



SREE
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Process Dimensions of Child Care Quality and Academic Achievement: An Instrumental Variables Analysis

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Child Care Quality

- Most children are in nonmaternal care by the time they enter formal schooling (Waldfogel, 2010)
- Modest association between quality of care and child outcomes (Burchinal, Kainz & Cai, 2011)



Child Care Quality

- Two dimensions – structural and process
- Process quality most related to academic **outcomes** (Howes et al., 2008; Mashburn et al., 2008)
 - Present study focuses on process quality



Why IV?

- Move from “Association to Causation” (Gennetian, Magnuson & Morris, 2008)
- IV analysis removes “contaminated variation” in predictor variable (Bloom & Zhu, 2010)
- Accounts for measurement error in predictor variable



Research Question

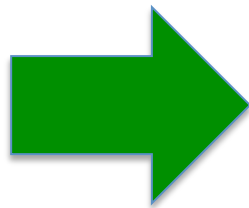
Do children who are in a preschool center with high process quality have higher math, vocabulary, and reading achievement compared with those in lower process quality centers?



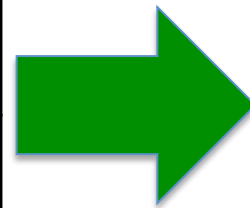
Data Set

- Preschool Curriculum Evaluation Research (PCER) Initiative Study
- All grantees managed curriculum evaluations with assistance from RTI & Mathematica
- Random assignment of curriculum mostly occurred at study site level.

Tennessee
North Carolina
Georgia
New Hampshire
Florida (3 Sites)
Kansas
New Jersey
Texas
Florida (UNF)
Virginia
Florida (FSU)
California
New York
Wisconsin
Missouri
New Jersey



27 Schools
14 Locations



41 Sites



Sample Characteristics

- Preschools Characteristics
 - 92% full day
 - 1/3 of preschools Head Start centers
- Child Characteristics
 - 40% African American, 15% Hispanic
 - Majority low-income
 - Maternal average level of education – High school degree



Measures

- Child Care Quality (Composite)
 - Classroom Specific: ECERS, Arnett
 - Instruction in Content Area: TBRS Math and Literacy
- Academic Outcomes
 - Math: WJ Applied Problems
 - Vocabulary: PPVT
 - Reading: WJ Letter Word
- Covariates



Child Baseline Achievement

	Treatment	Control
Math	93.71	94.06
Vocabulary	88.60	88.42
Letter Word	99.08	98.75

Baseline achievement equivalent across treatment and control condition



Procedure

- Instrumental Variables approach used to estimate the effect of preschool center quality on academic achievement.
- Instruments – Treatment, Treatment X Site (1st Stage)
 - Selection into treatment condition is unrelated to center quality
 - Interactions used to account for variation by site in center quality.

Quality

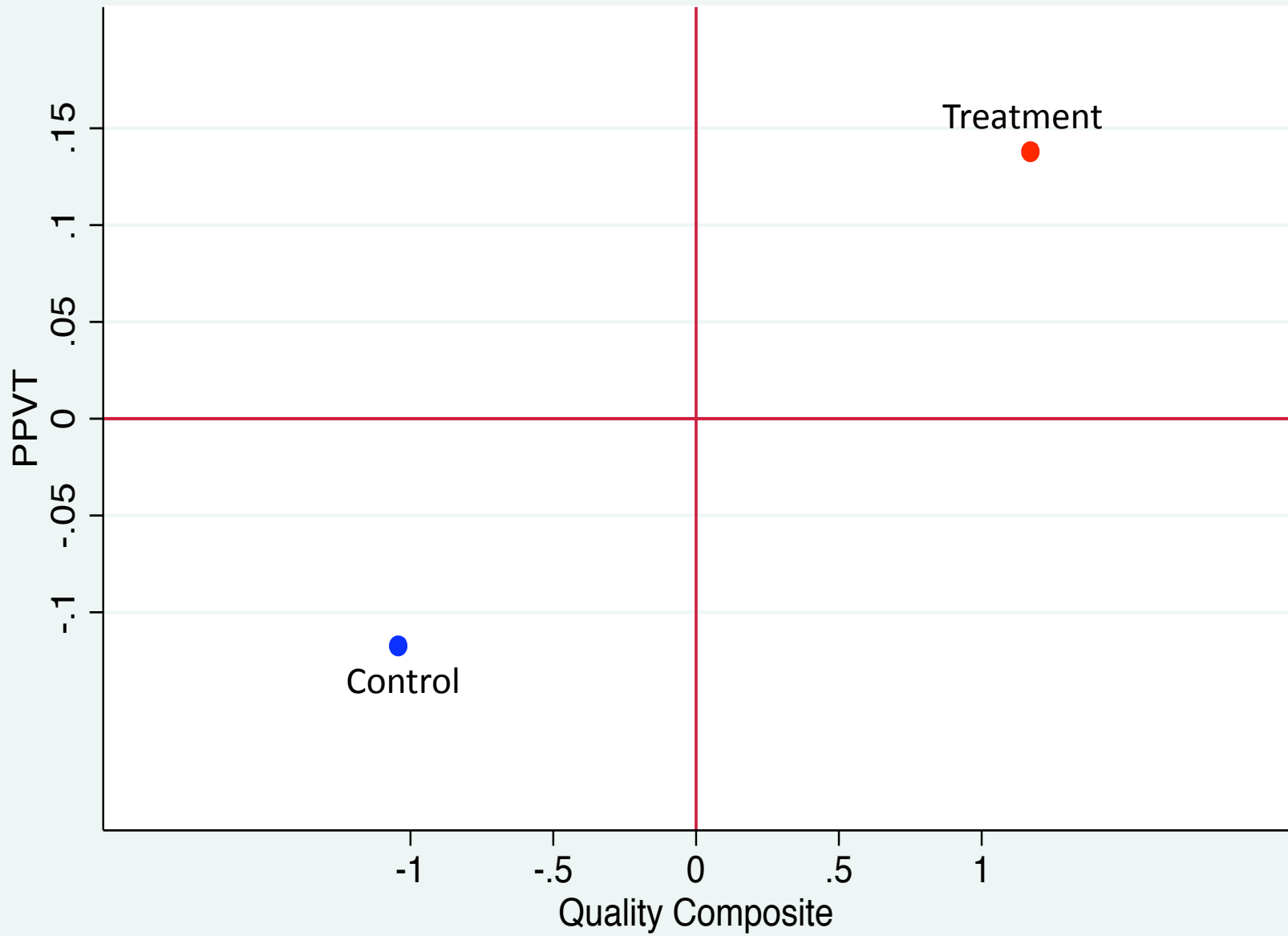
Treatment by
Site Interaction

$$M_i = \mu + \pi T_i \cdot S_i + \delta X_i + \varepsilon_i$$

Child
Outcomes

Predicted
quality

$$Y_i = \alpha + \beta_{ca} \hat{M}_i + \delta' X_i + v_i$$





Procedure

- Second stage uses predicted quality to predict child outcomes
 - Child and parent characteristics and site are controlled for in the analysis
- OLS used to show comparison with IV results

Results

	Vocabulary	Math	Reading
Child Care Quality Composite			
<i>OLS</i>	.048** (.016)	.028 (.025)	.084*** (.023)
Child Care Quality Composite			
<i>IV</i>	.087** (.034)	.084* (.039)	.050 (.038)
N	2,700	2,650	2,650

F-Statistic for IV = 22.27



Discussion

- Although modest, child care quality has a significant effect on preschool children's academic outcomes
- Future work needed to determine validity of child care quality measures



Future Directions

- Multiple quality indicators as mediators
- Examine other child outcomes
- Examine other experimental datasets



Thank you!
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