

Jörg F. Maas | Simone C. Ehmig |  
Carolyn Seelmann (eds.)

# Prepare for Life!

Raising Awareness for  
Early Literacy Education

Results and Implications of the  
International Conference of Experts  
2013

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**Eric A. Hanushek**

## The Economic Relevance of Early Childhood Development

Considerable evidence has accumulated about the importance of earlier childhood education, particularly for disadvantaged students who have a less complete learning environment in their home. At the same time, simply knowing that early childhood education has valuable learning effects does not mean that they justify any particular policy interventions. The efficacy of such interventions would depend on the balance of the costs and benefits of any programs.

The literature on early childhood education is both broad and rapidly expanding. Importantly, it is the subject of research across a variety of disciplines, and the focus of this research varies widely. There are clearly many noneducational outcomes of early childhood programs, but this discussion will focus narrowly on the academic components and, within that, on the development of cognitive skills.

The existing research on early childhood programs provides some clear findings but also indicates a number of uncertainties. Overall, the economic impacts of early childhood programs depend on the size of the population affected by any program, the magnitude of any effect on learning and the lasting impacts of the program. These

matters clearly depend on the dimensions of any specific programs. There are some relevant research findings that are useful in projecting the impacts of any program, but there are also elements that are currently unknown.

The currently available research, much of which comes from programs in the United States, indicates that early childhood programs can have significant impacts on disadvantaged children, but there is little evidence of impacts on more advantaged students. As such, they offer a potentially powerful tool for dealing with achievement gaps across society and for leading to larger educational equity.

At the same time, the available evidence provides limited guidance about the structure of any programs. The clearest evidence on achievement impacts of programs comes from demonstration programs that are not viable models for larger on-going programs. Thus, new developments will necessarily have to incorporate a substantial research and evaluation component.

Additionally, one largely ignored aspect of early childhood programs is how they integrate with school policies in primary and

secondary schools. A primary value of early childhood programs comes from ensuring the adequate preparation of children for entry into formal schools. If the schools see an altered flow of entrants, they must necessarily modify their programs to some extent in order to make use of the earlier education.

**Existing Preschool Programs**

There is substantial coverage of early childhood programs for both three- and four-year olds across the OECD, and this coverage has been expanding in recent years. At the same time, there is considerable variation across countries in programs – reflecting both cultural differences and different willingness to provide fiscal support.

Figure 1 shows the country differences in enrollment for younger children, while Figure 2 shows the same for four-year-olds. The range is quite astounding. For three-year-olds, Switzerland, Turkey and Australia provide virtually no programs, contrasting sharply with France, Spain and Belgium, which have essentially universal coverage.

By age four, coverage increases noticeably, with only Turkey continuing with minimal coverage. But even for four-year-olds, the OECD average participation rate is just over three-quarters.

**Program Effects**

We know the most about a series of model programs that have been extensively studied. The Perry Preschool Program and the Abecedarian Program have rightfully received considerable attention.<sup>1</sup>These programs are small (less than 75 subjects), old (conducted in the 1960s) and expensive. At the same time, they have been evaluated using ran-

domized trials and the subjects have been followed over a long period of time. The resulting picture is one of significant effects and outcomes leading to large benefit-cost ratios. Many of the benefits have been non-cognitive, seen through reduced criminality and other important social outcomes (e.g., Gramlich 1986; Belfield, Nores, Barnett and Schweinhart 2006). The measured cognitive effects in these programs have, however, been relatively small.

There is nonetheless a broader body of literature on the impacts of early childhood programs. While a little more difficult to summarize, the broad summary is that the programs considered are much larger in scale involving operational programs, they are less intensive (less expensive) than the model programs, and the evaluations are much more recent. The evaluations are less reliable, generally because of difficulties in finding an adequate control group. Moreover, the evaluations have been largely restricted to educational outcomes measured by standardized assessments.

Three overall results come from reviewing these programs. First, the effect sizes for cognitive outcomes average about 0.3 standard deviations (s.d.). Second, these cognitive differences tend to fade over time. Finally, the positive results apply just to disadvantaged children with little or no impact on more advantaged children.

These program impacts can be translated into impacts on later achievement. While the degree of fade out and the coverage depend on the specific program and country circumstance, it is possible to trace out ultimate impacts using plausible values for each. Figure 3 displays the impact, measured by a

PISA scale, for cases where ultimate fade out ranges none to 70% and where the population benefitting from the program ranges from 20% to 60%.

At the least impactful (70% fade out and 20% benefitting), the program would lead to two PISA points, or an effect size of 0.02 s.d. At the other end of the simulations in Figure 3, with no fade out and 60% benefitting, there would be an effect size of 0.17 s.d.

It is possible to translate these points into economic impacts. One approach is to look at the impact on individual earnings into the future. One standard deviation in achievement will increase individual lifetime earnings by an estimated 15%. Using this expected impact, the present value of gains from early childhood programs in the United States would range from \$3,000 for an effect size of 0.02 s.d. to \$30,600 for an effect of 0.17 s.d. The present value of an increase of slightly over five points of improvement would exceed the average spending on K-12 education of \$10,000 per student.

An alternative way to value the improvements from early childhood comes from the aggregate impact on the national economy. Past research has also shown that the quality of a country's labor force as measured by cognitive skills is directly related to long-term growth rates (Hanushek and Woessmann 2012).

Table 1 projects the impact of differing numbers of PISA points on growth in GDP for the United States. These gains can be measured against what can be accomplished from early childhood programs (as seen in Figure 3). For example, a gain of 25 PISA

points would by past growth relationships add \$45 trillion in present value. As we saw, early childhood programs have the possibility of providing 2 to 17 PISA points, which can cover a substantial portion of the 25 PISA points. Similarly, closing the US gap in black and Hispanic achievement would yield a \$49 trillion gain in GDP. Early childhood programs, if aimed at black and Hispanic children, could close 12% to 40% of the gaps.

**Some Discussion**

The simple conclusion from the prior estimates is that the potential economic gains of expanded and improved early childhood programs are huge. Moreover, these gains come just from the increases in cognitive skills. Any improvements in noncognitive skills would be on top of these.

There do remain substantial questions that are not addressed here. These calculations build on an aggregate set of estimates from existing programs. The characteristics of these programs are not really well specified. Neither are the appropriate ways to introduce such programs or to pay for them.

They also do not consider that the fade out from these programs might be directly related to other policies. For example, improved K-12 schooling that built more appropriately on added skills from early childhood programs might reduce the amount of fade out.

In any event, the magnitude of potential gains is sufficient to justify expanded public actions to design and implement early childhood programs for disadvantaged youth.



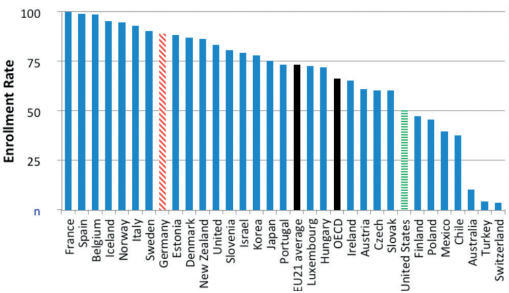


Fig. 1 – Enrollment Rates of Three-Year-Olds in OECD, 2010

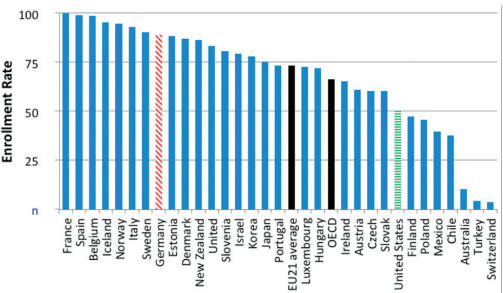


Fig. 2 – Enrollment Rates of Four-Year-Olds in OECD, 2010

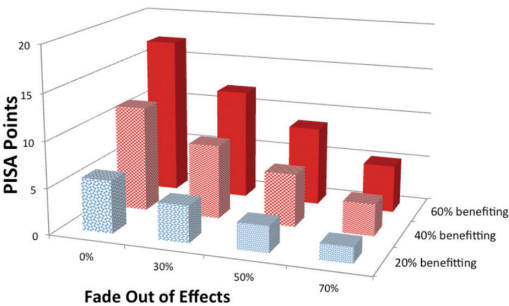


Fig. 3 – Plausible Impacts of Early Childhood Programs by Fade Out and Coverage (PISA Scale)

Achievement Gain	Present Value (\$ trillion)	Percent of Current GDP	Proportion Gains from Preschool
25 PISA point gain	\$44	268%	10-65%
Close black/Hispanic gaps	\$49	289%	12-40%

Table 1 – Impact of Achievement Gains on US GDP

Notes

'Both have been extensively analyzed. For the Perry Preschool Program, see, for example, Barnett (1992) and Schweinhart et al. (2005). For Abecedarian, see, for example, Campbell et al. (2001).

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