pupil on a scale of 'academic effectiveness', after controlling for pupils' prior attainments and other demographic characteristics of each school's intake.

Background information for the EPPE 3-11 pupil sample was derived from interviews with and questionnaires to parents. We investigated the influence of different child, family and Early years HLE background factors as predictors of EPPE 3-11 pupils' attainment and development at age 11 and their progress over Key Stage 2 from age 7 to 11 (Sammons et al., 2007a; 2007b; 2008a; 2008b). These analyses identify the unique (net) contribution of particular factors to pupil outcomes, while other background influences are controlled. Information on school and classroom practices and processes were obtained from observations in a sub-sample of 125 schools (whilst pupils were in Year 5) and questionnaires to teachers and pupils.

The data enabled the research to establish developmental profiles and learning trajectories for each pupil that included cognitive and social/emotional assessments as well as family demographics and information on pre-school settings and the primary school each pupil attended.

While the research cannot fully explain why any one pupil prospers or falters it has been used to identify the kinds of pupil and the combinations of social and educational experiences that predict more successful or, by contrast, poorer development. The research was enriched by case studies of a small sample of low SES pupils and their families who were identified as doing better than predicted. They illuminated practices, which

parents, family and community members used to enhance such children's social and educational capital.

Major findings

1 The age 11 effects of pre-school, including the contribution of quality

The positive benefits of pre-school education identified in earlier reports have largely persisted through to the end of Key Stage 2. Having attended pre-school (versus none) had significant benefits for English, Mathematics and Pro-social behaviour. These effects were largely carried by settings of medium or high quality. The quality of the pre-school attended, both medium and high (measured on the Early Childhood Environment Rating Scales), was an important predictor of all children's developmental outcomes, cognitive and social behavioural. For all social outcomes, the benefits of attending high quality pre-school was particularly important for boys (ES from 0.28 to 0.45 depending on the social/behavioural outcome), for children with SEN (ES from 0.23 to 0.39), and for children from disadvantaged backgrounds (ES from 0.29 to 0.34). In addition, high quality pre-school is also found to be especially beneficial for the most disadvantaged pupils (ES=0.21) and for those of low qualified parents (ES=0.28) in terms of better Mathematics outcomes at age 11. When compared to children who had not attended pre-school, children who had attended poor quality/less effective pre-school generally showed no significant benefits in terms of improved outcomes. However, they did show better Pro-social behaviour but poorer ratings for Hyperactivity.

2 The contribution of the family and the home learning environment (HLE)

Although taken together the overall effects of child and family characteristics were less powerful (i.e. smaller effect sizes) at age 11 than they had been at age 7, the mother's highest qualification level and the Early years HLE¹ still showed the strongest effects upon later academic outcomes. For example, mother with a degree versus no qualifications had a strong, significant positive impact on English (ES=0.76) and Mathematics (ES=0.71) attainment at age 11. The support for learning that parents provided during the pre-school period (Early years HLE) continued to show effects on several outcomes: attainment in English (ES=0.69) and Mathematics (ES=0.42), 'Self-regulation' (ES=0.42), 'Pro-social' behaviour

(ES=0.22) and 'Hyperactivity' (ES=-0.23) at the end of primary school. In line with findings for the sample in younger ages, gender was particularly important for 'Pro-social' behaviour and 'Hyperactivity', with girls being more pro-social (ES=0.71) and boys more hyperactive (ES=0.71). However, for Mathematics boys have higher attainment at age 11, though the difference is relatively small (ES=0.19), and girls still have better outcomes in English (ES=0.29).

3 The contribution of primary schools to children's development

The academic effectiveness of the primary school between Key Stage 1 and 2 was measured independently of the EPPE 3-11 longitudinal sample, by analysing National assessments for all pupils in all state primary schools in England, using a value added approach (Melhuish et al., 2006). Attending a more academically effective school was found to have a positive influence on the EPPE 3-11 pupils' English (ES=0.24) and particularly Mathematics outcomes (ES=0.38). Not only was the effectiveness of the school linked to pupils' absolute attainment at age 11, it also predicted the amount of progress the EPPE 3-11 pupils made between the ages of 7 and 11. For social/behavioural outcomes, the academic effectiveness of the school did not show a significant effect across all pupils. However, certain groups of pupils, such as those with SEN or whose mothers had low educational qualifications, showed significantly better social/behavioural outcomes if they attended schools that were more academically effective (ES from 0.33 to 0.37).

4 Classroom and school processes

Classroom observations in a sub-sample of 125 schools revealed considerable variation in the quality of EPPE 3-11 pupils' educational experiences during Year 5 (Summer 2004, Summer 2005). Overall *Teaching quality* was a significant predictor of greater cognitive progress between ages 6 and 10: Reading (ES=0.37) and Mathematics (ES=0.35). The *Quality of Pedagogy* and *Classroom Control* were significant for progress in Mathematics (ES=0.27) and *Quality of Pedagogy* was also related to reduced 'Hyperactivity' (ES=0.28) and better 'Pro-social' behaviour (ES=0.27) and 'Self-regulation' (ES=0.17). High levels of classroom *Disorganisation* predicted poorer progress in both Reading (ES=0.21) and Mathematics (ES=0.34) and increased 'Hyperactivity' (ES=0.37).

¹ EPPE also measured the HLE at age 7, however the Early years HLE explained more variance in KS2 outcomes and so has been used in the analyses reported.

Teachers' reports of their school context and processes (particularly the five factors concerning *Use of homework and school standards*, *Pupils' agency and voice*, *Anti-academic ethos*, *School communication with parents*, and *Parental support of their child's learning*) were related to better progress in Mathematics and social outcomes (ES from 0.27 to 0.38) at age 10. In schools where teachers reported active *School communication with parents*, pupils made better academic progress in Reading (ES=0.38) and Mathematics (ES=0.34), and showed better 'Self-regulation' (ES=0.27). In addition, where teachers reported strong *Parental support for their child's learning*, pupils made better progress in Reading (ES=0.28) and 'Pro-social' behaviour (ES=0.38).

The Ofsted inspection measure of overall *School effectiveness* was a moderately strong predictor of pupil progress in Mathematics (ES=0.41) and 'Self-regulation' (ES=0.39) whilst the judgement on the *Quality of school leadership* showed a positive relationship with Mathematics progress (ES=0.32). Ofsted's judgement of a school's *Improvement since last inspection* was a significant predictor of EPPE 3-11 pupils' Mathematics progress (ES=0.35), and development in 'Self-regulation' (ES=0.49), 'Pro-social' (ES=0.43) and 'Anti-social' behaviour (ES=0.31).

5 How pre-school and primary school interact to affect pupils' learning and development
EPPE 3-11 is the first study to investigate the combined effects of pre-school and primary school on a wide range of child outcomes. The combination of attending a higher quality pre-school and then moving on to an academically effective primary school had additional benefits for pupils' cognitive outcomes at age 11, especially so in Mathematics (ES=0.67). High quality pre-school appears to provide some 'protection' against attending an ineffective primary school compared to pupils who had not attended pre-school: weakly for English (ES=0.12), and much more strongly for Mathematics (ES=0.61); or those who had attended pre-schools of lower quality. The reverse was also true: pupils who attended a primary school of high academic effectiveness managed to do well in Mathematics in Key Stage 2 even if they had not attended a pre-school (ES=0.43) or if their pre-school was of low quality (ES=0.45).

6 Influences are different for English, Mathematics and social/behavioural development
By Year 6 the influences on English were somewhat different from Mathematics in certain aspects. For English, child, family and home background mattered relatively more than for

Mathematics, where the effect of educational influences was stronger. For English the effects of mothers' highest qualification (ES 0.76) and the Early years HLE (ES=0.69) were over twice as great as those of pre-school or primary school. For Mathematics, mothers' highest qualification (degree or above versus none) was again the strongest predictor (ES=0.71), but with pre-school (ES=0.40) and primary school academic effectiveness (ES=0.38) being relatively more influential than they were for English (ES=0.25 and ES=0.24 respectively) and comparable to the effect size of Early years HLE (ES=0.42).

Patterns of influence are also different for social/behavioural development. In Year 6, background characteristics were found to be better predictors of 'Self-regulation' than for other social/behavioural outcomes. In addition, gender effects were particularly strong for 'Pro-social' behaviour (ES=0.71) and 'Hyperactivity' (ES=-0.71) outcomes, having around twice as large an effect as pre-school quality (ES=0.28) and effectiveness (ES=0.38). Mothers' highest qualification level was also an important predictor and had the strongest effects for 'Self-regulation' (ES=0.55) and 'Hyperactivity' (ES=-0.53) outcomes. Thus the patterns of influence vary to some extent for different outcomes, as well as for different groups of pupils. Only a large scale and longitudinal study could reveal such subtle differences, along with the interacting effects of pre-school and primary education.

7 Pupils' self-perceptions: what influences them and their effects on future development?
Influential factors for pupils' self-perceptions were different for each self-perception measure. Gender was the strongest predictor of 'Behavioural self-image' (ES=0.53), whereas for 'Academic self-image' the strongest predictors were fathers' highest qualification level (ES=0.27) and Early years HLE (ES=0.24). 'Enjoyment of school' was somewhat higher for pupils who were eligible for FSM (ES=0.26) and for those who had previously attended high quality pre-school versus low quality (ES=0.18).

Pupils' self-perception factors were differentially associated with their other educational outcomes. Pupils' 'Academic self-image' was the strongest predictor of progress in Reading (ES=0.38), Mathematics (ES=0.51) and 'Self-regulation' (ES=0.56), whereas pupils' 'Behavioural self-image' was the strongest predictor of improvement in 'Pro-social' behaviour (ES=0.68) and reduction in 'Hyperactivity' (ES=-1.05) and 'Anti-social' behaviour (ES=-0.48) from Year 1 to Year 5. However, the reverse is also the case; earlier

attainment (Year 2) predicted better 'Academic self-image' (ES=0.45) later on in Year 5. These findings indicate a strong *reciprocal* relationship between 'Academic self-image' and academic achievement and progress, and between 'Behavioural self-image' and social/behavioural outcomes and development.

EPPE 3-11 pupils' views of a positive social (school) environment were significantly predicted by family salary (ES=0.34), Early years HLE (ES=0.22) and quality of pre-school attended (ES=0.20). Girls were slightly more likely to perceive that their Headteacher was interested in pupils in their school (ES=0.14), whereas pupils who received free school meals (FSM) tended to have more positive views of 'Teachers' support for pupils' learning' (ES=0.14).

EPPE 3-11 pupils' views of primary school were also related to their cognitive and social/behavioural outcomes as well as progress and development in these outcomes. Pupils' positive views about their social environment were a predictor of better cognitive progress (Reading ES=0.20; Mathematics ES=0.17) and social/behavioural development from Year 1 to Year 5 (ES range from -0.41 to 0.30). Pupils' perceptions of Teachers' support for pupils' learning predicted improved 'Self-regulation' (ES=0.25) and 'Pro-social' behaviour (ES=0.33), whereas their perceptions of Headteacher qualities predicted improved 'Pro-social' behaviour (ES=0.16) and reduced 'Hyperactivity' (ES=-0.16). It appears that pupils' experiences of feeling safe and supported in schools are related to better overall development.

8 How pre-schools, schools and families can support the development of children from disadvantaged and ethnic minority backgrounds to achieve 'against the odds'

Good quality pre-school helps boys and also disadvantaged children and those 'at risk' of developing learning or behavioural difficulties to make a better start to school. Effective primary schools are also important for children who come from a high multiple disadvantage background at KS2, for Mathematics the primary school effects are stronger than those related to income and on a par with those of a mother having an A-level versus no qualification. Certain groups such as those with special educational needs (SEN), or whose mothers had low educational qualifications, also had better social/behavioural outcomes if they attended schools that were more academically effective. The Early years HLE and support for parents in providing a more stimulating HLE, (where parents are actively engaged in learning

activities with children) have been found to promote intellectual and social development in all children. While the levels of education of parents were strongly related to child outcomes, a higher scoring Early years HLE was also found to be more important than family SES and income effects.

If a child experiences no, or poor quality, pre-school and then moves to a less academically effective primary school their prospects of good outcomes are significantly reduced. This is of particular concern for those already experiencing other disadvantages and who are already at higher risk of poor outcomes. Thus educational influences, and early learning experiences, have the capacity to mitigate or further exacerbate inequalities. It is particularly important therefore to ensure that the most disadvantaged groups have access to high quality educational experiences from pre-school up.

The case study findings on individual pupils (selected for low SES and varied ethnic status) who 'succeeded against the odds' showed that what they had in common was a high Early years HLE. Interviews with parents and pupils to explore what might account for a pupil's success revealed: a) a range of family members provided support for the pupil's learning, b) pupils themselves were active in maintaining these practices and c) education was valued highly by the family as a means of improving life chances.

Parents and pupils who had experienced a higher Early years HLE but lived in a disadvantaged context thought that the reason some pupils did better in school was because they were more attentive and made more of an effort. Parents had high expectations for their children. They saw education as important for achieving economic independence and employment opportunities in the future as well as hoping their children would attend higher education and have a professional career (EPPE 3-11 Team, 2007).

Other influences on children's development

EPPE 3-11 also looked at other areas that influence children's educational development.

Mobility during primary school

Mobility is defined here as a change of primary school that does not result from a school closure, amalgamation, or transfer across phases of schooling, and about a fifth of the EPPE 3-11 pupil sample were mobile in this way during KS2 (age 7-11). Mobility in the KS2 period predicts lower levels of Mathematics attainment after controlling

for background characteristics (ES=-0.27), but not significantly so with English.

In addition, KS2 mobility and particularly if a pupil changed schools during both KS1 and KS2, predicted later poorer social/behavioural outcomes in Year 6: lower levels of 'Self-regulation' (ES=-0.28) and 'Pro-social' behaviour (ES=-0.35) and higher levels of 'Hyperactivity' (ES=0.32) and 'Anti-social' behaviour (ES=0.48). However, as with most educational research these results do not show whether or not KS1 and/or KS2 mobility itself causes poorer social/behavioural outcomes; rather it shows that mobility during primary school predicts lower scores on later outcome assessments. It may be that awareness of problems prompts parents to move their children.

For a detailed description on mobility during pre-school, KS1 and KS2 please see the separate report by Melhuish et al. (2008b).

'Out of school hours learning (OSHL)'

OSHL covers any learning experience or activities pupils engaged in out of school hours (e.g. sports classes, music tuition, religious groups and extra subject tuition). EPPE 3-11 identified a consistent positive relationship between both parents' educational level and 'Out of school hours learning'. Engagement in any OSHL activity predicted better progress in English (ES=0.20) and Mathematics (ES=0.17) at age 11, after controlling for background factors. As there is a relationship between SES and OSHL this may partially contribute to SES differences in educational attainment, reported in this study and elsewhere.

Term of birth (summer born children)

Differences in pupil attainment were identified in terms of pupils' age in relation to their classmates. The younger the pupil (in their academic year i.e. summer born) the poorer their attainment tends to be, compared to the older pupils, and summer-born pupils are 10-18% more likely to be designated as having SEN. Overall summer born children showed poorer attainment outcomes in both English (ES=-0.29) and Mathematics (ES=-0.33).

Transition to Secondary School

A poor transition to secondary school can itself become a barrier to future success (see the linked sub-study by Evangelou et al., 2008). To ensure that children's transitions are successful, social adjustment, institutional adjustment and curriculum interest and continuity all need to be taken into account when planning transition strategies.

Some implications of EPPE 3-11

EPPE 3-11 has highlighted the importance of large scale, longitudinal studies using a mixed methods approach (Sammons et al., 2005; Siraj-Blatchford et al., 2006) for studying how different phases of education interact with one another. There are many implications of the findings for policy and practice. These include the importance of enhancing the quality of pre-school; supporting parents as educators as well as carers; additional support for disadvantaged children; developing positive relationships between academic and socio-emotional outcomes; and treating health, education and care as inseparable (Melhuish et al., 2008b; Sylva et al., 2007; Siraj-Blatchford et al., 2008). In addition the evidence supports the case for universal provision of good quality pre-school (Melhuish et al., 2008c).

The results clearly demonstrate the importance of investment in early years; especially for children from disadvantaged backgrounds and those who go on to primary education of poorer quality, while also showing that pre-school is not a magic bullet. The research has provided a unique insight into the *enduring* impact of early experiences, especially the Early years HLE and the quality of pre-school. It also shows the importance of the primary school attended, especially its academic effectiveness. At primary school, EPPE 3-11 has drawn attention to the importance of how classroom practices relate to the overall climate of the school, which has often been missing in earlier school effectiveness studies. It confirms the importance of the overall quality of teaching for academic progress. The project has also revealed that the relationship between disadvantage and educational experience is complex and that multiple disadvantages interact and are key sources of inequality.

The case study evidence supports the policy focus on initiatives that provide family and/or child mentoring (e.g. Learning Mentorship) as these may have a strong role in supporting the development of social capital. Community focused supplementary schools and classes can provide important educational resources. Schools and pre-schools need to encourage the involvement of parents and the wider family, particularly in the education of disadvantaged children.

Although this report represents the end of the primary phase of EPPE 3-11, the Effective Pre-school, Primary and Secondary Education Project (EPPSE 3-14) is continuing to follow the same students into secondary school up to the end of Key Stage 3 (age 14) and will report findings on the interactions between home, pre-school,

primary and secondary schooling in 2011.

Methodology

The EPPE 3-11 research has involved a series of three 'nested' sets of analyses, which help answer specific research questions.

The first set investigated the academic effectiveness of the approximately 950 primary schools in 155 local authorities the EPPE 3-11 children attended. It used statistical data (matched KS1 and KS2 National assessment results), for successive pupil cohorts derived from every primary school in the country (over three consecutive years 2002-2004), for English and Mathematics to provide value added estimates of the academic effectiveness of each school in these subjects and matched the resulting value added measures to the EPPE 3-11 child data set (Melhuish et al., 2006).

The second set of analyses involved the collection of information on academic and social/behavioural development for every pupil in the sample. The sample (of 2701 pupils included in these analyses) originated from 141 pre-school centres covering six types of provision (nursery classes, nursery schools, integrated settings, playgroups, private day nurseries and local authority day nurseries) in six local authorities and included a group of 'Home' pupils who had not attended pre-school. They went on to attend 950 primary schools in approximately 100 local authorities. Multilevel analyses investigated the effects of child, family and home learning environment (HLE) characteristics, and pre-school and primary schooling on children's developmental outcomes.

The third set of analyses explored classroom practice in a sample of 125 Year 5 classes with a sub sample of 1160 EPPE3-11 pupils through two different but complementary classroom observations. These analyses showed the variation in teachers' and pupils' behaviours and the impact of this on EPPE 3-11 pupils' outcomes (see Sammons et al., 2006; 2008c).

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The views expressed in this report are the authors' and do not necessarily reflect those of the Department for Children, Schools and Families.

Table 1: Summary of key background factors and pre- and primary school influences on cognitive attainment and social behaviour at Year 6 and Pupils' self-perceptions and views of primary school on progress from Year 1 to Year 5
(Only the largest significant effect sizes are reported)

		English	Mathematics	'Self-regulation'	'Pro-social' behaviour	'Hyper activity'	'Anti-social' behaviour
Key Child Factors (Largest significant effect size group)	Compared to						
Gender (Girls)	Boys	0.29	-0.19	0.30	0.71	-0.71	-0.38
Need of EAL support (Need EAL support)	None	-0.59	-0.64	-0.65		0.46	
Key Family factors							
Free school meals (FSM) (FSM)	Non-FSM	-0.23	-0.15	-0.23		0.21	0.27
Family earned income (£17,500-£29,999)	No earned income				0.25	-0.24	
Family earned income (£37,500-£67,499)	No earned income	0.23	0.22	0.38			
Mother's qualification level (Degree)	None	0.76	0.71		0.36		-0.27
Mother's qualification level (Higher Degree)	None			0.55			
Mother's qualification level (Other professional)	None					-0.53	
Father's Qualification level (Degree)	None			0.29		-0.30	
Father's Qualification level (Higher Degree)	None	0.39	0.34				
Home Learning Environment (HLE)							
Early years HLE (Highest)	Low	0.69	0.42	0.42	0.22	-0.23	
Key Stage 1 HLE (Moderate-High)	High	0.18	0.17				

Table 1 (cont): Summary of key background factors and pre- and primary school influences on cognitive attainment and social behaviour at Year 6 and Pupils' self-perceptions and views of primary school on progress from Year 1 to Year 5
(Only the largest significant effect sizes are reported)

		English	Mathematics	'Self-regulation'	'Pro-social' behaviour	'Hyper activity'	'Anti-social' behaviour
Pre-school (Largest significant effect size group)	Compared to						
Attending (Pre-school)	'home' – not attending	0.22	0.26		0.19		
Pre-school quality							
ECERS-E (Low)	'home' – not attending					0.22	
ECERS-E (High)	'home' – not attending	0.29	0.34	0.25	0.23		-0.22
ECERS-R (Low)	'home' – not attending					0.22	
ECERS-R (High)	'home' – not attending			0.24	0.28		-0.23
Pre-school effectiveness							
Early number concepts (High)	'home' – not attending		0.40	0.29	0.27		
Pre-reading (Low)	'home' – not attending				0.22		
Pre-reading (High)	'home' – not attending	0.25					
'Co-operation and Conformity' (Medium)	'home' – not attending			0.19			
'Co-operation and Conformity' (High)	'home' – not attending				0.26		
'Independence & Concentration' (Low)	'home' – not attending					0.24	
'Independence & Concentration' (Medium)	'home' – not attending			0.20			
'Independence & Concentration' (High)	'home' – not attending				0.21		
'Peer Sociability' (Low)	'home' – not attending					0.20	
'Peer Sociability' (Medium)	'home' – not attending				0.21		
'Peer Sociability' (High)	'home' – not attending			0.21			
'Anti-social' behaviour (High)	'home' – not attending			0.24	0.38		-0.25
Primary School Effectiveness							
English (High)	Low	0.24					
Mathematics (High)	Low		0.38				

Table 1 (cont): Summary of key background factors and pre- and primary school influences on cognitive attainment and social behaviour at Year 6 and Pupils' self-perceptions and views of primary school on progress from Year 1 to Year 5
(Only the largest significant effect sizes are reported)

		Reading	Mathematics	'Self-regulation'	'Pro-social' behaviour	'Hyper activity'	'Anti-social' behaviour
Pupils' self-perceptions (Largest significant effect size group)	Compared to						
Enjoyment of School (Medium-Low)	Low		0.25	0.34			
Enjoyment of School (Medium-High)	Low	0.30					
Enjoyment of School (High)	Low				0.37	-0.42	-0.16
Academic Self-image (Medium-High)	Low	0.38	0.51			-0.44	-0.18
Academic Self-image (High)	Low			0.56	0.33		
Behavioural Self-image (Medium-High)	Low		0.15				
Behavioural Self-image (High)	Low	0.27		0.30	0.68	-1.05	-0.48
Pupils' views of primary school							
Teachers' support for pupils' learning (High)	Low			0.25	0.33		
Headteacher qualities (Medium)	Low					-0.16	
Headteacher qualities (High)	Low				0.16		
Positive Social Environment (Medium-Low)	Low		0.17	0.21			
Positive Social Environment (Medium-High)	Low						-0.21
Positive Social Environment (High)	Low	0.20			0.30	-0.41	