Let evidence lead the way: Findings from the UK's effective provision of pre-school education study

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Publication Details
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Abstract
Effective Provision of Pre-School Education (EPPE) is the first major study in the United Kingdom to focus specifically on the effectiveness of early years education. The large-scale, longitudinal study follows the progress and development of 4,000 children in various types of at home and pre-school settings. It explores the characteristics of different kinds of early years settings and their influences on children’s early development and their later progress. It is now reporting at age 16. Dr. Melhuish's work explores the effects of student variables (gender, EAL status), family (parental SES, qualifications, home learning etc.) and neighbourhood characteristics on student’s secondary school attendance, attitudes, social, behavioural and academic outcomes. The next phase of EPPE, projects future trajectories based on entire family and educational histories and explores possible long-term outcomes in relation to economic indicators (employment, earning etc.).

Keywords
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Disciplines
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Edward Melhuish

Toronto, 26th April 2013
Culture and social context  (Macro-level)  
(e.g., labour markets & ideology)  
\downarrow  
Policy on early childhood services, (e.g. ECEC)  
\downarrow  
Family support, childcare, ECEC centre, etc.  
\downarrow  
Children’s daily experiences (individual level)  
(home and out-of-home)  
\downarrow  
Children’s development

Factors impacting on children’s development
Why the early years?

“If the race is already halfway run even before children begin school, then we clearly need to examine what happens in the earliest years.” (Esping-Andersen, 2005)

“The first 2000 days are the most important…. The experience we are exposed to in early life affect equity in health learning and behaviour throughout life.” (Fraser Mustard, 2007)
Early risk factors and poor outcomes

- Poor literacy and numeracy
- School failure
- Unemployment
- Antisocial behaviour and criminality
- Substance abuse
- Mental health problems
- Physical health problems
For many families their problems derive from problems with the infrastructure of society.  

No amount of counselling, early childhood curricula, or home visits will take the place of:

1. jobs with decent incomes,  
2. affordable decent housing,  
3. good health care,  
4. optimal family structure or  
5. supportive neighbourhoods where children encounter positive role models.
Interventions with Disadvantaged Groups

“If people keep falling off a cliff, don’t worry about where you put the ambulance at the bottom. Build a fence at the top and stop them falling off in the first place.”
Early Childhood Education

Perry Preschool Study
(Schweinhart, Barnes & Weikart, 1993)

123 African-American children in extreme poverty
Randomly assigned age 3 to program or no-program

Daily High/Scope classes with planned learning activities and weekly home visits to families
Had savings Account at 40
Own Car at 40
Own Home at 27
Employed at 40
Earned >$20K at 27
Earned >$20K at 40
Program
No Program
Return on investment

Program Benefits Versus Cost

1992 dollars, 3% annual discount rate

Return on the dollar invested

$7.16
General Population Studies
Effective Pre-School, Primary and Secondary Education Project
EPPSE (1997 – 2013)

Principal Investigators: Kathy Sylva, Pam Sammons (Oxford), Iram Siraj-Blatchford & Brenda Taggart (IoE), & Edward Melhuish (Birkbeck)

A longitudinal study funded by DfE
EPPE STUDY in UK

- 25 nursery classes: 590 children
- 34 playgroups: 610 children
- 31 private day nurseries: 520 children
- 20 nursery schools: 520 children
- 24 local authority day care nurseries: 430 children
- 7 integrated centres: 190 children
- Home: 310 children

School starts:
- 6 yrs
- 7 yrs
- 16 yrs

Key Stage 1:
- 600 Schools
- approx. 3,000 children

Key Stage 2:
- 800 Schools
- approx. 2,500 children
Quality and Duration matter
(months of developmental advantage on literacy)
Effects of child, home, and pre-school compared

EFFECTS UPON LITERACY

- Home environment
- Social class
- Quality pre-school
- Duration pre-school
- Low birthweight
- Gender

Mean EFFECT
- Gender: 0.6
- Birthweight: 0.5
- Pre-school: 0.4
- Mid-school: 0.3
- High school: 0.2
- Other: 0.1
Parents asked about activities in the home, and some were linked to development.

A home learning environment (HLE) index constructed (Melhuish et al., 2001).

<table>
<thead>
<tr>
<th>Activity</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading to child</td>
<td>0-7</td>
</tr>
<tr>
<td>Library visits</td>
<td>0-7</td>
</tr>
<tr>
<td>Painting &amp; drawing</td>
<td>0-7</td>
</tr>
<tr>
<td>Playing with letters</td>
<td>0-7</td>
</tr>
<tr>
<td>Playing with numbers/shapes</td>
<td>0-7</td>
</tr>
<tr>
<td>Songs/poems/nursery rhymes</td>
<td>0-7</td>
</tr>
</tbody>
</table>

0 = not occur
6-7 = very frequent

Home Learning Environment
Distribution of Home Learning Environment (HLE)

Mean = 23.12
Std. Dev. = 7.66
N = 3,006
The Home Learning Environment in the early years has powerful long-term effects

“What parents do is more important than who parents are”.

(Melhuish et al., 2001)
Social class and pre-school on literacy (age 7)

- **Mean year 2 reading level**
  - **Pre-school**
  - **No pre-school**
  - **Expected minimum**

- **Social class by occupation**
  - Professional
  - Skilled
  - Un/semi skilled
Combining quantitative and qualitative methods

From quantitative analyses we identified ECEC centres that were particularly effective.

Then qualitative case studies looked at what made them effective.
Effective Pre-schools

Five areas were particularly important:

• Quality of the adult-child verbal interaction.

• Knowledge and understanding of curriculum.

• Knowledge of how young children learn.

• Adults skill in helping children resolve conflicts.

• Helping parents to support children’s learning at home.
Sustained shared thinking

Good outcomes are linked to:

Adult-child interactions that involve ‘sustained shared thinking’ and open-ended questioning to extend children’s thinking

Sustained shared thinking: 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.
Modelling later outcomes

**Family Factors**

**Child Factors**

**Home-Learning Environment**

**Pre-school**

**Primary School**

**Secondary School**

**Child development:**

- e.g. literacy
- numeracy
- sociability
- behaviour problems

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Child development:

- e.g. literacy
- numeracy
- sociability
- behaviour problems
Effects upon Age 11; literacy and numeracy

- **Father’s Education**: High positive effect for literacy, moderate effect for numeracy.
- **Socio-economic status**: Moderate effect for literacy, small effect for numeracy.
- **Home learning environment**: High effect for literacy, moderate effect for numeracy.
- **High-quality pre-school**: Moderate effect for literacy, small effect for numeracy.
- **Primary school**: Small effect for literacy, negligible effect for numeracy.
Combined Impact of Pre- and Primary School - Maths

Effect Size

Pre-School Effectiveness

Low
Medium
High

Reference Group: No Pre-School and low Primary School Effectiveness
Effect sizes for 14 year olds

- Literacy
- Numeracy

Effect size

- Family income
- Mother’s education
- Father’s education
- Socio-economic status
- Home Learning
- Environment
- High-quality pre-school
- Primary school
- Secondary school quality
Pre-school Quality and Self-regulation and Pro-social behaviour (age 11 and 14)
Trajectories for Numeracy

Group %:
- 1 1 1 8.2%
- 2 2 2 19.6%
- 3 3 3 18.8%
- 4 4 4 17.3%
- 5 5 5 23.2%
- 6 6 6 12.9%
Study in Northern Ireland
850 children followed from 3 to 11 years of age.
Similar results to EPPE in England.

At age 11, allowing for all background factors,
The effects of quality of pre-school persist until age 11 years

High quality pre-school – improved English and maths,
And improved progress in maths during primary school.

Children who attended high quality pre-schools were 2.4 times more likely in English, and 3.4 times more likely in mathematics, to attain the highest grade at age 11 than children without pre-school.
Odds Ratio for Highest Grade for Literacy and Numeracy – Age 11
Peer Group Effects

Social mix in ECEC affects outcomes

- disadvantaged children show greater benefits when in ECEC centres that are socially mixed rather than centres with only disadvantaged children
Conclusions

• From age 2 all children can benefit from ECEC.
• The quality of ECEC matters.
• Part-time has equal benefit to full-time.
• ECEC effects persist until teenage years
• High quality ECEC can help protect a child from effects of a low effective school.
• Poor children benefit from a social mix in ECEC.
• Early HLE effects persist into the teenage years.
Policy Impact of EPPE

- Free part-time ECEC place from 3 years
- Free part-time ECEC place from 2 years (40% most deprived)
- Maternity leave increased to 1 year
- New Early Years curriculum
- New training programmes for EY staff
- Acceptance that EY spending is part of government responsibilities
- Children’s Centres
International Evidence

Studies from many countries now support the importance of high quality ECEC for child development in the long-term.
USA- Age 5 Reading by pre-school quality: 12,800 children
- Comparison with no pre-school (Magnusson et al., 2003)

<table>
<thead>
<tr>
<th></th>
<th>READING</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ALL</td>
<td>Poverty</td>
<td>Low Mother Educ.</td>
</tr>
<tr>
<td>Pre-school (High Quality)</td>
<td>1.66**</td>
<td>2.23**</td>
<td>3.44**</td>
</tr>
<tr>
<td>Pre-school (Low Quality)</td>
<td>1.34**</td>
<td>1.48*</td>
<td>1.21</td>
</tr>
</tbody>
</table>
In **Norway**, free preschool available to children aged 3 years during the 1960’s and 1970’s – huge increase in preschool attendance.

Analysis showed children attending preschool:

1. had higher educational levels and
2. better job outcomes later in life.
3. higher income in later life
In **France**, preschool expanded in 1970’s – huge increase in preschool attendance.

Analysis showed preschool:
1. leads to higher income in later life
2. reduces socio-economic inequalities - children from less advantaged backgrounds benefit more.

**Switzerland** has also expanded preschool.
- Improved intergenerational education mobility
- Especially beneficial for disadvantaged children
Danish register data on whole population  
5 quality indicators of preschool:  
1) the staff-to-child ratio  
2) the share of male staff in the preschool,  
3) % of pedagogically trained staff  
4) % of non-native staff,  
5) the stability of the staff (staff turnover).

Controlling for background factors, **better preschool quality** linked to better test results in 9th grade.

“the fact that we find long-lasting effects of pre-school even after 10 years of schooling is quite remarkable”
Benefits of preschool have also been evident in Asia and South America.

- In **Bangladesh**, children attending preschool achieved higher attainment levels at primary school.

- **Uruguay** has followed suit - studies identified better attainment in secondary school for children who attended preschool.

- **Argentina** found increases in primary school attainment from children who spent at least 1 year in preschool.
Latin America

Association between Preschool, Literacy and Under 5 Mortality

% in preschool

literacy 6th grade

Under 5 mortality

Paraguay, Dominican R, Colombia, Peru, Argentina, Uruguay, Chile, Costa Rica, Cuba

Pre-school in random sample of children born in 1958 in UK

Effects on cognition and socialisation are long-lasting.

Controlling for child, family and neighbourhood, there were long-lasting effects from pre-school education.

Pre-school leads to **better cognitive scores at 7 and 16 years**

In adulthood, pre-school was found to increase the **probability of good educational qualifications and employment at age 33**, and **better earnings at age 33**.
Gains from ECEC

Education and Social Adjustment
- Educational Achievement improved
- Special education and grade repetition reduced
- Behaviour problems, delinquency and crime reduced
- Employment, earnings, and welfare dependency improved
- Smoking, drug use, depression reduced

Decreased Costs to Government
- Schooling costs
- Social services costs
- Crime costs
- Health care costs
PISA results for 2009

15-year-olds who had attended pre-school were on average a year ahead of those who had not.

Also, PISA results suggest that pre-school participation is strongly associated with reading at age 15 in countries that
1. have sought to improve the quality of pre-school education
2. provide more inclusive access to pre-school education.
OECD report on PISA results

“The bottom line: Widening access to pre-primary education can improve both overall performance and equity by reducing socio-economic disparities among students, if extending coverage does not compromise quality.”

“Research increasingly has shown the benefits of early childhood education and efforts to promote the lifelong acquisition of skills for both individuals and the economy as a whole. The payoffs of early childhood programs can be especially high.”
LESSONS

1. Early years are very important
2. ECEC is part of infrastructure for a successful society
3. High quality ECEC boosts development
4. Parenting is also very important
5. ECEC can lift population curve.
6. Disadvantaged children benefit greatly from high quality ECEC.
Policy Issues

Parenting and Home factors have more than twice the effect of preschool or school factors.

However policy levers for parenting very very limited.

Whereas policy levers on preschool and school potentially very strong.
Example References


[http://www.child-encyclopedia.com/Pages/PDF/Melhuish-BarnesANGxp1.pdf](http://www.child-encyclopedia.com/Pages/PDF/Melhuish-BarnesANGxp1.pdf)


