

Abstract Title Page
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Title: Head Start and Urban Children's School Readiness: A Birth Cohort Study in 18 Cities

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Abstract Body

Limit 5 pages single spaced.

Background/context:

Description of prior research, its intellectual context and its policy context.

Since its inception in 1965, Head Start has been the single largest publicly financed early childhood education and care program in the United States. Head Start's primary goal is to improve the school readiness of children from low-income families by delivering high-quality and comprehensive early education services to preschool age children, in particular, 3- and 4-year olds. However, throughout its history, the success of the program in meeting this goal has been debated (Styfco & Zigler, 2004) and continues to be (Besharov & Call, 2009; Nisbett, 2009), even though recent well-designed observational studies (e.g., Currie & Thomas, 1995, 1999; Garces, Thomas, & Currie, 2002; Ludwig & Miller, 2007; Zhai, 2007) and a recent (and the only) randomized experiment (Puma et al., 2005) have reported significant short- and long-term benefits of Head Start.

One challenge that is common to all non-experimental Head Start studies is to adequately account for selection bias, given that the program by design serves very disadvantaged children. Although recent studies have used stronger research designs, including random assignment, to address selection bias, a further challenge is that many studies have not clearly defined the reference group to which Head Start children were being compared, even though children not attending Head Start might attend a variety of alternative care settings (Lee, Brooks-Gunn, & Schnur, 1988; Puma et al., 2005). The lack of a clear reference group may contribute to the variation in findings across studies given the considerable variations in child care programs and policies across localities and time periods (Ludwig & Phillips, 2007, 2008; Rigby, Ryan, & Brooks-Gunn, 2007; Waldfogel, 2006).

Purpose / objective / research question / focus of study:

Description of what the research focused on and why.

In this study, we used data from a large longitudinal birth cohort study of primarily low-income children in urban areas, the Fragile Families and Child Wellbeing Study (FFCWS), to investigate the effects of Head Start participation on children's school readiness. The fact that our sample was mainly made up of disadvantaged families helped address some of the issues with regard to selection bias, but to further address possible selection bias, we adopted several different analytic approaches, including ordinary least squares (OLS) regressions with a rich set of controls, city-fixed effects, and propensity score matching models. In addition, we were able to control for children's earlier developmental outcomes (i.e., at age three when almost none of the children had attended Head Start), which has not been possible in most of the previous research. In common with prior studies, we first examined the effects of Head Start by comparing Head Start participants to all non-participants (regardless of what their child care arrangements were). Then, to address the problem of the lack of clarity with regard to the reference group, we compared children who attended Head Start to children who attended specific types of other care arrangements separately, including parental care, pre-kindergarten, other center-based care, and other non-parental care. We also analyzed whether the effects of Head Start were moderated by child gender and race/ethnicity.

Setting:

Description of where the research took place.

We used data on a birth cohort of new parents and children from 18 large U.S. cities from the Fragile Families and Child Wellbeing Study (FFCWS) (Reichman, Teitler, Garfinkel, & McLanahan, 2001; FFCWS, 2008). As a national longitudinal study of a large and diverse sample of predominantly low-income urban children, the FFCWS used a stratified random sample of all U.S. cities with 200,000 or more people to randomly select participating cities based on three policy and labor market indicators (i.e., welfare generosity, strength of child support system, and strength of labor market).

In the analysis, we first focused on the effects of Head Start participation compared to any other care arrangements (i.e., Head Start versus non-Head Start). Following these analyses, we further compared Head Start to the other specific types of child care arrangements (i.e. pre-kindergarten, other center-based care, other non-parental care, or parental care).

Population / Participants / Subjects:

Description of participants in the study: who (or what) how many, key features (or characteristics).

Our analysis sample included 2,803 children who had valid information on child care arrangements prior to kindergarten and outcome variables from the FFCWS five-year in-home study. Overall 14% of children in the full analysis sample attended Head Start programs. Other children received parental (16%), pre-kindergarten (25%), other center-based (37%), or other non-parental care (8%).

Our analysis sample consisted primarily of children in low-income families and was very diverse in terms of race/ethnicity. Nearly half (49%) were non-Hispanic Black children, followed by Hispanics (20%), non-Hispanic Whites (17%), and children of biracial or other racial/ethnic groups (14%). Approximately 36% of children lived in poverty when they were born. In addition, 71% of children had mothers who were not married when children were three years old and more than one quarter (27%) of children had mothers with less than high school education. The Head Start children in our analysis sample were also comparable to those in the Head Start Impact Study in terms of gender, mother being a teen mom, mother's age, education, employment, and self-reported health status, and household income. Differences between the Head Start children in our sample and those in the Head Start Impact Study (e.g., child race/ethnicity and parents' marital status) were mainly because the sampling of FFCWS heavily focused on non-marital births in large U.S. cities while the Head Start Impact Study was representative of Head Start children nationwide.

Intervention / Program / Practice:

Description of the intervention, program or practice, including details of administration and duration.

We focused on children who attended Head Start programs prior to kindergarten. Since its inception in 1965, Head Start has been the single largest publicly financed early childhood education and care program in the United States. The target population of Head Start is preschool age children in low-income families, particularly 3- and 4-year olds. Head Start aims to promote multiple aspects of children's school readiness (e.g., cognitive development, learning skills, social competence, health, and nutrition) through the provision of comprehensive and high-quality services, including early education and development, parental involvement, medical, dental,

mental health, and nutritional programs as well as other social services (Administration for Children and Families [ACF], 2009; Aughinbaugh, 2001; Blau, 2001; Smolensky & Gootman, 2003). Recent research suggests that compared to teachers in other center-based classrooms serving low-income families, Head Start teachers tend to be less harsh, less detached, less permissive, more sensitive, and more likely to encourage children to be independent and to promote children's active involvement in learning and cooperative behaviors with teachers and peers (Puma et al., 2005). Compared to parents of non-participants, Head Start parents are more emotionally supportive, more likely to read to their children, less detached and less likely to use physical discipline, and have overall better quality of home environment (Puma et al., 2005).

Research Design:

Description of research design (e.g., qualitative case study, quasi-experimental design, secondary analysis, analytic essay, randomized field trial).

We conducted secondary analyses using data from the FFCWS. To address the issue of selection bias, we adopted several different analytic approaches, including OLS regressions with a rich set of pretreatment controls (i.e., child demographics and earlier ability or behavior), OLS regressions with city-fixed effects, and propensity score matching models. In common with prior research, we first focused on the effects of Head Start compared to any other care arrangements. Then, to further explore the effects of Head Start compared to specifically defined reference groups, we conducted separate analyses comparing children who attended Head Start with children experiencing specific other types of care arrangement, including parental care, pre-kindergarten, other center-based care, and other non-parental care. Finally, given prior mixed findings as to whether the effects of Head Start might be moderated by child gender or race/ethnicity, we also carried out supplemental analyses examining both gender and race/ethnicity.

Data Collection and Analysis:

Description of the methods for collecting and analyzing data.

In the analysis we first used OLS regressions with a series of increasingly controlled models. We started with a model that included Head Start participation status (1 = yes; 0 = no) and child demographics. We then added child pretreatment scores on the relevant outcome variables at age three in the models. We further added mother and family covariates into the models to see whether controlling for those potential selection factors changed the results. The descriptive analyses within cities showed that the distribution of child care arrangements was different across cities (table available from the authors upon request). Thus as a robustness check, we further controlled for city-fixed effects to account for the heterogeneity across cities in Head Start programs, the availability and usage of other types of child care arrangements, and other contextual factors that could affect children's participation in Head Start as well as their developmental outcomes.

To further address the issue of selection bias, we employed a three-stage propensity score matching method to identify children who did not attend Head Start but were comparable to Head Start participants in terms of their demographics and family background at age three. In the first stage, we used the child, mother, and family covariates that were collected when the focal child was three years old, as detailed above, to predict the probability of attending Head Start right before kindergarten (i.e., the propensity score) for each child. In the second stage, each

Head Start participant was matched with a child who did not attend Head Start but lived in the same city and had the closest propensity score, using a one-to-one nearest neighbor matching method with replacement. In the third stage, the effects of Head Start were estimated by the regression-adjusted differences in children's outcomes between Head Start participants and non-participants within the same pairs matched in the second stage.

Findings / Results:

Description of main findings with specific details.

Descriptive statistics showed that Head Start participants and non-participants before propensity score matching were significantly different on most pretreatment variables. Consistent with prior studies (e.g., Lee et al., 1988), non-Head Start children before matching tended to be more advantaged on most child and family covariates compared to Head Start participants. In contrast, after propensity score matching, non-Head Start children looked almost exactly the same as Head Start participants.

Results from the propensity score matching method showed that overall we found significant and consistent effects of Head Start on improving children's cognitive development (measured by PPVT-III and WJ-R Letter-Word Identification) and social competence (measured by ASBI) and reducing their attention problems at age five, and no statistically significant effects on their internalizing or externalizing behavior problems. Our results also showed that the effects of Head Start depended on what the reference group was (i.e. whether it was parental care, pre-kindergarten, other center-based care, or other non-parental care). Finally, consistent with the findings in the Head Start Impact Study (Puma et al., 2005), we did not find evidence that the effects of Head Start on school readiness were moderated by child gender or race/ethnicity.

Conclusions:

Description of conclusions and recommendations based on findings and overall study.

Our findings may provide important implications for policy makers who need to decide whether to allocate scarce public funds to Head Start or to other child care or early education programs. Policy makers also need to decide how to allocate funds within Head Start, given that the budget of Head Start is insufficient to serve all eligible children. Our findings suggest that, to the extent that improving cognitive development is a goal, it would be important in allocating scarce Head Start funds to try to target children who otherwise would receive only parental care or other non-parental care, since the cognitive benefits to these two groups are the largest. The Stimulus Bill, passed in January of 2009, increases the Head Start budget, making it possible to expand access to under-served groups. Another implication is that children currently attending Head Start could benefit from program improvements that increase the capacity of Head Start programs to improve children's cognitive skills. Quality improvement in Head Start has been a focus for some time and such efforts should continue.

Appendices

Not included in page count.

Appendix A. References

References are to be in APA version 6 format.

- Administration for Children and Families (ACF) (2009). *Program description and program services*. Washington, DC: U.S. Department of Health and Human Services. Retrieve online on Jan. 20, 2009 from <http://www.acf.hhs.gov/programs/ohs/index.html>.
- Aughinbaugh, A. (2001). Does Head Start yield long-term benefits? *The Journal of Human Resources*, 36, 641-665.
- Besharov, D. J., & Call, D. M. (2009, February 8). Head Start falls further behind. *New York Times*, p. WK12 of the New York edition.
- Blau, D. M. (2001). *The child care problem: An economic analysis*. New York: Russell Sage.
- Currie, J., & Thomas, D. (1995). Does Head Start make a difference? *American Economic Review*, 85, 341-364.
- Fragile Families and Child Wellbeing Study (FFCWS) (2008). *Introduction to the Fragile Families public use data: Baseline, one-year, three-year, and five-year core telephone data*. Princeton, NJ: Princeton University Bendheim-Thoman Center for Research on Child Wellbeing and Columbia University Population Research Center.
- Garces, E., Thomas, D., & Currie, J. (2002). Long-term effects of Head Start. *The American Economic Review*, 92, 999-1012.
- Lee, V. E., Brooks-Gunn, J., & Schnur, E. (1988). Does Head Start work? A 1-year follow-up comparison of disadvantaged children attending Head Start, no preschool, and other preschool programs. *Developmental Psychology*, 24, 210-222.
- Ludwig, J., & Miller, D. L. (2007). Does Head Start improve children's life chances? Evidence from a regression discontinuity design. *Quarterly Journal of Economics*, 122, 159-208.
- Ludwig, J., & Phillips, D. (2007). The benefits and costs of Head Start. *Social Policy Report*, 21, 3-18.
- Ludwig, J., & Phillips, D. (2008). Long-term effects of Head Start on low-income children. *Annals of the New York Academy of Sciences*, 1136, 257-268.
- Nisbett, R. E. (2009, February 8). Education is all in your mind. *New York Times*, p. WK12 of the New York edition.
- Puma, M., Bell, S., Cook, R., Heid, C., Lopez, M., Zill, N., et al. (2005). *Head Start Impact Study: First year findings*. Washington, DC: U.S. Department of Health and Human Services.
- Reichman, N. E., Teitler, J. O., Garfinkel, I., & McLanahan, S. S. (2001). Fragile Families: Sample and Design. *Children and Youth Services Review*, 23, 303-326.
- Rigby, E., Ryan, R. M., & Brooks-Gunn, J. (2007). Child care quality in different state policy contexts. *Journal of Policy Analysis and Management*, 26, 887-907.
- Smolensky, E., & Gootman, J. A. (Eds.). (2003). *Working families and growing kids: Caring for children and adolescents*. Washington, D.C.: The National Academies Press.
- Styfco, S., & Zigler, E., (2004). *The Head Start debates*. Baltimore, MD: Brookes Publishing Company.
- Waldfoegel, J. (2006). *What children need*. Cambridge, MA: Harvard University Press.
- Zhai, F. (2007). Effects of Head Start participation in the year right before kindergarten on child outcomes. Paper presented at the 29th Annual Association for Public Policy Analysis and Management (APPAM) Research Conference, Nov. 2007, Washington, D.C.

Appendix B. Tables and Figures

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Table 1. Effects of Head Start compared to any other child care arrangements

	PPVT-III	WJ-R	Social competence	Attention problems	Internalizing problems	Externalizing problems
Model 1	-0.03 (0.04)	0.00 (0.04)	0.06 (0.04)	-0.02 (0.04)	0.07+ (0.04)	0.09* (0.04)
Model 2	0.03 (0.05)	-0.01 (0.05)	0.09+ (0.05)	-0.05 (0.05)	0.00 (0.05)	-0.01 (0.05)
Model 3	0.10* (0.05)	0.09 (0.05)	0.11* (0.05)	-0.10* (0.05)	-0.02 (0.05)	-0.05 (0.05)
Model 4	0.08* (0.03)	0.11** (0.03)	0.10+ (0.06)	-0.11* (0.04)	-0.02 (0.03)	-0.04 (0.03)
Model 5	0.19** (0.06)	0.16** (0.06)	0.14* (0.05)	-0.16* (0.07)	-0.05 (0.06)	-0.08 (0.06)

Notes: Model 1 included only child demographics; additional child pretreatment scores at age three were added in Model 2; Model 3 contained additional mother and family covariates; Model 4 controlled for city fixed effects; and Model 5 used propensity score matching. The outcome variables were standardized to have a mean of 0 and a standard deviation of 1. The sample sizes were 2,803 for Models 1-4 and 750 for Model 5. Standard errors in parentheses; ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$

Table 2. Effects of Head Start compared to other specific care arrangements

Reference Care	PPVT-III		WJ-R		Social competence		Attention problems		Internalizing problems		Externalizing problems	
	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched	Unmatched	Matched
Parental care	0.21** (0.06)	0.33** (0.07)	0.39** (0.06)	0.46** (0.07)	0.17* (0.07)	0.24** (0.08)	-0.11 (0.07)	-0.10 (0.09)	-0.00 (0.06)	-0.06 (0.08)	-0.02 (0.06)	-0.07 (0.08)
Pre-kindergarten	0.06 (0.05)	0.09 (0.07)	-0.02 (0.07)	0.01 (0.07)	0.13* (0.06)	0.15* (0.07)	-0.06 (0.05)	-0.05 (0.07)	-0.00 (0.04)	-0.04 (0.08)	0.04 (0.04)	0.03 (0.07)
Other center-based	0.04 (0.05)	0.09 (0.07)	0.03 (0.05)	0.05 (0.07)	0.09+ (0.05)	0.17* (0.07)	-0.15** (0.04)	-0.18* (0.07)	-0.05 (0.05)	-0.07 (0.07)	-0.09* (0.04)	-0.14* (0.07)
Other non-parental	0.21** (0.05)	0.32** (0.07)	0.32** (0.07)	0.41** (0.06)	0.03 (0.08)	0.05 (0.07)	-0.18* (0.08)	-0.19** (0.07)	-0.01 (0.07)	-0.18 (0.11)	-0.13 (0.08)	-0.10 (0.08)

Notes: The analyses were conducted separately in sub-samples consisting of Head Start participants and children who received one of other specific care arrangements. Results from unmatched samples were based on OLS regressions with city-fixed effects (i.e., Model 4 in Table 2), and results from matched samples were from propensity score matching analyses (i.e., Model 5 in Table 2). The sizes for unmatched and matched samples were 837 and 682 for parental care, 1,087 and 678 for pre-kindergarten, 1,427 and 732 for other center-based care, and 610 and 596 for other non-parental care, respectively. The outcome variables were standardized to have a mean of 0 and a standard deviation of 1. Standard errors in parentheses; ** p<0.01, * p<0.05, + p<0.10