The Added Impact of Parenting Education in Early Childhood Education Programs: A Meta-Analysis

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# Today’s Presentation

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<th>Background</th>
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<td>Description of the present study</td>
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<td>Implications</td>
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</table>
How do we best direct our investments in early childhood education?

Two Generational Programs

Does the addition of parenting education services to early childhood education programs yield greater benefits for children and their families?
Two Types of Parenting Education

1) Providing parents with information or encouraging parental involvement with the ECE program

2) Modeling and providing parents opportunities to practice developmentally appropriate adult/child interactions
Examples of Parenting Education Without Modeling or Opportunities for Practice

• Encouraging parents to volunteer in the classroom without formal training

• General parenting information classes/ didactic information about parent-child activities

Examples: Abbot PreK evaluation, Bright Beginnings Pre-K, Michigan School Readiness Program
Examples of Parenting Education With Modeling or Opportunities for Practice

- Parent trainers modeled responsive and/or cognitively stimulating interactions with child and parents practiced them (i.e. IHDP).
- Parent educators observed child in classroom with the parent and provided information about what the teacher was doing and why (i.e. Howard University, BEEP).
- Learning activities (often from school’s curriculum) demonstrated to parent. In some programs parents practiced these during a visit or parent/child class (i.e. Project CARE, Perry Preschool).
Research Questions

1. Is the addition of *parenting education of any type* to early childhood education programs associated with larger program impacts?

2. Is the addition of *parenting education that includes modeling or opportunities to practice* to early childhood education programs associated with larger program impacts?
Meta-analysis

• **Benefits:**
  – Integrates decades of research without picking and choosing among studies
  – Ability to model factors that might explain study to study variation in findings

• **Weakness:**
  – Less specificity than a single study
  – Correlation rather than causation
  – Relies on the available information
National Forum on Early Childhood Policy and Programs Meta-Analytic Database

- ECE programs for children birth -5
- Studies conducted in U.S., 1960-2007

To be included, studies must have:

- A comparison group
- At least ten participants in each group
- Less than 50% attrition
- Used random assignment or high quality quasi-experimental methods
- Pre and posttest information for both groups if groups were equivalent at baseline on relevant indicators
Outcome Domains

- Two child cognitive domains (Christian, Morrison, Frazier, & Massetti, 2000)
  - **Child Cognitive skills** (e.g. vocabulary, IQ).
    - 72 studies, 116 contrasts, 739 effect sizes
  - **Child Pre-academic skills** (e.g. letter-word recognition, numeracy skills).
    - 37 studies, 70 contrasts, 368 effect sizes

- Parenting
  - **Parent warmth and responsiveness**
    - 12 studies, 16 contrasts, 109 effect sizes
Research Question 1

Is the addition of any type of parenting education to early childhood education programs associated with larger program impacts on children’s cognitive skills and pre-academic skills, and parents’ warmth and responsiveness?
RQ#1: Adjusted mean effect sizes of parenting education of any type services

No Significant Differences

Adjusted mean effect size

0.30 0.31

0.22 0.18

0.10 0.10

Child cognitive skills
Child pre-academic skills
Parent warmth & responsiveness

ECE with parenting education of any type
ECE only
Research Question 1: Finding

ECE programs that provided parenting education of any type did not produce larger impacts on children’s cognitive skills and pre-academic skills or parent warmth and responsiveness when compared to ECE programs that do not provide these services.
Research Question 2

Is the addition of parenting education that includes modeling or opportunities for practice to early childhood education programs associated with larger program impacts on children’s cognitive skills and pre-academic skills, and parents’ warmth and responsiveness than those that do not?
RQ#2: Adjusted mean effect sizes for ECE programs did and did not offer parenting education with modeling:
RQ#2: Adjusted mean effect sizes for ECE programs did and did not offer parenting education with modeling:

<table>
<thead>
<tr>
<th>Child cognitive skills</th>
<th>Child pre-academic skills</th>
<th>Parent warmth &amp; responsiveness</th>
<th>ECE programs that did provide parenting education with modeling</th>
<th>ECE programs that did not provide parenting education with modeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect size difference of 0.06</td>
<td>Adjusted mean effect size</td>
<td>16</td>
<td>0.37</td>
<td>0.39</td>
</tr>
<tr>
<td>0</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
</tr>
</tbody>
</table>
RQ#2: Adjusted mean effect sizes for ECE programs did and did not offer parenting education with modeling:

<table>
<thead>
<tr>
<th>Study findings</th>
<th>Effect size difference of 0.25*</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE programs that did provide parenting education with modeling</td>
<td></td>
</tr>
<tr>
<td>ECE programs that did not provide parenting education with modeling</td>
<td></td>
</tr>
</tbody>
</table>
RQ#2: Adjusted mean effect sizes for ECE programs did and did not offer parenting education with modeling:

![Effect size difference of 0.12~](#)
Research Question 2: Finding

Early childhood education programs that provided parenting education with modeling or opportunities to practice were associated with larger program impacts on children's pre-academic skills than those programs that do not provide this type of parenting education.
Follow up analyses

Covariates

• Controlled for study-design, program, and participant characteristics
  ▫ Findings hold for pre-academic skills but lose significance for cognitive skills

Sample

• Excluded programs that provided either less than four months of services or fewer than ten hours per week of early childhood education
  ▫ Consistent with the findings presented in the primary analysis
Follow up analyses

Length of follow up

- Limited the follow up period to one-year post treatment
  - Parenting education with modeling still associated with larger program impacts but effects are no longer statistically significant in either domain

Measurement quality

- Limited to measures that were highly reliable (reliability > .9) measures or normed on a nationally representative sample
  - Parenting education with modeling still associated with larger program impacts but effects are no longer statistically significant in either domain
Follow up analyses

The presence of other types of family support services

- Of the programs that offered parenting education with modeling
  - 42% offered parent human capital development
  - 36% helped parents access additional services
  - 32% offered some direct material support
- We conducted separate parallel analyses examining whether the addition of the relationship of each of these other types of parent-focused services on children's development
  - None of these services was significantly associated with larger effects on children or their parents
Implications

• The addition of parent programming can increase the effectiveness of ECE programs, but not all programs do so.

• Parenting education that provides active modeling and/or opportunities for hands on practicing of parent-child interactions appear to yield stronger results.

• Recent evaluations support the benefits of integrating modeling and feedback in efforts to promote specific parenting behaviors (Dozier; Landry) have yet to be embedded in large-scale ECE systems.
Limitations

• Findings are correlational rather causal

• Little information regarding intensity of parenting education components

• Relevance of older studies
Acknowledgements

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- Jenya Murnikov, Soojin Susan Oh, Robert Kelchen, Hilary Shager, Mai Youa Lor, Jimmy Leak, and Weilin Li

This database builds on previous meta-analytic databases created by Abt Associates and the National Institute for Early Education Research (NIEER)

- (Camilli et al., 2010; Jacob, Creps & Boulay, 2004; Layzer, Goodson, Bernstein & Price, 2001).
For more information please contact Todd Grindal, Abt Associates

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617.520.2486
Appendices
Explore our database
http://bit.ly/1aJ8oeo

Desktop version
http://public.tableausoftware.com/views/Parentedpaper--withES/DashboardAltformating?:embed=y&:display_count=no

Description of the present study
Description of the present study

**Additional descriptive information**

- **Percentage of participants African American or Latino**
  - ECE Programs that did provide parenting education with modeling: 80.2%
  - ECE Programs that did not provide parenting education with modeling: 68.4%

- **Child to adult ratio**
  - ECE Programs that did provide parenting education with modeling: 5.6:6.3
  - ECE Programs that did not provide parenting education with modeling: 12.2:17.2

- **Group size**
  - ECE Programs that did provide parenting education with modeling: 29.2
  - ECE Programs that did not provide parenting education with modeling: 11.5

- **Total number of parent classes**
  - ECE Programs that did provide parenting education with modeling: 3.7
  - ECE Programs that did not provide parenting education with modeling: 1.0

- **Total number of home visits**
  - ECE Programs that did provide parenting education with modeling: 72.4
  - ECE Programs that did not provide parenting education with modeling: 68.4

- **Program length (months)**
  - ECE Programs that did provide parenting education with modeling: 29.2
  - ECE Programs that did not provide parenting education with modeling: 11.5
Controls used in full models

Participant Characteristics
• Majority of participants African American or Latino

Program Characteristics
• Intensity of early childhood education program
• Length of treatment

Study Characteristics
• Random assignment
• Activity level of the control group
• Published in a peer refereed journal
• Level of attrition

Study findings
## Study findings

### Parenting education of any type: Sensitivity analysis with covariates

<table>
<thead>
<tr>
<th></th>
<th>Cognitive skills</th>
<th>Pre-academic skills</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Covariates</td>
<td>With Covariates</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.312 ***</td>
<td>0.617 ***</td>
</tr>
<tr>
<td></td>
<td>(0.069)</td>
<td>(0.210)</td>
</tr>
<tr>
<td>Any parenting education</td>
<td>-0.022</td>
<td>-0.071</td>
</tr>
<tr>
<td></td>
<td>(0.075)</td>
<td>(0.076)</td>
</tr>
<tr>
<td>15 hrs or more of ECE per week</td>
<td>0.013</td>
<td>-0.070</td>
</tr>
<tr>
<td>Home visits by a professional</td>
<td>-0.043</td>
<td>-0.123</td>
</tr>
<tr>
<td>High quality study index</td>
<td>-0.014</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.036)</td>
<td></td>
</tr>
<tr>
<td>Active control group</td>
<td>-0.230 *</td>
<td>-0.086</td>
</tr>
<tr>
<td></td>
<td>(0.074)</td>
<td>(0.080)</td>
</tr>
<tr>
<td>Program length</td>
<td>0.007 **</td>
<td>0.016 ~</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Time elapsed since end of treatment</td>
<td>-0.005 *</td>
<td>-0.012</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>Peer refereed publication</td>
<td>0.167 *</td>
<td>-0.166</td>
</tr>
<tr>
<td></td>
<td>(0.062)</td>
<td></td>
</tr>
<tr>
<td>Treatment on the treated study</td>
<td>0.033</td>
<td>0.019</td>
</tr>
<tr>
<td></td>
<td>(0.106)</td>
<td>(0.209)</td>
</tr>
<tr>
<td>Child age at follow up</td>
<td>-0.002</td>
<td>0.008</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>Majority of participants African American or Latino</td>
<td>0.006</td>
<td>-0.125</td>
</tr>
<tr>
<td></td>
<td>(0.071)</td>
<td></td>
</tr>
</tbody>
</table>
Parenting education with modeling or opportunities to practice: Sensitivity analysis with covariates

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<tr>
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<th>Cognitive skills</th>
<th>Pre-academic skills</th>
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<tbody>
<tr>
<td></td>
<td>No Covariates</td>
<td>With Covariates</td>
</tr>
<tr>
<td><strong>Intercept</strong></td>
<td>0.254* (0.042)</td>
<td>0.634* (0.211)</td>
</tr>
<tr>
<td><strong>Parenting education with modeling</strong></td>
<td>0.115~ (0.068)</td>
<td>-0.082 (0.079)</td>
</tr>
<tr>
<td><strong>15 hrs or more of ECE per week</strong></td>
<td>-0.034 (0.088)</td>
<td>0.085 (0.157)</td>
</tr>
<tr>
<td><strong>Home visits by a professional</strong></td>
<td>-0.048 (0.079)</td>
<td>-0.159 (0.170)</td>
</tr>
<tr>
<td><strong>Study quality index</strong></td>
<td>-0.014 (0.036)</td>
<td>0.147 (0.072)</td>
</tr>
<tr>
<td><strong>Active control group</strong></td>
<td>-0.240* (0.075)</td>
<td>-0.065 (0.098)</td>
</tr>
<tr>
<td><strong>Program length</strong></td>
<td>0.007* (0.002)</td>
<td>0.013~ (0.007)</td>
</tr>
<tr>
<td><strong>Time elapsed since end of treatment</strong></td>
<td>-0.004 (0.002)</td>
<td>-0.014* (0.006)</td>
</tr>
<tr>
<td><strong>Peer refereed publication</strong></td>
<td>0.172* (0.062)</td>
<td>-0.147 (0.123)</td>
</tr>
<tr>
<td><strong>Treatment on the treated study</strong></td>
<td>0.037 (0.105)</td>
<td>0.032 (0.202)</td>
</tr>
<tr>
<td><strong>Child age at follow up</strong></td>
<td>-0.002 (0.002)</td>
<td>0.011~ (0.006)</td>
</tr>
<tr>
<td><strong>Majority of participants African American or Latino</strong></td>
<td>0.004 (0.069)</td>
<td>-0.024 (0.113)</td>
</tr>
</tbody>
</table>
Analysis Subsample

• Treatment v. Control

• Assessment between two-thirds of total treatment to five years after the end of treatment
Our Analysis

Multi-level models (random intercept)

- Level 1: Effect sizes (Hedge’s $g$)
  - Dependent-measure covariates
- Level 2: Contrasts
  - Program and research design predictors and covariates

Weighted by the inverse of the variance of each effect size and the inverse of the number of effect sizes per contrast

Effect sizes > 1.5, <-1.5 capped (2%)
Question Predictors

Dummy variables for:

RQ#1: Parenting education of any type

Any type of parenting education

[Reference category, Early childhood education without parenting education]

RQ#2: Parenting education with or without opportunities for practice/ modeling

Early childhood education plus Parenting Education with modeling/practice

[Reference category, Early childhood education without parenting education with modeling/practice]
National Forum on Early Childhood Policy and Programs Meta-Analytic Database

- Effect Sizes
  - nested in
  - Contrasts
    - nested in
    - Studies
Early Training Project (1962)

Condition 1: Three years of ten week summer school + home visits
- WISC
- SB
- Grad H.S

15 27 38 48 163

Months since the initiation of treatment

Condition 2: Two years of ten week summer school + home visits
- WISC
- SB
- Grad H.S

15 27 38 48 163

Months since the initiation of treatment

Condition 3: No Treatment
- WISC
- SB
- Grad H.S

15 27 38 48 163

Months since the initiation of treatment

Description of the present study
Contrast 1: Three years of ten week summer school + home visits

Vs.

Condition 3: No Treatment

Contrast 2: Two years of ten week summer school + home visits

Vs.

Condition 3: No Treatment

Contrast 3: Three years of ten week summer school + home visits

Vs.

Two years of ten week summer school + home visits
Description of the present study

Early Training Project (1962): Sample
Effect sizes for contrast 1

WISC SB Grad H.S

15 27 38 48 163†

Effect Size=

.35 .45 .50

.96 1.21 .74 .54 .14

†Months since the initiation of treatment
<table>
<thead>
<tr>
<th>Contrast 1</th>
<th>Condition 1: Three years of ten week summer school + home visits</th>
<th>Vs.</th>
<th>Condition 3: No Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrast 2</td>
<td>Condition 2: Two years of ten week summer school + home visits</td>
<td>Vs.</td>
<td>Condition 3: No Treatment</td>
</tr>
<tr>
<td>Contrast 3</td>
<td>Condition 1: Three years of ten week summer school + home visits</td>
<td>Vs.</td>
<td>Condition 2: Two years of ten week summer school + home visits</td>
</tr>
</tbody>
</table>

Description of the present study
Early Training Project (1962): Dependent measures and effect sizes for the analytic subsample

Treatment lasted 30 months

15  27  38  48  163†

Effect Size =

.35  .45  .50

.96  1.21  .74  .54

.14

†Months since the initiation of treatment
Prior Meta-Analytic Findings

• Camilli et al. (2010)
  – Compared ECE programs
    – Found smaller effect sizes for programs that also provided family support services

• Blok et al. (2005)
  – Compared services provided in the home and the school
    – Found slightly smaller effects for programs that provided services at school and at home
Quasi-experimental studies

Methods

- Regression discontinuity
- Fixed effects (individual or family)
- Residualized or other longitudinal change models
- Difference in difference
- Instrumental variables
- Propensity score matching
- Interrupted time series

- Pre and posttest information for both groups
- Groups were equivalent at baseline on relevant indicators

Description of the present study