The Effectiveness of Head Start in Low-Wealth Rural Communities: Evidence from The Family Life Project

by

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Description
The long-term effects of pre-kindergarten (pre-K) programming may depend on access to high-quality educational environments in elementary school, but this topic has not been studied extensively in relation to the federal Head Start pre-K program and the extant findings are mixed. The overarching aim of the current study was to examine the effects of Head Start participation in relation to children’s academic skills in the spring of pre-K and one-year later in the spring of kindergarten. The current study also examined the quality of children’s kindergarten classroom environments in relation to the sustained effects of Head Start during kindergarten. These issues were examined with a sample of children born in low-wealth rural communities in North Carolina and Pennsylvania. This focus on rural communities was important given the unique challenges and affordances of life in rural America as well as documented variation in the effectiveness of Head Start between urban and rural regions of the US.

Research Questions
1. To what extent does Head Start participation affect children’s language, literacy, and mathematics skills in the spring of pre-K?
2. To what extent does Head Start participation affect children’s language, literacy, and mathematics skills in the spring of kindergarten?
3. To what extent does kindergarten classroom quality moderate the effect of Head Start participation in relation to children’s language, literacy, and mathematics skills in the spring of kindergarten?

Sample
The Family Life Project (FLP) is prospective longitudinal study of 1,292 children born in two historically low-wealth, rural regions of the US located east of the Mississippi: the “Black South” and the Appalachian Mountains (Vernon-Feagans, Cox, & The FLP Key Investigators, 2013). An epidemiological sampling frame was used to recruit a representative sample of children and families in three counties within each of these regions: three counties in Eastern North Carolina (“Black South”) and three counties in Central Pennsylvania (“Appalachia”). Families were recruited shortly after the birth of the child during a one-year period between the fall of 2003 and fall of 2004. Since then, the FLP has continued to collect extensive information on children’s developmental competencies and caregiving environments currently extending through adolescence.

Methods
Analyses for this study were undertaken in three phases.

• Phase I: Multiple Imputation Analyses. Multiple imputation analyses were used to account for missing data on all of the analytic variables in order to retain the full sample of 1,292 children in the subsequent analyses.

• Phase II: Propensity Score Analyses. Propensity score analyses were conducted to estimate the probability of treatment assignment (i.e., Head Start vs. comparison group) for each study participant. Specifically, stabilized inverse probability of treatment weights (IPTWs) were estimated using logistic regression based on 26 covariates related to children’s demographic/family background characteristics and developmental competencies assessed when children were 36-months of age or younger.

• Phase III: Multi-Level Regression Analyses. A series of multi-level regression models were used to address each of the study’s research questions (RQs). Two-level
regression models were estimated with children (level-1) nested within preschool classrooms (level-2). The regression models were weighted by the stabilized IPTWs as well as the FLP survey weights and strata in order to estimate the population average treatment effect (i.e., the effect of moving the FLP’s target population from the comparison to Head Start group at the level in which there was covariate balance between the groups). The regression models also included the 26 covariates that were used to calculate the stabilized IPTWs (i.e., a method termed doubly robust). After considering the main effects of Head Start in relation to child outcomes in the spring of pre-K (RQ 1) and in the spring of kindergarten (RQ 2), interaction terms were added to the regression models in order to examine if measures of kindergarten classroom quality moderated the effect of Head Start in relation to child outcomes in the spring of kindergarten (RQ 3).

**Results**

Head Start participants outperformed the comparison group in literacy in the spring of pre-K ($\beta = 0.17$). This effect was only sustained into the spring of kindergarten when children subsequently experienced high-quality emotional support in kindergarten ($\beta = 0.17$), but not average-quality ($\beta = 0.00$) or low-quality emotional support ($\beta = -0.17$) as measured by the Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2008). The Head Start and comparison groups were found to be comparable in terms of language and mathematics skills in the spring of pre-K and in the spring of kindergarten.

Education stakeholders are increasingly interested in the design of policies and practices to align children’s educational experiences across pre-K through third grade. The current study suggests that the benefits of Head Start participation for children’s literacy skill development may be sustained across the transition to elementary school for children in kindergarten classrooms characterized by high-quality emotional support. Strategies should be considered to promote emotional support quality in elementary schools, including quality monitoring and improvement as well as professional development for teachers.

**Implications for research**

The current study’s focus on research in low-wealth rural communities was important because research on education in rural communities has been historically underrepresented in the literature. Additionally, the current study was the first to consider classroom process quality in elementary school in relation to the sustained effects of Head Start—a dimension of education quality considered to be most proximal to children’s learning and development in the early childhood classroom context.

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**Implications for policy/practice**