Preschool Center Quality and School Readiness: Quality Main Effects and Variation by Demographic and Child Characteristics

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Introduction

• State and federal government spend billions of dollars on preschool as a means to improve school readiness skills of children from disadvantaged backgrounds. Still, literature remains inconclusive regarding:
  1) Size of main effects: Prior studies yield mixed results on the magnitude of child care effects on cognitive and achievement outcomes
  2) Existence of Interactions: No consensus on the existence of differential child care quality effects for population subgroups

Research Questions

1) To what extent are children’s cognitive and achievement skills higher when they experience higher quality preschools?
2) Do the effects of preschool center quality on these school readiness skills differ by demographic or child characteristics (i.e. race/ethnicity, gender, maternal education, or child’s initial cognitive/achievement skills, attention, or problem behaviors)?

Method—analysis

• Meta-analysis (i.e. a systematic statistical procedure that combines the results of many different studies) across 4 large datasets, 2 types of outcomes, and 3 preschool center quality measures
• Datasets: selected large child care datasets with both preschool child care quality and child outcome measures
• For each dataset, conducted analyses that, in part, accounted for selection bias by including the child’s baseline skills level as a covariate
• Outcomes: cognitive/language and achievement/mathematics skills
• Predictors: observed child care quality and interactions between quality and demographic characteristics on one set of analyses and the child’s baseline cognitive/achievement, attention, and problem behaviors on another set of analyses
• Covariates (where available): baseline cognitive/achievement skills, child age, low birth weight, maternal characteristics, parenting quality, household structure, and family income

Analytic Model

Main effect model: Yt = β0 + β1Xt + β2Yt-1 + β3 covariates + β4 quality + cov × quality + ε

Interaction model: Yt = β0 + β1Xt + β2Yt-1 + β3 covariates + β4 quality + β5 quality × cov + ε

Final step: Combined coefficients in a meta-analysis using Comprehensive Meta-Analysis (CMA)

Note: NICHD-SECCYD= National Institute of Child Health and Human Development-Study of Early Child Care and Youth Development; ECLS-B=Early Childhood Longitudinal Study – Birth Cohort; NCELD=National Center for Early Development and Learning; EHS=Early Head Start.

Findings

• Preschool center quality main effects: significant associations found
  • Average effect size (ES) for both outcomes = .03, p < .001
• Preschool center quality by demographic characteristics interactions:
  • For cognitive outcomes, two statistically significant interactions across the four datasets—
  • Quality was a stronger predictor for males than females (ES = .03, p < .001)
  • Quality was a stronger predictor of child for highly educated mothers (BA) than mothers with 12 years or less of schooling (ES = .05, p < .001)
  • For achievement outcomes, no significant interactions

Preschool center quality by baseline child skills:
• No significant interactions on either cognitive or achievement outcomes

Conclusion

The consistency of our generally null results and the precision with which they are estimated across the multiple datasets, outcomes, and child care quality measures suggests:
• Very small quality main effects on both cognitive and achievement child outcomes
• General absence of differential quality effects on school readiness for subgroups of children

Keep in mind:
• Quality has been defined differently in different studies whereas present study examines quality during preschool year in center-based care only
• Quality may not be adequately measured in currently available databases

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Descriptives of School Readiness Outcomes & Preschool Center Quality Variables

<table>
<thead>
<tr>
<th>NICHD SECCYD</th>
<th>ECLS-B</th>
<th>NCELD Birth Cohort</th>
<th>EHS</th>
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<tbody>
<tr>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
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<tr>
<td>School Readiness Outcomes:</td>
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<tr>
<td>Preschool Language Scale</td>
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<td>101.78</td>
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<tr>
<td>Composite of PPVT &amp; other measures</td>
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<td>Predicted FSIQ Vocabulary Test (PPVT-IV)</td>
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<td>Woodcock-Attainment III applied problems</td>
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<td>Math ECLS-R developed measures</td>
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<td>Preschool Center Quality</td>
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<td>OREC (25 months)</td>
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<tr>
<td>OREC (34 months)</td>
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<td>CLASS Factor 2: Instructional Climate</td>
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<td>2.06</td>
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Effect Sizes for Preschool Quality Main Effect & Interactions for Cognitive Outcomes

Effect Sizes for Preschool Quality Main Effect & Interactions for Achievement Outcomes

Meta-analytic Average (fixed model = statistically significant)

W = .25% percentile on child characteristics—initial cognitive/achievement skills, attention, or problem behaviors

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