



Long-term effects of Head Start on academic and school outcomes of children in persistent poverty: Girls vs. boys

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ABSTRACT

Using various years of the Panel Study of Income Dynamics and their two Child Development Supplements of 1997 and 2002, this study focused on the long-term effects of Head Start programs on academic achievement and school outcomes of children who grew up in chronic poverty after controlling for their home environments and neighborhood qualities. Findings suggest that (1) Head Start participation was associated with higher scores on Woodcock Johnson-Revised Test and decreased involvement with school suspension, expulsion, and grade repetition throughout all school years (from age 7 to 17) for chronically poor girls and that (2) home environments and parents' education are more consistent and significant determinants of children's long-term outcomes than Early Childhood Care and Education programs including Head Start. The findings of this study offer implications for policy and research.

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1. Introduction

Although the United States is the richest country in the world, U.S. children are not the most advantaged, and a substantial share of them live in economic deprivation. Around 18%, (12.9 million) of all children lived in poverty in 2007, and although children comprised about 25% of the U.S. population, they accounted for more than 35% of all poor persons (DeNavas-Walt, Proctor and Smith, 2008). Moreover, a third of all children spend at least 1 year in poverty, and for 15% of children who have ever been poor, poverty lasts for 10 years or longer (Lewit, Terman and Behrman, 1997). Literature documents that children growing up in persistently disadvantaged environments are likely to have weaker outcomes in most domains and that, if not prevented, society as a whole ends up bearing significant social and economic costs of these negative outcomes (Duncan, Yeng, Brooks-Gunn and Smith, 1998; Yeung, Linver, and Brooks-Gunn, 2002).

Head Start is a preventive program that was specially designed to mitigate the negative impacts of poverty or low income on children's outcomes. The program provides comprehensive developmental services for low-income children between 3 and 5 years old and social services for their families based on the rationales that today's children determine the future prosperity of our society and intervention in early childhood increases developmental and educational gains for children and reaps long-term benefits for society (Heckman, 2008). However, there have been ongoing debates on the program's long-term effectiveness, particularly with regard to

educational outcomes, because the best publicized cognitive gains achieved by Head Start children were found to fade after only a few years of elementary school. Although the two national randomized studies, the Early Head Start Evaluation and the National Impact Study of Head Start, yielded some significantly positive effects on cognitive development, there have been conflicting views about how to interpret the findings and furthermore whether to support or expand Head Start given what seemed to be at best minor and heterogeneous program effects (Besharov and Higney, 2007; Currie, 2007; Gish, 2004; Karoly et al., 1998; Nathan, 2007; Puma et al., 2005). In particular, as Besharov and Higney (2007) have argued, despite 40 years of operation, we still do not know for what groups of children Head Start yield positive and long-term effects.

The primary purpose of this study is to examine whether Head Start participation produced improvement in academic achievement and school outcomes for elementary school and adolescent children who grew up in chronic poverty. Academic and school outcomes were chosen because much of the past evaluation of Head Start has focused on those outcomes due to their significance in children's later economic success. This study is unique in that it observes Head Start participants throughout their school years (from ages 7 to 17) and offers evidence on long-term effects while focusing on gender differences in often overlooked areas. A focus on gender differences is warranted, because participation in early childhood care and education programs is likely to yield the best outcomes for the least advantaged children (which, among chronically poor children, tend to be girls). Although research hints that scarce resources are more likely to be invested in boys than girls within poor families, it is also very important to study poor girls' outcomes because many of them are

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likely to head families with children when public transfer programs and marriage do not offer much economic security.

Using various years of the Panel Study of Income Dynamics and their two Child Development Supplements from 1997 to 2002, this study found that Head Start was associated with increased academic test scores and decreased involvement with school problems throughout all school years, particularly for girls who grew up in chronic poverty.

2. Review of the literature

2.1. Long-term effects of ECCE on children's cognitive and school outcomes

Because most of the evidence on any benefits of early childhood care and education (ECCE) have been drawn from demonstration preschool programs, a review of these programs' effects is necessary and important (Barnett, 1995). Among several demonstration programs, most of the literature have focused on three programs: the Carolina Abecedarian Project, the Perry School Project, and the Chicago Child Parent Center Program targeting low-income families. Implemented in the 1960s and 1970s on a small scale and evaluated by a randomized experimental design, these early intervention programs have usually been found to yield strong long-term impacts on participating children (Currie, 2000; Karoly et al., 1998).

For the Carolina Abecedarian Project, where children who were economically disadvantaged and at risk of mental retardation started receiving the intervention weeks after the child's birth, the mean IQ score of the treatment group was 5 points higher than that of the control group at age 12, and the treatment group had higher average test scores and were twice as likely to still be in school or to have ever attended a 4-year college at age 21 (Currie, 2000; Karoly, et al., 1998). For children who participated in the Perry School Project, the treatment group scored 11 points higher than the control group on an achievement test, and their scores remained significantly higher through age 14. The treatment group was also more likely to have graduated from high school (Karoly, et al., 1998). The Chicago Child Parent Center Program reduced the number of high school dropouts and significantly increased reading and math scores. Furthermore, youth who participated in the program demonstrated a trend of higher overall competency and higher assertive social skills by age 15 compared with the comparison group (Niles, Reynolds, and Nagasawa, 2006).

Compared to all other ongoing preschool programs, these three programs were of higher quality and were much more expensive and intense. They were also targeted to the most disadvantaged group of children. It is possible that these three programs had relatively more qualified staff, closer supervision of staff by experts, lower child-staff ratios, and smaller group sizes. Head Start programs have tended to have larger group sizes, pay teachers much less, and sometimes provide classes only part of the year, although there is considerable variation in the quality of educational experience within Head Start participants (Barnett, 1995).

2.2. Long-term effects of Head Start on children's cognitive and school outcomes

Again, although the bulk of Head Start studies that have focused on cognitive development have generally reported positive short-term impacts of program participation (Bronfenbrenner, 1974; Currie and Thomas, 1995; Datta, 1979; McCall, 1993; McKey, Condelli, and Ganson, 1985; Zigler, Abelson, and Trickett, 1982; Zigler and Styfco, 1993), the evidence on long-term effects is mixed at best. Among the studies that have examined long-term program effects, studies by Currie and Thomas (1995, 2000) are particularly worth mentioning. Using the National Longitudinal Survey of Youth (NLSY), Currie and

Thomas (1995) compared Head Start children with siblings who had another type of preschool experience or no preschool. With controls for family background factors, not only did Head Start children receive higher scores on the Peabody Picture Vocabulary Test (PPVT) than siblings who had not attended preschool, but also, for White children, the effects of Head Start were much greater than the effects of attending other preschool programs. They also found that Head Start narrowed over one third of the gap in the test scores between children attending the program and their more advantaged peers. Interestingly, whereas the beneficial effects persisted at least into adolescence among White children, the gains were quickly lost among African American children. In a later study, Currie and Thomas (2000) attributed the fade-out effect to the fact that African American children are disproportionately affected by poor-quality schools in subsequent years.

Evidence on the long-term effects of Head Start on children's grade repetition and school suspension is, by and large, mixed (Aughinbaugh, 2001; Currie and Thomas, 1995). Currie and Thomas (1995) found that whereas White children over 9 years old who attended Head Start were 47% less likely to have repeated a grade than other White children, Head Start participation had no significant impact on African American children's probability of grade repetition. Similarly, Aughinbaugh (2001) reported that although having attended Head Start was associated with a decrease in the probability of grade repetition by 49 percentage points, it was also related with an increased level of school suspension for youth between ages 12 and 17. Aughinbaugh explained that this mixed finding might be due to Head Start youth having attended poor schools and having disadvantaged peers, both of which may negatively affect outcomes in teenage years, including suspension from school.

2.3. Do children's gender and disadvantage matter?

Although most studies have focused on racial differences in children's outcomes, some studies have suggested differential impacts of ECCE by gender. For example, Larson and Robinson (1989) suggested that the impacts of ECCE were particularly strong and significant among boys; those who had attended preschool scored significantly higher on the reading-vocabulary, total-reading, spelling, total-language, and total-battery components of the achievement measures than those who had not attended preschool. On the contrary, evaluation studies of the aforementioned demonstration projects showed that it was usually girls who benefited from participating in ECCE. Studies on children at the Abecedarian and Perry schools found larger effects on achievement test scores for low-income girls than boys, although the differences were not necessarily statistically significant. Studies on the Perry school also found that graduation rates were higher for girls than for boys. A more recent reanalysis of these demonstration projects also revealed that girls gained substantial short- and long-term benefits from the interventions, particularly by having more years of education, while there were no significant long-term benefits for boys (Anderson, 2008). The reason is unclear, and further research on this topic is warranted (Karoly et al., 1998).

Other studies have also hinted that ECCE is particularly effective for children from economically disadvantaged backgrounds (Magnuson, Ruhm, and Waldfogel, 2004). In Magnuson et al.'s study, whereas the impacts of cognitive gains associated with ECCE experience faded out by the spring of first grade for all children, the initial benefits of prekindergarten and preschool on reading and math scores were not only larger but also more persistent for disadvantaged children than for non-disadvantaged children. In fact, the primary reason why the demonstration projects generated large and significant impacts was that they targeted the poorest or the most disadvantaged children; the project offered children educational stimulation and opportunity, which were crucial for their development, but their parents and home

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