

2011

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Recommended Citation

Melhuish, Edward, "Early years experience and longer-term child development: Research and implications for policymaking" (2011). *Faculty of Social Sciences - Papers*. 1192.
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Abstract

Why should we focus on the early years? One reason is the accumulation of evidence that indicates that the child's experience in the early years has profound consequences for later life. There are now many studies that present a consistent picture indicating that adversity in early life, such as frequently accompanies child poverty, is linked to: poor adult mental and physical health, adult mortality, anti-social and criminal behaviour, substance abuse and poor literacy and academic achievement.

Keywords

research, experience, years, longer, term, early, child, policymaking, development, implications

Disciplines

Education | Social and Behavioral Sciences

Publication Details

Melhuish, E. (2011). Early years experience and longer-term child development: Research and implications for policymaking. Paris, France: OECD.

EARLY YEARS EXPERIENCE AND LONGER-TERM CHILD DEVELOPMENT: RESEARCH AND IMPLICATIONS FOR POLICYMAKING

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Why should we focus on the early years? One reason is the accumulation of evidence that indicates that the child's experience in the early years has profound consequences for later life. There are now many studies that present a consistent picture indicating that adversity in early life, such as frequently accompanies child poverty, is linked to: poor adult mental and physical health, adult mortality, anti-social and criminal behaviour, substance abuse and poor literacy and academic achievement.

To quote two well known social scientists
Esping-Anderson (2004)

"If the race is already halfway run even before children begin school, then we clearly need to examine what happens in the earliest years."

And the Nobel prize winning economist James Heckman (Heckman and Wax, 2004)

"Like it or not, the most important mental and behavioural patterns, once established, are difficult to change once children enter school."

Heckman has analysed data from many different studies and produced a graph showing the relationship between investment and the return to investment for interventions at different stages of the life cycle, and clearly interventions in the early years are the most cost-effective.

In considering the evidence of what might be done in the early years there are a number of studies that indicate investment in the early years would have definite benefits. For example the Perry Preschool Project, and the Abecedarian Project have shown the possible benefits of high quality preschool education years for disadvantaged African-American children, and that the value of the benefits are far greater than the cost of preschool. These American studies clearly demonstrate benefits of Early Childhood Education and Care (ECEC) for disadvantaged children. Also they indicate that it can make good economic sense for society. However they do not tell us about the value of ECEC for the general population.

In addition there has been much other research on ECEC and child development. A review of this research has been provided online by Melhuish (2004). In making conclusions from the evidence on ECEC, we need to distinguish between results for 0-3 years where the evidence is mixed with some studies indicating benefits of early childcare, some indicating negative effects and some studies indicating no effects at all. Whereas for children over 3 years the evidence of benefits for children is very clear and there are almost universal benefits for children associated with the various forms of group-based ECEC (*e.g.* playgroups, day care centres, nursery schools) attended by children from 3 years upwards. Also the benefits increase the greater the quality of ECEC (*i.e.* how well the centres serve children's developmental needs). The discrepant results for studies of ECEC for children 0-3 years probably reflects different effects for different populations, different ages, different types of children as well as differing qualities of childcare for differing settings and differing populations.

EPPE and EPPNI projects

The EPPNI and EPPE projects are the first large-scale longitudinal studies in Europe to investigate the effects of different kinds of preschool provision for the general population, and to relate experience in preschool centres to child development. These projects are summarised below.

Effective Preschool and Primary Education (EPPE) - England

The EPPE Project has addressed the question of the longer-term impact of preschool provision. Preschool provision includes group-based provision such as playgroups, day care centres, nursery classes, nursery schools, and integrated children's centres. This longitudinal study of 3000 children has also the effects of various child, family and home characteristics upon child development. The results up to age 11 are summarised in Sylva, Melhuish, Sammons, Siraj-Blatchford and Taggart (2010).

Children whose first language was not English, who had low birth weight, or who had 3 or more siblings, and boys, all did worse on cognitive development. Parent education and social class were also important influences upon child development and children from poor families did worse. However the strongest effect of all was for the Home Learning Environment. Where the child had more frequent opportunities for learning activities in the home, the child did better on all aspects of child development. These effects were after taking account of all other child parent and home characteristics. We summarise these findings by the saying
"What parents do is more important than who parents are".

This reflects the fact that the Home Learning Environment had a more powerful effect upon child development than parents' education or social class.

After allowing for all these effects of background factors were considered whether attending a preschool centre mattered. On measures of language, literacy and numeracy the preschool group did better. On average the benefit of preschool was 0.2 of a standard deviation above that of the no-preschool group. As well as measuring the effect of preschool overall, we had extensive data on the quality of the preschool environments from direct observation and also of the amount of time that the child had attended preschool. We found that both quality and duration of preschool were important. Where children had been to preschool for a longer duration *e.g.* 2 rather than 1 year benefits were greater. Also for any period of preschool, 1, 2 or 3 years, the effects for high quality preschool were greater than average quality, which were greater than for low quality preschool. The benefits of preschool were also evident for social development, and the quality and duration of preschool also affected children's social development.

Preschool effects for primary school attainment

After children had been at school for 2 years we collected more information on their development. The benefits of preschool were still apparent and also the benefits of better quality preschool and longer duration of preschool. After 3 years of school all children in England take National Assessments in reading, mathematics and science. We used these data to see if the effects of preschool persisted.

For all social class groups the effect of preschool was clear, and similar for all groups. However there is a minimum level of attainment that is expected of all children. While all social class groups who received preschool education were, on average, above the minimum level, for the disadvantaged group (unskilled or unemployed) children scored, on average, **below the expected minimum** if they had not had preschool education. This indicates that the consequences of not having preschool are particularly important for disadvantaged children.

The EPPE study was able to identify the most effective preschools that produced the most developmental benefit for children. We undertook case studies of the most effective and average

preschools to investigate what processes were associated with particularly effective preschools. In these case studies the researchers did not know which preschools had been identified from the quantitative analyses as effective or ineffective. These case studies identified 5 areas that were particularly important.

1. Quality of adult-child verbal interaction.
2. Staff knowledge and understanding of the curriculum.
3. Staff knowledge of how children learn.
4. Adult's skills in helping children resolve conflicts.
5. Helping parents to support children's learning at home.

In order to continue to investigate children's development we thought that it was important to be able to take account of the effects of the primary school upon the children in the study. Therefore we devised a way to measure the effectiveness of primary schools.

In England all children take a National Assessment in reading, mathematics and science at age 7 and age 11. Also schools keep records of characteristics such as:

- Eligibility for free school meals (indicator of poverty)
- Special educational needs
- Whether English is first language
- Ethnicity and also
- The child's postcode.

Using the child's postcode we could get data on the area where the child lived such as the level of economic, health, educational and deprivation as well as data on the population living in the area. This data existed for over 600,000 children a year in over 15,000 primary schools.

We were able to analyse the child's progress from age 7 to age 11 in literacy, mathematics and science as a function of the child's characteristics and the area characteristics of where the child lived. Using this multi-level analysis we were able to measure the effectiveness of each primary school in England, for 3 successive years. We had schools where children did better than expected, - effective schools and schools where children did worse than expected – ineffective schools. Also the effectiveness of a school could be analysed for children of different levels of ability. We found that being in an effective school had a bigger influence on low ability pupils than for high ability pupils.

Once we had these measures of school effectiveness we could analyse children's development in terms of child, family, home learning environment, preschool and school factors. We estimated the contribution of a range of demographic factors and preschool and school factors to children's educational attainment and social development. Social class, mother's education, family income and the Home Learning Environment (measured at age 3-4) are powerful influences upon children's attainment. However preschool effectiveness and primary school effectiveness are important influences and are similar in their importance and account for about half as much variance as home factors. Similar results emerge for literacy and numeracy. However the home-related factors are stronger for literacy than for numeracy, and the preschool and school factors are stronger for numeracy than for literacy.

There also appear to be interactions between the effects of some of these predictor variables. For example preschool and primary school effects appear to interact. We analysed the effects of different combinations of preschool and school. For children who have no preschool, the effectiveness of the school is very important. This is also true for children who went to a low quality preschool; as is shown by the differences in effects for low medium and high effective school. For children who went to a medium quality preschool, the effectiveness of the primary school is still important but less than for children who

went to a low quality preschool. However for children who went to a high quality preschool the effects are very similar for each level of primary school effectiveness, with children attending low effective school attaining similarly to those who went to high effective schools. This indicated that preschool quality is very important and can protect children from the consequences of less effective primary schools (Melhuish *et al.*, 2008; Sylva *et al.*, 2010).

Effective Preschool Provision in Northern Ireland (EPPNI)

The EPPNI project is a longitudinal study that has investigated the development of children between the ages of 3 and 11 years. It is a parallel study to EPPE in England. In EPPNI 683 children were randomly recruited from 80 preschool centres randomly selected in Northern Ireland. In order to examine the impact of no preschool provision, 151 children without preschool experience were recruited from the primary schools later attended by EPPNI children. The progress and development of the children has been followed from age 3 until the end of primary school (age 11). After allowing for the effects of background variables preschool experience was related to age 11 performance in English and mathematics. High quality preschools show consistent effects that are reflected not only in improved attainment in English and mathematics, but also improved progress in mathematics over the primary school years. Children who attended high quality preschools were 2.4 times more likely in English, and 3.4 times more likely in mathematics, to attain the highest level than children without preschool experience (Melhuish *et al.*, 2010a). Overall the results support those of EPPE.

Family processes

We see the importance of family processes in the early years in various ways.

Firstly and most obviously through the impact of family demographics. However as important as demographics, and sometimes more important are family processes affecting child rearing. In the studies described here the early years Home Learning Environment has a very powerful long-term impact on children's cognitive, educational and social outcomes. These effects are likely to continue in educational and occupational success as well as social adjustment and possibly criminality.

Changing family's processes is difficult to do through government policy but ECEC can help. Programmes like Sure Start are another strategy.

Community

There is importance in getting communities engaged in programmes like ECEC and sure start in particularly disadvantaged areas. Often there is a need to avoid the possibility of families feeling stigmatized by special services. Area targeting but universal provision within an area is one way to do this.

In our research we have found some community level effects independent of family demographics upon child outcomes. However these effects disappear once the HLE is taken into account. This suggests that community effects are mediated through parenting and family process differences between communities.

In adolescence we are finding some independent community effects of child development outcomes.

Summary

In summary there are 3 key elements of a child's environment for educational success.

1. Good Home Learning Environment

2. Good preschools
3. Good primary schools.

Other things being equal, those children with all 3 will outperform children with 2 who will outperform children with 1 who will outperform children with 0.

Conclusions

1. From age 2 all children will benefit from preschool education.
2. The quality of preschool matters.
3. The duration of preschool matters in the early school years.
4. Part-time preschool has equal benefit to full-time.
5. For medium and high quality preschool the benefit persist until at least the end of primary school.
6. High quality preschool can protect a child from consequences of attending low effective school.

In the UK similar effects of quality of preschool have been found for disadvantage samples also (Melhuish *et al.*, 2010b). In addition, Goodman and Sianesi (2005) found that preschool education leads to better educational attainment at age 7. Although these effects diminished in size, they remained significant up to age 16. In adulthood, preschool experience was associated with an increased probability of obtaining qualifications, of being employed, and a 3-4% wage gain at 33.

Research in other parts of the world also supports the importance of preschool education for children's later educational attainment. In the US the Early Childhood Longitudinal Study, a nationally representative sample of children who entered kindergarten in 1998, was used by Magnuson, Meyers, Ruhm and Waldfogel (2004), who found that pre-kindergarten (preschool) increases mathematics and reading skills at kindergarten entry. Other US research also finds benefits for children from preschool education (Gormley, Phillips and Gayer, 2008). Also Aboud (2006) found that preschool boosted primary school achievement in Bangladesh, with similar results reported for ten countries by Montie, Xiang and Schweinhart (2006). Other recent research also compares children having preschool experience versus none. Berlinski, Galiani and Manacorda (2007) used administrative data in research in Uruguay. A period of expansion of preschool in the 1990's allowed this study to compare a) siblings with and without preschool and b) regions that varied in speed of preschool expansion. Controlling for background characteristics, both comparisons indicated clear benefits of preschool for school performance in primary and secondary school. Similarly Berlinski, Galiani and Gertler (2006) used the expansion of the preschool education in Argentina in the 1990's to explore amongst regions the covariation of changes in school performance with increases in preschool education. Recent US evidence indicated that high quality preschool may have influences upon academic attainment as late as age 15 (Vandell *et al.*, 2010).

Such evidence has fuelled an increasing interest in the provision of preschool education for all children as a means of advancing the school readiness and later attainment of children (Zigler, Gilliam and Jones, 2006), and it has been argued that the longer term benefits far outweigh the costs involved, particularly for disadvantaged groups (Heckman 2006). Some authors argue that preschool experience is critical for children's future competence, coping skills, health, and success in the labour market, and consequently the social and economic health of the nation (*e.g.* McCain and Mustard, 1999). In a technologically sophisticated world a population's educational attainment is likely to be increasingly important for a nation's economic development. The EPPE and EPPNI studies show the factors that can influence such attainment. The effects associated with various child and family background variables are very similar to those frequently reported in other studies. In addition preschool education, particularly high quality preschool education, is important.

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