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

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Project Description

The effectiveness of the federal Head Start preschool program has been studied extensively for more than five decades. However, several areas of research need further consideration. First, a focus on Head Start's effectiveness in rural communities is needed because of the unique challenges and affordances of life in rural America as well as documented variation in the effects of Head Start between urban and rural regions of the US. Second, the sustained effects of Head Start may depend on access to high-quality educational environments in elementary school, but this topic has not been studied extensively and the extant findings are mixed. The overarching aim of this study was to examine the effects of Head Start participation in relation to children's academic and social-behavioral skills in the spring of pre-kindergarten (pre-K) and in the spring of kindergarten as well as the educational characteristics of kindergarten classrooms and elementary schools that may help to sustain the long-term effects of Head Start.

Research Questions

1. To what extent does Head Start participation affect children's academic and parent-reported social-behavioral skills in the spring of pre-K?
2. To what extent does Head Start participation affect children's academic and teacher-reported social-behavioral skills in the spring of kindergarten?
3. To what extent does kindergarten classroom quality and elementary school context moderate the effect of Head Start participation in relation to children's academic and teacher-reported social-behavioral 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 and elementary school context moderated the effect of Head Start in relation to child outcomes in the spring of kindergarten (RQ 3).

Progress Update
Analyses have been completed for all phases of the study. A favorable effect of Head Start was found in relation to children's literacy skills in the spring of pre-K (*Effect Size* [*ES*] = 0.17), but no reliable effects were found in relation to measures of language and mathematics, nor parent-reported measures of social skills and problem behaviors in the spring of pre-K. In the spring of kindergarten, no reliable main effects of Head Start were found in relation to measures of language, literacy, and mathematics. However, unfavorable main effects of Head Start participation were found in relation to teacher-reported measures of social skills (*ES* = –0.21) and problem behaviors (*ES* = 0.16). Limited evidence of moderation was found. Specifically, the effect of Head Start in relation to children's spring of kindergarten

literacy skills was moderated by the quality of classroom-wide teacher–child interactions in kindergarten, as measured by the Emotional Support domain of the Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2008). This finding revealed a favorable effect of Head Start in relation to children's spring of kindergarten literacy skills for children who experienced *high*-quality CLASS Emotional Support in kindergarten (*ES* = 0.17), but not *average* (*ES* = 0.00) or *low*-quality CLASS Emotional Support (*ES* = –0.17).

Implications for policy/practice
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 early literacy skill development may be sustained across the transition to elementary school for children in kindergarten classrooms characterized by high-quality CLASS Emotional Support.

Implications for research
This study's focus on research in two low-wealth rural regions of the US is important because research on education in rural communities has been historically underrepresented in the literature. Additionally, this study is the first to consider the quality of classroom-wide teacher–child interactions 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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