

# **The Early Years and Later Development: Evidence and Social Policy**

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**Growing Up in Ireland  
Research Conference 2011**

# Longitudinal Studies

The history of longitudinal studies show their usefulness for policy.

e.g. smoking in pregnancy,

Early experience and development

1. educational success
2. occupational success
3. criminality
4. social adjustment

## Social & economic context

By 2050 the EU working population will decrease by 50 million while the elderly will grow by 50%.

Similar situations in most industrialised countries.

Economic sustainability will require maximizing the capacity of the workforce.

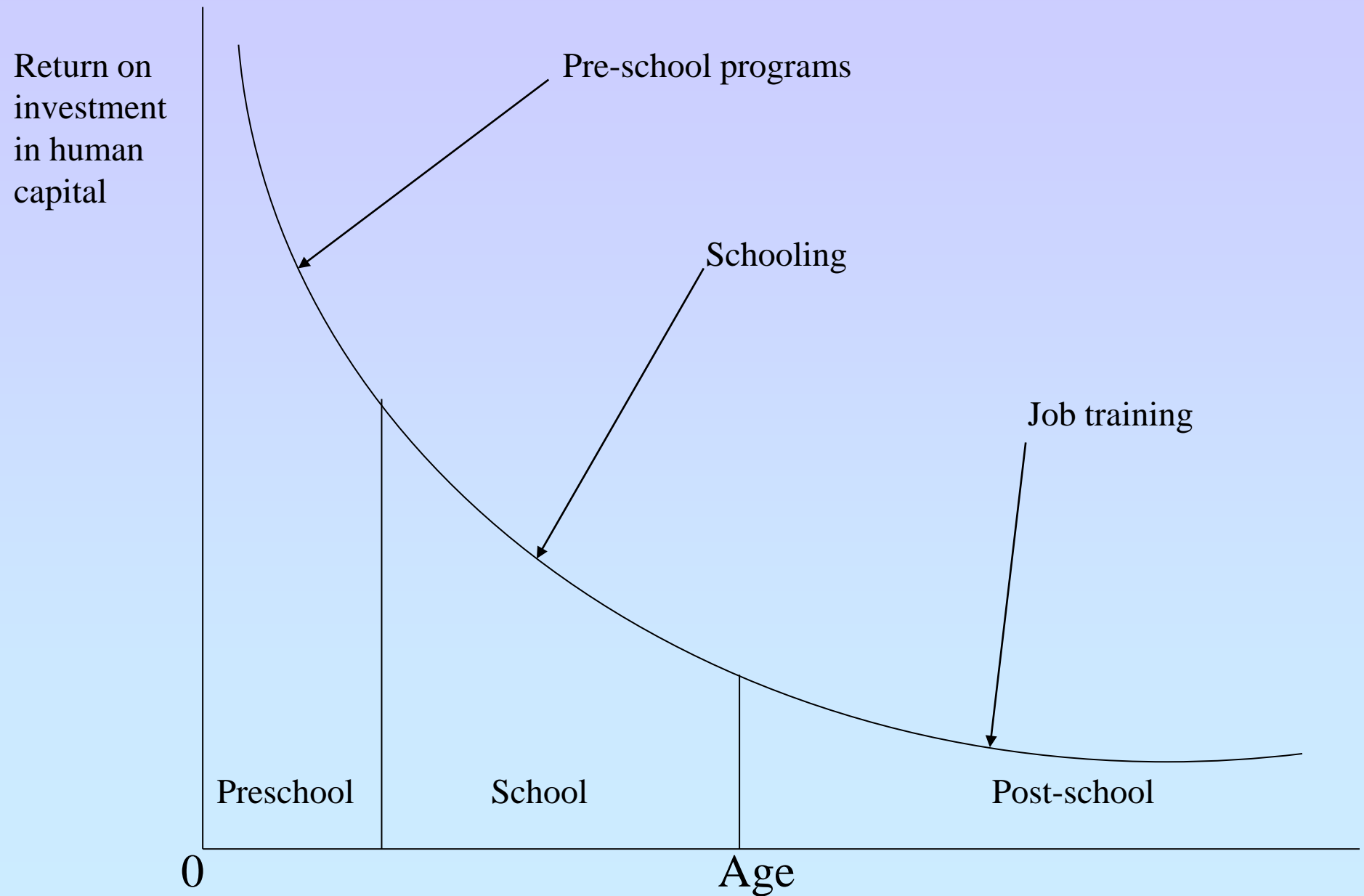
The skills for good outcomes are rising and changing,  
And there is still great inequality of opportunity.

Both cognitive and non-cognitive skills are critical..  
How can these be improved for the population?

# Why the early years?

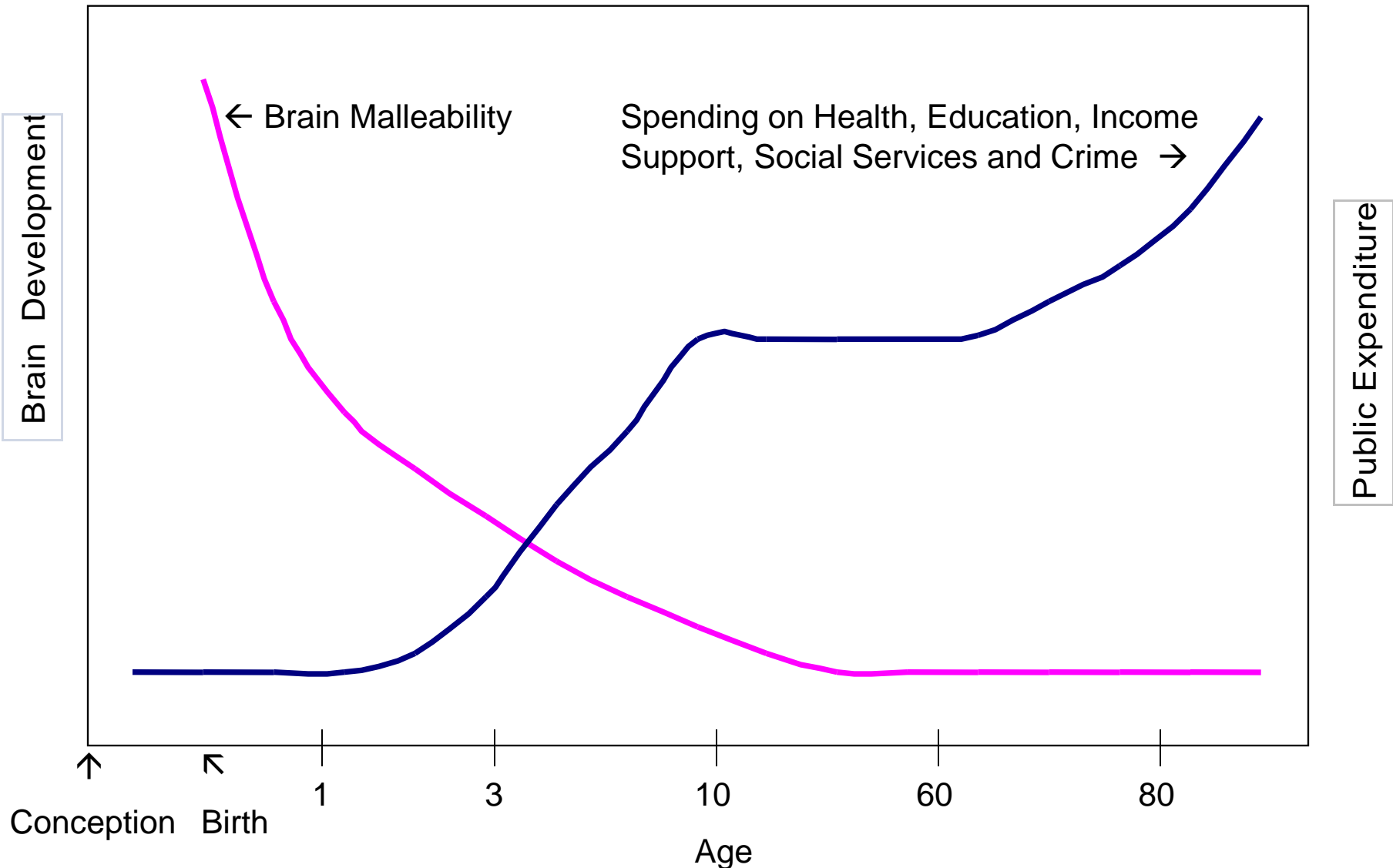
- “ If the race is already halfway run even before children begin school, then we clearly need to examine what happens in the earliest years.” (Esping-Andersen, 2005)
- “ Like it or not, the most important mental and behavioural patterns, once established, are difficult to change once children enter school.” (Heckman & Wax, 2004).

# Rates of return to human capital investment (Heckman 2000)



# Brain Development – Opportunity and Investment

From van der Gaag 2004 – presentation on World Bank - **The Benefits of Early Child development programs**



# Early Years Risk and Poor Outcomes

**Wealth of data from life course studies linking adversity in early life to:**

- poor literacy and educational attainment
- anti-social and criminal behaviour
- substance abuse
- poor mental and physical health
- adult mortality

# **Early Years research**

**We can distinguish 2 major strategies**

- 1. Intervention with disadvantaged groups**
- 2. For general population**



# Intervention strategy

*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.*

*Source: Allen & Duncan-Smith, 2010  
– report to UK government*

# INTERVENTIONS with DISADVANTAGED GROUPS

## *Examples*

Perry Preschool Project – preschool 3-6 years

Abecedarian Project – childcare/preschool 0-6

Chicago Child- Parent Centers – preschool and  
family support 3 years on

UK Sure Start – childcare/ preschool /family  
support 0-5 years

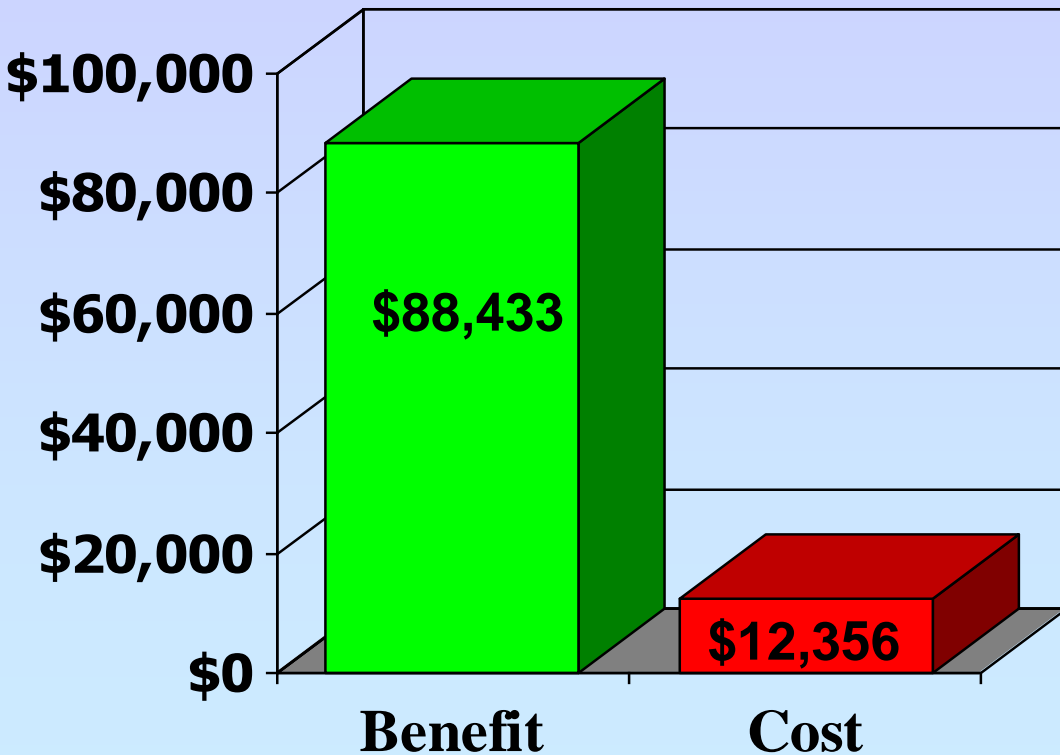
# ***Perry Preschool Study***

***(Schweinhart, Barnes & Weikart, 1993)***

- 📄 123 young African-American children, living in extreme poverty and at risk of school failure
- 📄 Randomly assigned at ages 3 and 4 to program and no-program groups
- 📄 Daily High/Scope classes with planned learning activities and weekly home visits to families

# *Return on investment*

## Program Benefits Versus Cost



1992 dollars, 3% annual discount rate

**Return on the  
dollar  
invested**

**\$7.16**

# **Abecedarian Project**

**111 African-American disadvantaged children randomly assigned at age 3 months to:**

- **High quality centre-based provision  
(day-care and preschool)**
- **Control group:**
  - **Both groups followed into adulthood**

# Abecedarian Project

Results up to age 21 years

- Intervention group showed

- Higher cognitive development from 18 months on
- Greater social competence in preschool
- Better school achievement
- More college attendance
- Delayed child bearing
- Better employment
- Less smoking and drug use
- **Cost – benefit - Savings 2.5 times costs**

## Reynolds, A.J. (2011) – Chicago-Parent Centers

- Disadvantaged children who start preschool at age 3 or 4 years had consistent benefits in later life compared to children starting preschool at a later age.
- Male children especially benefit in later life from preschool as do children of high school dropouts.
- Children starting preschool earlier have at age 28
  - higher rates of educational status,
  - higher income and
  - lower rates of substance abuse.

# UK, Sure Start

UK government influenced by early years research set up Sure Start

- Targeted - 20% most disadvantaged areas
- 0-5 year olds
- Universal in area - All families in area served
- Locally controlled



# National Evaluation of Sure Start (NESS)

- In this evaluation we have set up a longitudinal study of 8000 children living in disadvantaged areas served by Sure Start.
- Also we have used as a comparison group children from another longitudinal study: Millennium Cohort Study (MCS)

## *Changes to Sure Start as a result of evidence*

1. Early findings - Sure Start having mixed effects
2. EPPE showed that integrated Children's Centres were particularly effective:

**ACTION:** the government decided to transform Sure Start Programmes into Children's Centres.

From 2006 all became Children's Centres:

With a more clearly specified set of services and guidelines.

# What happened next, 2008

## 3 year olds

- **5 outcomes indicated beneficial effects for SSLPs.**
  - child positive social behaviour (cooperation, sharing, empathy)
  - Child self-regulation (perseverance, self-control)
  - Parenting Risk Index (observer rating + parent-report)
  - home learning environment
  - total service use
- **In addition there were better results in SSLPs for:**
  - child immunisations
  - child accidents

But these 2 outcomes might be influenced by timing effects

# Impact of Sure Start when children are 5 years old

*Mothers in Sure Start areas reported:*

- greater life satisfaction,
- less harsh discipline
- a less chaotic home and a
- more stimulating home learning environment (HLE)
- *but more depressive symptoms*

*Children had:*

- Lower BMIs – less overweight
- Better general health

*Families had:*

- a greater decrease in workless status up to *5 years* of age

# CONCLUSIONS

- Sure Start has improved over the years and Children's Centres are in the right direction
- Many examples of good practice
- Still great variation between best and worst
- Need to learn from most effective Children's Centres

What about the general population?

Are the early years important for all?

# Non-intervention studies – General population

*NICHD Study of Early Child Care* in USA

*Effective Preschool & Primary Education – EPPE*

3000 children followed from age 3 in England

*Effective Preschool Provision in Northern Ireland -  
EPPNI*

# *NICHD Study of Early Child Care* **in USA**

## **Early Child Care has Benefits and Risks**

- **Higher **quality** child care linked to**
  - better pre-academic skills
  - better language skills
- **Experience in child care **centres** linked to**
  - better language skills
  - more problem behaviors
- **More **hours** in child care **centres** linked to**
  - more problem behaviors—aggression, disobedience



# Effective Pre-School and Primary Education EPPE



**Kathy Sylva – University of Oxford**  
**Pam Sammons – University of Oxford**  
**Iram Siraj-Blatchford – Institute of Education, University of London**  
**Brenda Taggart – Institute of Education, University of London**  
**Edward Melhuish – Birkbeck, University of London**

# EPPE STUDY

(3+ yrs)



School starts



6yrs



7yrs



16yrs

**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**

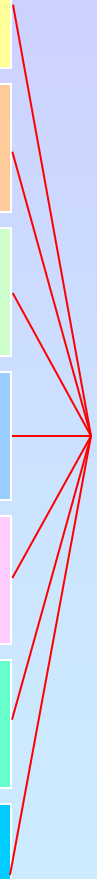
**430 children**

**7 integrated centres**

**190 children**

**home**

**310 children**

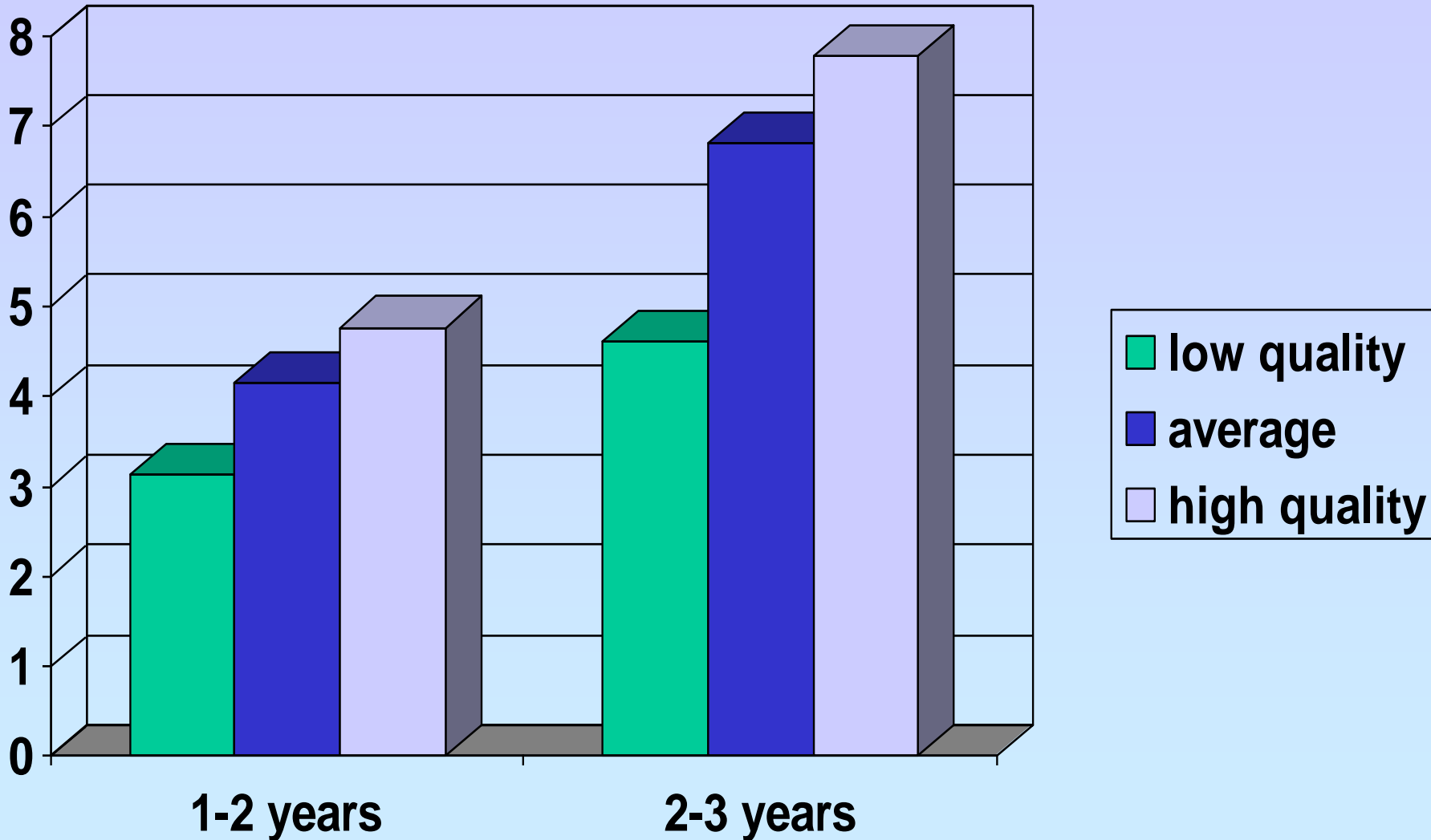


Key Stage 1  
600 Schools  
approx. 3,000 chd

Key Stage 2  
800 Schools  
approx. 2,500 chd

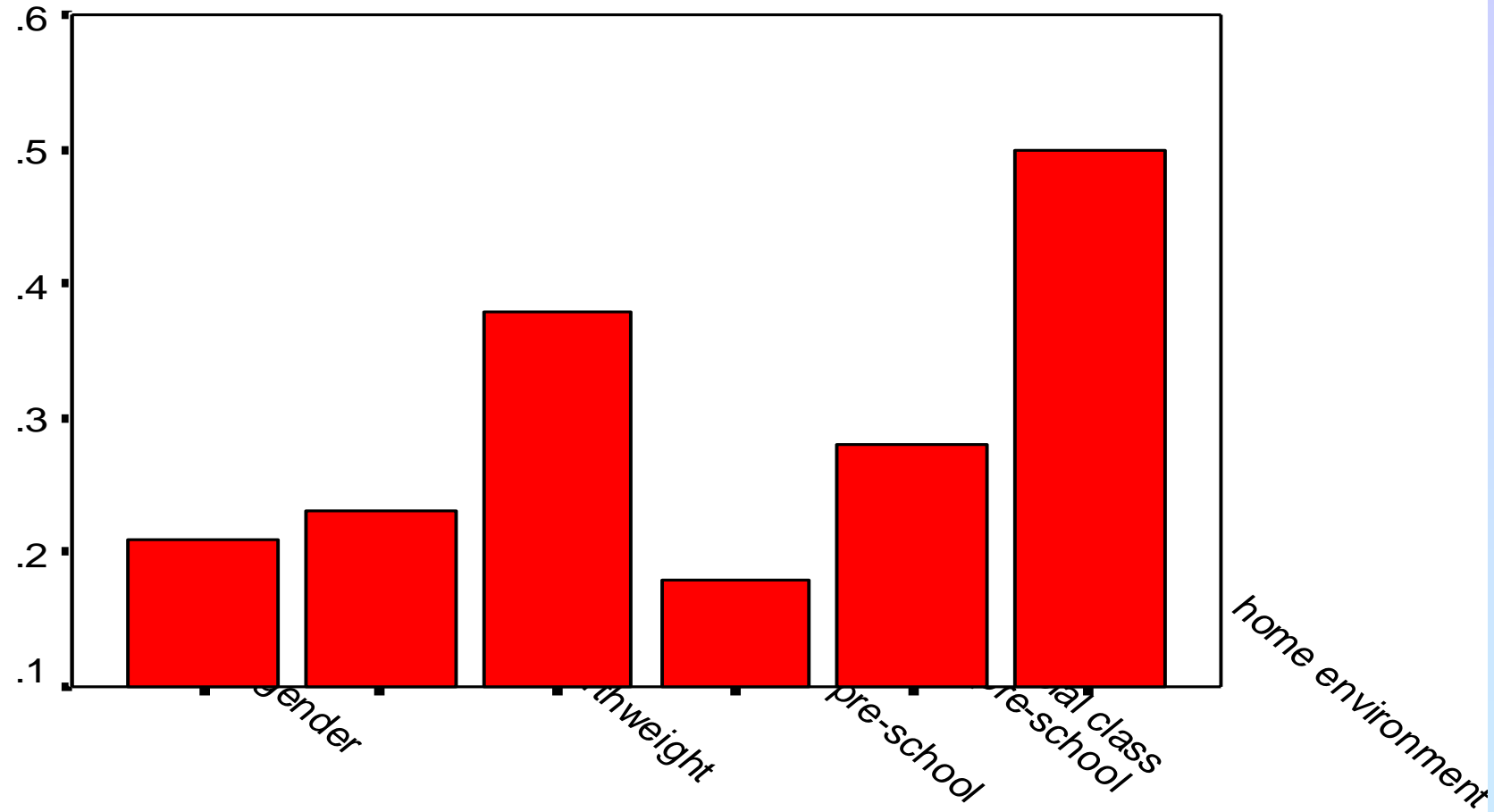
# Quality and Duration matter

(months of developmental advantage on literacy)



# Effects of child, home, and pre-school compared

## EFFECTS UPON LITERACY



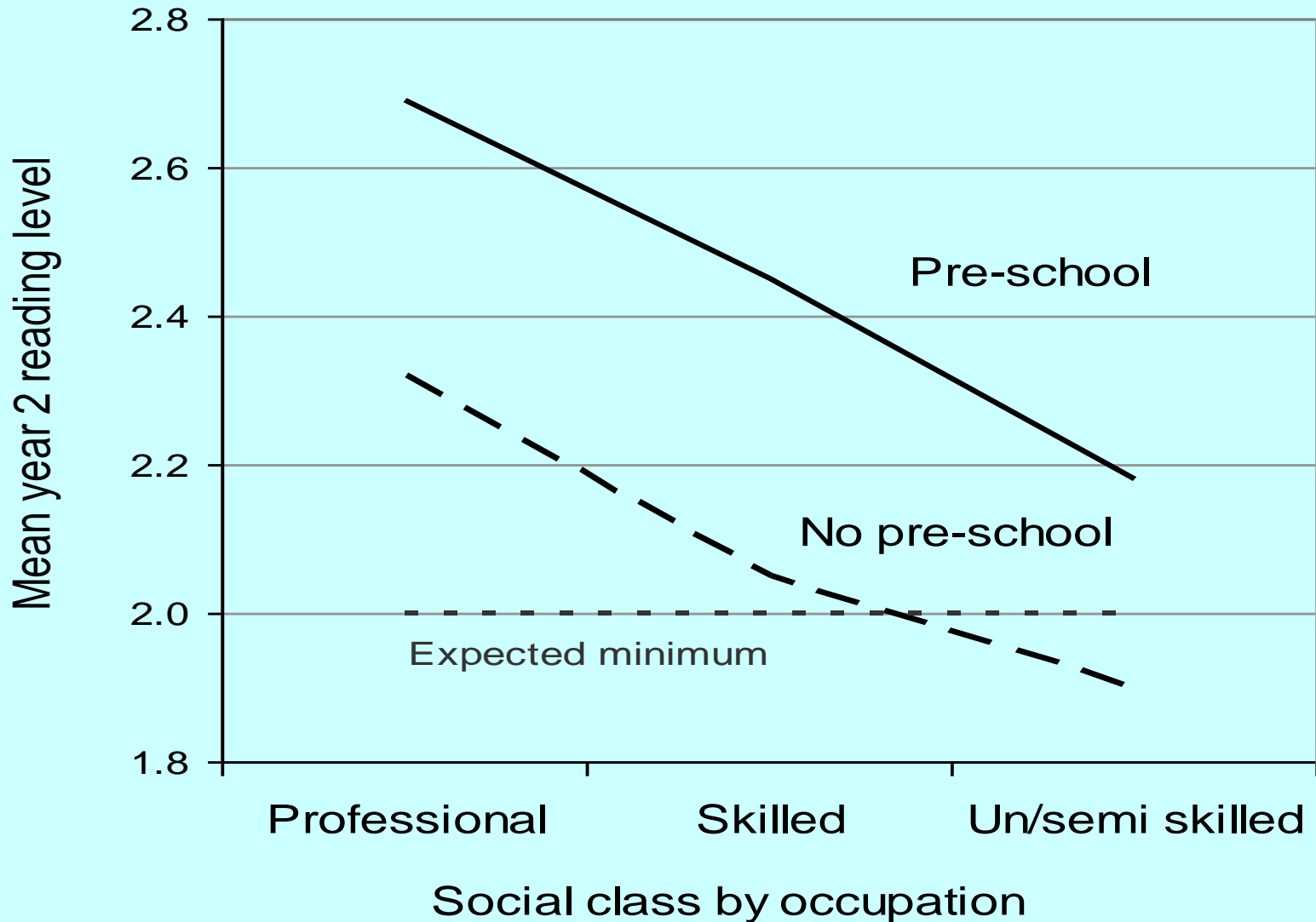
# Home Learning Environment

Parents were asked about learning and play activities in the home. An index of the home learning environment (HLE) was constructed. There were seven types of home learning activities. These were:

- Reading
- Painting and drawing
- Playing/ teaching with numbers /shapes
- Library visits
- Playing/ teaching the alphabet or letters
- Playing with letters or numbers
- Playing/teaching of songs/ nursery rhymes

Each activity was rated on a scale 0–7 where 0 is not occurring and 7 is occurring very frequently. These ratings were then combined to form the Home Learning Environment index (HLE) (Melhuish et.al. (2001).

# Social class and pre-school on literacy (age 7)



## Effective Pre-schools

**Five areas were particularly important:**

- **Quality of the adult-child verbal interaction.**
- **Knowledge and understanding of the curriculum.**
- **Knowledge of how young children learn.**
- **Adults skill in supporting children in resolving conflicts.**
- **Helping parents to support children's learning at home.**

# Measuring the effectiveness of primary schools

- Data every child in England in state school
- 600, 0000 children in each year,  
N = 15,771 primary schools

We used data to calculate the **effectiveness** of each school

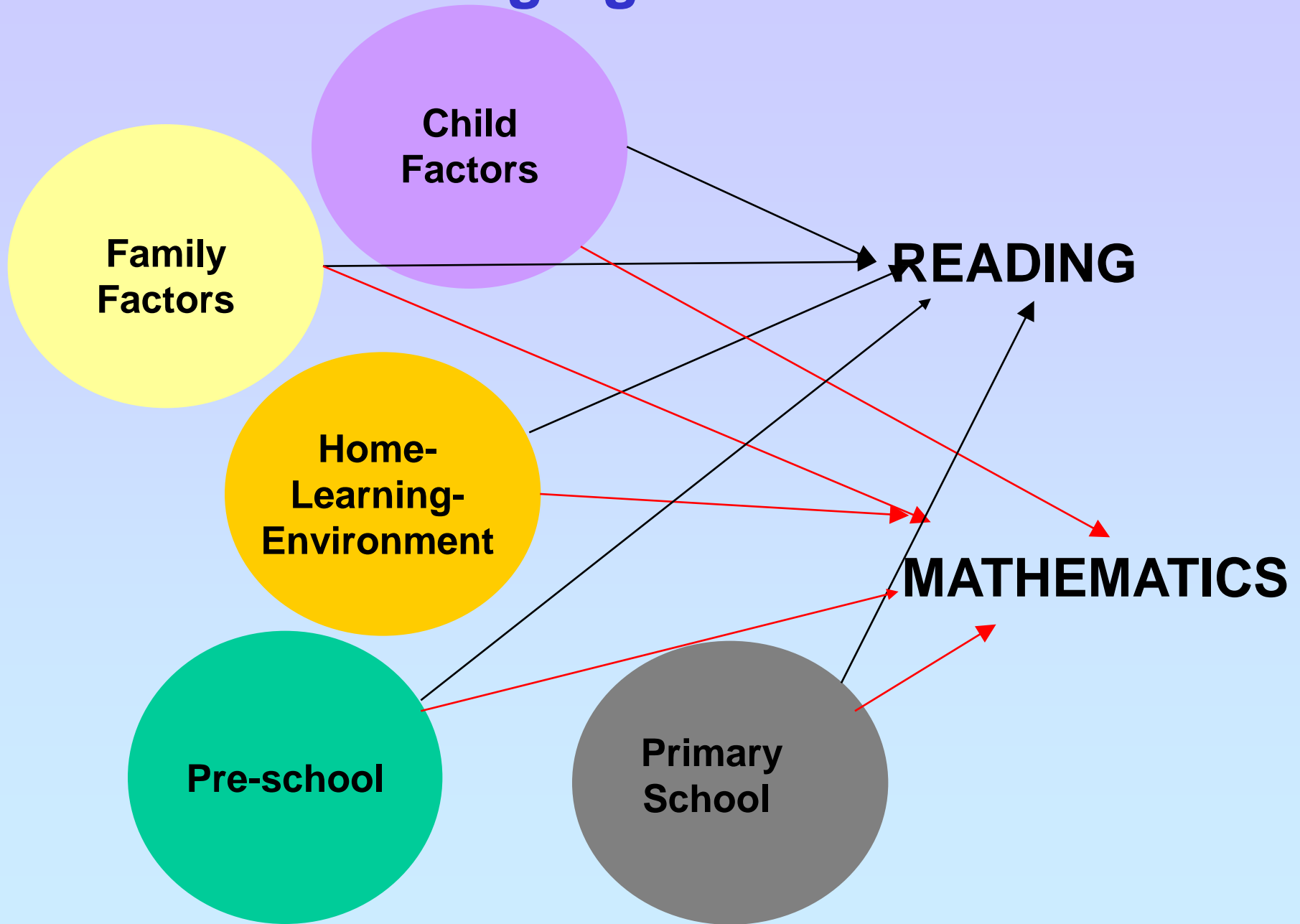


# EFFECTIVENESS

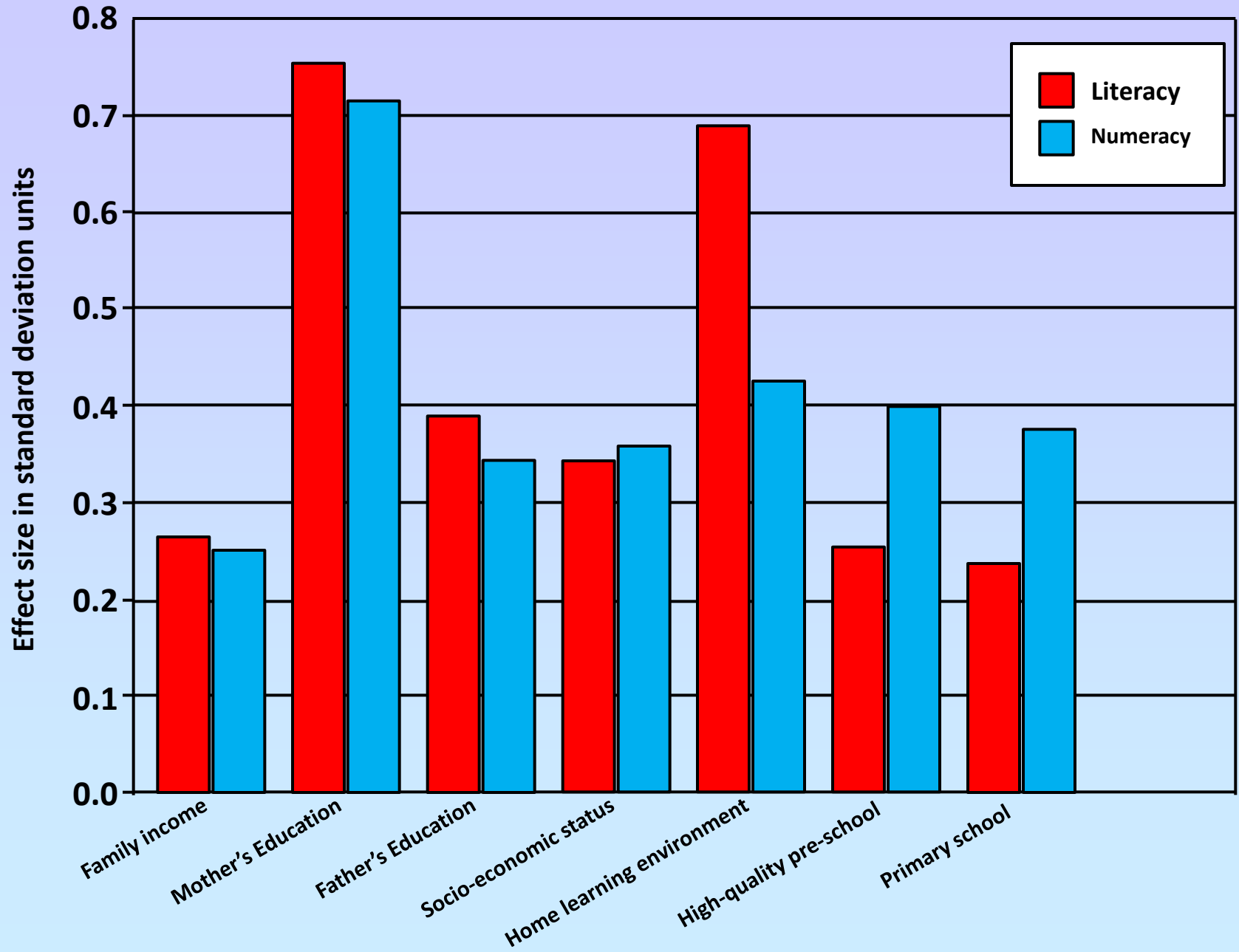
- Schools where children make greater progress than predicted on the basis of initial attainment and pupil and area characteristics can be viewed as ***more effective***.
- Schools where children make less progress than predicted can be viewed as ***less effective***.

**We have a continuous scale of school effectiveness**

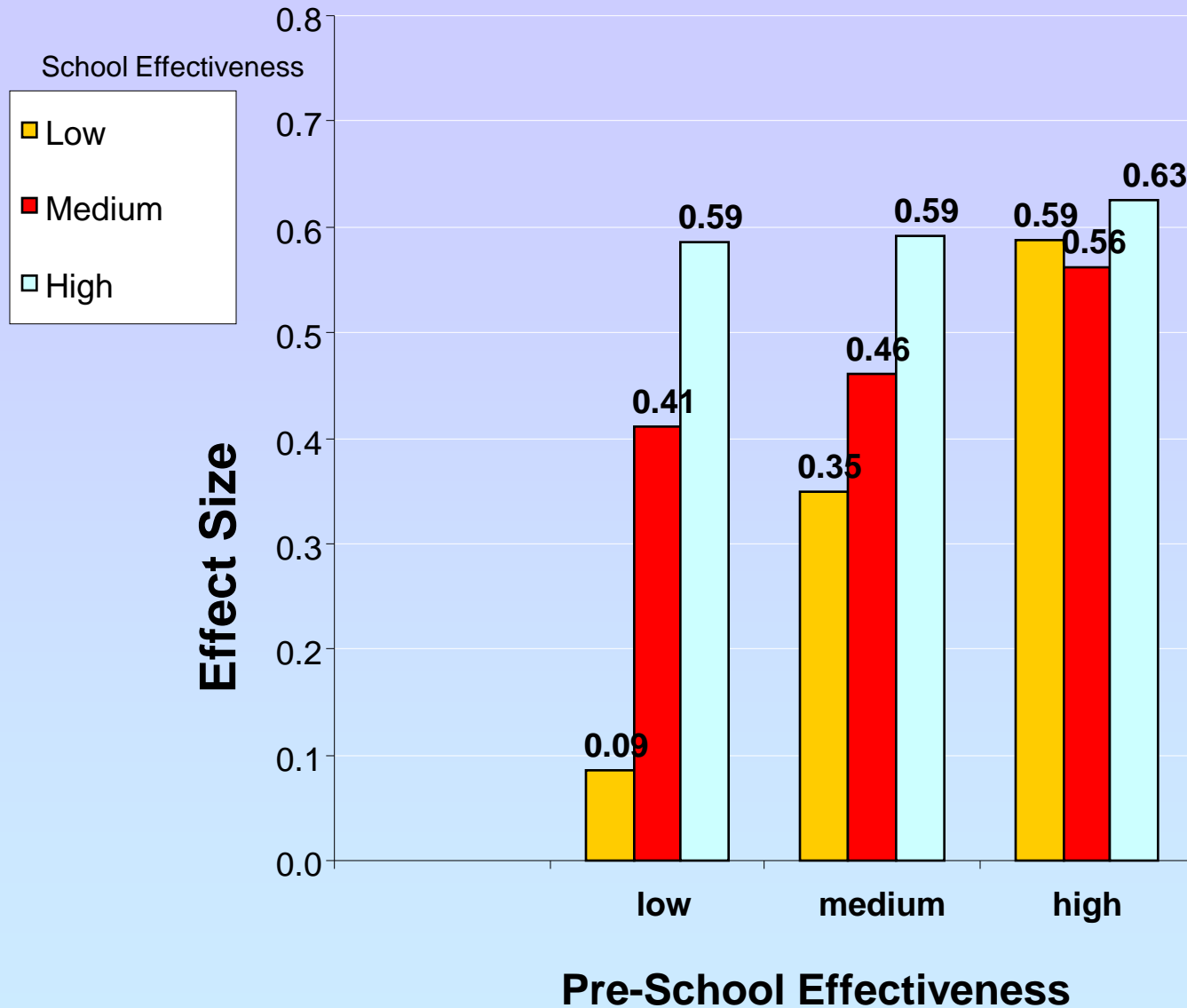
# Modelling Age 11 outcomes



# Effects upon Age 11 ( +age 14) literacy and numeracy

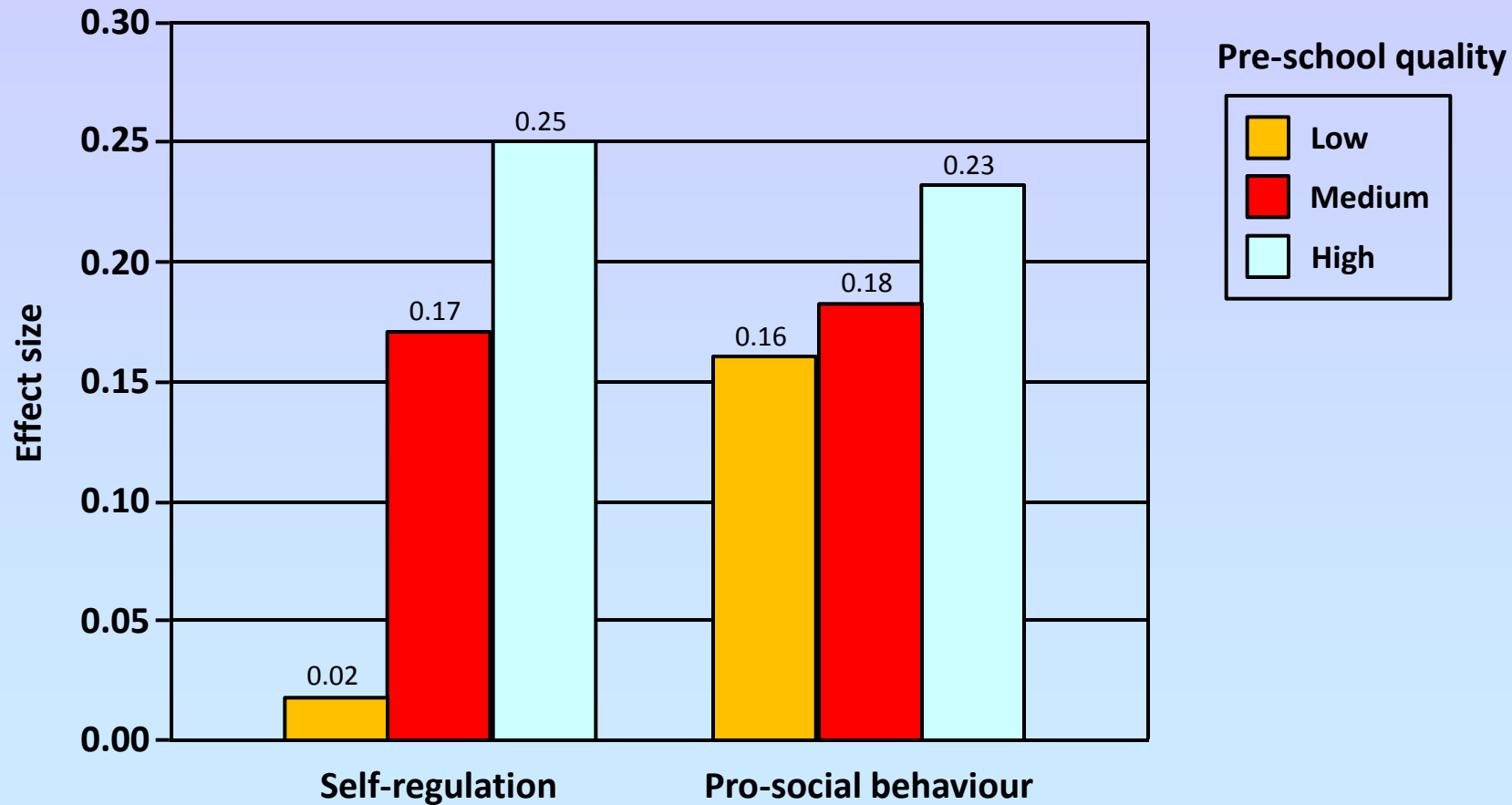


# Combined Impact of Pre- and Primary School - Maths

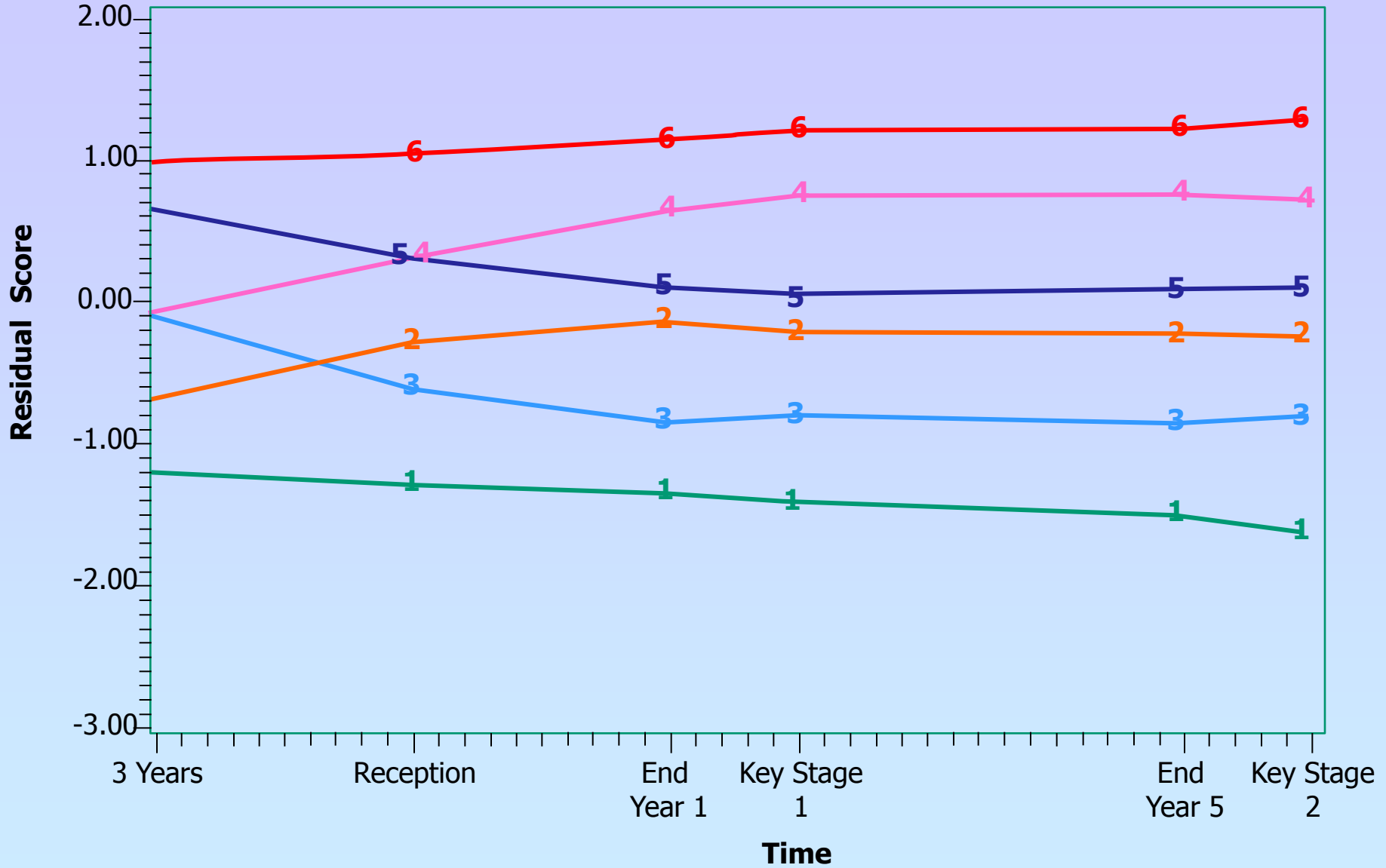


Reference Group: No Pre-School and low Primary School Effectiveness

# Pre-school Quality and Self-regulation and Pro-social behaviour (age 11)



# Trajectories for Numeracy



Group %      ~~1~~111 8.2%    ~~2~~222 19.6%    ~~3~~333 18.8%    ~~4~~444 17.3%    ~~5~~555 23.2%    ~~6~~666 12.9 %

## EFFECTIVE PRE-SCHOOL PROVISION IN NORTHERN IRELAND (EPPNI)

Similar study to EPPE with children in Northern Ireland  
850 children followed from 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.

# What matters

3 elements that can lead to educational success

**Good Home Learning Environment (pre-school)**

**Good Pre-schools for longer duration**

**Good Primary schools**

Those children with all 3 will out-perform those with 2  
who will out-perform those with 1  
who will out-perform those with 0  
All other things being equal



# Conclusions

- From age 2 all children benefit from pre-school.
- The quality of preschool matters.
- Part-time has equal benefit to full-time.
- Quality of preschool effects persist until at least the end of primary school.
- High quality preschool can protect a child from consequences of attending low effective school.

## EPPE results have influenced policy:

- Retention of nursery schools
- Free part-time pre-school place for all 3 & 4 year-olds (2004)
- Extension of parental leave (2004)
- 10-year Childcare Strategy (2004)
- Guidance for Children's Centres (2005)
- Childcare Bill (2006)
- Acceptance that money spent on pre-school produces savings later

Magnusson, Meyers Ruhm & Waldfogel (2003)

Results for US nationally- representative  
sample of 12,800 children

# Age 5 Reading by sub-group & pre-school quality:

- Comparison with no pre-school

<b>Year Before</b>	<b>READING</b>				
	<b>ALL</b>	<b>Poverty</b>	<b>Low Mother Educ.</b>	<b>Single Parent</b>	<b>Non- English</b>
Pre-school (High Quality)	1.66**	2.23**	3.44**	3.10**	2.72**
Pre-school (Low Quality)	1.34**	1.48*	1.21	2.11**	1.56**

Goodman & Sianesi (2005). Early education and children's outcomes: How long do the impacts last? *Fiscal Studies*, 26, 513-548.

Pre-school in a 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.**

In France, free school provision was made available to children aged 3 years during the 1960's and 1970's – this produced a huge increase in preschool attendance.

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

Switzerland has also expanded the age of children starting preschool.

The impact of this expansion: - improved the children's intergenerational education mobility - was especially more beneficial for children from disadvantaged backgrounds.

Similarly, Norway expanded preschool education for 3-6 year olds during the 1970's and found children attending preschool had higher educational levels and better job outcomes later in life.

Bauchmüller, Gørtz and Rasmussen (2011)

[http://www.cser.dk/fileadmin/www.cser.dk/wp\\_008\\_rbmgaawr.pdf](http://www.cser.dk/fileadmin/www.cser.dk/wp_008_rbmgaawr.pdf)

Danish register data on whole population

5 quality indicators of preschools:

- 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 secondary educational attainment in children who attended preschool.
- Argentina found increases in primary school attainment from children who spent at least 1 year in preschool.

Many studies agree that high preschool quality is critical to success.

Research from the US and UK suggest higher quality preschools provide greater long term benefits.

By the age of 11 years, children attending high quality preschools outperformed those who did not in numeracy and literacy.

Low quality pre-schooling does not have any beneficial effects on children.

These findings are important to preschools as an intervention strategy.

- In the US, some argue that government funded preschool programs are of poor quality.
- Children attending these programs gain little cognitive advances.
- Others argue that public funded low quality programs narrow the gap between advantaged and less advantaged children by less than 5%.
- The gap could be narrowed by 50% if the quality of the programs were improved.

## **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.

**PISA 2009** - the relationship between pre-school and performance at age 15 is strongest when

1. larger % of population can use pre-school
2. pre-school is for more months
3. pre-school has smaller pupil-to-teacher ratios
4. more is spent per child in pre-school

# 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.”

OECD (2011). *Pisa in Focus 2011/1: Does participation in pre-primary education translate into better learning outcomes at school?*. Paris: OECD. Available at [www.pisa.oecd.org.dataoecd/37/0/47034256.pdf](http://www.pisa.oecd.org.dataoecd/37/0/47034256.pdf)

# International Perspectives

**Countries planning for economic expansion are increasing their investment in pre-school education.**

**E.g. China, New Zealand, Scandinavia, Canada, some US states (e.g. California, Minnesota, Massachusetts).**

**See**

Melhuish & Petrogiannis (Eds.) (2006)  
*Early Childhood Care & Education:  
International Perspectives.*  
London: Routledge

Some governments are realising-

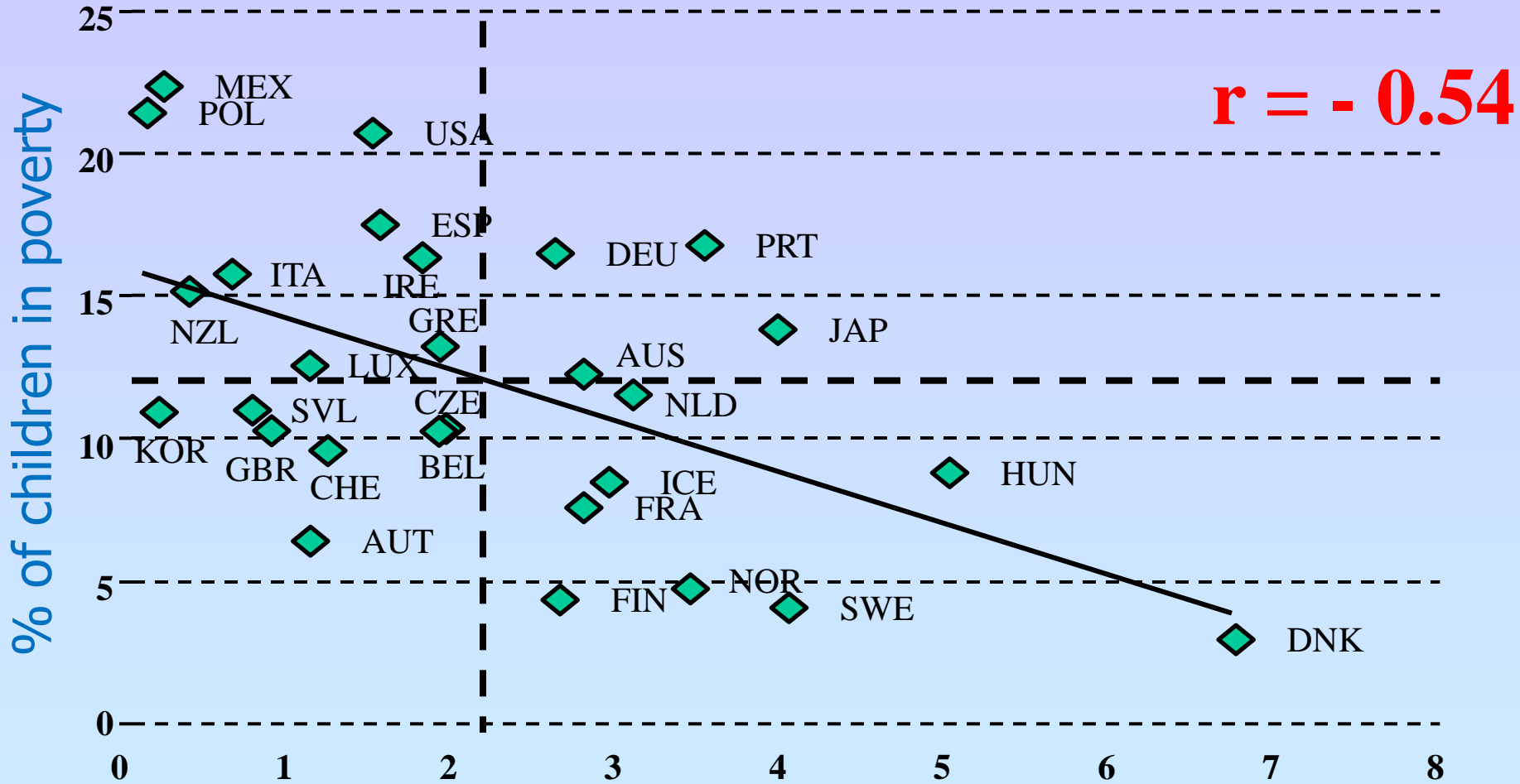
Good quality pre-school is an essential component of the infrastructure for sustained economic development



Head US Federal Reserve- Ben Bernanke, 2011

*“No economy can succeed without a high-quality workforce, particularly in an age of globalization and technical change. Cost-effective schooling crucial to building a better workforce, but they are only part of the story. **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.**”*

# Early childhood spending is linked with lower poverty rates



Early childhood spending as a proportion of median income - 2003

# Longitudinal studies & Policy

The critical evidence showing the importance of the early years for life-long development all comes from longitudinal studies.

It is absolutely clear that longitudinal studies are an essential resource for sound policy development.

# For more information

EPPE [eppe.ioe.ac.uk](http://eppe.ioe.ac.uk)

Melhuish, E. et al. (2008). Preschool influences on mathematics achievement. *Science*, 321, 1161-1162.  
Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B., (Eds) (2010). *Early Childhood Matters: Evidence from the Effective Pre-school and Primary Education Project*. London: Routledge

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Melhuish, et al. (2008). Effects of fully-established Sure Start Local Programmes on 3-year-old children and their families living in England. *Lancet*, 372, 1641-1647.  
Melhuish, E, Belsky, J., & Barnes, J. (2010). Evaluation and value of Sure Start. *Archives of Disease in Childhood*, 95, 159-161.

## Reviews

Melhuish, E. C. (2004). *A literature review of the impact of early years provision upon young children, with emphasis given to children from disadvantaged backgrounds: Report to the Comptroller and Auditor General*. London: National Audit Office. Available at [www.nao.org.uk/publications/0304/early\\_years\\_progress.aspx](http://www.nao.org.uk/publications/0304/early_years_progress.aspx)

OECD (2009). *Doing Better for Children*

[www.oecd-ilibrary.org/social-issues-migration-health/doing-better-for-children\\_9789264059344-en](http://www.oecd-ilibrary.org/social-issues-migration-health/doing-better-for-children_9789264059344-en)

European Commission (2011). Early Childhood Education and Care: Providing for all our children with the best start for the world of tomorrow. Brussels, 12.2.2011. COM (2011) 66final. Available at: [ec.europa.eu/education/school-education/doc/childhoodcom\\_en.pdf](http://ec.europa.eu/education/school-education/doc/childhoodcom_en.pdf)

Melhuish E C (2011) Preschool Matters. *Science*, 333, 299-300.