

Economics of Early Education

W. STEVEN BARNETT

Abstract

Economic research has established that public investments in early childhood programs providing education can yield high rates of return. A substantial portion of these returns are spillover effects that benefit society generally but not the child and family creating a classic instance of market failure. Benefits include improvements in school progress and achievement, health and health behaviors, social behavior, and employment and earnings for children and improvements in maternal employment and career paths. The weight of the evidence indicates that disadvantaged children benefit more than others. While programs can produce benefits from increased maternal employment (child care function) as well as from improved child development (education function), child development benefits look to be the larger part of the potential gain. Studies of large-scale public policies and programs find much smaller benefits indicating that there may be substantial government failure in putting this knowledge into practice. One point that is immediately obvious is that public programs often fail to replicate the successful programs from research because government funds them inadequately. However, this is not the only problem as the costs and benefits of programs depend on the details of policy and program design and implementation. These details are not all well understood. Recent research has provided some insights, but has by no means answered all the key questions definitively. Key issues for further research include the advantages and disadvantages of means-tested v. universal programs, and the nature and size of investments that are most productive at each age.

INTRODUCTION

Until relatively recently, most investments in the education of children under the age of five were through informal interactions in the home. With economic development, home investments in the education of young children have increased, and investments in formal education outside the home have increased even more dramatically. The past half century has seen tremendous growth in early care and education globally. This expansion has been supported by public, as well as private, funding, and governments now make substantial investments in many countries. The range of public programs for early education include such parenting supports as nurse

home visitation, child care, and the inclusion of younger children in public education. Public programs often have as an important goal increasing the equality of investment in human development and improving the life course for young children from disadvantaged backgrounds. Nevertheless, most developed countries (but not the United States), and many developing nations, make such investments through universal public programs that are open to all families.

From an economic perspective early education in all its forms produces a joint product with at least two differentiated outcomes—education and care. Education is an activity designed to enhance learning and development. It should not be viewed as narrowly academic but as concerned with the development of the whole child—cognitive, social, emotional, and physical. Care is itself an ambiguous term because while it means to “provide for another’s needs” and often implies an emotional connection, the term child care has also come to refer to a more limited custodial function of child watching that ensures that a child is safe, but may not provide for any of a child’s other needs. While education may be viewed as supplementing rather than replacing parental efforts, child care in the custodial sense when it is not provided by a parent is designed to enable parents to pursue other activities, principally other work. Regardless of the label applied to an arrangement—parenting, child minding, child care, nursery school, Head Start, Sure Start, early education, preschool and pre-K—all of these activities can provide both care and education, though the proportions of each product vary within and by type of arrangement.

The economics of early education is most often thought of as concerned with the economic returns to public investments. As important as that topic is, economics has also been making contributions toward understanding how parents make decisions regarding their own and others, services, how these decisions interact with decisions regarding employment, and the effects of alternative public policy approaches on parental decisions and children’s early education including the effects of child allowances, care and education subsidies, and direct public provision of services. Economics also is providing insights into the effects of early education policies, including intervention programs designed for specific disadvantaged populations, and into the processes through which the initial effects of early education lead to lifelong transformations of human development.

FOUNDATIONAL RESEARCH

Modern research on the importance of early education for child development owes much to a burst of experimental studies that began in the 1960s stimulated by research on the malleability of intelligence and the effects of

the social environment on opportunities to learn, motivation, and other contributors to knowledge and skills. Long-term follow-ups provided evidence that early education could have persistent developmental effects well beyond intelligence and significantly alter life courses. Indeed, most of these early studies found that effects on intelligence (as measured by IQ) did not persist beyond a few years. This finding has been replicated in many studies since, but two key points regarding the finding are not always recognized. First, even with transitory IQ effects, studies typically found persistent gains in academic achievement (subject matter specific knowledge and skills), educational attainment, and a variety of social and emotional aspects of development. Second, educational interventions that began in the first year of life and continued to school entry did produce persistent IQ gains.

One of the experimental studies begun in the early 1960s provided the basis for the first and most far-reaching comprehensive benefit–cost analysis of early education. The Perry Preschool study pre-dates Head Start and other large-scale public preschool programs in the United States. Participants were economically disadvantaged 3- and 4-year-olds randomly assigned to treatment and control groups. The intervention group attended a 2 1/2 h per day, intensive educational program with highly qualified teachers in small classes for up to two years. The 123 low-income children in the study have been followed through age 40 (Schweinhart *et al.*, 2005). Positive effects on cognitive test scores were observed from ages 3 through 27, but the persistent effects were found on achievement, not on IQ. In addition, the intervention group evidenced better classroom and personal behavior from their first years of school followed by lower youth misconduct and crime. Other positive schooling outcomes were fewer years of special education years, and a higher rate of on-time high school graduation. Positive adult outcomes include increased earnings, decreased welfare dependency, reduced arrests and decreases in risky behavior that could lead to poorer health outcomes.

Benefit–cost analysis of results from the Perry Preschool study was first based on follow-up data through age 10. Owing to the limited follow-up, this analysis was primarily based on projections, but indicated that benefits were likely to exceed costs. This led to a series of benefit–cost analyses that Steven Barnett and colleagues built off this early work to estimate economic benefits based on data through age 19, then age 27, and most recently age 40. As the duration of follow-up increased, these benefit–cost analyses increasingly relied more on actual outcome estimates for educational costs, delinquency and crime, social services use, and the value of individual productivity as measured by employer willingness to pay for labor and less on projections. As projections are made only through age 65, the estimated economic returns in the most recent studies depended more heavily on actual results than on projections.

The benefit–cost analyses of the Perry Preschool represented a departure from much previous practice in the economics of education in expanding the estimation of benefits beyond earnings. While economists had pointed out that there were many other benefits from education for which economic value could be estimated, this had been rare, and it continues to be the exception rather than common practice in estimating the returns to educational investments. Beyond indicating that the benefits were much larger than the costs of the program these analyses provided two other key insights. First, the largest part of the economic benefit was from impacts on outcomes other than earnings, crime in particular, but there were other areas such as reduced costs for special education (as less was needed). Second, most of the economic benefits accrued to the general public rather than to the participants and their families. In other words, the spillover benefits, or what economists call “externalities,” accounted for most of the benefits and were quite large.

Although these results are widely known, some confusion has resulted from the variation in estimates of the return and the way in which has been reported over time. As new estimates appeared over time they changed, primarily because benefit estimates increased as conservative projections were replaced by estimated effects at later ages. In addition, results have been reported as benefit–cost ratios with a range of ratios based on alternative assumptions at each follow-up, and results have also been reported as rates of return. Multiple benefit–cost ratios are presented that vary depending on the discount (interest) rate used to take into account the opportunity costs of resources over time (a dollar today is worth more than one 20 years from now). As economists disagree about what is the most appropriate rate, a range of rates is typically used. For example, at the age 40 follow-up, the estimated benefit–cost ratio was \$17 to 1 with a discount rate of 3% and \$7 to 1 with a discount rate of 7%. The estimated annual rate of return was 18%. Under more conservative assumptions regarding benefit estimates the ratio was as low as \$4.5 to 1 and the rate of return would be correspondingly lower.

More recently, economists have begun adding even more estimates to the mix. Art Rolnick and Rob Grunewald estimated a real rate of return of 16%. James Heckman and colleagues have updated the statistical methodology for estimates underlying the benefit–cost analysis, estimated statistical confidence intervals for the economic returns, and produced estimated rates of return of between 7% and 10%. These differ from earlier estimates owing to differences in assumptions, for example, about the value of crime or the costs of taxes, rather than differences in the underlying estimates. Of course, the uncertainty surrounding these and earlier estimated rates of return is substantial. The most accurate answer to the benefit–cost question really is that in this study benefits were large relative to cost. More importantly, none

of the Perry Preschool benefit cost estimates can be directly generalized to large-scale public policies and programs. This is a major challenge as will be discussed below.

A second well-known randomized trial of early education followed the Perry Preschool a decade later. This is the Abecedarian study which has studied 111 children through age 30. In this study children from economically disadvantaged families were randomized at birth. The treatment group attended center-based, educational child care for a full work day, year-round through the age of five. Positive effects were observed on IQ and on reading and math achievement in the short and long terms. Children who attended the program had lower rates of grade retention and special education and increased rates of higher education attainment. Positive effects were also found for health-related behaviors and for symptoms of depression (Campbell *et al.*, 2012). In addition, because (unlike the Perry Preschool) the Abecedarian program was an effective provider of child care, benefits were estimated for effects on maternal productivity in the labor force. Unfortunately, the immediate impacts on maternal labor force participation during the program were not measured. However, impacts on earnings were measured in later years, and these indicate a substantial increase, likely because of greater attachment to the labor force during the early years (Barnett & Masse, 2007). Once again benefits were large relative to costs and spillovers were considerable. However, the estimated returns were considerably smaller than in the Perry study because of both higher costs and lower benefits, \$2.5 dollars per dollar invested. One reason benefits were lower is that no significant impacts were found on crime and delinquency, but costs are much higher per year and extend over more years, as well.

A third landmark study in this field was conducted another decade later, a longitudinal study of the Chicago Child-Parent Centers, which provided part-day early education through the public schools to disadvantaged children on a large-scale. Effects were estimated by comparisons to children in similar neighborhoods where the program was not available. Although providing less certainty than a randomized trial that the impact estimates are unbiased, it measures the effects of a program under more typical conditions and at a program intensity and cost consistent with public schooling in the United States more generally. The pattern of effects is remarkably similar to that in the Perry study, and, to a lesser extent, the Abecedarian study, though effects tend to be somewhat smaller. In addition to increased test scores there were reductions in grade repetition and special education as well as increases in high school completion and decreases in arrest rates. Benefit estimates

remain proportionate to the lower costs so that the benefit–cost ratio estimated by Arthur Reynolds, Judy Temple and colleagues exceeded 10 to 1 and the estimated annual rate of return was 18%.

Another approach to increasing investment in early education is to support better parental care and education of the child. This can be done through home visiting or bringing parents in to a center where they may be worked with in groups. Such efforts often have failed to produce substantive results in randomized trials. However, there have been a number of exceptions including a number of programs that focus on the parents of children with identified problems. Programs targeting disadvantaged families more generally that have been identified as successful in producing long-term impacts with clear economic benefits include the Nurse Family Partnership in the United States, a Turkish early enrichment program for mothers, and a nutritional supplementation and home stimulation program studied in Jamaica.

The Nurse Family Partnership now has three fairly large randomized trials with long-term follow-up, the longest now reaching to adulthood. Several benefit cost analyses of the Nurse Family Partnership program have found benefit cost ratios exceeding \$2 to 1. Child benefits included improved achievement, decreased injury, abuse and neglect, and fewer arrests. Using the most recent trial data, one study found a benefit cost ratio of 3 to 1 just through the age 9 follow-up with benefits to both mothers (primarily) and children. As this study estimated a broader range of early benefits than the others, it suggests that even larger returns might be found in a similarly broad analysis using data from the longer-term follow-ups.

If the economic case for public investment in early education rested on the studies reviewed above alone, its foundation would be interesting, but nevertheless fairly narrow. Fortunately, there is a much larger body of research that has established that early education can produce a wide range of immediate and persistent effects on cognitive, social, and emotional development. A fair number of randomized trials in a wide range of countries, not just the United States, provide a strong basis for causal claims. Results include short- and long-term improvements in cognitive abilities including educational achievement, school progress, pro-social and anti-social behaviors, executive functions, delinquency, crime, mental health, and health related behaviors. Generally, effects decline in the years after children leave early education, and persistent effects are associated with relatively large initial impacts. In developing country contexts, impacts from early childhood programs on nutrition, health, and physical development are common; programs producing these impacts typically have nutrition components, and somewhat less frequently health services, as well as education.

CUTTING-EDGE RESEARCH

Despite the overwhelmingly positive effects of early education on child development that have been found by research overall, the evidence with respect to the impacts of large-scale public programs has been much more mixed. In the United States, randomized trials of major educational programs for disadvantaged children such as Early Head Start and Head Start revealed weak initial impacts with little or no long-term improvements in any domain of development. (With respect to Head Start, some researchers suggest that it is too soon to conclude that the program does not pass a benefit cost test because even though effects are small they are underestimated by intent to treat analyses and even small effects can have substantial value.) Results are even less positive for public subsidies of low cost child care; results range from very small positive to modest negative effects on child development. Similar decreases in some outcomes are evident for home visitation models, as well. Outside the United States, results are similarly mixed. Some public programs are found to produce long-term gains in cognitive abilities, educational achievement, and adult earnings. Other programs are found to produce null or even negative effects. It should be noted that public programs not replicating the results from research on small-scale programs failed to replicate either the funding or the design of the successful models, typically having much less qualified teachers and many more teacher per child. However, as with the economics of education generally there are a substantial number of studies that fail to find a relationship between such program features and outcomes.

In view of the results found when moving from carefully controlled studies to large-scale policy implementation, two issues have been particularly important for recent research in the economics of early education. One is estimating the returns to large-scale programs and policies across a wide range of social and economic contexts. The other is increasing our understanding of the conditions under which returns are high as well as when they are not. Large impacts and high rates of return have been found in high, medium, and low income countries around the globe. Across all these contexts benefits have been found to vary with the level of family disadvantage and program design. In fact the two interact as the effectiveness of early education depends on the formal program providing higher quality than is available in the home; clearly this is easier to accomplish for disadvantaged families that provide fewer resources because parents are less educated or do not know the language of schooling.

A key rationale for public funding of early education (and other supports for early development) is the evidence of the large human and economic costs from poor child development and the potential for early education to

alter these poor developmental trajectories. These include the costs of grade repetition and special or remedial education, poor health, low productivity in the work force, and high involvement in delinquency and crime. The high rates of return documented for early education programs that prevent these problems indicate that parents, particularly low-income parents, invest too little in high quality early education from a societal perspective. As most of the economic benefits just listed are in large part spillovers that do not accrue to the low-income families, but to the larger community, families have little economic incentive to invest more in early education even if this was an affordable option. Governments, on the other hand, have a very strong reason to invest in such early education, particularly for low-income families and others for whom effects and spillovers are large (e.g., migrants and parents with very limited capabilities). Public investment has increased globally, and this evidence may have contributed to that increase.

To date most of the research on returns to large-scale public programs has focused on earnings benefits to children and parents. Oklahoma was first in the United States to achieve essentially universal coverage at age four. That program is estimated to produce earnings benefits that are 3 or 4 times the cost of the program and rates of return of 6–7%. Other work has indicated that adult earnings increases from attending Head Start and other pre-K programs in the United States could exceed the cost of the program. Research in other developed economies has found increased adult earnings but has not estimated rates of return. For middle and low income countries it has been estimated that increasing preschool education enrollments in low- to middle-income countries from 25% to 50% would yield a benefit-to-cost ratio of between 6 and 17 to 1 based solely on increased earnings (Engle *et al.*, 2011).

Studies of the effects on parental employment and earnings of public programs to subsidize or provide early care and education have produced mixed results. Most studies find positive effects on maternal employment. However, the magnitude of the effect varies considerably across studies. A few studies do not find positive effects on employment, primarily because increased public investments may lead to a switch from informal and privately paid arrangements to other forms (often classroom based) that are publicly subsidized. The estimated magnitude of the switch also varies substantially. Variations in findings seem likely to be due to the variations in family structure, labor market conditions, other family policies, and specific features of the public early childhood policy (such as whether they target low-income, single parents).

As it has become clear that the details of policies matter a great deal for the benefits, economic analysis has begun to examine these details. Research in this vein includes studies of how parents make decisions (including joint

decisions about employment and early education arrangements) as well as how variations in program features affect costs and benefits. Features examined in such studies include length of day, class size, and programs to enhance classroom management. The Tennessee class size randomized trial illustrates how complex the details can be. Reducing class size in kindergarten (which would be preschool in many countries) had persistent effects on achievement, and class size effects were larger for kindergarten than later grades. Some studies indicated that minority children gained more. One study suggested that small classes may produce their effects primarily through eliciting greater effort rather than improved instruction, while another indicated that better results in small classes were produced only by more experienced teachers.

Economists also have begun to expand the range of benefits estimated beyond those in previous studies. Such outcomes include effects on child mortality and morbidity including obesity, quality of life, mental health, and peer effects of all types. For example, a child's own learning may not be significantly affected by her classroom behavior, but the learning of other children in the classroom is affected by her behavior. Estimated peer effects even though modest are of practical significance because of the numbers of children affected. Another benefit newly included is the value of decreased inequalities. Preschool education has been found to raise average achievement nationally while decreasing inequality in achievement. In addition, to the direct value of decreased inequality to a nation's citizens, decreased inequality can contribute to greater social cohesion and economic stability. Although early education is not by itself a solution to income or gender inequalities, it can be one element of a broader strategy to increase social equality.

With the expansion of large-scale public policies and programs, issues of the systemic effects of such policies have begun to be addressed. One of these issues is the extent to which public provision of preschool education crowds out private provision rather than expanding access for children who otherwise would not have attended a private program. Studies to date indicate that most of the take up in public programs in advanced economies is a switch from private to public arrangements. Less clear is how the quality of the public arrangements compares with the private and what the consequences are for child development. If the public support is for low quality child care, impacts on child development can even be negative. If public programs are of higher quality then much of the gain may come from improving outcomes for children who would have been in private programs and not only from increased net enrollments.

Economists also have contributed to research on the mechanisms by which the impacts of early education (and related services including nutrition

where relevant) are translated into long-term impacts. Suggested pathways to adult economic outcomes include snow-balling effects of early success on motivation and effort, effects on meta-cognitive abilities and executive function, and lasting impacts on family interactions. Which pathways to long-term effects are activated depends on the nature of the educational services provided. Recent studies have sought to identify the contributions of general cognitive abilities, subject matter specific abilities, executive functions, and other aspects of personal development including social and emotional development. It seems clear that there are multiple paths and that all educational programs do not activate all of these paths equally. Even within a single domain such as social development program may have differing effects; for example, programs can simultaneously increase aggression and sociability. Research strongly supports the view that cognitive academic abilities are not the sole source of important long-term benefits from early education.

KEY ISSUES FOR FURTHER RESEARCH

Much remains to be learned about how to optimize the economic returns to public investments in early education. Two questions where both costs and benefits may loom large are: who should public programs serve and how early should they start? Broad questions about the economics of universal as opposed to means-tested programs go beyond the simple question of whether early education produces larger gains for disadvantaged children (and even this may not yet be definitively answered). Might benefits for nondisadvantaged children nevertheless exceed costs? Do universal programs reach a much larger percentage of the disadvantaged population because of practical difficulties of trying to enroll children continuously based on transitory income? What about the effects on enrollment of parental concern with stigma or negative peer effects in targeted programs? How much does the willingness of the populace to support a quality educational program depend on universal access?

With respect to age at start, the now ubiquitous “Heckman curve” portrays returns to early education as declining exponentially with age. Yet, this curve is not empirically derived. Meta-analyses do not find a consistent relationship between age and outcomes through age 5. The available benefit–cost results indicate to the contrary that returns are lower before age three. Theoretical arguments for the curve appear to be based on rudimentary theories of learning and are inconsistent with evidence from Heckman and colleagues about the long-term malleability of “noncognitive” characteristics associated with large benefits. The cost side seems not to have been considered, as costs are higher for infant-toddler education. When comparing preschool returns

to those for later education and training it has not been taken into account that later estimates rarely include anything other than earnings effects, which account for a small fraction of the preschool benefits. In addition, returns to early education depend on later educational opportunities and, in general, declining marginal returns are likely to affect all of the comparisons. Relative returns should be expected to be quite different across countries depending on public investments in pre-primary, primary and secondary education and parental investments beginning with pregnancy. Much more economic research should be conducted on age at start despite popular opinion that the question is settled.

Further research is needed to understand the production functions for learning and development at home and in programs. Economic research on this topic could be enriched by combining what economists have learned about production functions generally with what cognitive science, education, and psychology have learned about the processes of learning and development. Such interdisciplinary work might be highly productive for both development and testing of theory. Given how much remains unknown, more progress might be made by designing and implementing experiments to test theories about the production of long-term learning and development gains from early education rather than to test or evaluating or evaluating programs. Experimental studies also might provide clearer answers to questions about the impacts of funding, teacher qualifications, and teacher-child ratios than those relying on natural variation.

Given the extent to which the details of program design and implementation affect their costs and benefits, it also would be wise to shift away from summative evaluation to systematic experimentation aimed at policy and program improvement. As noted earlier, in evaluating benefits such studies should attend simultaneously to care and education, and outcomes for parents and children. Such evaluations should not be thought of as one-time studies, but as on-going systems designed to fine-tune policy and practice from the local level on up to the national. Such studies might also illuminate the reasons for implementation failure and help to identify adequate resource levels (which permit but do not guarantee results) and other necessary features that together might constitute a sufficient basis for achieving policy and program goals regarding benefits.

REFERENCES

- Barnett, W. S., & Masse, L. N. (2007). Early childhood program design and economic returns: Comparative benefit-cost analysis of the Abecedarian program and policy implications. *Economics of Education Review*, 26, 113–125.

- Campbell, F. A., Pungello, E. P., Burchinal, M., Kainz, K., Pan, Y., Wasik, B. H., ... Ramey, C. T. (2012). Adult outcomes as a function of an early childhood educational program: An Abecedarian project follow-up. *Developmental Psychology, 48*(4), 1033–1043.
- Engle, P.L., Fernald, L.C.H., Alderman, H., Behrman, J., O’Gara, C., Yousafzai, A., ... , Iltus, S., & the Global Development Steering group. (2011). Strategies for reducing inequalities and improving developmental outcomes for young children in low-income and middle-income countries. *The Lancet, 37*, 1339–1353.
- Schweinhart, L. J., Montie, J., Xiang, Z., Barnett, W. S., Belfield, C. R., & Nores, M. (2005). *Lifetime effects: The High/Scope Perry Preschool study through age 40*. Ypsilanti, MI: High/Scope Press.

FURTHER READING

- Barnett, W. S. (2011). Effectiveness of early educational intervention. *Science, 333*(6045), 975–978.
- Camilli, G., Vargas, S., Ryan, S., & Barnett, W. S. (2010). Meta-analysis of the effects of early education interventions on cognitive and social development. *Teachers College Record, 112*(3).
- Cunha, F., Heckman, J. J., Lochner, L., & Masterov, D. V. (2006). Interpreting the evidence on life cycle skill formation. *Handbook of the Economics of Education, 1*, 697–812.
- Herbst, C. M., & Tekin, E. (2010). Child care subsidies and child development. *Economics of Education Review, 29*, 618–638.
- Haeck, C., Lefebvre, P., & Merrigan, P. (2012). *Quebec’s universal childcare: The long term impacts on parental labour supply and child development*. Montreal: Economics, University of Quebec.
- Nores, M., & Barnett, W. S. (2010). Benefits of early childhood interventions across the world: (Under) Investing in the very young. *Economics of Education Review, 29*(2), 271–282.
- Olds, D., Miller, T.R., Knudtson, M., Luckey, D., Bondy, J., Stevenson, A., ... Arcoleo, K. (2011). *Impact of the nurse-family partnership on neighborhood context, government expenditures, and children’s school functioning*. Rockville, MD: National Criminal Justice Reference Service.
- Pianta, R. C., Barnett, W. S., Burchinal, M., & Thornburg, K. (2009). The effects of preschool education: What we know, how public policy is or is not aligned with the evidence base, and what we need to know. *Psychological Science in the Public Interest, 10*(2), 49–88.
- Reynolds, A. J., & Temple, J. A. (2008). Cost-effective early childhood development programs from preschool to third grade. *Annual Review of Clinical Psychology, 4*, 109–139.
- Reynolds, A. J., Temple, J. A., White, B. A. B., Ou, S. R., & Robertson, D. L. (2011). Age 26 cost-benefit analysis of the child-parent center early education program. *Child Development, 82*(1), 379–404.

W. STEVEN BARNETT SHORT BIOGRAPHY

W. Steven Barnett is a Board of Governors Professor and Director of the National Institute for Early Education Research (NIEER) at Rutgers University. His research includes studies of the economics of early childhood care and education (ECCE), the long-term effects of ECCE on children's learning and development, and ECCE policies. Dr. Barnett earned his PhD in economics at the University of Michigan. He conducted several of the early comprehensive benefit-cost analyses of preschool education and its long-term consequences including in 1985 *The Perry Preschool Program and its long-term effects: A benefit-cost analysis. High/Scope Early Childhood Policy Papers* (No. 2) and in 1996 *Lives in the Balance: Age 27 Benefit Cost Analysis of the High/Scope Perry Preschool Program*. Recent publications include "Effectiveness of early educational intervention" in *Science* and "Four reasons the United States should offer every child a preschool education" in *The pre-k debates: current controversies and issues* from Brookes Publishing.

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