Can Head Start Lead to Long Term Gains in Cognition After All?

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Early intervention programs for preschoolers have been suggested as a means of improving educational attainment among disadvantaged children. Children who lag behind their peers when they start school often fall further behind they are more likely to repeat grades, and to eventually drop out of school. Quality preschool programs can help prepare children for school by providing cognitive stimulation, as well as health and nutritional benefits. However, many of the programs attended by low income children are of low quality. They often have high child/staff ratios, more teacher turnover, teachers with less training, and they frequently lack services such as health screenings as well as formal curriculums or guidelines outlining what students are to learn (U.S. General Accounting Office, 1995).

The Head Start preschool program aims to redress these inequities. It is a federal local matching grant program intended to improve the skills of poor children so that they can begin schooling on an equal footing with their more advantaged peers. Begun in 1964 as part of the “War on Poverty”, the program now serves over 700,000 children in predominately part day programs, or roughly 30% of eligible 3 to 5 year olds. In order to serve greater numbers of poor children, both Democratic and Republican administrations have increased Head Start funding annually since 1989. Most recently, President Clinton has proposed increasing the number of children served to 1 million by the year 2000.

Price research suggests that “Cadillac” interventions such as the famous Perry Preschool Program (which was funded at twice the level of the average Head Start program today) may have lasting effects on a range of outcomes such as high school completion and the avoidance of crime and teen pregnancy. And regular Head Start programs are thought to have many benefits including improvements in future school attendance and a reduction in the probability that a child is placed in remedial education (McKey et al., 1985).

However, a typical finding in the Head Start evaluation literature has been that the benefits measured in terms of test scores fade out within a few years of program completion (Barrett, 1992).

In response, advocates for the program have pointed out that it may be unrealistic to expect a one or two year intervention like Head Start to have long lasting effects on cognition. One cannot inoculate children against poverty (Zigler and Menchow, 1992).

Recent work by Janet Currie and Duncan Thomas revisits this question. Their work differs from previous efforts both in terms of the data source and in terms of methodology. Specifically, we focus on a national sample of children from the National Longitudinal Surveys. These children were born to female participants in the National Longitudinal Survey of Youth (NLSY), a study of men and women who were between the ages of 14 and 21 in 1978. These individuals have been surveyed every year since. Beginning in 1986, the children of the NLSY mothers were also surveyed bi-annually.

Children who were age eligible were given a battery of assessments including the Peabody Picture Vocabulary Test (PPVT), and the Peabody Individual Achievement Tests in Reading Recognition and Mathematics (PIAT Reading and PIAT Math). Beginning in 1988, mothers were asked whether their child had ever attended Head Start or some other form of preschool. A key feature of this data set is that it includes a large number of children from a range of backgrounds. In contrast, many experimental evaluations have focused on small groups of children from relatively homogenous backgrounds, and especially on inner city African Americans.

From a purely scientific point of view, we would run a larger experiment in which some children were randomly assigned to the treatment (Head Start) and others were not. We tried to come as close to the experimental design as possible with the survey data by adopting the following research design. Since we wanted to compare children who attended Head Start to other children who were as much like them as possible but did not receive the "treatment", we examined siblings of whom attended other preschools and some of whom did not attend any preschool. This design sweeps out all fixed background characteristics that are shared by siblings in a household.

In addition, our statistical models controlled for observable differences between siblings that were either child specific (such as age, gender and birth order) or that varied over time within families (such as household income and household composition).

This sibling comparison design has several well known drawbacks, which are discussed at length in our paper (Currie and Thomas, 1995). The first is that if there is error in the measured test scores, then the true effects of Head Start may be underestimated. The second is that our methodology implicitly assumes that within families, and conditional on gender and birth order, children are randomly assigned to Head Start. If for example, relatively gifted children are more likely to attend Head Start than their siblings, then the effects will be overestimated.
On the other hand, if less gifted children attend Head Start, then the effects of the program will tend to be underestimated. Some additional analyses of the observable circumstances surrounding entry into Head Start within families, suggest that, if anything, Head Start children are worse off than non-Head Start siblings. Thus, we argue that our estimates are likely to underestimate the true effects of Head Start. Nevertheless, we found that among white children, attending Head Start closed about one third of the raw gap in PPVT and PIAT reading scores between more disadvantaged children and the scores the Head Start children would have received had they not attended any preschool. There was no significant effect on PIAT Math scores. In sharp contrast, we found no significant benefits associated with attending Head Start for the average African American child. By digging a little more deeply, we uncovered some important patterns.

Specifically, we estimated sibling comparison models that included not only an indicator equal to one if the child attended Head Start, but also an interaction between the Head Start indicator and the number of years since the child attended the program. This model allows us to separately measure the gains to Head Start as of the time the child left the program, and any “fadeout” of that effect over time. These estimates suggested that when measured at age 5, the benefits of Head Start were identical for whites and African Americans. Moreover, these benefits persisted well into adolescence for whites, but faded out rapidly among African Americans. By age 10, the benefits had all but disappeared among these children.

What is remarkable about these results is how closely they accord with the previous experimental literature about Head Start “fadeout.” As discussed above, virtually all those studies have found large initial effects of participation in Head Start. But many of the experimental studies focused on inner city African American children and concluded that gains on test scores from Head Start are lost as early as 3rd grade. Our study sounds a more hopeful note since we find lasting effects of Head Start on the test scores of at least some children. Thus, our results question the conventional wisdom that fadeout is inevitable, and raise the question of “What factors undermine gains from Head Start?”

A possible answer is that children who live in sustained poverty are less likely to retain gains from Head Start. While most children in the program are poor, not all of them remain to, and typically blacks have lower incomes over longer periods than whites. One way to get at this question is to examine a third group who also suffer disproportionately from poverty: Latinos. According to the latest Census figures, Hispanics are now more likely to live in poverty than blacks. Thus, if poverty was the sole factor undermining gains from Head Start, we might expect to see fadeout of benefits among Latino children.

We examined the effects of Head Start on Latinos using the same NLSY data as in our earlier study (Carrie and Thomas, 1996a). Our results are quite the opposite from those suggested by the resource constraint hypothesis above. If anything, the gains from Head Start are larger among Hispanics than among non Hispanic whites, although they are not evenly distributed across Latino subgroups. Gains are largest among children of Mexican origin and children of native born mothers.

Secondly, given continuing concerns about segregation and differential school quality, we asked whether differences in school quality could explain these patterns (Carrie and Thomas, 1996b). Specifically, the initial positive effects of the Head Start program may be undermined if Head Start children are subsequently exposed to inferior schools. And since we see fadeout for blacks but not for whites, it would have to be the case that black Head Start children are attending worse schools than other black children but that the same was not true among whites.

We tested this hypothesis using a sample of 8th graders from the National Educational Longitudinal Study of 1988 (NELS). Our work builds on earlier research by Valerie Lee and Susanna Loeb (1995) who showed using these data that the schools attended by Head Start children are of worse quality in some observable dimensions than the schools attended by other children. However, they did not look at racial differences, and they did not allow for unobservable differences between schools. We find that even controlling for family income and parent’s education, children who attended Head Start have lower test scores than other children. This result is to be expected if Head Start does not entirely compensate for early disadvantages.

We then show that among black children, the gap between Head Start children and other children is virtually eliminated when we compare children within the same school. That is, within schools, black Head Start children do no worse than other black children. But since they perform more poorly than other children on average, they must be attending schools in which all black children do badly. If a “quality” school is defined as one in which children do well then, these results suggest that black children who attend Head Start go on to attend schools of significantly worse quality than other black children. In contrast, among non Hispanic white children there appeared to be little difference in the schools attended to by Head Start and other children. The results for Latinos are in between those for blacks and non Hispanic whites.

The extensive literature on school quality emphasizes that there are several reasons why a school may be of high quality in the sense that children who attend that school do well. First, the choice of a better school may reflect family or neighborhood characteristics that are themselves associated with better child outcomes. Second, a quality school may be one with superior resources or programming. Third, a quality school may be one that provides a good peer environment.

We asked which aspects of the schools attended by black Head Start children appeared to be deficient by estimating models that included observable characteristics of schools and peers such as class size, teacher salaries, the fraction of children who were black or Hispanic, and the fraction of children in remedial education classes. We found that among blacks,

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differences in observable school characteristics such as the number of hours of homework assigned can explain some of the gap between Head Start and other children, although, unlike the within school comparisons, they do not entirely eliminate the gap. Among whites, the inclusion of observable school characteristics has no effect on the gaps between Head Start and other children, suggesting once again that past attendance of Head Start is not correlated with subsequent school quality.

In summary, our research suggests three things. First, Head Start can make a difference to long term cognitive attainment. In this sense, our work is more hopeful than much of the previous work examining these outcomes. Second, although Head Start appears to have similar initial effects on children from different backgrounds, the extent to which the effects are sustained varies between groups. Third, the fact that the initial effects are similar suggests that the reasons for differential fadeout may lie in the larger society, beyond the reach of Head Start program administrators. We need to know more about the specific conditions that undermine gains to cognitive achievement so that we can safeguard early investments in the most vulnerable children.

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