



Facts about Fadeout

The Research Base on Long-Term Impacts of High Quality Pre-K

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INFORMATION REQUEST

As the public profile of early childhood education has increased, state education agency staff, policymakers, and researchers are interested in understanding the lasting impacts of quality pre-K. Particularly for states beginning an investment in early childhood education or expanding access to an existing program, it is important to examine the research base for what type and the intensity of impacts policy makers can expect to see in subsequent years of schooling for children who participated in prekindergarten. It is also important to identify the factors that contribute to children experiencing high-quality prekindergarten and to understand what is known about how likely it is that these effects are expected to lead to lasting positive outcomes.

What We Know

High quality prekindergarten programs have meaningful impacts on children's development

- There is a substantial body of evidence demonstrating that quality preschool programs can produce meaningful lasting gains for children's learning and development.¹

Background and Context

Increased national attention to expanding early childhood education has raised questions regarding the persistence of impacts of quality pre-K education.

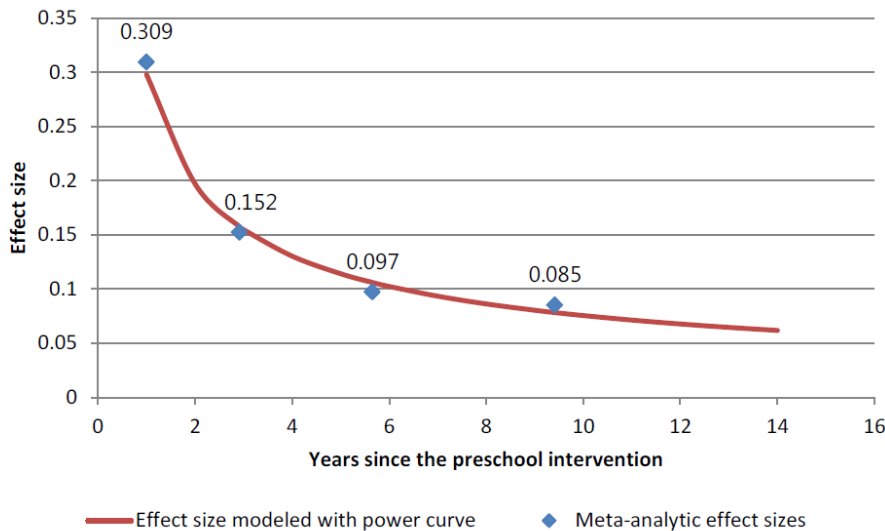
Methodology

CEELO staff reviewed relevant recent studies on a variety of pre-K programs, including Head Start and state-funded pre-K programs.

¹ Barnett, W. S. (2008). Preschool education and its lasting effects: Research and policy implications. Boulder and Tempe: Education and Public Interest Center & Education Policy Research Unit. Retrieved from: <http://nieer.org/resources/research/PreschoolLastingEffects.pdf> For more information on effectiveness, see: Barnett, W.S. (2011). Effectiveness of early educational intervention. *Science*, 333, 975-978. Retrieved from: <http://www.sciencemag.org/content/333/6045/975>. Barnett, W.S. (2013). Expanding access to quality pre-K is sound public policy. New Brunswick, NJ: National Institute for Early Education Research. Retrieved from <http://nieer.org/publications/nieer-working-papers/expanding-access-quality-pre-k-sound-public-policy>.

- The recent independent meta-analysis by the Washington State Institute for Public Policy summarized findings from 49 rigorous studies of a variety of early childhood education programs, finding positive impacts for low-income three- and four-year-olds. **Figure 1**, used with permission from their paper, estimates the effect sizes through grade 12.² They found a non-linear relationship between the effect size and time since the intervention, and found a decrease in effect size from third through fifth grades, similar to what was found by Camilli et al.³

Figure 1: Consistency seen in pre-K effect size over time⁴



“Fadeout” is, more accurately, other children catching up

- Cognitive test score differences between children who did and did not attend preschool gradually converge over the years after they enter school to varying degrees, depending on the study.⁵
- Commonly referred to as “fade out,” this convergence may result from “catch up” as those who did not attend quality preschool programs receive extra assistance in later years, or even benefit from improvements in the capabilities of their classmates who did attend quality preschool.

² As various studies may utilize different methods of data collection, effect size is used as a standardized measure to compare the degree to which a program affects an outcome.

³ 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), 579-620. Available at: http://rci.rutgers.edu/~camilli/Papers/38_15440.pdf.

⁴ Source: Kay, N., & Pennucci, A. (2014). *Early childhood education for low-income students: A review of the evidence and benefit-cost analysis* (Doc. No. 14-01-2201). Olympia: Washington State Institute for Public Policy. Retrieved from: http://www.wsipp.wa.gov/ReportFile/1547/Wsipp_Early-Childhood-Education-for-Low-Income-Students-A-Review-of-the-Evidence-and-Benefit-Cost-Analysis_Full-Report.pdf.

⁵ Yoshikawa, H., Weiland, C., Brooks-Gunn, J., Burchinal, M.R., Espinosa, L. M., Espinosa, L. M., Zaslow, M. J. (2013). Investing in our future: the evidence base on preschool education. Society for Research in Children and Foundation for Child Development. Retrieved from: <http://fcd-us.org/sites/default/files/Evidence%20Base%20on%20Preschool%20Education%20FINAL.pdf>.

- Some of the convergence may be more apparent than real--byproducts of imperfect research design that exaggerate the loss of effects as more children who did not attend pre-K fall behind a grade level.
- Other advantages in school success (less grade repetition and special education) as well as in habits, dispositions, and social skills can persist even when test score advantages decline, as indicated by the meta-analysis summarizing 123 studies.⁶

Certain features of high quality programs, such as intentional teaching and education of teachers produce larger initial effects which, in turn, can lead to larger long-term effects for children

- Quality matters. Camilli et al. (2010) point to intentional teaching, particularly one-on-one and with small groups, as a means to produce larger cognitive gains, a finding unlikely to surprise either teachers or parents.
- Kay and Pennucci (2014) find that on average the state-funded pre-K programs studied have been more effective and have a higher benefit-cost ratio than Head Start. One study of Head Start has also found that academic gains were not sustained into first and third grade.
- New Jersey's Abbott Preschool program has unusually high standards due to a court order, and has relatively large long-term outcomes compared to programs with lower standards.⁷
- Reforms mandated by Congress subsequent to the National Impact Study⁸ appear to have increased Head Start's effects, as measured by the Family and Child Experience Surveys (FACES)⁹ in the 2003, 2006, and 2009 school years. As shown in Figures 2 and 3, children made greater gains in language and literacy in 2006 and 2009 than in 2003. Language and literacy gains are larger for all three major ethnic groups in 2009 compared to 2003, sometimes two or more times as large. This suggests that policy changes, particularly the Bush Administration's literacy push, may be responsible. Other data from FACES indicate that the frequency of intentional literacy activities and the percentage of teachers with a 4-year college degree both had increased by 2009.¹⁰ The larger initial gains produced as a result of reform may result in larger long-term gains than found in the National Impact Study of children who attended Head Start more than a decade ago.

⁶ Camilli et al, 2010.

⁷ Barnett, W.S., Jung, K., Youn, M., & Frede, E., (2013). Abbott Preschool Program Longitudinal Effects Study: Fifth Grade Follow-Up. New Brunswick, NJ: National Institute for Early Education Research. Retrieved from: <http://nieer.org/sites/nieer/files/APPLES%205th%20Grade.pdf>.

⁸ For more information on the Head Start Impact Study, visit: <http://www.acf.hhs.gov/programs/opre/research/project/head-start-impact-study-and-follow-up>

⁹ U.S. Department of Health and Human Services, Administration for Children and Families (January 2010). Head Start Impact Study. Final Report. Washington, DC. Retrieved from: http://www.acf.hhs.gov/sites/default/files/opre/executive_summary_final.pdf.

¹⁰ Hulsey, L. K., Aikens, N., Kopack, A., West, J., Moiduddin, E., & Tarullo, L. (2011). Head Start Children, Families, and Programs: Present and Past Data from FACES. OPRE Report 2011-33a. Washington, DC. Retrieved from: http://www.acf.hhs.gov/sites/default/files/opre/present_past.pdf.

Figure 2: Language Gains Increased in Head Start FACES by Year

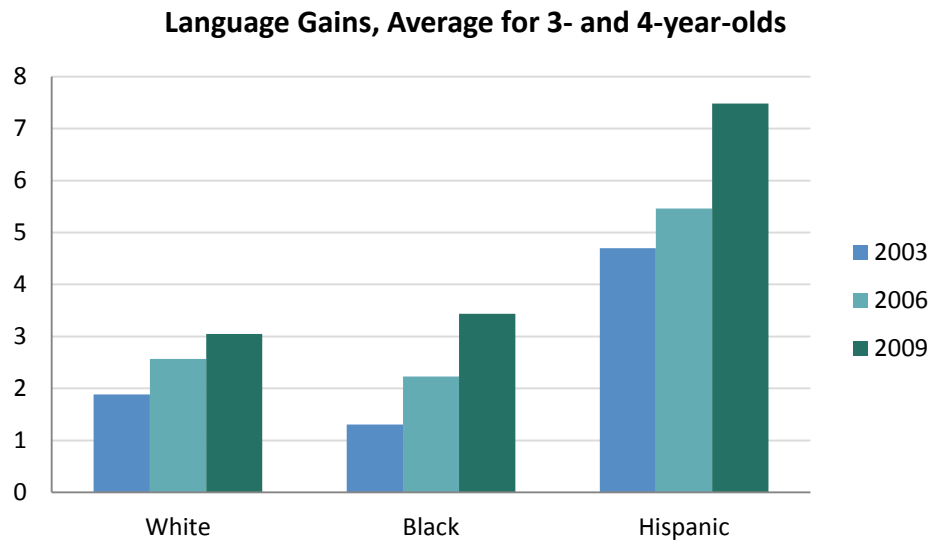
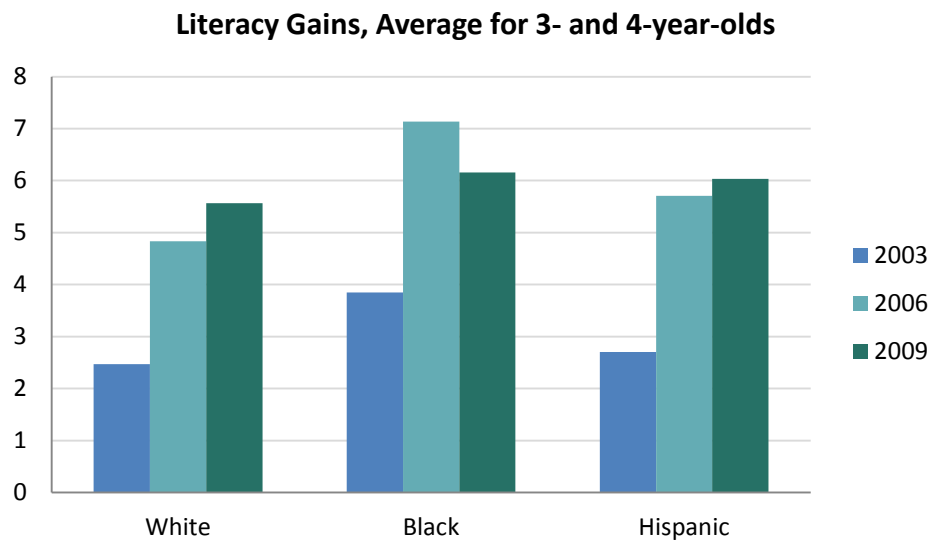


Figure 3: Literacy Gains Largely Increased in Head Start FACES by Year.



What We Recommend

- Ensure that all 3- and 4-year-olds, but especially those from low-income families, have access to high quality prekindergarten. See [Access to High Quality Early Care and Education Programs: Readiness and Opportunity Gaps in America.](#)

- Develop program standards and policy guidance that support high quality teaching of the kind associated with larger, lasting learning gains including strong pre-service and in-service preparation of teachers; adequate pay and working conditions; reasonable class sizes; evidence-based curriculum and aligned assessments; and coaching and support for responsive teacher-child interactions. Examples of these can be seen in the policy benchmarks of NIEER’s annual [State of Preschool report](#). See CEELO’s [State of the State Policy Snapshot: State Early Childhood Assessment Policies](#) and [Formative Assessment: Guidance for Early Childhood Policymakers](#).
- Implement comprehensive continuous improvement systems to ensure that programs are well-implemented and effective. See CEELO’s [State of the State Policy Snapshot: State Pre-K Monitoring and Evaluation Policies](#).
- Provide ongoing, job-embedded professional development (including coaching and professional learning communities) to prekindergarten teachers and administrators.
- Conduct rigorous ongoing formative and summative evaluations of prekindergarten programs, including longitudinal studies through early elementary years to gauge the impacts of such programs.

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