

## **Professor Iram Siraj - Formal invitation to appear at a public hearing held by the Royal Commission into Early Childhood Education and Care**

Session 4: What do we know about how ECEC can support child development. Intended outcome: Build a positive picture of population impact of ECEC from particular interventions; what works in some places and for some children may not work everywhere for all children.

### **FROM OECD – Please read Improving Early Equity**

*From Evidence to Action – from the OECD International Early Learning and well-being study IELS 2022*

[https://www.oecd-ilibrary.org/education/improving-early-equity\\_6eff314c-en](https://www.oecd-ilibrary.org/education/improving-early-equity_6eff314c-en)

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## **Evidence from the 17 year longitudinal EPPSE study – and methods of measuring quality in ECEC**

Effective pre-school, primary and secondary education project (EPPSE 3-16+ the research team: Kathy Sylva, Ted, Melhuish, Pam Sammons, Iram Siraj & Brenda Taggart. Funded: Approx £10.5 million 1997-2017 by the UK, DfE)

### **How pre-school influences children and young people's attainment and developmental outcomes over time.**

#### **Background: The early years landscape**

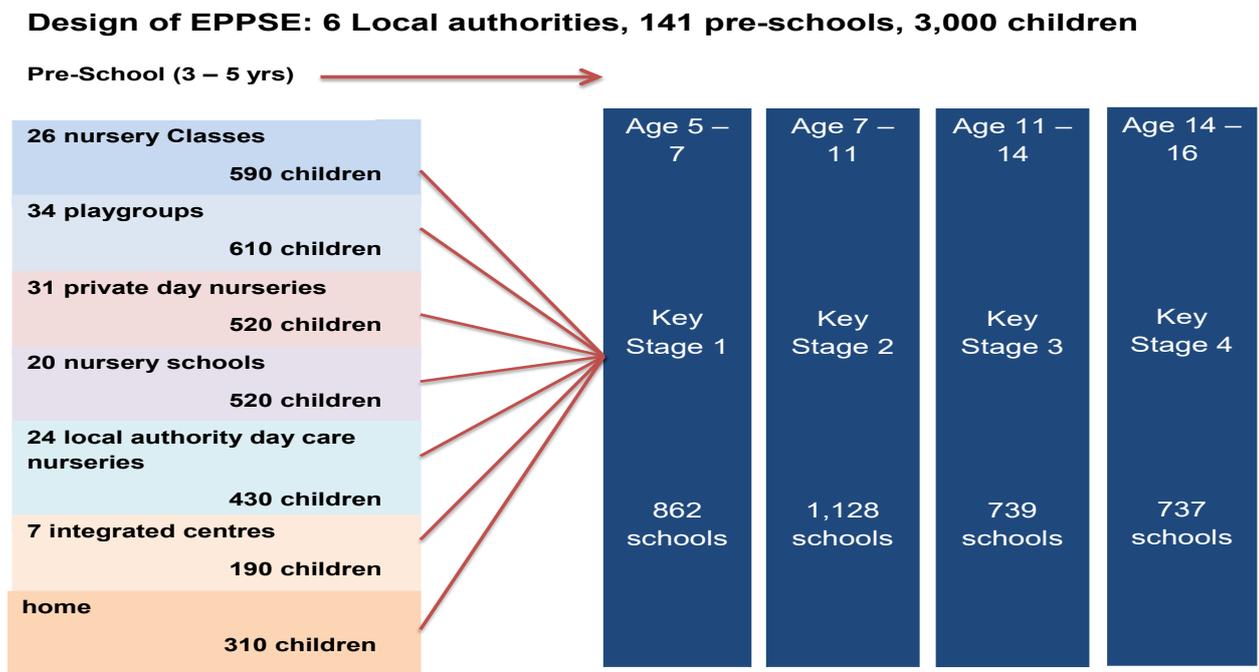
What happens to young children between the age of 3 and 5 is now an important phase of education in its own right and one with long term implications for children as learners. Since the 1990s there has been radical reform (Taggart, 2010a). Notable policy changes have included: The Early Years Foundation Stage (DfES 2006; DCSF, 2009; DfE, 2012, DfE, 2021) that sets out the statutory requirements for children's safety, welfare, curriculum and good development that includes monitoring and assessment arrangements; inspections carried out by the Office for Standards in Education against a common framework for all providers (revised Ofsted, 2014; 2022); universal entitlement to a funded nursery place for every 3 (2005) and 4 (2000) year old (DES/DWP, 2002) funded provision for disadvantaged 2 year olds (DfE, 2011) and significant investment in up-skilling the workforce (Nutbrown 2012). These reforms have been implemented to increase access to pre-school and so enhance children's development including their emotional, physical, social and intellectual capabilities. In addition, they were intended to help address the effects of disadvantage and place all children on sound learning trajectories. The Effective Pre-school, Primary and Secondary Education (EPPSE) research has contributed evidence that has underpinned many of these reforms.

#### **The EPPSE sample**

The EPPSE study was commissioned in to investigate the influences on children development, most notably pre-schooling. To this end 2,800 children were recruited to the study from 6 English Local Authorities. These children, from four academic cohorts came from different types of pre-school provision (141 in total) spanning the private, voluntary and maintained sectors (Taggart et al., 1999). At entry to the study, age 3, children were assessed on their cognitive/academic and social-behavioural development and their parents interviewed to obtain social demographic and background information (Melhuish et al., 1999). When these children entered compulsory schooling (age 5) a

further 310 children, who had little/no pre-school experience joined the study (the ‘home’ or no pre-school group, see Sammons et al., 2003a; 2003b). All children continued to be monitored throughout their school careers until 6 months after they left compulsory education as illustrated below. Cognitive/academic assessment were at entry to the study (aged 3) and entry to school (age 5) on a range of assessment from the British Ability Scales (Elliot et al. 1996) and at the end of each Key Stage (aged 7, 11, 14 and 16) from information obtained from the National Pupil Database<sup>1</sup>. Standardised assessment were also administered at ages 6 and 10. Social-behavioural profiles were derived from reports from pre-school and school staff - see Sylva et al., 2014 for further details.

**Figure 1 The EPPSE sample and assessment points**



<sup>1</sup> The ‘no pre-school group’ had all assessments apart from the age 3 assessments.

### **EPPSE aims and methodology**

The specific aims of EPPSE changed depending on the age of the children, but can be summarised as an exploration of the:

- short, medium and long term effects on children's academic and social-behavioural development from attending pre-schools of different type, with varying levels of quality and for different periods of time (duration);
- characteristics of effective pre-schools and primary schools with a focus on pedagogy;
- influence of a range of primary and secondary school characteristics on student outcomes;
- influence of child characteristics and a range of background family demographics on outcomes.

EPPSE was the first study in Europe to apply a 'mixed methods' (Sammons et al., 2005; Siraj-Blatchford et al., 2006) approach to the study of pre-school children developed from school effectiveness or 'value-added' approaches to institutional effects. This quantitative approach sees children nested in families, communities and settings and includes exploratory and confirmatory factor analyses along with multilevel modelling to determine the relative strength of different influences on outcomes. Family information was obtained through interviews and questionnaires, the Index of Multiple Disadvantage (Noble et al., 2004; 2008), as well as parental perceptions were used to explore aspects of the neighbourhood and information from schools have been obtained from the National Pupil Database and Ofsted reports.

Results are commonly reported as statistical effect sizes ( $ES^2$ ) which allows for a comparison of the strength of different predictors both in isolation and in combination. For example, EPPSE analyses the influence of pre-school, net of other influences such as gender etc. (child level), mothers qualifications etc. (family level) as illustrated in Figure 7 for outcomes at age 16.

Whilst this paper has focussed on pre-school, the quantitative analyses allows comparisons to be made between a wide range of background factors at child level (gender, low birth weights etc.), family (parental qualifications, income, SES etc.) and the home learning environment (Early Years, KS1 etc.). Appendix 3 gives some examples and readers are encouraged to look at the end of phase reports for more examples. For more details of the quantitative methodology see Sammons, 2010.

This short summary of the influence of pre-school at different time points cannot detail all of the findings from this 17 year project, instead it summarises some of the key findings on the importance of pre-school over time. Information on other important predictors, such as family characteristics etc. can be found in many Technical Papers and end of phase reports. For information on the economic returns of pre-school, student's views of school, case studies of effective practice, children who succeed against the odds and many other strands of this programme of research readers are advised to visit <http://www.ioe.ac.uk/research/153.html>

### **Key findings on the influence of pre-school and pre-school quality on outcomes, answering question:**

Impact of ECEC on development outcomes for vulnerable children and whole population

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<sup>2</sup>Effect sizes compare the relative strength of different influences. An ES of 0.1 is relatively weak, one of 0.35 moderately strong, one of 0.7 strong.

EPPSE explored pre-school as a predictor of outcomes over time. Data were analysed using multilevel modelling (Goldstein, 1995) enabling the net influence of attendance (attending v non attending), duration (in months), effectiveness and the quality of settings to be estimated having already taken account of other (individual, family, etc.) background characteristics. The key findings are outlined below:

- **Pre-school has a positive and long-term impact on children’s attainment, progress and social-behavioural development.**
- **At school entry (age 5), attending pre-school improved children’s academic and social outcomes with an early start (before 3) and attending a high-quality setting being particularly beneficial. Full time attendance led to no better gains than part-time (half day) provision.**
- **Pre-school continued to influence outcomes throughout primary school especially if it was of high quality. At age 11, high quality pre-school was especially important for boys, pupils with SEN and those from disadvantaged backgrounds. High quality pre-school enhanced the maths outcomes for disadvantaged pupils and for those of low qualified parents.**
- **The pre-school influence continued during secondary school. Those who attended high quality pre-school had higher attainment and better social-behavioural development at age 14 (KS3). By age 16 (KS4) there were no lasting pre-school effects on social behaviours but attending a pre-school predicted better GCSE results. This positive influence was greater for those who had started at an earlier age (before 3) or who had attended a pre-school of high quality. Beyond compulsory schooling, students who attended pre-school were more likely to go onto higher academic study, taking four or more AS/A levels<sup>3</sup>.**
- **At a range of time points, disadvantaged children gained from high quality pre-school. It reduced the risk of anti-social or worried behaviour and improved attainment. It was particularly importance for children who had a less stimulating home learning environment or who were from families where parents had poor or no qualifications.**
- **The Institute of Fiscal Studies (IFS) estimated that pre-school attendance and attending a pre-school of high quality lead to positive financial returns over life time earnings to the individual, a household and the Exchequer.**

### **The enduring legacy of pre-school**

The focus of this paper is on pre-school but the EPPSE findings, detailed in many reports (see Appendix 2 for key documents) describe children not on their own, but as part of families and neighbourhoods. Findings on the strength (Effect Size) of the pre-school influence are usually reported alongside other background factors contained in the statistical models. This enables the strength of any one predictor, such as pre-school quality, to be compared with other individual, (gender etc.), family (SES etc.), and home learning environment (Early Years etc.)

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<sup>3</sup> Higher academic route = 4 or more AS/A levels, Lower academic route = 3 or fewer AS/A levels, Vocational route = those who did not take any AS/A levels

characteristics. Appendix 3 gives examples of the strength of other influences on children’s development, and may help to put the findings on pre-school in wider context.

Greater attendance, duration and quality of pre-school all enhanced pupil’s attainment, progress and development at different time points.

**Entry to school (age 5)**

When children entered school around the age of 5 the benefits of having attended any pre-school became apparent. Those who attended pre-school, compared to those who did not, had better attainment in language, pre-reading and early number concepts after controlling for the influence of background characteristics. With higher scores for independence, concentration, co-operation, conformity and peer sociability, the pre-school group appeared to be better socially adjusted.

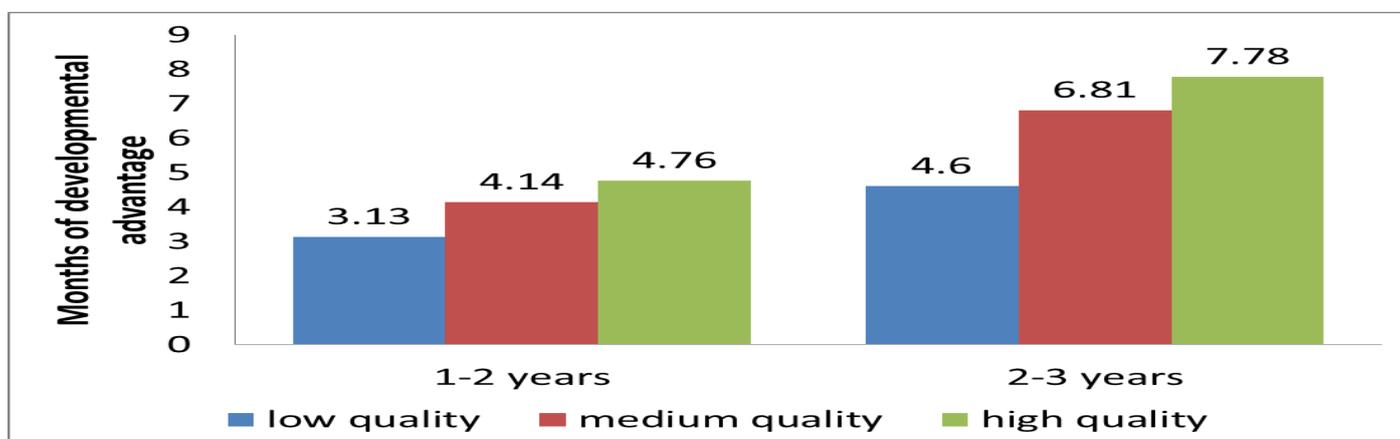
At this age, the duration of attendance was also important with an earlier start (under 3 years) being related to better development for language, pre-reading, early number concepts and non-verbal reasoning. A longer duration (in months) also improved independence, concentration and sociability. Going to pre-school part time (half a day) was found to be just as good as having attended full time.

The quality of the pre-school was identified as positive for a range of academic outcomes but the effects were strongest for pre-reading. **Children who attended pre-school centres of high quality also showed reduced anti-social/worried behaviour when they entered school.**

Although good quality was found across all types of settings it was highest overall in the education, maintained sector (integrated settings<sup>4</sup>, nursery schools and nursery classes), similar to Australian pre-school provision. The maintained sector had staff with higher qualifications, with a good proportion of trained teachers interacting with children on a daily basis.

Fig 1 below shows the advantage in terms of months of development of longer duration and higher quality on literacy at school entry. It shows that children who attended high quality pre-school for 2-3 years were nearly 8 months ahead in their literacy development compared to children who had not attended pre-school.

**Figure 2: Development advantage (in months) for duration and quality of pre-school on literacy at school entry (home as comparison)**



<sup>4</sup> In 1997 combined or integrated centres were the newest form of provision. They combined ‘education’ and ‘care’ and often provided ‘wrap-around’ services such as parental support, health advice etc. Most were former nursery schools that became the model for the development of Sure Start Children’s Centres.

### Primary school (age 7 – 11)

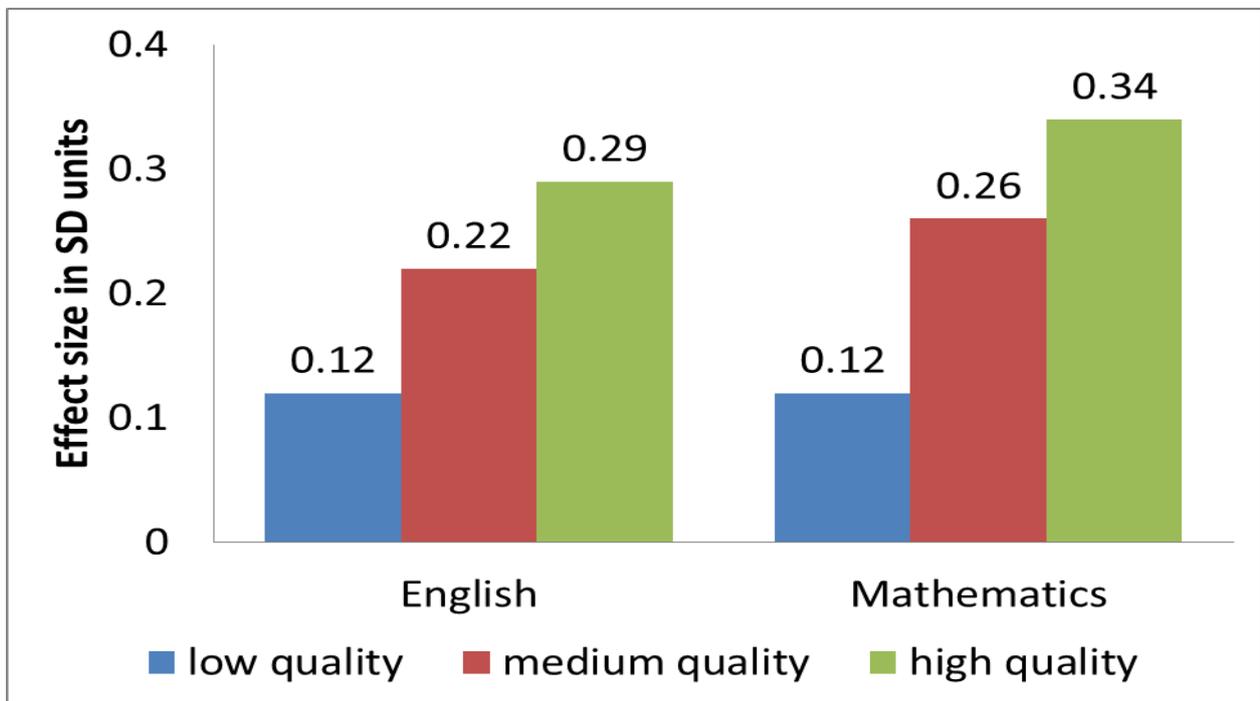
The *beneficial effects of pre-school remained evident to the end of Key Stage 1 (age 7) and 2 (age 11)*, although for some outcomes they were not as strong as they had been at school entry.

Attending any pre-school showed positive effects for English, maths and pro-social behaviour at the end of KS2. However, these effects were largely carried by settings of medium or high quality. Attending a low quality pre-school no longer showed any significant effects however, the number of months a child attended pre-school (duration) continued to have an effect on their progress throughout KS1, although this was stronger for academic skills than for social-behavioural development. At the end of KS2 the effects of duration no longer reached statistical significance.

The quality of pre-school attended continued to show small positive effects throughout the primary years. Children who attended high quality pre-school had statistically significant better attainment in reading and maths at age 6. At age 7 the relationship between quality and academic attainment was weaker but still evident. In addition, the combined effect of high quality and longer duration had the strongest effect on development. At this age the effect of quality alone on social-behavioural development was no longer significant.

As Fig 2 shows, the benefits of both medium and high quality pre-school persisted to the end of KS2 (age 11) for attainment in Reading/English and maths. In addition, attending a more effective pre-school (one that promoted early number concepts) had particular benefits for later attainment in maths.

**Figure 3: Influence of pre-school quality on academic outcomes age 11 (home as comparison)**



There were also benefits at age 11 for the social-behavioural development of boys (ES<sup>5</sup> from 0.28 to 0.45 depending on the 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) where they had attended higher quality pre-school.

<sup>5</sup>ES = Effect sizes which compare the relative strength of different influences. An ES of 0.1 is relatively weak, one of 0.35 moderately strong, one of 0.7 strong.

Children who had attended poor quality pre-school (compared to the no pre-school group) showed no significant benefits other than slightly better pro-social behaviour but this was offset by poorer rating for hyperactivity.

In addition, the quality of pre-school positively influenced pupils' own views of their primary school and the extent to which they reported, they 'enjoyed school'. An analyses of questionnaires returned by pupils showed that 'Enjoyment of primary school' was slightly higher in pupils who had attended a high quality pre-school (ES=0.18) and pupils' views of a positive social (primary school) environment were significantly influenced by the quality of their pre-school (ES=0.20). For more detail see Sammons et al., 2008a; Sammons et al., 2008b. One way to interpret these findings is that attendance at a high quality pre-school enhanced children's capacity to enjoy their primary school.

### Secondary school (age 11 – 16)

Although somewhat reduced, the influence of pre-school on outcomes remained significant at the end of Key Stage 3 (age 14 see Sammons et al., 2011a; 2011b) and 4 (age 16 see Sammons et al., 2014a; 2014b; 2014c; 2014d)

At age 14 there was no statistically significant influence detected for attendance at pre-school, but it is worth noting that at age 14 the academic measure (Key Stage 3 National Assessments) changed during the period of assessment (see Sylva et al., 2013, Sammons et al., 2011). Attendance was important again at age 16 where attending pre-school predicted higher total GCSE score (ES=0.31), more full GCSE entries (ES=0.21), better grades in GCSE English (ES=0.23) and maths (ES=0.21) and a higher probability of achieving 5 A\*-C including English and maths (OR<sup>6</sup>=1.48). The benefit of attending any pre-school was equivalent to 41 points at GCSE which represents the difference between getting 7 GCSE at 'B' grades versus 7 GCSE at 'C' grades, or 7 'C' grades versus 7 'D' grades etc.

Similarly at age 14 there was no influence detected for the duration of pre-school but, as with attendance above, this was significant at age 16 with ***students who spent longer in pre-school (between 2 or 3 years) obtaining higher total GCSE scores (ES=0.38), better grades in GCSE English (ES=0.28) and in maths (ES=0.30), and entering for more GCSE exams (ES=0.24).***

The influence of quality remained throughout secondary schooling on a range of outcomes. At age 14, pre-school quality predicted academic and social-behavioural outcomes especially where it was of high quality or where the pre-school was particularly effective (see later section on what makes an effective pre-school). High quality pre-school continued to show an effect on attainment in maths (ES=0.28 for high quality versus low quality). In science, only those who had attended a high or medium quality pre-school continued to show significantly better attainment than the no pre-school group.

At age 14, ***students who attended a pre-school that was highly effective in promoting pre-reading skills had better outcomes for English.*** For maths, all pre-school effectiveness groups (ES=0.36 for high; ES=0.22 for medium; ES=0.30 for low effectiveness) had better KS3 results than the no pre-school group. Attendance at a high (ES=0.33) or medium effective (ES=0.19) pre-school predicted better outcomes in science compared to the no pre-school group.

Higher pre-school quality also predicted better self-regulation, pro-social, hyperactivity and anti-social behaviour at the end of KS3 (age 14) as seen in Figures 3 and 4 below.

#### **Figure 4: Influence of the quality of pre-school on positive social behaviours at age 14 (home as comparison)**

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<sup>6</sup> OR = Odds Ratios represent the odds of achieving certain benchmark performance indicators given certain characteristics relative to the odds of the reference group.

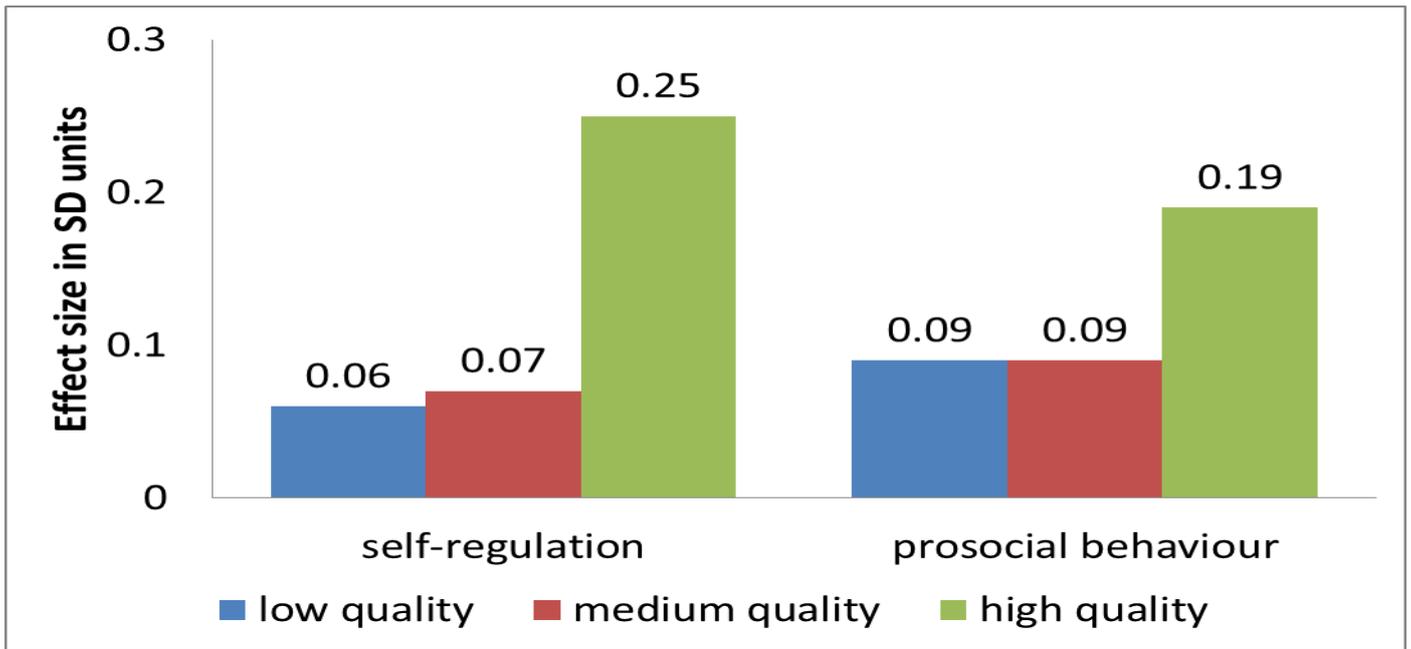
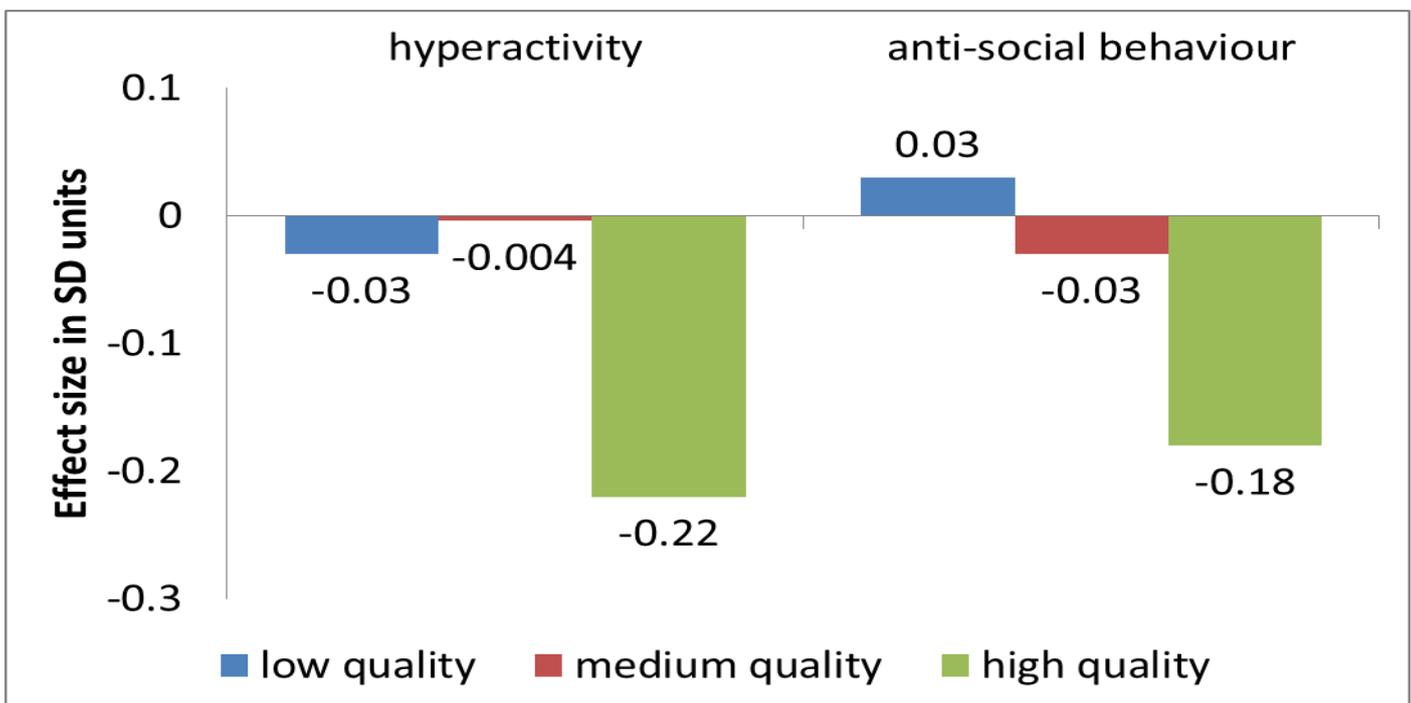


Figure 5: Influence of the quality of pre-school on negative social behaviours at age 14 (home as comparison)



At the end of secondary school (age 16) pre-school quality still predicted academic attainment with high quality being associated with better total GCSE scores (ES=0.37) and English (ES=0.31) and maths (ES=0.36) grades. Students who had attended high quality pre-schools were more likely to achieve 5 A\*-C including English and maths (OR=1.69).

As Table 1 below shows, the benefit of attending any pre-school, compared to none, is equivalent to 41 points at GCSE. This is the equivalent to the difference between getting 7 GCSE at 'B grades versus 7 GCSE at 'C' grades, or 7 'C' grades versus 7 'D' grades etc. Attending for longer duration or a high quality pre-school showed even stronger effects.

**Table 1: Total GCSE scores showing the influence of pre-school attendance, duration and quality**

<i>Comparison group is no pre-school</i>	Effect Size	Point score difference	Equivalent to GCSE grades (approx)*
<b>Attending any pre-school</b>	0.31	41	7 grades
<b>Attending any pre-school for 2 years or more</b>	0.38	51	8 grades
<b>Attending high quality pre-school</b>	0.37	49	8 grades

\*e.g. this represents the difference between getting 7 GCSE at 'B grades versus 7 GCSE at 'C' grades, or 7 'C' grades versus 7 'D' grades) etc. Each difference in grade at GCSE is the equivalent of 6 points.

In addition, students who attended a more effective pre-school (for pre-reading) were entered for more GCSEs (ES=0.25), obtained better grades in English (ES=0.31), and had a higher probability of achieving 5 A\*-C including English and maths (OR=1.73). The effectiveness of the pre-school in promoting early number concepts was apparent in better GCSE grades in maths (ES=0.35) and total GCSE score (ES=0.48).

An analyses of the 'joint effects' of ***pre-school quality and gender showed that boys who had attended a medium (ES= 0.33) or a high quality (ES= 0.41) pre-school obtained significantly higher grades in GCSE maths than those in lower quality*** or who did not attended pre-school.

Although the effect of pre-school quality on social-behavioural development was weaker than at earlier time points, students who had attended high quality pre-schools had better self-regulation (ES=0.14), pro-social behaviour (ES=0.16) and reduced hyperactivity (ES=-0.20), when they reached age 16.

#### **Beyond compulsory education age 16+**

As Table 1 above shows there is an enduring influence of pre-school attendance, quality and duration on academic outcomes at age 16. Beyond age 16, pre-school attendance (OR = 2.79), duration (OR = 4.38), quality (OR = 2.79) and effectiveness (OR = 3.06) all predicted a greater likelihood of following a higher academic route after GCSEs (studying 4 or more AS levels), rather than a vocational one<sup>7</sup>.

#### **Predicted economic returns to individuals, households and society**

Estimates of the benefits upon future earnings of attending a pre-school and the additional benefits of attending one of high quality was conducted by the Institute of Fiscal Studies (Cattan et al., 2014).

Cattan and colleagues, calculations explored the likely earnings/benefits of attending any pre-school vs. not attending, and attending pre-schools of different quality. Each of the effects was modelled for lifetime gross earnings to the individual, a household and on specific returns to the Exchequer.

- Children who had attended pre-school are likely to earn, on average, around £27,000 more over their working lives than children who receive little or no pre-school experience, and around £36,000 more taking into account the earnings of other members of their household. Attending pre-school also translates into an estimated benefit of around £16,000 lifetime benefits to the Exchequer (per household).
- There were also greater financial benefits for children who attended a high or medium quality pre-school compared to those who went to pre-schools of low quality. The benefits of higher quality, for individual life

<sup>7</sup> Higher academic route = 4 or more AS/A levels, Lower academic route = 3 or fewer AS/A levels, Vocational route = those who did not take any AS/A levels

time earnings were around £12,000, rising to £19,000 for a household. The benefits to the Exchequer associated with higher quality were estimated at around £8,000 (per household).

***The economic findings add further to the empirical argument in favour of pre-school attendance and high-quality provision.***

### **Disadvantaged groups**

Disadvantaged children often suffer from multiple 'risk' factors such as living in poverty, in a workless household and/or where parents have poor academic qualifications. The rich EPPSE data is well placed to explore what happens to different groups of children, with different background characteristics, over time. Given the limitations of this paper readers who are interested in this area are advised to look at the project reports for the full range of findings, only a few of which are highlighted below.

### **The long-term consequences of living in poverty**

The impact of living in poverty can have long term consequences. Overall students living in poorer households (eligible for Free School Meals) had lower full GCSE grades in English and maths and those in more disadvantaged neighbourhoods had lower GCSE scores at age 16 and poorer development in self-regulation and pro-social behaviour even after allowing for family disadvantage.

Pre-school cannot eliminate the adverse effects of disadvantage but it can ameliorate these. Pre-school, especially if it is of high quality, can act as a 'protective' factor for disadvantaged children. For instance, high quality pre-school reduced the risk of anti-social/worried behaviour for children during their early years with disadvantaged children doing better if they had attended a pre-school with a mixture of children from different social backgrounds rather than going to a setting containing largely numbers of disadvantaged children. Of particular importance is the finding that having attended a high-quality pre-school reduced the effects of multiple disadvantage on later attainment and progress in primary school (Hall et al., 2012).

### **Can pre-school make a difference to children with SEN?**

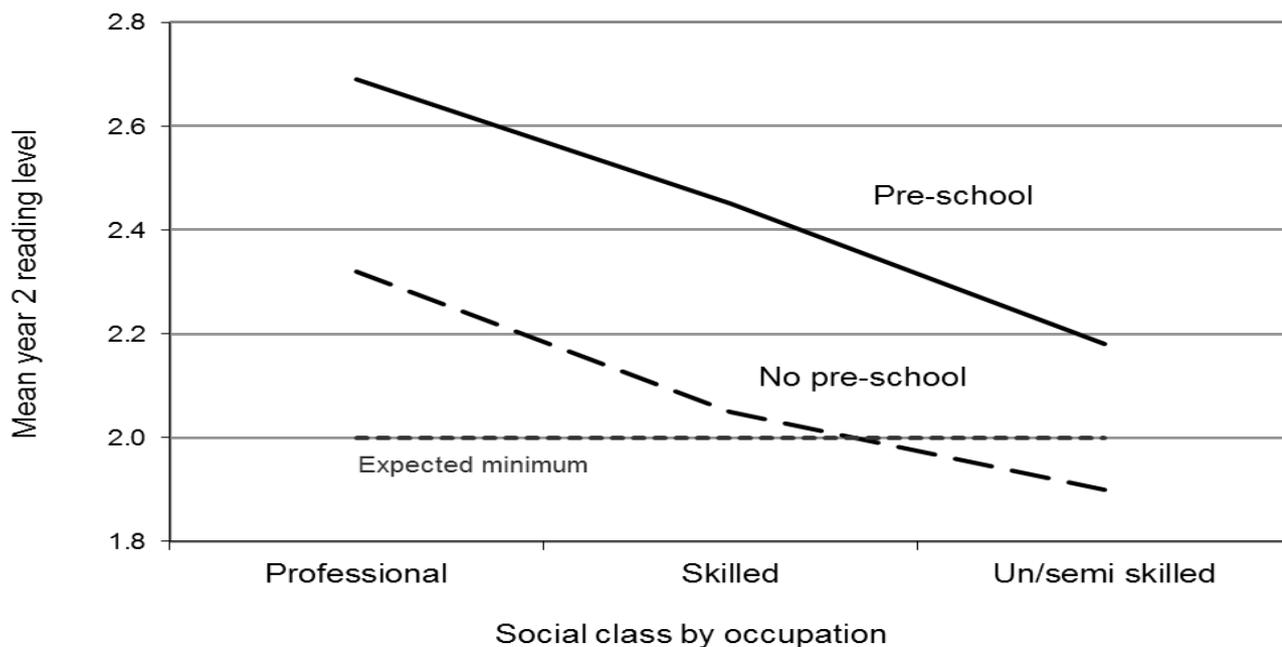
One in three children assessed by EPPSE during pre-school were 'at risk' of developing learning difficulties. This fell to one in five by the time they started primary school, suggesting that pre-school can be an effective intervention for the reduction of special educational needs (SEN).

By age 7, whilst only 2.3% of the EPPE sample had full statements of SEN, more of the children who had not been to pre-school fell into this category. Further analyses of attainment in KS2 showed that high quality pre-school reduced the risk of later SEN identification. For more information on SEN and early years see Sammons et al., 2002; 2004; 2008c; , Anders et al, 2010; Taggart et al., 2004; 2006, Taggart 2010b.

### **Can pre-school make a difference to children from low SES families?**

Attending pre-school made a particular difference to the attainment of children from lower socio-economic groups. Fig 5 below shows that for the most disadvantaged groups it can make the difference between achieving the nationally expected level or falling behind by the end of Key Stage 1. Thus the consequences of attending pre-school are particularly important for this group as children who are already falling behind by age 7 are likely to need additional help throughout Key Stage 2 to help them catch up. Later interventions such as Reading Recovery etc. also tend to be more expensive the older the child is.

**Figure 6: The influence of pre-school attendance on reading (age 7) by social class groups**



### Does the quality of pre-school make a difference to disadvantaged children?

At age 11 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. For maths, high quality pre-school was especially beneficial for the most disadvantaged pupils (ES=0.21) and for those of low qualified parents (ES=0.28). Children from less stimulating homes were more responsive to the quality of pre-school provision than those from homes that had high levels of stimulation and intellectual challenge.

By age 14 having attended a high-quality pre-school showed particular benefits for those children who were disadvantaged due to a poor early years Home Learning Environment (HLE). These young people showed better self-regulation at secondary school if they had attended a pre-school of high quality rather than low quality or no pre-school (ES=0.50).

By age 16 the quality of pre-school was especially important for children whose parents had low or no qualifications. Table 2 below shows that students of low qualified parents who attended high quality pre-school had better grades in GCSE English (ES= 0.35) and in maths (ES= 0.25) compared to similar students who had not attended pre-school.

**Table 2: The influence of high quality pre-school for children of parents with low qualifications on GCSE English and maths.**

<i>Comparison group – Low qualified parents with no pre-school</i>	Effect size	Point score difference	Equivalent to GCSE grades (approx.)
<b>GCSE English</b> Students with low qualified parents attending high quality pre-school.	<b>0.35</b>	<b>2.62</b>	<b>Just under half a grade</b>
<b>GCSE – Maths</b> Students with low qualified parents attending high quality pre-school.	<b>0.25</b>	<b>2.27</b>	<b>A third of a grade</b>

As a mixed methods study, the EPPSE quantitative data explored ‘protective’ factors which helped to ameliorate the negative effects of poverty and disadvantage. These findings are complemented by in-depth qualitative analyses that explore, through child and family case studies, the stories of children on different developmental pathways including

those who ‘succeed against the odds’ (Siraj-Blatchford, 2010a; Siraj-Blatchford et al., 2011; Siraj et al., 2014 see later section on case studies).

**What makes a high quality, effective pre-school?**

This paper has summarised the benefits of high-quality pre-school. Quality can be expressed in many ways but in the EPPSE study ‘quality’ was measured using three internationally recognised observation instruments: the Early Childhood Environment Rating Scale-Revised (ECERS-R, Harms et al., 1998), the Early Childhood Environment Rating Scale-Extension (ECERS-E, Sylva et al., 2003) and the Child-Care Interaction Scale (Arnett 1989). These quality ratings have predicted, over time, better outcomes and this makes for a persuasive argument regarding the benefits to children of providing good, high quality early learning experiences. We have since produced two further scales to the ECERS E which show links between their expressed quality and child development, the Sustained, Shared Thinking and Well-being (SSTEW) scale (Siraj et al 2015) and the MOVERS, a movement play scale (2017, Archer & Siraj), these scales have been used in studies to improve quality and child development (Siraj et al 2023; Howard et al 2018; Kazmierska-Kowalewska et al 2018). They are drawn from our research and aid practitioners to improve quality in centres. **See Appendix 5 and 6 to see how quality rating scales have been used to interrogate quality in Australian settings and how they can lift practice.**

We used a scale known as ECERS-R (1997) which had 7 sub-scales: Space and furnishing, Personal care routines, Language and reasoning, Activities, Social interactions, Organisation and routines and Adults working together. The ECERS-E has of 4 sub-scales: Literacy, Maths, Science/environment, and Diversity.

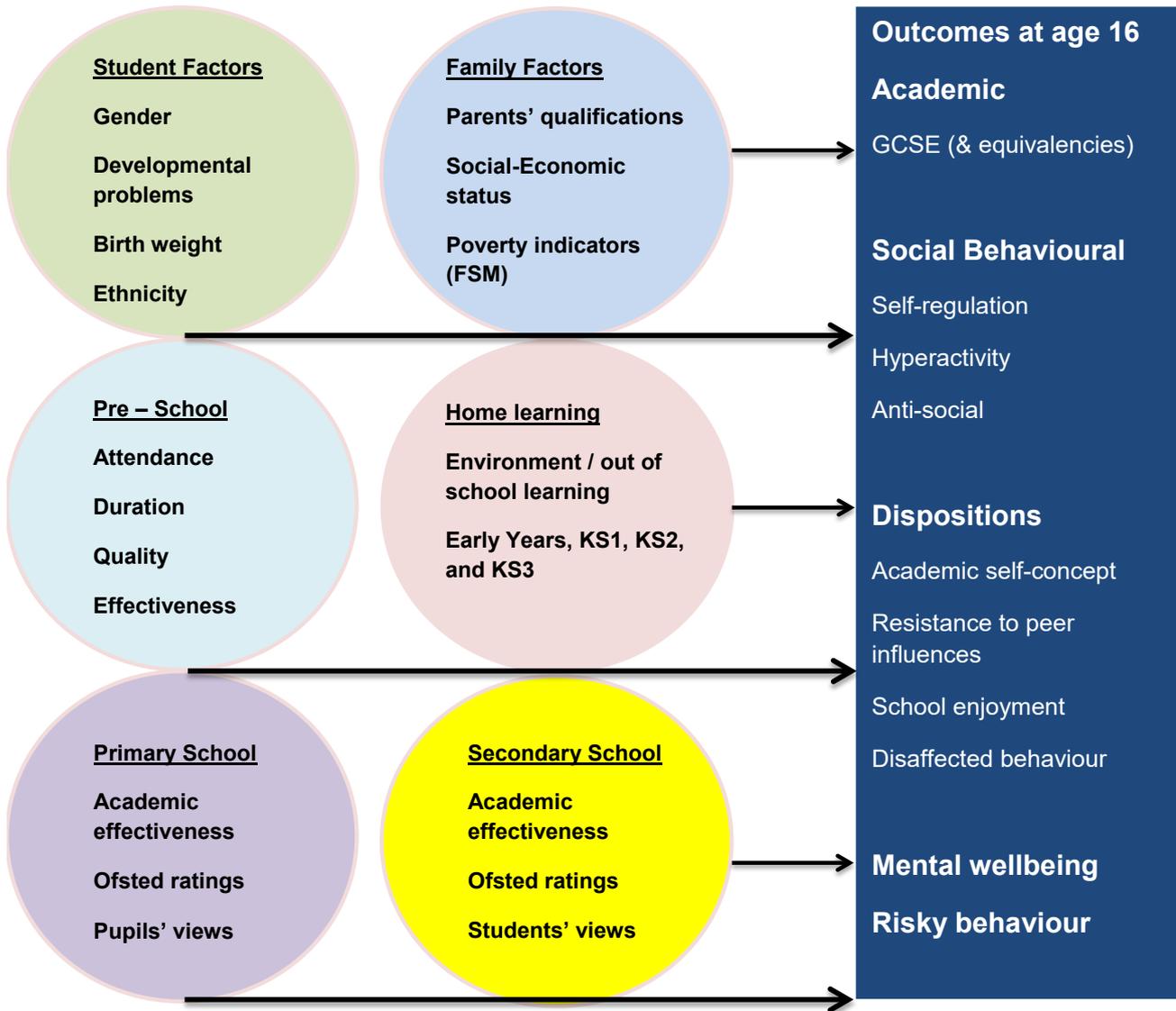
The following is an abbreviated example of an ECERS-E (Sylva et al) item and how it can be scored to capture quality with ratings from ‘low’ (inadequate) to ‘high’ (excellent) for the quality of interactions and extending children’s abilities in taking and listening.

**Table 3: Abbreviated ECERS-E item: Talking and Listening**

Inadequate	Minimal	Good	Excellent
<p>Very little encouragement or opportunity for children to talk to adults.</p> <p>Most verbal attention from adults is of a supervisory nature.</p>	<p>Some conversation between adults and children does occur.</p> <p>Children are mostly permitted to talk amongst themselves.</p> <p>There is little adult intervention to extend conversation.</p>	<p>Interesting experiences are planned by adults and drawn upon to encourage talk and the sharing of ideas.</p> <p>Children are encouraged to ask and answer questions.</p> <p>Adults create one-to-one opportunities to talk with children by initiating conversations with individuals.</p>	<p>Adults provide scaffolding for children’s conversations with them, that is, they accept and extend children’s’ verbal contributions in conversation.</p> <p>Children are often encouraged to talk in small groups and adults encourage their peers to listen to them.</p>

Although the rating scales provide indications of quality on more global domains, the quantitative analyses was limited in providing information on the day-to-day practices that appear to make a difference to children’s outcomes. See section on case studies below.

Figure 7: Influences on outcomes at age 16 and post 16 destinations



In addition to the quantitative analyses, EPPSE as a mixed methods study, also used qualitative data and case study methodology to provide 'thick descriptions' of the structure and process characteristics associated with effective settings (see Siraj-Blatchford 2010a; Siraj-Blatchford et al., 2002; Siraj-Blatchford et al., 2003) and information on children who 'succeeded against the odds' (Siraj-Blatchford, 2010b; Siraj-Blatchford et al., 2011; Siraj et al., 2014).

The EPPSE research came to an end in 2014 but the methodology used has provided inspiration for other longitudinal studies in England and elsewhere. Examples include the Millennium Cohort Study (Hansen & Joshi, 2007) and the Study of Early Education and Development (SEED see <http://www.seed.natcen.ac.uk/the-findings.aspx>).

## **Evidence informed policy and practice**

EPPSE has, for many years, informed major policy decisions affecting young children (Sylva & Pugh 2005; Taggart et al, 2008). It has been referenced in many Parliamentary debates, DfE Research Strategies, National Childcare Strategies, Policy Reviews and international reports. The following examples, give an indication of policy engagement: EPPSE findings have featured in HM Treasury Comprehensive Spending Reviews and National Childcare Strategies since 2000. The National Audit Office (2012) used EPPSE to justify increasing investment in early years. The DfE (2013) cites EPPSE findings on 'what works' in raising quality in the context of a £5 billion-a-year expenditure in early education. EPPSE evidence underpins the free entitlement to the poorest 40% (some 260,000) of two-year-olds (DFE/DH 2012). Two major policy reviews on poverty and life chances, (Field 2010 and Allen 2011) used EPPSE evidence to promote policies to improve the prospects of disadvantaged children through early interventions.

In addition to informing policy, EPPSE findings have been used extensively to support developments in initial teacher and practitioner training. In the Edexcel A2 Psychology textbook (Brain, 2009) EPPSE is used to demonstrate how research is applied to the real world.

EPPSE has had a significant impact on the early years curriculum, pedagogy and the development of the workforce. The Field Report (2010) recommended the national implementation of the ECERS-E for quality assurance. Findings from the pre-school case studies underpinned the original Early Years Foundation Stage (DCSF, 2009) and its revision in 2012 (Siraj-Blatchford 2008a & b). Tickell's (2011) independent review of the EYFS referenced EPPSE throughout. EPPSE was the only research evidence referred to in the press release announcing the expansion of the Teach First programme. Practices, such as 'sustained shared thinking' identified by EPPSE are now taken for granted as 'best practice' in the UK and abroad (179 books were identified as containing the phrase in 2013 - up from 21 in 2008).

### **EPPSE and the international evidence on the benefits of pre-school**

This paper cannot detail all of the international evidence on the benefits of pre-school but this section cites examples of studies that confirm many of EPPSE's main findings.

Early day care was found in EPPSE to relate to increased cognitive outcomes better independence and peer sociability at 5 years but also to increased anti-social behaviour. These findings are similar to those in the US, Germany and Northern Ireland (NICHD, 2002; Anders et al., 2012; Melhuish et al., 2001; 2002).

Similarly, to EPPSE, the US National Institute of Child Health and Development Study (NICHD) found that family characteristics have a greater impact on outcomes for children than pre-school factors. However, the effect of attending pre-school (versus not) on developmental progress is greater than the effect of some social disadvantage. (NICHD, 2002). EPPSE findings on disadvantage are mirrored elsewhere (see Melhuish, 2004a) and are the basis of policy initiatives all over the world (Young, 1996).

The short and long-term, positive effects of pre-school education have been shown conclusively in several countries, e.g. USA, France, Norway, Switzerland, Canada, Denmark, Northern Ireland and New Zealand (see Melhuish 2004a; 2011).

The contribution of high quality to children's developmental progress has been shown in many studies, often using the observational scale (Melhuish, 2004a and b).

Other studies have linked pre-school to the wider benefits for society. Studies of programmes in the US such as High Scope/Perry Pre-School; California Abecedarian; Chicago Child-Parent Centers (Reynolds et al., 2011) provide evidence on the longer-term benefits that result from early childhood interventions with children and their parents. These small-scale experimental studies of intensive programmes with children and parents indicate that benefits can include higher rates of high-school graduation, greater academic achievement, lower teenage pregnancy, and lower juvenile crime (see Schweinhart et al., 1993).

Again, in the US the 'Head Start' and 'Early Head Start' were large-scale integrated early childhood programmes, introduced to boost the school readiness of disadvantaged children with a 'whole child' approach (including parenting practices) which focus on a child's cognitive, social-emotional and health needs. These programmes provide evidence of a range of benefits including positive parenting, improved home learning environment, improved school readiness and better cognitive outcomes at ages 3 and 4, and (for children enrolled in Early Head Start) better social and emotional development at age 3.

Head Start provides evidence for longer term outcomes such as reduced grade repetition, reduced special educational needs, lower rates of teenage pregnancy, higher high school graduation rates, higher enrolment in college, and lower rates of criminal activity as teenagers and adults (Oden et al., 2000a, b). It also showed benefits for language and literacy development and improved health outcomes (US DHHS, 2010)

Outside of the US, the OECD (Organisation for Economic and Co-operation and Development) comparisons show a relationship between attending pre-primary school and better student reading at age 15. This is strongest in school systems that: offer pre-primary education to a larger % of the population; do so over a longer period of time; have smaller pupil-to-teacher ratios in pre-primary school; and invest more per child at pre-primary level (OECD, 2011).

In Sweden, the Andersson study of children from low- and middle-resource areas of two large cities showed that the earlier a child entered centre or family day care, the stronger the positive effect on academic achievement at age 13 (Andersson, B. 1992). For children entering child care age 2 or under, the academic benefit was 10-20% better compared to children who stayed at home.

In France, a national survey found that performance in primary school is correlated with length of time spent in pre-primary education, even after controlling for background characteristics (Jarousse et al., 1992). Each year of kindergarten reduced the likelihood of being kept back in the first grade of primary school, especially for those from the most disadvantaged families.

In New Zealand there is evidence from The Competent Children and The Competent Learners Study (Hodgen. E.; 2007) that children who attended effective childhood education achieved higher scores for cognitive (literacy and numeracy) and attitudinal competencies at age 16 and that children from low-income families with four years of early childhood education experience achieved as well at literacy and communication as children from high-income families (Wylie et al., 1999).

These studies consistently point to the short, medium and long term benefits of early education for a range of outcomes that improve the outcomes for not just the individual but for society as a whole. As many of these programmes are targeted at disadvantaged children they demonstrate the global interest in early education as a way of combating social exclusion.

## **QUALITY MATTERS - CASE STUDIES OF PRACTICE ACROSS MORE EFFECTIVE CENTRES – THOSE THAT ADD VALUE TO CHILDREN'S DEVELOPMENT**

### **Introduction**

In order to look more closely at pre-school pedagogy the EPPSE study conducted analyses on all 141 pre-schools to see whether or not some settings were more 'effective' than others. An effective setting is one in which a child makes attainment and progress beyond what could have been predicted given their background characteristics. The EPPSE definition of 'effectiveness' is based on child outcomes (e.g. pre-reading, verbal comprehension scores etc. detailed in Sylva et al., 1999) which is understood as a necessary but insufficient component of quality on its own.

Having established that some pre-schools are more 'effective' than others<sup>8</sup> (Sylva et al., 2004a; 2004b) EPPSE sought to investigate the day-to-day practices evident in 'excellent' and 'good' settings in order to describe some of the characteristics of effective provision (Siraj-Blatchford 2008; Siraj-Blatchford et al., 2002; 2003).

### **Key Findings**

**The findings show that good outcomes for children are linked to early years settings that:**

- **View cognitive and social development of children as complementary and do not prioritise one over the other. That is combining daycare and pre-school.**
- **Have strong leadership and long-serving staff (three years plus, this was even the case in the private daycare settings where the turnover of staff is normally the highest).**
- **Provide a strong educational focus with trained teachers working alongside and supporting less qualified staff.**
- **Provide children with a mixture of practitioner initiated group work and learning through freely chosen play.**
- **Provide adult-child interactions that involve 'sustained shared thinking' and open-ended questioning to extend children's thinking.**
- **Have practitioners with good curriculum knowledge combined with knowledge and understanding of how young children learn.**
- **Have strong parental involvement, especially in terms of shared educational aims with parents.**
- **Provide formative feedback to children during activities and provide regular reporting and discussion with parents about their child's progress.**
- **Ensure behaviour policies in which staff support children in rationalising and talking through their conflicts.**
- **Provide differentiated learning opportunities that meet the needs of particular individuals and groups of children e.g. bilingual, special needs, girls/boys etc.**

### **Aims**

The aim of the intensive case study analyses has been to tease out the specific pedagogical and other practices that are associated with achieving 'excellent' outcomes compared to those centres with 'good' or more 'average' outcomes. This analysis has been extended significantly in the Researching Effective Pedagogy in the Early Years (REPEY) study (Siraj-Blatchford, et al 2002), which added case studies of two reception classes.

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<sup>8</sup> In highly effective (excellent) setting children made progress significantly above what would have been expected given their individual/home characteristics.

## **Methods and timetable**

In conducting the case studies, trained researchers, who were already familiar with the centres, spent two whole weeks in each centre. Case study data came from multiple sources to allow for assessment by source and the method of data collection. Data from policy documents was triangulated with manager and parent interviews, extensive naturalistic observations of staff (over 400 hours) and systematic focal child observations of children (254 target child observations).

## **Background**

Analyses of the quantitative data collected on every child in the study revealed that in some pre-school centres children made progress as expected or better progress than expected given their individual and home characteristics. Settings for the case study research were selected based on a compilation of profiles for each setting on their child outcome data. This enabled an examination of the variation in child outcomes between centres and the range of outcomes within centres on eight identified cognitive and social development outcomes (a centre scoring '0' on an outcome indicated children had made progress 'as expected'; a score of 1 indicated a positive outcome; and 2 a significantly positive outcome). All of the settings selected for case study demonstrate a range of practices and all of them demonstrate some above average outcome/s. Put another way, settings were chosen from a range identified as good (if their children made slightly more developmental progress than expected based on their individual child and home characteristics) to excellent (where children made significant developmental progress above their projected developmental progress). The report therefore consistently refers to settings throughout as 'good' (slightly above average) or 'excellent' (well above average) based on their child outcome data.

The report provides comprehensive descriptions of one of each type of early years, group setting implementing the Foundation Stage (local authority day care, private day nursery, playgroup, nursery class, nursery school, integrated provision<sup>9</sup> and from the REPEY study, one reception class). None of the cases reported fully is meant to be typical of its type of provision.

Across the 14 case studies, centres have varied in their quality of practice but have contributed to effective results in their child outcomes, although in some cases this is very modest e.g. a positive impact on one outcome out of eight social and cognitive development outcomes for their children. In other cases the centre may have a more robust effectiveness profile demonstrating effectiveness in several areas e.g. number, pre-reading or making children less anti-social/worried/upset in their behaviour.

The EPPE definition of 'effectiveness' is based on child outcomes, which was understood as a necessary but insufficient component of quality on its own. High quality provision is related to child outcomes but also to the quality of child care and pedagogical practices that is offered as well. The report shows how the actual practices in the settings vary in important ways.

## **Detailed Research Findings**

Every effort was made to collect comparable data across the case studies and to provide a framework for analysis allowing comparison across centres. Case studies were compared in terms of their key quality characteristics, for example the pedagogy employed, the curriculum on offer, the ethos and the management and organisational strategies.

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<sup>9</sup> In this case an Early Excellence Centre - which is part of the Government's initiative to provide every region with a one-stop-shop childcare and education service which is responsive to the needs of children, families and local early years staff.

The term 'pedagogy' in this report refers to the instructional techniques and strategies that enable learning to take place. It refers to the interactive process between teacher/practitioner and learner. It also refers to aspects of the learning environment (eg materials provided, organisational techniques, actions of the family and community etc) and how they are harnessed to foster learning in children.

### **Management and staff**

The data reveal that all the case study pre-school settings had strong leadership and long serving staff. Most of the managers and staff had been in the settings over 3 years. Previously published Technical Paper 5 (Taggart et al 2000) has shown that there is a high turnover of staff in the private sector; the private nurseries in the case study sample had stability of staffing with retention between 3-9 years. In the other settings, staff, especially senior management had been in post even longer and 10 to 20 years was not uncommon.

All the managers took a strong lead, especially in curriculum and planning. In most of the settings the strong leadership was characterised by a strong philosophy for the setting that was shared by everyone working in the setting. The managers of the excellent centres had a strong educational focus, valued the importance of adult-child interaction, and supported their staff to develop better ways of engaging children.

In excellent centres, the staff were encouraged to attend staff development sessions, although there was a great deal of variation in training offered and what staff were able to access. Recent developments enabling local authorities to offer training that includes personnel from all pre-school sectors would appear to be a positive way forward. However, the research indicates that training needs to be more sensitive to the needs of staff from different backgrounds. Discussions with local authority personnel and staff in the case study centres revealed that there are wide variations in training backgrounds. Where there are trained teachers, a stronger educational emphasis was found with the teachers playing a lead role in curriculum planning and offering positive pedagogical role modelling to less well-qualified staff.

### **Ethos and climate of the settings**

Perhaps most significantly, the case studies have shown how diverse early years settings are. They show that there is no 'level playing field' in terms of the training of staff, staff salaries and conditions of service, adult-child ratios, resources or accommodation.

The case studies reveal great variation in the conditions and the service provided to children and families. For instance, opening times and sessions varied greatly from children attending half-day sessions a few times a week to extended daycare and education being provided full time for 48-50 weeks of the year. There was similar variation apparent in the salaries paid to staff. The salary range for the playgroup was under £3,000 to £7,000 per annum; while the maintained sector was £15,000-32,000 and the private sector £11,000-24,000.

Additionally, the number of children tends to vary from 20 or so in playgroup and nursery classes to 100–200 in nursery schools, local authority day care and fully integrated centres. The staff numbers reflect the numbers of children and the extent of the services on offer to families and other early years practitioners e.g. training support.

Most nursery classes and playgroups are small with two or three members of staff. Most private nurseries are medium sized with 3-8 or more staff and nursery schools with up to 12 staff. The more complex fully integrated<sup>10</sup> (combined) centres (and early excellence centres) and local authority daycare centres have large numbers of staff due to larger numbers of children on roll and their outreach work to parents, their role as trainers and their dissemination work. For example, in one case study centre, which caters for 200 children and has Early Excellence Centre (EEC) status, the staff total is 55.

It is clear that EPPE has been able to locate moderate to excellent settings from among all the types of providers. However, there were many fewer settings whose children had better outcomes amongst playgroups and local authority daycare. Given the variation in staff pay, training and development this is unsurprising. There is no level playing field. In spite of this the case study centres were able to portray some or a good deal of quality characteristics in terms of their ethos:-

- a) All case study centres on the whole had a warm, caring, safe, secure and supportive approach to their children. All the settings engaged children in a range of different groupings, individual and group play, group focused table top activities, interest areas and class snack and story times.
- b) All case study settings had a welcoming appearance. The displays on the whole reflected the children's work. Children were generally treated with respect. The centres were warm and inviting places. Staff appeared calm and engaged well with the children. All these centres had fairly good resources and, although not always ideal, space. However the outdoor play environments varied greatly.

#### **Analysis of the quantitative findings with the qualitative case studies data**

The case study analysis has gone a long way in providing explanations for the patterns and associations between particular practices (as measured by the Early Childhood Environment Rating Scales R and E, see Sylva et al 1999, Technical Paper 6) and developmental outcomes (see Sammons et al 2002 and Sammons et al 2003). Four patterns of association were identified for special attention and closer analysis of the data from systematic observations suggested that each of the following practices should be investigated further:

- Adult-child verbal interactions
- Differentiation and formative assessment
- Discipline and adult support in talking through conflicts
- Parental partnership with settings and the home education environment

#### **Adult-child interactions**

The 'excellent' settings encouraged 'sustained shared thinking'. This refers to an episode in which two or more individuals "work together" in an intellectual way to solve a problem, clarify a concept, evaluate activities, extend a narrative etc. Both parties must contribute to the thinking and it must develop and extend thinking. The research found that this does not happen very frequently. In 'excellent' settings there were significantly more 'sustained shared thinking' interactions occurring between staff and children than in the 'good' settings. When it did occur, it extended children's thinking. Investigations of adult-child interaction have suggested that periods of 'sustained shared thinking' are a necessary pre-requisite for the excellent early years practice, especially where this is also encouraged in the home through parent support.

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<sup>10</sup> Throughout this report integrated centres (which in some previous EPPE reports have been referred to as combined centres) are those centres which fully combine education and care with the same ratio of trained teachers as nursery schools for 3-5 year olds.

In the 'excellent' case study settings, the importance of staff members extending child-initiated interactions was also clearly identified. In fact, almost half of all of the child-initiated episodes which contained intellectual challenge, included interventions from a staff member to extend the child's thinking. The evidence also suggests that adult 'modelling'<sup>11</sup> is often combined with sustained periods of shared thinking, and that open-ended questioning is also associated with better cognitive achievement. However, open-ended questions made up only 5.1% of the questioning used in the 14 case study settings.

In the 'excellent' settings, the balance of who initiated the activities (staff member or child) was nearly equal, revealing that the pedagogy of the excellent settings encourages children to initiate activities as often as the staff. Also, staff regularly extended child initiated activities, but did not dominate them. The children in reception classes experienced a different balance of initiation, with a much greater proportion of staff initiated episodes. In all of the case study settings children spent most of their time in small groups. But observations show that 'sustained shared thinking' was most likely to occur when children were interacting 1:1 with an adult or with a single peer partner. Freely chosen play activities often provided the best opportunities for adults to extend children's thinking. Adults need, therefore, to create opportunities to extend child-initiated play as well as teacher-initiated group work, as both have been found to be important vehicles for promoting learning.

The findings reveal that level 5 qualified staff (almost all trained teachers) provided children with more experience of academic activities (especially language and mathematics) and they encouraged children to engage in activities with higher cognitive challenge. While the most highly qualified staff also provided the most direct teaching (instruction through demonstration, explanation, questioning, modelling etc) they were the most effective in their interactions with the children, using the most sustained shared thinking. Furthermore, less well qualified staff were significantly better pedagogues when they worked alongside qualified teachers.

### **Differentiation and formative assessment**

The analysis of teacher observations suggests a positive association between curriculum differentiation, formative assessment, and the process of selecting activities to provide the optimum cognitive challenge, and sustained 'shared thinking'. The practice of adults 'modelling' (or demonstrating) positive attitudes, behaviours, and appropriate use of language, has also been identified as a valuable pedagogic strategy to be employed in early childhood. The best case study settings kept good records and engaged with parents about their child's progress on a weekly or monthly basis. However, there was little evidence of detailed formative feedback to children during tasks.

### **Discipline and adult support in talking through conflicts**

The excellent settings adopted discipline/behaviour policies that involve staff in supporting children in rationalising and talking through their conflicts. In other words, a more problem solving approach was taken. Three settings with very positive social and behavioural outcomes had this practical approach supported by a strong behaviour management policy with which all the staff were conversant. In settings that were less effective in this respect, observations showed that there was often no follow up on

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<sup>11</sup> The process where early years educators provide a 'model' in terms of their language, behaviours, skills and/or attitudes for young children to imitate.

children's misbehaviour or conflicts and, on many occasions, children were 'distracted' or simply told to stop.

### **Parental partnership**

The case studies indicate that where a special relationship in terms of shared educational aims has been developed with parents, and pedagogic efforts are made by parents at home to support children, sound learning can take place even in the absence of consistently good pedagogic practice in the pre-school setting. The excellent settings shared child-related information between parents and staff, and parents were often involved in decision making about their child's learning programme. This level of communication was particularly the case in private day nurseries. While settings providing for the needs of children from the higher socio-economic groups benefited especially from this, the potential benefit of adopting a combined approach (good pedagogic practice within the setting and support for the home learning environment) in settings serving more disadvantaged areas is also clear.

In more disadvantaged areas, staff in settings had to be proactive in influencing and supporting the home education environment in order to support children's learning. The evidence suggests that the 'excellent' settings in disadvantaged areas recognise the importance of, and were pro-active in encouraging strong parental involvement in the educational process, by taking the time to share their curriculum, pedagogical strategies and educational aims with parents. They offered advice on how parents could complement this within the home learning environment and how this impacted on young children's development.

### **Pedagogy**

Whilst this paper describes the pedagogy in a limited number of Foundation Stage settings, more detailed information on reception class practices, childminders and the Foundation Stage curriculum is reported in the Researching Effective Pedagogy in the Early Years (REPEY) Project report (Siraj-Blatchford et al 2002).

### **Knowledge of the curriculum and child development**

The case studies show that practitioners' knowledge and understanding of the particular curriculum area that is being addressed are vital. A good grasp of the appropriate 'pedagogical content knowledge'<sup>12</sup> is a vital component of pedagogy and is just as important in the early years as at any later stage of education. Even in these 'good' and 'effective' settings, there were examples of inadequate knowledge and understanding of curriculum areas, especially in the teaching of phonological skills and science.

The study shows that early years staff may need support in developing their pedagogical content knowledge in the domains of the Early Learning Goals. Educators who demonstrate good 'pedagogical content knowledge' display a firm knowledge and understanding of their curriculum content, but crucially, the most 'effective' educators also demonstrated a knowledge and understanding of what part of that content was most significant and relevant to the needs of the children that they were teaching. They were also able to draw upon knowledge of the pedagogical strategies found to be most effective in teaching any particular content. In summary, effective pedagogy in the early years involves both the kind of interaction traditionally associated with the term "teaching", and also the provision of instructive learning environments and routines.

The 'excellent' settings provided both teacher-initiated group work and freely chosen yet potentially instructive play activities. Children's cognitive outcomes appear to be directly related to the quantity and

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<sup>12</sup> Different pedagogic techniques are often required to make different forms of knowledge, skills and understanding accessible to young children. In teacher education the identification of appropriate strategies is often referred to as 'pedagogical content knowledge'. Requires knowledge of the 'subject' being taught and the child's level of learning.

quality of the teacher/adult planned and initiated focused group work for supporting children's learning. The research findings support the general approach taken in Curriculum Guidance for the Foundation Stage (CGFS 2000). The settings that viewed cognitive and social development as complementary managed to achieve the best outcomes for children. Trained teachers were most effective in their interactions with children, using the most sustained shared thinking interactions. Less well-qualified staff were better pedagogues when qualified teachers supported them.

## Conclusion

The EPPSE findings reported in this paper focus exclusively on how children's outcomes and development are influenced by pre-school<sup>13</sup> and makes a persuasive argument that early investment can pay long term dividends. Whilst the strength of the influence of pre-school changed as the EPPSE children turned into teenagers, having positive early learning experiences continued to shape these young people's lives beyond compulsory education. Going to a high-quality pre-school was especially important when starting school and remained so beyond the age of 16. It influences both attainment and progress in early school careers and set children on particularly beneficial learning trajectories, especially if they came from more disadvantaged backgrounds where it provided them with a better start to school. Whilst the influence of pre-school weakened over time it nevertheless provides an important foundation on which to build future learning pathways.

EPPSE has also provided insights into the day-to-day experiences that enhance children's learning. The descriptions of effective pedagogy have contributed to the global debate about what constitutes high quality and how to get the balance right between early 'education' and 'care'. The case studies in effective setting have also shown how 'play' environments can be used to provide the basis for instructive learning.

Whilst this paper has focuses on pre-school, the paramount importance of their family should not be forgotten. The full contextualised results contained in the EPPSE Technical Papers and end of phase reports show the pre-school effects **alongside** other important influences. For instance, whilst the pre-school remains as significant influence to age 16, there are also important effects from the Early Years Home Learning Environment (EY HLE) and many family characteristics such as the qualification level of the mother or being in a household with multiple disadvantages.

EPPSE has shown that pre-school can help to ameliorate some of the disadvantages of growing up in poverty or in households where parents have poor levels of qualifications or provide little intellectual stimulation. It cannot however, do this in isolation. To improve outcomes for children they need supportive families with stimulating home learning environments, high quality pre-school followed by effective primary and secondary school.

The many ways in which EPPSE has contributed to the development of local, national and international policies for young children marks it out as an important, indeed, seminal study. **It shows that ECEC is vital in the mission to develop the wealth of a nation by investing in human development during a critical stage of life.**

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<sup>13</sup> See the EPPSE website [www.ioe.ac.uk](http://www.ioe.ac.uk) for findings on individual (gender etc.), family (SES etc.), home learning environments (Early Years, KS1 etc.) the neighbourhood, primary and secondary school (effectiveness, Ofsted judgements etc.) as predictors of academic, social-behavioural, dispositional and well-being outcomes.

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Appendix 1 EPPSE sample cohort information and assessment time points for the academic year (2013/14)

A1Table 1: EPPSE cohort information for academic year 2013/14

Cohort	DOB	Pre-school Entry to study (age 3+)	Primary School				Secondary School		Post 16 Compulsory Education (KS5)		H.E.= 1 <sup>st</sup> Year Uni (age 19)	H.E.= 2 <sup>nd</sup> Year Uni (age 20)	H.E.= 3 <sup>rd</sup> Year Uni (age 21)	
			KS1		KS2		KS3	KS4	Year 12 A/S = (age 17)	Year 13 A = (age 18)				
			Entry to Reception (age 5)	Year 1 (age 6)	Year 2 (age 7)	Year 5 (age 10)	Year 6 (age 11)	Year 9 (age 14)	Year 11 GCSE (age 16)					
1	Sept 92 – Aug 93	Sept 95– Aug 96	Sept 96– Aug 97	Sept 97– Aug 98	Sept 98 – Aug 99	Sept 02 – Aug 03	Sept 03 – Aug 04	Sept 06 – Aug 07	Sept 08 – Aug 09	Sept 09– Aug 10	Sept 10 – Aug 11	Sept 11 – Aug 12	Sept 12 – Aug 13	Sept 13 – Aug 14
2	Sept 93 – Aug 94	Sept 96– Aug 97	Sept 97– Aug 98	Sept 98– Aug 99	Sept 99 – Aug 00	Sept 03 – Aug 04	Sept 04 – Aug 05	Sept 07 – Aug 08	Sept 09 – Aug 10	Sept 10 – Aug 11	Sept 11 – Aug 12	Sept 12 – Aug 13	Sept 13 – Aug 14	Sept 14 – Aug 15

Key Stage (KS) Assessment time points

 KS1 National Assessments (Year 2)

 KS2 National Assessments (Year 6)

 KS3 National Assessments (Year 9)

 KS4 GCSEs (Year 11)

## Appendix 2 Key EPPSE Reports

This findings in this paper are taken from a number of Technical Papers and end of phase reports. For more information see the following key documents or go to <http://www.ioe.ac.uk/research/4586.html> for a full list of publications.

### The Pre-school phase:

Final report and associated technical papers <http://dera.ioe.ac.uk/18189/> There are twelve technical papers associated with this phase of the research – see also [www.ioe.ac.uk/eppse](http://www.ioe.ac.uk/eppse) Sylva, K., Melhuish, E.C., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (2004). The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 12 -The Final Report: Effective Pre-School Education. London: DfES / Institute of Education, University of London. [http://www.ioe.ac.uk/EPPE\\_TechnicalPaper\\_12\\_2004.pdf](http://www.ioe.ac.uk/EPPE_TechnicalPaper_12_2004.pdf) Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (2004), The Effective Provision of Pre-School Education (EPPE) Project: Final report. London: SureStart DfES Publications Ref SSu/FR/2004/01 <http://www.education.gov.uk/publications/eOrderingDownload/SSU-FR-2004-01.pdf> Research Brief: [http://www.ioe.ac.uk/RB\\_Final\\_Report\\_3-7.pdf](http://www.ioe.ac.uk/RB_Final_Report_3-7.pdf) <http://www.education.gov.uk/publications/eOrderingDownload/SSU-SF-2004-01.pdf>

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### Academic

Sammons, P., Sylva, K., Melhuish, E.C., Siraj-Blatchford, I., Taggart, B. and Elliot, K. (2002). The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 8a -Measuring the Impact of Pre-School on Children's Cognitive Progress over the Pre-School Period. London: DfES / Institute of Education, University of London. [http://www.ioe.ac.uk/EPPE\\_TechnicalPaper\\_08a\\_2002.pdf](http://www.ioe.ac.uk/EPPE_TechnicalPaper_08a_2002.pdf)

### Social-behavioural

Sammons, P., Sylva, K., Melhuish, E.C., Siraj-Blatchford, I., Taggart, B. and Elliot, K. (2003). The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 8b -Measuring the Impact of Pre-School on Children's Social/Behavioural Development over the Pre-School Period. London: DfES / Institute of Education, University of London. [http://www.ioe.ac.uk/EPPE\\_TechnicalPaper\\_08b\\_2003.pdf](http://www.ioe.ac.uk/EPPE_TechnicalPaper_08b_2003.pdf)

### The Primary Phase:

#### End of Key Stage 1

Sammons, P., Sylva, K., Melhuish, E.C., Siraj-Blatchford, I., Taggart, B., Elliot, K. and Marsh A. (2004). The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 11 - The Continuing Effects of Pre-school Education at Age 7 Years. London: DfES / Institute of Education, University [http://www.ioe.ac.uk/EPPE\\_TechnicalPaper\\_11\\_2004.pdf](http://www.ioe.ac.uk/EPPE_TechnicalPaper_11_2004.pdf)

#### End of KS 2, age 11

Final report of the end of the primary phase <http://dera.ioe.ac.uk/id/eprint/8543> Sylva, K., Melhuish, E.C., Sammons, P. Siraj-Blatchford, I. and Taggart, B. (2008). Final Report from the Primary Phase: Pre-school, School and Family Influences on Children's Development during Key Stage 2 (7-11). Nottingham: DCSF Research Report 61 / Institute of Education, University of London [http://www.ioe.ac.uk/End\\_of\\_primary\\_school\\_phase\\_report.pdf](http://www.ioe.ac.uk/End_of_primary_school_phase_report.pdf) <http://www.education.gov.uk/publications/eOrderingDownload/DCSF-RR061.pdf> Final Report Brief from the Primary Phase: Pre-school, School, and Family Influences on Children's development during Key Stage 2 (Age 7-11 (2008). Research Brief RB061

[http://www.ioe.ac.uk/End\\_of\\_primary\\_school\\_phase\\_research\\_brief.pdf](http://www.ioe.ac.uk/End_of_primary_school_phase_research_brief.pdf)  
<http://www.education.gov.uk/publications/eOrderingDownload/DCSF-RB061.pdf>

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#### **Academic**

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**Appendix 3: Contextualised models showing the strength of main predictors for maths at different time points**

**A3 Table 1: The effects on maths at age 7**

Factors	Effect size	Description
Age	<b>0.47</b>	Older Children higher attainment
Birth Weight	<b>0.42</b>	Normal birth weight higher than very low
EAL	<b>0.20</b>	Children with EAL attained lower scores
Developmental problems	<b>0.57</b>	Early developmental problems = predictor of low attainment.
Parents Qualifications	<b>0.47</b>	Higher qualified = higher attainment
Social- Economic status	<b>0.31</b>	Higher SES = higher attainment
Free school meals	<b>0.27</b>	Eligible for FSM = negative predictor.
Early year HLE	<b>0.61</b>	Higher Early years HLE = higher attainment
Pre-School	<b>0.20</b>	Attending vs. non-attending
Quality (ECERS-E) by duration	<b>0.41</b>	High quality and long duration = better results

**A3 Table 2: The effects on maths at age 11**

Factors	Effect size	Description
Gender	<b>0.19</b>	Boys show higher attainment than girls
Birth Weight	<b>0.48</b>	Normal birth weight higher than very low
Ethnic groups	<b>0.45</b>	Indian heritage higher than children of White UK heritage
Need for EAL support	<b>0.64</b>	Need of EAL support = predictor of low attainment
Developmental problems	<b>0.15</b>	Early developmental problems = predictor of low attainment.
Parents Qualifications	<b>0.71</b>	Higher qualified = higher attainment
Social- Economic status	<b>0.36</b>	Higher SES = higher attainment
Free school meals	<b>0.15</b>	Eligible for FSM = negative predictor.
Early year HLE	<b>0.42</b>	Higher Early years HLE = higher attainment
KS1 HLE	<b>0.17</b>	Moderate personal interactions better than high
Pre-School	<b>0.26</b>	Attending vs. non-attending
Pre-School quality (ECERS_E)	<b>0.34</b>	High quality pre-school = higher attainment
Pre-School effectiveness	<b>0.40</b>	High effective pre-school = higher attainment
Primary School effectiveness	<b>0.38</b>	High effective primary school = higher attainment

**A3 Table 3: The effects on maths at age 14**

Factors	Effect size	Description
Age	<b>0.15</b>	Older pupils perform better than younger
Birth Weight	<b>0.40</b>	Normal birth weight higher than very low
Ethnicity	<b>0.37</b>	Indian heritage higher than children of White UK heritage
Developmental problems	<b>0.16</b>	Early developmental problems = predictor of low attainment.
Behavioural problems	<b>0.18</b>	Early behavioural problems = predictor of low attainment
Number of siblings	<b>0.19</b>	Three siblings or more predict lower cognitive achievement
Parents Qualifications	<b>0.50</b>	Higher qualified = higher attainment
Free school meals	<b>0.31</b>	Eligible for FSM = negative predictor.
Social- Economic status	<b>0.36</b>	Higher SES = higher attainment
Family income	<b>0.21</b>	Pupils from families with a high income perform better
Early year HLE	<b>0.38</b>	Higher scores on Early Years HLE are associated with higher attainment
KS2 HLE	<b>0.17</b>	Moderate computing usage is better than frequent computer usage
Pre-School attendance	<b>0.26</b>	Attending vs. non-attending
Pre-School quality (ECERS-E)	<b>0.28</b>	High quality pre-school = higher attainment

**A3 Table 4: The effects on maths at age 16**

<b>Factors</b>	<b>Effect size</b>	<b>Description</b>
Age	<b>0.14</b>	Older pupils perform better than younger
Ethnicity	<b>0.53</b>	Indian students higher total GCSE score
Health Problem	<b>0.16</b>	Early health problems = predictor of low attainment
Behavioural problems	<b>0.27</b>	Early behavioural problems = predictor of low attainment
Number of siblings	<b>0.17</b>	Three siblings or more predict lower cognitive achievement
Parents Qualifications	<b>0.74</b>	Higher qualified = higher attainment
Mother's age	<b>0.10</b>	Older mothers = higher attainment
Free school meals	<b>0.37</b>	Eligible for FSM = negative predictor.
Social- Economic status	<b>0.66</b>	Higher SES = higher attainment
Family income	<b>0.28</b>	Pupils from families with a high income perform better
Early year HLE	<b>0.45</b>	Higher Early years HLE = higher attainment
KS1 HLE	<b>0.11</b>	Moderate outing = higher attainment
KS2 HLE	<b>0.15</b>	Moderate computing = higher attainment
KS3 HLE	<b>0.47</b>	High academic enrichment = higher attainment
Pre-School attendance	<b>0.21</b>	Attending vs. non-attending
Pre-School quality (ECERS-E)	<b>0.26</b>	High quality pre-school = higher attainment

## Appendix 5 Quality and Inspection:

Please read (attached as pdf)

This paper compares Australian ECEC centre NQS ratings with ECERS E and SSTEW – validated quality ratings in the same centres and reaches the conclusion that NQS rating uplift practice for low quality centres but do not lift quality sufficiently at the higher end to support child development. Quality could be further improved with the use of validated instruments. See their use below in appendix 6 by Goodstart Early Learning, changing quality in one provider.

Siraj, I., Howard, S., Kingston, D., Melhuish, E., Neilsen-Hewett, C. & de Rosnay, M. (2019) 'Comparing regulatory and non-regulatory indices of early childhood education and care (ECEC) quality in the Australian early childhood sector' in *The Australian Educational Researcher* 46(3), 365-383 <http://link.springer.com/article/10.1007/s13384-019-00325-3>  
Article DOI: 10.1007/s13384-019-00325-3

Issues around the early home learning environment can also be discussed and what this means for parent partnership, there is strong evidence from EPPSE and OECD studies.

## Appendix 6: Quality as important in driving impact and characteristics of high quality ECEC – case study of Goodstart Early Learning using quality rating scales (QRS)

**Enabling environments and children's agency: Connecting the pieces.**

**The following is an abstract written by Catherine Tisdell of Goodstart Early Learning**

### **National Lead Data and Policy.**

The Early Years Learning Framework (DEEWR, 2009, p. 45) defines agency as being able to make choices and decisions, to influence events and to have an impact on one's world. Children's agency is supported through intentional teaching, involvement in decision making and reciprocal, attuned responsive interactions. (ACECQA, 2018) all of which constitute the environments that teachers/educators provide for children.

Enabling environments that support teaching and learning for all children provide opportunities for both planned and spontaneous teaching and learning, they show evidence of an understanding of children's learning, development and well-being as they are challenging, promoting the notion of *high expectations* for children (DEEWR, 2009) and stimulating. They are underpinned by children's theories, perspectives and ideas that engage and challenge them to what to extend on their learning in new and exciting ways.

At Goodstart Early Learning, we have adopted the use of two internationally renowned environmental rating scales to focus on environments to improve outcomes for children across our services. They are:

- *ECERS-E: The Early Childhood Environment Rating Scale* (Sylva, Siraj-Blatchford & Taggart, 2010)

- *Assessing Quality in Early Childhood Education and Care : Sustained Shared Thinking and Emotional Well-being (SSTEWS) Scale for 2-5-year-olds provision* (Siraj, Kingston & Melhuish, 2015).

Research suggests that these tools can raise standards of quality in 3- 5 years rooms (Siraj, Howard, Kingston, Neisen-Hewett, Melhuish, & de Rosnay, 2019). This program has now been in place for two years in all our early learning centres. Teachers and educators use the scales to self-assess in order to understand the quality of learning environments and teaching practices. Results are then used to set goals to focus improvement in each particular centre. These resources make very clear what is required in identified areas of learning to ensure high-quality, enabling environments that supports teaching and learning and children’s agency.

Gagan, and Natsumi two of our teachers from Goodstart Early Learning, Calamvale, QLD, share their experiences with the tools:

Below, Gagan describes how the Early Childhood Environment Rating Scale (ECERS-E) has supported the design and resourcing of the room.

ECERS-E has helped me in planning, reflecting and self-evaluating the physical environment in the kindergarten room. It has helped me in deepening my knowledge of what “high quality early childhood education” looks like, our strengths and areas of development. Based on the assessment results as well as I was able to design the room into areas that consider literacy, mathematics, science and the natural environment, and take into account diversity. Critically reflecting on all the areas in the room, brainstorming with colleagues about having specific resources in the areas as well as listening to children’s voices and understanding their interests, helped in the design of the room. I always make sure to keep the areas refreshed and ‘alive’ by adding or taking away resources and provocations. Making sure the areas provide support to the ongoing projects, emergent interests of the children and cater to the specific needs, has helped in children being engaged and has immensely improved the learning and development outcomes for the children.

Natsumi reflects on one of her goals as a self-assessment using SSTEWS:

One of my goals focuses on “Encouraging sustained shared thinking through storytelling, sharing books, signing and rhymes” (p. 30) and I have been working on building resources and engaging in shared and sustained conversations with children in small groups. Hand-made puppets and felt boards have been added to our book corner for children to access and use alone, in small groups or with the support of an educator. Consideration of grouping sizes has further enabled me to engage in better conversations with children and focus on scaffolding learning. I have also learnt that this way of working allows me to provide many opportunities for children to revisit their own learning in their own ways. They are given ample space and time to co-construct and deepen their knowledge base and I find myself balancing my role as an observer, facilitator or researcher in children’s learning.

By providing quality learning areas and facilitating a positive learning environment we are able to create and sustain enabling environments that authentically supports children’s agency.

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