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Supplemental Information 5
Systematic Review Results: All Outcomes

| Table A. ECERS/ECERS-R Predicting all Approach & Combination Outcomes |
|---------------------------------------------------------------|
| **ECERS/ECERS-R Measurement Level** | **STUDY**<sup>a,b</sup> | **Approach**<sup>c</sup> | **COMBO** |
|-----------------------------------|-------------------------|----------------------|------------------|
| **ECERS** | | | |
| **Total Score** | Burchinal 2011<sup>19</sup> – CQO<sup>19</sup> | | |
| | Epstein 1993<sup>29</sup> | | |
| | McCartney 1982<sup>40</sup>, C | | |
| **Total Score (Parents and Staff Subscale not included)** | Peisner-Feinberg 1997<sup>55</sup>, D | | |
| | Phillips 1987<sup>42</sup>, C | | |
| | Seppanen 1993<sup>68</sup> | | |
| **Mean of 5 items** | Peisner-Feinberg 1999<sup>56</sup>, D | | |
| **ECERS-R** | | | |
| **Total Score** | Abreu-Lima 2013<sup>3</sup> | | |
| | Fiorentino 2004<sup>60</sup> | | |
| | McWayne 2004<sup>47</sup> | | |
| | Moller… Friedman 2008<sup>53</sup>, R | | |
| | Moller… Hightower 2008<sup>52</sup>, R | | |
| | Montes 2005<sup>54</sup> | | |
| | Sylva 2006<sup>69</sup>, E | | |
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| Total Score (Parents and Staff Subscale not included) | Mashburn 2008\textsuperscript{47,F} | | | | |
|---|---|---|---|---|---|
| Zellman 2008\textsuperscript{13,Z} | | | | | |

| ECERS Subscales | Creative Activities | Epstein 1993\textsuperscript{29} | ★ | ★ | ★ |
|---|---|---|---|---|---|
| Fine and Gross Motor Activities | Epstein 1993\textsuperscript{29} | ★ | ★ | ★ | ★ |
| Furnishings and Display | Epstein 1993\textsuperscript{29} | ★ | ★ | ★ | ★ |
| Language-Reasoning | Epstein 1993\textsuperscript{29} | ★ | ★ | ★ | ★ |
| Personal Care Routines | Epstein 1993\textsuperscript{29} | ★ | ★ | ★ | ★ |
| Social Development | Epstein 1993\textsuperscript{29} | ★ | ★ | ★ | ★ |

| ECERS-R Subscales | Activities | Sylva 2006\textsuperscript{69,E} | | |
|---|---|---|---|---|
| Interactions | Sylva 2006\textsuperscript{69,E} | | | |
| Language-Reasoning | Sylva 2006\textsuperscript{69,E} | | | |
| Parents & Staff | Sylva 2006\textsuperscript{69,E} | | | |
| Personal Care Routine | Sylva 2006\textsuperscript{69,E} | | | |
| Program Structure | Sylva 2006\textsuperscript{69,E} | | | |
| Space and Furnishings | Sylva 2006\textsuperscript{69,E} | | | |

**Legend for Table**

| Significant and Positive | Significant and Negative | Non-Significant | Statistic |
|---|---|---|---|
| ★ | ★ | ★ | r - Zero Order Pearson’s Correlation |
| ○ | ○ | ○ | Beta |
| ■ | ■ | ■ | B (Unstandardized Coefficient) |
| ⬇ | ⬇ | ⬇ | Partial Correlation |
| ● | ● | ● | F-Ratio |
| ↓ | ↓ | ↓ | Effect Size |

\textsuperscript{a}This paper is one of a series of Meta-Analyses and Systematic Reviews assessing the relationship between child care quality and children’s outcomes; therefore, superscript letters below are in reference to various large databases that samples in these papers were drawn from. These letters have been kept consistent across the series for our readers.

\textsuperscript{b}Samples within papers are described in more detail in S3.

\textsuperscript{c}Acronyms for child outcomes are listed in S4.

\textsuperscript{C}Bermuda Preschool Study (1980); \textsuperscript{D}Cost, Quality and Outcomes Study (CQO, 1993-1994); \textsuperscript{E}Effective Preschool and Primary Education Study (EPPE, 1997-1998); \textsuperscript{F}Georgia Early Childhood Study (GECS, 2002); \textsuperscript{R}Northeastern United States sample (Moller and colleagues, 2008; Year NR); \textsuperscript{Z}Colorado QRIS.
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Systematic Review Results: All Outcomes

| ECERS/ECERS-R Measurement Level | STUDY | COGNITIVE^c |
|---------------------------------|-------|-------------|
|                                 |       | Academic Achievement | BAS II - Pattern Construction | BAS II - Picture Similarities | Backward Digit Span | Bayley - Mental Development | CBI - Intelligence | Cognitive Composite | COR - Cognitive | DIAL-R - Concepts | Forward Digit Span | Identifying Colors^d | K-ABC Achievement | K-ABC Mental Processing | PSPCSA - Competence | Preschool Inventory | School Readiness | Skills Mastery | Slosson Intelligence Test | FACIES - Social Awareness | WPPSI-III Matrix Reasoning | WPPSI-III Similarities |
| Total Score                     |       | Academic Achievement | BAS II - Pattern Construction | BAS II - Picture Similarities | Backward Digit Span | Bayley - Mental Development | CBI - Intelligence | Cognitive Composite | COR - Cognitive | DIAL-R - Concepts | Forward Digit Span | Identifying Colors^d | K-ABC Achievement | K-ABC Mental Processing | PSPCSA - Competence | Preschool Inventory | School Readiness | Skills Mastery | Slosson Intelligence Test | FACIES - Social Awareness | WPPSI-III Matrix Reasoning | WPPSI-III Similarities |
| Total Score (Parents and Staff Subscale not included) |       | Academic Achievement | BAS II - Pattern Construction | BAS II - Picture Similarities | Backward Digit Span | Bayley - Mental Development | CBI - Intelligence | Cognitive Composite | COR - Cognitive | DIAL-R - Concepts | Forward Digit Span | Identifying Colors^d | K-ABC Achievement | K-ABC Mental Processing | PSPCSA - Competence | Preschool Inventory | School Readiness | Skills Mastery | Slosson Intelligence Test | FACIES - Social Awareness | WPPSI-III Matrix Reasoning | WPPSI-III Similarities |

Table B. ECERS/ECERS-R Predicting all Cognitive Outcomes
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

| ECERS-R | ECERS-R – Total Score (Parents and Staff Subscale not included) | Creative Activities | Fine and Gross Motor Activities | Furnishings and Display |
|---------|---------------------------------------------------------------|---------------------|---------------------------------|-------------------------|
|         | Total Score                                                   |                     |                                 |                         |
|         | Aboud 2006<sup>1,3</sup>                                      |                     |                                 |                         |
|         | Phillips 1987<sup>62</sup>                                    |                     |                                 |                         |
|         | Phillips 1987<sup>62.C</sup>                                  |                     |                                 |                         |
|         | Seppanen 1993<sup>68</sup>                                    |                     |                                 |                         |
|         | Le 2015<sup>45</sup>                                          |                     |                                 |                         |
|         | Peisner-Feinberg 2006<sup>57,YA,YC</sup>                     |                     |                                 |                         |
|         | Peisner-Feinberg 2007<sup>58,YC</sup>                        |                     |                                 |                         |
|         | Peisner-Feinberg 2008<sup>69</sup> – NC 07/08                 |                     |                                 |                         |
|         | Peisner-Feinberg 2008<sup>59</sup> – NC 03/07<sup>YB,YC</sup> |                     |                                 |                         |
|         | Zellman 2008<sup>73,Z</sup>                                   |                     |                                 |                         |
|         | Chin-Qee 1994<sup>21 – Primary 3,4</sup>                     |                     |                                 |                         |
|         | Epstein 1993<sup>29</sup>                                     |                     |                                 |                         |
# The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

| ECERS-R Subscales | Language-Reasoning | Personal Care Routines | Social Development | Activities | Interactions | Language-Reasoning | Parents and Staff | Personal Care Routines | Program Structure | Space and Furnishings | Developmentally Appropriate Activities | Preschool Appropriate Caregiving | Provisions for Learning | Teaching & Interactions |
|-------------------|---------------------|------------------------|-------------------|------------|--------------|-------------------|-------------------|-----------------------|----------------------|------------------------|--------------------------------------|-------------------------------|-----------------------|----------------------|
|                   | Epstein 1993$^{29}$ | Dunn 1994$^{27,S}$    |                   |            |              |                   |                   | Dunn 1994$^{27,S}$  |                      |           | Lyon 1995$^{46}$          | Lyon 1995$^{46}$          |                      | Early 2006$^{28,A}$      |                      |
|                   |                     |                        |                   |            |              |                   |                   |                       |                      |           | Whitebrook 1989$^{72,O}$       |                           |                      | Weiland 2013$^{70}$        |                      |
|                   |                     |                        |                   |            |              |                   |                   |                       |                      |           |                           |                               |                      |                      |                      |

**Legend for Table**

| Significant and Positive | Significant and Negative | Non-Significant | Statistic |
|--------------------------|--------------------------|----------------|----------|
| ★                        | ■                        | ■              |          |
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

| ★ | ★ | ★ | r - Zero Order Pearson’s Correlation |
|---|---|---|----------------------------------|
| ○ | ○ | ○ | Beta |
| ■ | ■ | ■ | B (Unstandardized Coefficient) |
| ◊ | ◊ | ◊ | T-Test |
| ✡ | ✡ | ✡ | Partial Correlation |
| ♦ | ♦ | ♦ | F-Ratio |
| ◁ | ◁ | ◁ | Effect Size |

This paper is one of a series of Meta-Analyses and Systematic Reviews assessing the relationship between child care quality and children’s outcomes; therefore, superscript letters below are in reference to various large databases that samples in these papers were drawn from. These letters have been kept consistent across the series for our readers.

Samples within papers are described in more detail in S3.

Acronyms for child outcomes are listed in S4.

Identifying Colors (also referred to as Color Knowledge, Color Naming, Color Naming Task).

National Center for Early Development and Learning Dataset (NCEDL, 2002, 2004); Bermuda Preschool Study (1980); Effective Preschool and Primary Education Study (EPPE, 1997-1998); Georgia Early Childhood Study (GECS, 2002); Head Start Family and Children Experiences Survey (FACES, 2000) Cohort; National Child Care Staffing Study (NCCSS, 1988); Northeastern United States sample (Moller and colleagues, 2008; Year NR); 8-County Region of North-Central Indiana (Year NR); Otitis Media Study (Year NR); Five Rural Districts of Bangladesh (2006-2008); More is Four North Carolina Study (2002-2003) Cohort; More is Four North Carolina Study (2003-2004) Cohort; More is Four North Carolina Study (2005-2006) Cohort; Colorado QRIS.
### Table C. ECERS/ECERS-R Predicting all Physical and Math Outcomes

| ECERS/ECERS-R Measurement Level | STUDY\(^{a,b}\) | BAS II - Early Number Concepts | COR - Logic & Math | Counting Task\(^d\) | ECLS-B Math | Identifying Numbers\(^c\) | K-ABC Arithmetic | Math (Grade 1) | WJ - Applied Problems | WPSSI - Math | COR - Motor | COR - Music & Movement | Design Copying | DIAL-R - Motor | PSPCSA - Physical Competence |
|---------------------------------|-----------------|---------------------------------|-------------------|-------------------|-------------|--------------------------|-------------------|--------------|------------------------|--------------|-------------|--------------------------|---------------|----------------|--------------------------|
| **ECERS**                      |                 |                                 |                   |                   |             |                          |                   |              |                        |              |             |                          |               |               |                          |
| **Total Score**                |                 |                                 |                   |                   |             |                          |                   |              |                        |              |             |                          |               |               |                          |
| Burchinal, Peisner 2000\(^{15}\) - CQO\(^{D}\) |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| Burchinal, Peisner 2000\(^{15}\) - NC PS |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| Burchinal 2011\(^{19}\) - CQO\(^{D}\) |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| Epstein 1993\(^{29}\)          |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| Lyon 1995\(^{46}\)            |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| **Total Score (Parents and Staff Subscale not included)** |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| Bryant 2003\(^{33}\) - Whole Sample |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| Peisner-Feinberg 1997\(^{55,D}\) |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| **Mean of 5 Items**            |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| Peisner-Feinberg 1999\(^{56,D}\) |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| **ECERS - R**                  |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| **Total Score**                |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| Abreu-Lima 2013\(^{3}\)       |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| Anders 2012\(^{8}\)           |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| Barnett 2007\(^{11}\) - Whole Sample |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
| Barnett 2007\(^{11}\) - Spanish |                 |                                 |                   |                   |             |                          |                   |              |                        | ★              |             |                          |               |               |                          |
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| Study                                      | Total Score (Parents and Staff Subscale not included) |
|--------------------------------------------|-------------------------------------------------------|
| Burchinal 201119 – NCEDL^A                 | ☐                                                      |
| Burchinal 201119 – FACES 1997^J            | ☐                                                      |
| Burchinal 201119 – FACES 2000^K            | ☐                                                      |
| Henry 200335,F                             | ☐                                                      |
| Henry 200534,F                             | ☐                                                      |
| Jeon 201041                                | ☐                                                      |
| Moller...Friedman 200853,R                 | ☐                                                      |
| Moller...Hightower 200852,R                | ☐                                                      |
| Peisner-Feinberg 201351                    | ☐                                                      |
| Sabol 201365,A                             | ★                                                      |
| Sylva 200669,E                             | ★                                                      |
| Aboud 20112                                | ☐                                                      |
| Dang 201123 – ECLS-B 05/06N                 | ★                                                      |
| Dang 201123 – NCEDL^A                     | ★                                                      |
| Dang 201123 – EHS 01/03H                   | ★                                                      |
| Gordon 201332,N                            | ☐                                                      |
| Hindman 201037,J                           | ★                                                      |
| Keys 201332 – ECLS-B 05/06N                | ★                                                      |
| Keys 201332 – NCEDL^A                     | ★                                                      |
| Keys 201332 – EHS 01/03H                   | ★                                                      |
| Le 201545,Z                               | ★                                                      |
| Mashburn, Pianta 200848,A                  | ★                                                      |
| Peisner-Feinberg 200627,YA, YC             | ★                                                      |
| Peisner-Feinberg 200758,YC                 | ★                                                      |
| Peisner-Feinberg 200850 – NC 07/08         | ★                                                      |

Notes: ☐ indicates a positive relationship, ★ indicates a negative relationship, and ☒ indicates no significant relationship.
### The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

| ECERS Subscales | Creatives Activities | Fine and Gross Motor Skills | Furnishings and Display | Interactions (Author Created) | Language-Reasoning | Personal Care Routines | Social Development |
|----------------|----------------------|-----------------------------|-------------------------|-------------------------------|-------------------|-----------------------|---------------------|
|                | Peisner-Feinberg 2008\(^{59}\) - NC 03/07\(^{84,A}\) | Reid 2013\(^{64,A}\) | Sabol 2014\(^{66,N}\) | Zellman 2008\(^{73,Z}\) | Epstein 1993\(^{29}\) | Epstein 1993\(^{29}\) | Epstein 1993\(^{29}\) |
|                | ![Rating](image1) | ![Rating](image2) | ![Rating](image3) | ![Rating](image4) | ![Rating](image5) | ![Rating](image6) | ![Rating](image7) |

| ECERS-R Subscales | Activities | Interactions | Language-Reasoning |
|-------------------|------------|--------------|--------------------|
|                   | Jeon 2010\(^{41}\) | Burchinal 2011\(^{19} – \text{NCEDL}^A\) | Burchinal 2011\(^{19} – \text{FACES} 1997^I\) |
|                   | Sylva 2006\(^{69,E}\) | Burchinal 2011\(^{19} – \text{FACES} 2000^B\) | Jeon 2010\(^{41}\) |
|                   | ![Rating](image8) | ![Rating](image9) | ![Rating](image10) |
| Reasoning | Burchinal 2011<sup>19</sup> – FACES 1997<sup>a</sup> |  |  |  |
| --- | --- | --- | --- | --- |
|  | Burchinal 2011<sup>19</sup> – FACES 2000<sup>b</sup> |  |  |  |
|  | Jeon 2010<sup>41</sup> |  |  |  |
|  | Sylva 2006<sup>69,E</sup> |  |  |  |
|  | Zill 2006<sup>75,K</sup> |  |  |  |
| Parents and Staff | Sylva 2006<sup>69,E</sup> |  |  |  |
| Personal Care Routines | Sylva 2006<sup>69,E</sup> |  |  |  |
| Program Structure | Jeon 2010<sup>41</sup> |  |  |  |
|  | Sylva 2006<sup>69,E</sup> |  |  |  |
| Space and Furnishings | Sylva 2006<sup>69,E</sup> |  |  |  |
| ECERS Factors | Developmentally Appropriate Activities | Lyon 1995<sup>46</sup> |  |  |
|  | Preschool Appropriate Caregiving | Lyon 1995<sup>46</sup> |  |  |
| ECERS-R Factors | Provisions for Learning | Auger 2014<sup>10,U</sup> |  |  |
|  | Dotterer 2012<sup>25,A</sup> |  |  |  |
|  | Early 2006<sup>28,A</sup> |  |  |  |
|  | Howes 2008<sup>38,A</sup> |  |  |  |
|  | West 2010<sup>11,H</sup> |  |  |  |
| Teaching & Interactions | Aikens 2010<sup>6,B</sup> |  |  |  |
|  | Aikens 2012<sup>5,M</sup> |  |  |  |
|  | Auger 2014<sup>10,U</sup> |  |  |  |
|  | Burchinal 2008<sup>18,A</sup> |  |  |  |
|  | Dotterer 2012<sup>25,A</sup> |  |  |  |
|  | Early 2006<sup>28,A</sup> |  |  |  |
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| Study                                    | Significant and Positive | Significant and Negative | Non-Significant | Statistic                      |
|------------------------------------------|--------------------------|--------------------------|-----------------|--------------------------------|
| Howes 2008                               | ★                        | ★                        | ★               | r - Zero Order Pearson’s Correlation |
| Sabol 2013                                | ⬇                        | ⬇                        | ⬇               | Beta                           |
| West 2010                                 | ⬇                        | ⬇                        | ⬇               | B (Unstandardized Coefficient)  |

**Legend for Table**

| Symbol | Description | Statistic |
|--------|-------------|-----------|
| ★      | Significant and Positive | r - Zero Order Pearson’s Correlation |
| ○      | Significant and Negative | Beta |
| ★      | Non-Significant | B (Unstandardized Coefficient) |
| ◱      | Partial Correlation | T-Test |
| ◱      | F-Ratio | Effect Size |

aThis paper is one of a series of Meta-Analyses and Systematic Reviews assessing the relationship between child care quality and children’s outcomes; therefore, superscript letters below are in reference to various large databases that samples in these papers were drawn from. These letters have been kept consistent across the series for our readers.

bSamples within papers are described in more detail in S3.

cAcronyms for child outcomes are listed in S4.

dCounting Task (also referred to as One to One Counting).

eIdentifying Numbers (also referred to as Naming Numbers).

A National Center for Early Development and Learning Dataset (NCEDL, 2002, 2004); B Head Start Family and Children Experiences Survey (FACES, 2006) Cohort; C Cost, Quality and Outcomes Study (CQO, 1993-1994); D Effective Preschool and Primary Education Study (EPPE, 1997-1998); E Georgia Early Childhood Study (GECS, 2002); F Early Head Start (EHS, 2001-2003 Cohort); G Head Start Family and Children Experiences Survey (FACES, 1997) Cohort; H Head Start Family and Children Experiences Survey (FACES, 2000) Cohort; I Head Start Family and Children Experiences Survey (FACES, 2009) Cohort; J Early Childhood Longitudinal Study (ECLS-B, 2001-2006, Birth Cohort); K Northeastern United States sample (Moller and colleagues, 2008; Year NR); L Preschool Curriculum Evaluation Research (PCER, 1999-2003); MA More is Four North Carolina Study (2002-2003) Cohort; MB More is Four North Carolina Study (2003-2004) Cohort; MC More is Four North Carolina Study (2005-2006) Cohort; Z Colorado QRIS.
Table D. ECERS/ECERS-R Predicting all Positive Behavior Outcomes A to P

| 
|---|
| **STUDY** | **Positive Behavior** |
| **ECERS/ECERS-R Measurement Level** | **STUDY** | **Positive Behavior** |
| **ECERS** | **Total Score** |
| | Bryant 1994<sup>12</sup> - NonSuspect Homes | Adult Orientaion | ASBI - Comply | ASBI - Cooperation and Conformity | ASBI - Express | ASBI - Peer Sociability | Attitudes/Perceptions | BPI - Social Skills | CBI - Considerateness | CBI - Socialization | COR - Social Relations | Cooperative Behavior | ECLS-B - Attention and Conduction | ECLS-B - Emotional and Behavioral Regulation | ECLS-B - Prosocial | Enwistle Scale of Personal Maturity | Learning Self-Efficacy | Pencil Tap Task | PSPCSA - Cognitive Competence | PSPCSA - Maternal Acceptance | PSPCSA - Peer Acceptance |
| | Bryant 1994<sup>12</sup> - Suspect Homes | | | | | | | | | | | | | | | | | | |
| | Dunn 1993<sup>26,5</sup> | | | | | | | | | | | | | | | | | | |
| | Epstein 1993<sup>39</sup> | | | | | | | | | | | | | | | | | | |
| | Herrera 2005<sup>35</sup> | | | | | | | | | | | | | | | | | | |
| | Kontos 1991<sup>43</sup> | | | | | | | | | | | | | | | | | | |
| | Lyon 1995<sup>50</sup> | | | | | | | | | | | | | | | | | | |
| | McCartney 1982<sup>46,53</sup> | | | | | | | | | | | | | | | | | | |
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| ECERS - Total Score (Parents and Staff Subscale not included) | Peisner-Feinberg 1997<sup>SS,D</sup> | Phillips 1987<sup>SC,C</sup> | **</sup> | **</sup> |
|-------------------------------------------------------------|--------------------------------------|--------------------------------|---------|---------|
| Mean of 5 Items                                             | Peisner-Feinberg 1999<sup>SR,D</sup> |                                |          |         |
|-------------------------------------------------------------| Abreu-Lima 2013<sup>1</sup>           |                                |          |         |
| Burchinal 2011<sup>19</sup> - FACES 1997<sup>1</sup>        |                                      |                                | **      | **      |
| Burchinal 2011<sup>19</sup> - FACES 2000<sup>1</sup>        |                                      |                                | **      | **      |
| Hestenes 2015<sup>16</sup>                                  |                                      |                                |         |         |
| Moller…Hightower 2008<sup>52,R</sup>                       |                                      |                                |         |         |
| Moller…Friedman 2008<sup>53,R</sup>                        |                                      |                                |         |         |
| Sylva 2006<sup>60,E</sup>                                  |                                      |                                |         |         |
| Weiland 2013<sup>19</sup>                                  |                                      |                                |         |         |
| ECERS - R Total Score (Parents and Staff Subscale not included) | Gordon 2013<sup>32,N</sup>           |                                |         |         |
|                                                            | Keys 2013<sup>14</sup> - ECLS-B 2005-2006<sup>8N</sup> |                                |         |         |
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| ECERS Subscales | ECERS-R Subscales |  |
|----------------|------------------|---|
| Creative Activities | Activities | Sabol 2014<sup>60,N</sup> |  |
| Fine and Gross Motor Activities | Interactions | Epstein 1993<sup>59</sup> |  |
| Furnishings |  | Epstein 1993<sup>59</sup> |  |
| Language-Reasoning |  | Epstein 1993<sup>59</sup> |  |
| Personal Care Routines |  | Epstein 1993<sup>59</sup> |  |
| Social Development |  | Epstein 1993<sup>59</sup> |  |
| Activities |  | Sylva 2006<sup>69,E</sup> |  |
| Interactions |  | Burchinal 2011<sup>19</sup> - FACES 1997<sup>7</sup> |  |
|  |  | Burchinal 2011<sup>19</sup> - FACES 2000<sup>8</sup> |  |
|  |  | Sylva 2006<sup>69,E</sup> |  |
| Language-Reasoning |  | Sylva 2006<sup>69,E</sup> |  |
|  |  | Zill 2003<sup>74,K</sup> |  |
| Parents and Staff |  | Sylva 2006<sup>69,E</sup> |  |
| Personal Care Routines |  | Sylva 2006<sup>69,E</sup> |  |
| Program |  | Sylva |  |
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

| ECERS Factors | ECERS-R Factors | Significant & Positive | Significant & Negative | Non-Significant | Statistic |
|---------------|-----------------|------------------------|------------------------|----------------|----------|
| Structure     | Space and Furnishings | 2006<sup>69,E</sup> | Sylva 2006<sup>69,E</sup> |                |          |
| Developmentally Appropriate Activities | Lyon 1995<sup>46</sup> |                |                        | ● ● ● ● ●    |          |
| Preschool Appropriate Caregiving | Lyon 1995<sup>46</sup> |                |                        | ● ● ● ● ●    |          |
| Teaching and Interactions | Whitebook 1989<sup>2,0</sup> |                |                        | ● ● ● ● ●    |          |
| Provisions for Learning | Weiland 2013<sup>70</sup> |                |                        | ● ● ● ● ●    |          |

Legend for Table

- ★: Significant & Positive
- ●: Significant & Negative
- ○: Non-Significant

- r: Zero Order Pearson’s Correlation
- β: Beta
- B: Unstandardized Coefficient
- F-Ratio
- Effect Size

This paper is one of a series of Meta-Analyses and Systematic Reviews assessing the relationship between child care quality and children’s outcomes; therefore, superscript letters below are in reference to various large databases that samples in these papers were drawn from. These letters have been kept consistent across the series for our readers.

Samples within papers are described in more detail in S3.

Acronyms for child outcomes are listed in S4.

<sup>a</sup>National Center for Early Development and Learning Dataset (NCEDL, 2002, 2004); <sup>b</sup>Bermuda Preschool Study (1980); <sup>c</sup>Cost, Quality and Outcomes Study (CQO, 1993-1994); <sup>d</sup>Effective Preschool and Primary Education Study (EPPE, 1997-1998); <sup>e</sup>Head Start Family and Children Experiences Survey (FACES, 1997) Cohort; <sup>f</sup>Head Start Family and Children Experiences Survey (FACES, 2000) Cohort; <sup>g</sup>Early Childhood Longitudinal Study (ECLS-B, 2001-2006, Birth Cohort); <sup>h</sup>National Child Care Staffing Study (NCCSS, 1988); <sup>i</sup>Northeastern United States sample (Moller and colleagues, 2008; Year NR); <sup>j</sup>Eight-County Region of North-Central Indiana (Year NR); <sup>k</sup>Colorado QRIS.
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

Supplemental Information 5
Systematic Review Results: All Outcomes

| ECERS/ECERS-R Measurement Level | STUDY | Positive Behavior |
|---------------------------------|-------|-------------------|
| **ECERS**                      | Total Score | Burchinal 2006<sup>17</sup>,<sup>1</sup> | Social Competence (author created) |
|                                 |         | Herrera 2005<sup>35</sup>             | SSBS - Social Competence |
|                                 | Total Score (Parents and Staff Subscale not included) | Bryant 2003<sup>13</sup> – Whole Sample | SSR/S/SIS - Social Skills |
|                                 |         | Chin-Quee 1994<sup>21</sup> – Primary 1,2 | Student-Teacher Relationship Scale |
|                                 |         | Chin-Quee 1994<sup>21</sup> – Primary 3,4 | TCRS - Assertive Social Skills |
| **ECERS - R**                   | Total Score | Burchinal 2011<sup>19</sup> – NCEDL<sup>A</sup> | TCRS - Behavior Control |
|                                 |         | Jeon 2010<sup>41</sup>               | TCRS - Decreased Risk Status |
|                                 |         | Hestenes 2015<sup>36</sup>          | TCRS - Peer Sociability |
|                                 |         | Montes 2005<sup>24</sup>            | TCRS - Percent Not at Risk |
|                                 |         | Peisner-Feinberg 2013<sup>31</sup> | TCRS - Social Competence |
|                                 |         | Sabol 2013<sup>65</sup>,<sup>A</sup> | |
|                                 | Total Score (Parents and Staff Subscale not included) | Keys 2013<sup>42</sup> – NCEDL<sup>A</sup> | |
|                                 |         | Le 2015<sup>45</sup>,<sup>Z</sup> | |

Table E. ECERS/ECERS-R Predicting all Positive Behavior Outcomes S to Z
### The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

The following table presents the relationship between the Early Childhood Environment Rating Scale (ECERS) and its Revised Form (ECERS-R) and child outcomes. The table includes the ECERS-R subscales and factors, along with references and statistical significance levels. The legend for the table is provided at the bottom.

| ECERS-R Subscale        | ECERS-R Factors | Significant and Positive | Significant and Negative | Non-Significant | Statistic               |
|-------------------------|-----------------|--------------------------|--------------------------|-----------------|-------------------------|
| **Activities**          |                 |                          |                          |                 | r - Zero Order Pearson’s Correlation |
|                         |                 |                          |                          |                 | Beta                    |
| **Interactions**        |                 |                          |                          |                 | B (Unstandardized Coefficient) |
|                         |                 |                          |                          |                 | T-Test                  |
| **Language-Reasoning**  |                 |                          |                          |                 | Partial Correlation     |
| **Provisions for Learning** |                |                          |                          |                 | F-Ratio                 |
| **Program Structure**   |                 |                          |                          |                 |                         |

**Legend for Table**

- ★: Significant and Positive
- ●: Significant and Negative
- §: Non-Significant
- r: r - Zero Order Pearson’s Correlation
- Beta: Beta
- B: B (Unstandardized Coefficient)
- T-Test: T-Test
- Partial Correlation: Partial Correlation
- F-Ratio: F-Ratio

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This paper is one of a series of Meta-Analyses and Systematic Reviews assessing the relationship between child care quality and children’s outcomes; therefore, superscript letters below are in reference to various large databases that samples in these papers were drawn from. These letters have been kept consistent across the series for our readers.

bSamples within papers are described in more detail in S3.
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

Acronyms for child outcomes are listed in S4.

National Center for Early Development and Learning Dataset (NCEDL, 2002, 2004); Head Start Family and Children Experiences Survey (FACES, 2006) Cohort; Head Start Family and Children Experiences Survey (FACES, 2000) Cohort; Otitis Media Study (Year NR); More is Four North Carolina Study (2002-2003) Cohort; More is Four North Carolina Study (2003-2004) Cohort; More is Four North Carolina Study (2005-2006) Cohort; Colorado QRIS

Colorado QRIS.
### Table F. ECERS Predicting all Problem Behavior Outcomes

| ECERS Measurement Level | STUDY | Problem Behavior<sup>a</sup> |
|-------------------------|-------|-----------------------------|
|                         |       | ASBI - Antisocial/Worried P| BPI - Problem Behavior P| CBCL - Aggressive Behavior P| CBI - Apathy P| CBI - Behavior Problems P| CBI - Hostility P| ECERS-B - Externalizing Problems P| FACES - Aggressive Behavior P| FACES - Hyperactive Behavior P| FACES - Withdrawn Behavior P| PBQ - Aggressiveness/Hostility P| PBQ - Anxiey P| PQO - Hyperactivity/Distractibility P| PQO - Total Maladjustment P| PBS - Hyperactive Behavior P| SSIS - Externalizing Behavior P| SSIS - Internalizing Behavior P| SSPB - Problem Behavior Problems P| TCRS - Behavior Problems P| TCRS - Change in Risk P| TCRS - Increased Risk P| TCRS - Multiple Emotional Risk P| TBF - Problem Behavior P |
|-------------------------|-------|-----------------------------|
|                         | Bryant 1994<sup>12</sup> – NonSuspect Homes |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                         | Bryant 1994<sup>12</sup> – Suspect Homes |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                         | Burchinal, Peisner 2000<sup>13</sup> – CQO<sup>9</sup> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                         | Burchinal, Peisner 2000<sup>13</sup> – NC HS |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                         | Burchinal, Peisner 2000<sup>13</sup> – NC PS |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                         | Burchinal 2011<sup>19</sup> – CQO<sup>9</sup> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                         | Dunn 1993<sup>26.8</sup> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                         | Kontos 1991<sup>43</sup> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                         | McCartney 1982<sup>49.6</sup> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

<sup>a</sup> ASBI = Antisocial/Worried P
BPI = Problem Behavior P
CBCL = Aggressive Behavior P
CBI = Apathy P
CBI = Behavior Problems P
CBI = Hostility P
ECERS-B = Externalizing Problems P
FACES = Aggressive Behavior P
FACES = Hyperactive Behavior P
FACES = Withdrawn Behavior P
PBQ = Aggressiveness/Hostility P
PBQ = Anxiey P
PQO = Hyperactivity/Distractibility P
PQO = Total Maladjustment P
PBS = Hyperactive Behavior P
SSIS = Externalizing Behavior P
SSIS = Internalizing Behavior P
SSPB = Problem Behavior Problems P
TCRS = Behavior Problems P
TCRS = Change in Risk P
TCRS = Increased Risk P
TCRS = Multiple Emotional Risk P
TBF = Problem Behavior P
| ECERS - Total Score (Parents and Staff Subscale not included) | Bryant 200313 – Whole Sample | Peisner-Feinberg 199755,D | Phillips 198762,C |
| --- | --- | --- | --- |
| Mean of 5 Items | Peisner-Feinberg 199756,D |

| Total Score | Burchinal 201119 – NCEDLA |
| --- | --- |
| Burchinal 201119 – FACES 1997I |
| Burchinal 201119 – FACES 2000K |
| Clawson 200822 |
| Hestenes 201536 |
| Montes 200554 |
| Peisner-Feinberg 201354 |
| Sabol 201365,A |
| Sylva 200669,E |

| ECERS-R Total Score (Parents and Staff Subscale not included) | Keys 201354 – ECLS-B 05/06 |
| --- | --- |
| Keys 201354 – NCEDLA |
| Keys 201354 – EHS 01/03 |
| Mashburn, Pianta 200848,A |
| Peisner-Feinberg 200657,YA,YC |
| Peisner-Feinberg 200758,YC |
| Peisner-Feinberg 200860 – NC 07/08 |
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

| ECERS Subscales | ECERS-Interactions (Author Created) | Burchinal 2011<sup>19</sup> – CQO<sup>19</sup> |  |
|-----------------|------------------------------------|------------------------------------|---|
| Activities      | Sylva 2006<sup>69,E</sup>         | |||
| Interactions    | Burchinal 2011<sup>19</sup> – NCEDL<sup>A</sup> | | |
|                 | Burchinal 2011<sup>19</sup> – FACES 1997<sup>l</sup> | | |
|                 | Burchinal 2011<sup>19</sup> – FACES 2000<sup>k</sup> | | |
|                 | Sylva 2006<sup>69,E</sup>         | | |
| Language-Reasoning | Sylva 2006<sup>69,E</sup> | |||
|                 | Zill 2003<sup>44,K</sup>          | |||
|                 | Zill 2006<sup>75,K</sup>           | |||
| Parents and Staff | Sylva 2006<sup>69,E</sup> | |||
| Personal Care Routines | Sylva 2006<sup>69,E</sup> | |||
| Program Structure | Sylva 2006<sup>69,E</sup> | |||
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

| ECERS-R Factors | Space and Furnishings | Provisions for Learning | Teaching & Interactions |
|-----------------|-----------------------|-------------------------|-------------------------|
|                 | Sylva 2006⁶⁹,E        | Howes 2008³⁹,A          | Aikens 2010⁴,B          |
|                 |                       | West 2010⁷¹,B           | Burchinal 2008¹⁸,A      |
|                 |                       | Howes 2008³⁹,A          | Howes 2008³⁹,A          |
|                 |                       |                         | Sabol 2013⁶⁵,A          |
|                 |                       |                         | West 2010⁷¹,B           |

**Legend for Table**

| Significant and Positive | Significant and Negative | Nonsignificant | Statistic |
|--------------------------|--------------------------|----------------|-----------|
| ★                        |                          | ★              | r - Zero Order Pearson’s Correlation |
| ○                        | ★                        | ○              | Beta      |
| ■                        | ■                        | ■              | B (Unstandardized Coefficient) |
| ◊                        | ◊                        | ◊              | T-Test    |
| ★                        | ★                        | ★              | Partial Correlation |
| ·                        | ·                        | ·              | F-Ratio   |
| ▼                        | ▼                        | ▼              | Effect Size |

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Samples within papers are described in more detail in S3.

Acronyms for child outcomes are listed in S4.

National Center for Early Development and Learning Dataset (NCEDL, 2002, 2004); Head Start Family and Children Experiences Survey (FACES, 2006) Cohort; Bermuda Preschool Study (1980); Cost, Quality and Outcomes Study (CQO, 1993-1994); Effective Preschool and Primary Education Study (EPPE, 1997-1998); Early Head Start Family and Children Experiences Survey (FACES, 1997) Cohort; Head Start Family and Children Experiences Survey (FACES, 2000) Cohort; Early Childhood Longitudinal Study (ECLS-B, 2001-2006, Birth Cohort); 8-County Region of North-Central Indiana (Year NR); More is Four North Carolina Study (2002-2003) Cohort; More is Four North Carolina Study (2003-2004) Cohort; More is Four North Carolina Study (2005-2006) Cohort; Colorado QRIS.
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

Supplemental Information 5
Systematic Review Results: All Outcomes

| ECERS Measurement Level | STUDY<sup>a,b</sup> | LANGUAGE<sup>c</sup> |
|-------------------------|----------------------|---------------------|
|                         | ECERS Total Score    | ARS - Language Literacy | Adaptive Language Inventory | Book Knowledge | BAS-II - Language | BAS-II - Verbal Fluency | BAS-II - Word Reading | CAP - Emergent Literacy | COR - Language | Communication Task | DIAL-R - Language | ECLS K - Language Literacy | Expressive One Word Picture Vocabulary Test | Griffiths Language (hearing and speech) | Identifying Letters<sup>d</sup> | Language Skills (Composite) |
|                         |                      |                     |                     |                     |                  |                   |                     |                     |                   |                   |                  |                      |                           |                          |                          |                           |
| Burchinal 2006<sup>17</sup> |                      |                     |                     |                     |                  |                   |                     |                     |                   |                   |                  |                      |                           |                          |                          |                           |
| Epstein 1993<sup>29</sup>  |                      |                     |                     |                     |                  |                   |                     |                   |                   |                  |                          |                          |                          |                          |                           |
| Goelman 1988<sup>31</sup>  |                      |                     |                     |                     |                  |                   |                     |                   |                   |                  |                          |                          |                          |                          |                           |
| Kontos 1991<sup>43</sup>   |                      |                     |                     |                     |                  |                   |                     |                   |                   |                  |                          |                          |                          |                          |                           |
| Kwan 1998<sup>44</sup>     |                      |                     |                     |                     |                  |                   |                     |                   |                   |                  |                          |                          |                          |                          |                           |
| Lyon 1995<sup>46</sup>     |                      |                     |                     |                     |                  |                   |                     |                   |                   |                  |                          |                          |                          |                          |                           |
| McCartney 1982<sup>49,c</sup> |                      |                     |                     |                     |                  |                   |                     |                   |                   |                  |                          |                          |                          |                          |                           |
| Bryant 2003<sup>13</sup> - Whole Sample |                      |                     |                     |                     |                  |                   |                     |                   |                   |                  |                          |                          |                          |                          |                           |
| McCartney 1984<sup>50,E</sup> |                      |                     |                     |                     |                  |                   |                     |                   |                   |                  |                          |                          |                          |                          |                           |

<sup>a</sup> Total Score (Parents and Staff Subscale not included)
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

| ECERS-R | Total Score | Adult Needs | Creative Activities |
|---|---|---|---|
| ECERS-R - Total Score (Parents and Staff Subscale not included) | | | |
| | Dang 2011$^{22}$ - ECLS-B 05/06$^N$ | | |
| | Keys 2013$^{42}$ - ECLS-B 05/06$^N$ | | |
| | Mashburn 2008$^{47,F}$ | | |
| | Mashburn, Pianta 2008$^{48,A}$ | | |
| | Peisner-Feinberg 2006$^{37,YA,YC}$ | | |
| | Peisner-Feinberg 2007$^{38,YC}$ | | |
| | Peisner-Feinberg 2008$^{39}$ - NC 03/07$^{YB,YC}$ | | |
| | Pinto 2013$^{63}$ - (Portuguese version) | | ★ ■|
| | Sabol 2014$^{66,N}$ | | |
| | Abreu-Lima 2013$^3$ | | |
| | Barnett 2007$^{11}$ - Whole Sample | | |
| | Barnett 2007$^{11}$ - Spanish Sample | | |
| | Peisner-Feinberg 2013$^{61}$ | | |
| | Sabol 2013$^{65,A}$ | | |
| | Sylva 2006$^{69,E}$ | | |
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| ECERS-R Subscales      | ECERS Factors          | Provisions for Learning |
|------------------------|------------------------|-------------------------|
| Fine and Gross Motor Skills | Epstein 1993\(^{29}\) | Star | Star |
|                        | Kwan 1998\(^{44}\)    |            |            |
| Furnishings and Display | Epstein 1993\(^{29}\) | Star | Star |
|                        | Kwan 1998\(^{44}\)    |            |            |
| Language-Reasoning     | Epstein 1993\(^{29}\) | Star | Star |
|                        | Dickinson 2001\(^{24}\) |            |            |
|                        | Kwan 1998\(^{44}\)    |            |            |
| Personal Care Routines | Epstein 1993\(^{29}\) | Star | Star |
|                        | Kwan 1998\(^{44}\)    |            |            |
| Social Development     | Epstein 1993\(^{29}\) | Star | Star |
|                        | Kwan 1998\(^{44}\)    |            |            |
| Activities             | Sylva 2006\(^{69,E}\)  |            |            |
| Interactions           | Sylva 2006\(^{69,E}\)  |            |            |
| Language-Reasoning     | Sylva 2006\(^{69,E}\)  |            |            |
| Parents and Staff      | Sylva 2006\(^{69,E}\)  |            |            |
| Personal Care Routines | Sylva 2006\(^{69,E}\)  |            |            |
| Program Structure      | Sylva 2006\(^{69,E}\)  |            |            |
| Space and Furnishings  | Sylva 2006\(^{69,E}\)  |            |            |
| Developmentally Appropriate Activities | Lyon 1995\(^{46}\) | Star |
| Preschool Appropriate Caregiving | Lyon 1995\(^{46}\) | Star |
|                        | Whitebook 1989\(^{72,O}\) |            |            |
| ECERS-R Factors        | Dotterer 2012\(^{25,A}\) |            |            |
|                        | Early 2006\(^{28,A}\)  |            |            |

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The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

| Teaching & Interactions | Howes 2008<sup>39,A</sup> | Aikens 2012<sup>6,M</sup> | Burchinal 2008<sup>18,A</sup> | Dotterer 2012<sup>25,A</sup> | Early 2006<sup>28,A</sup> | Howes 2008<sup>39,A</sup> | Sabol 2013<sup>65,A</sup> |
|-------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
|                         | ★                         | ★                         | ★                         | ★                         | ★                         | ★                         | ★                         |

**Legend for Table**

| Significant and Positive | Significant and Negative | Non-Significant | Statistic          |
|--------------------------|--------------------------|-----------------|--------------------|
| ★                        | ★                        | ★               | r - Zero Order Pearson’s Correlation |
| □                        | □                        | □               | Beta               |
| ★                        | ★                        | ★               | B (Unstandardized Coefficient) |
| ★                        | ★                        | ★               | T-Test             |
| ★                        | ★                        | ★               | Partial Correlation |
| ★                        | ★                        | ★               | F-Ratio            |
| ★                        | ★                        | ★               | Effect Size        |

*This paper is one of a series of Meta-Analyses and Systematic Reviews assessing the relationship between child care quality and children’s outcomes; therefore, superscript letters below are in reference to various large databases that samples in these papers were drawn from. These letters have been kept consistent across the series for our readers.

<sup>a</sup>Samples within papers are described in more detail in S3.
<sup>b</sup>Acronyms for child outcomes are listed in S4.
<sup>c</sup>Identifying Letters (also referred to as Alphabet Recognition Test; Letter Identification, Letter Knowledge, Letter-Naming Test, Naming Letters, Cross-Linguistic Assessment of Foundation Level-Letter Identification).
<sup>A</sup>National Center for Early Development and Learning Dataset (NCEDL, 2002, 2004); <sup>B</sup>Bermuda Preschool Study (1980); <sup>C</sup>Effective Preschool and Primary Education Study (EPPE, 1997-1998); <sup>D</sup>Georgia Early Childhood Study (GECS, 2002); <sup>E</sup>Head Start Family and Children Experiences Survey (FACES, 2009) Cohort; <sup>F</sup>Early Childhood Longitudinal Study (ECLS-B, 2001-2006, Birth Cohort); <sup>G</sup>National Child Care Staffing Study (NCCSS, 1988); <sup>H</sup>More is Four North Carolina Study (2002-2003) Cohort; <sup>I</sup>More is Four North Carolina Study (2003-2004) Cohort; <sup>J</sup>More is Four North Carolina Study (2005-2006) Cohort.
### Systematic Review Results: All Outcomes

**Table H. ECERS Predicting all Language Outcomes M to S**

| ECERS Measurement Level | LANGUAGE<sup>c</sup> |
|-------------------------|----------------------|
|                         | MacArthur Story Stem Battery | OWLS - Oral Expression Scale | OWLS - Total Scale | PAT - Phonological Awareness | PPVT - Vocabulary | Phoneme Deletion | Pre-Reading | PreLAS 2000 - Language | PreLAS 2000 | Preschool Language Assessment | Reading (Grade 1) | Rhyme Recognition | SHELL - K - Formal Definitions | SHELL - K - Narrative Production | SICD - Expressive Communication Age | SICD - Receptive Communication Age |
| ECERS Total Score       |                      |                          |                      |                          |                          |                 |             |                           |             |                             |                |                         |                                |                             |                             |                          |
| Burchinal, Nelson 2000<sup>14,D</sup> | ![Rating Icon] | ![Rating Icon] | ★★★ | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] |
| Burchinal, Peisner 2000<sup>15</sup> - CQO<sup>D</sup> | ![Rating Icon] | ![Rating Icon] | ★ | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] |
| Burchinal, Peisner 2000<sup>15</sup> - NC PS | ![Rating Icon] | ![Rating Icon] | ★ | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] |
| Burchinal 2011<sup>19</sup> - CQO<sup>D</sup> | ![Rating Icon] | ![Rating Icon] | ★ | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] |
| Goelman 1988<sup>31</sup> | ![Rating Icon] | ![Rating Icon] | ★ | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] |
| Herrera 2005<sup>35</sup> | ![Rating Icon] | ![Rating Icon] | ★ | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] |
| Howes 1995<sup>38</sup> - African American<sup>0</sup> | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] |
| Howes 1995<sup>38</sup> - European American<sup>0</sup> | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] |
| Lyon 1995<sup>46</sup> | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] | ![Rating Icon] |

<sup>a,b</sup>
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

| Table H. ECERS Predicting all Language Outcomes M to S |
|--------------------------------------------------------|
| McCartney 1982<sup>59,C</sup>                             | ★★ | ★★ |
| Schliecker 1991<sup>67</sup> – Whole Sample           | ★★ |
| Schliecker 1991<sup>67</sup> – One Parent              | ★★ |
| Schliecker 1991<sup>67</sup> – Two Parent              | ★★ |
| Bryant 2003<sup>13</sup> – Whole Sample                | ★   |
| Burchinal, Roberts 2000<sup>16,T</sup>                 |     |
| McCartney 1984<sup>50,C</sup>                          | ★★ |
| Peisner-Feinberg 1997<sup>55,D</sup>                   | ★   |
| ECERS – Mean of 5 Items                                 |     |
| Peisner-Feinberg 1999<sup>56,D</sup>                   | ★   |
| Abreu-Lima 2013<sup>3</sup>                             | ★   |
| Assel 2008<sup>9</sup>                                  | ★   |
| Barnett 2007<sup>11</sup> – Whole Sample               | ★   |
| Barnett 2007<sup>11</sup> – Spanish                     | ★   |
| Burchinal 2011<sup>19</sup> – NCEDL<sup>A</sup>        | ★   |
| Burchinal 2011<sup>19</sup> – FACES 1997<sup>J</sup>    | ★   |
| Burchinal 2011<sup>19</sup> – FACES 2000<sup>K</sup>    | ★   |
| Fiorentino 2004<sup>30</sup>                            | ★   |
| Henry 2003<sup>33,F</sup>                              | ★   |
## The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

### Table H. ECERS Predicting all Language Outcomes M to S

| ECERS-R – Total Score (Parents and Staff Subscale not included) | Aboud 2011<sup>2,V</sup> | Dang 2011<sup>21</sup> – NCEDL<sup>A</sup> | Dang 2011<sup>22</sup> – EHS 2001-2003<sup>H</sup> | Keys 2013<sup>42</sup> – NCEDL<sup>A</sup> | Keys 2013<sup>42</sup> – EHS 01/03<sup>H</sup> | Le 2015<sup>45,Z</sup> | Mashburn, Pianta 2008<sup>48,A</sup> | Peisner-Feinberg 2006<sup>57,YA,YC</sup> | Peisner-Feinberg 2007<sup>58,YC</sup> | Peisner-Feinberg 2008<sup>60</sup> NC 07/08 | Peisner-Feinberg 2008<sup>60</sup> NC 03/07<sup>YB,YC</sup> | Reid 2013<sup>64,A</sup> | Zellman 2008<sup>71,Z</sup> |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Henry 2005<sup>34,F</sup> | | | | | | | | | | | | | | |
| Jeon 2010<sup>41</sup> | | | | | | | | | | | | | | |
| Sabol 2013<sup>55,A</sup> | | | | | | | | | | | | | | |
| Sabol 2014<sup>56,N</sup> | | | | | | | | | | | | | | |
| Sylva 2006<sup>69,E</sup> | | | | | | | | | | | | | | |
| Weiland 2013<sup>70</sup> | | | | | | | | | | | | | | |
## The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

### Table H. ECERS Predicting all Language Outcomes M to S

| ECERS Subscales | ECERS – Total Score (Toileting Indicator and Parents and Staff Subscale not included) | Language-Reasoning | Interactions (Author Created) | Activities |
|-----------------|--------------------------------------------------------------------------------------|--------------------|--------------------------------|------------|
|                 | Chang 2007<sup>20</sup> – NCEDL<sup>Λ</sup> (Multi & SWEEP)<sup>Λ</sup>             |                    |                                |            |
|                 | Chang 2007<sup>20</sup> – Spanish-Spanish Testing<sup>Λ</sup>                       |                    |                                |            |
|                 | Chang 2007<sup>20</sup> – SWEEP<sup>Λ</sup> (Spanish Children)<sup>Λ</sup>         |                    |                                |            |
| Language-Reasoning | Burchinal 2011<sup>19</sup> – CQO<sup>19</sup>                                      | ★                  |                                |            |
| Interactions (Author Created) | Dickinson 2001<sup>24</sup>                                                        | ★★                |                                |            |
| Activities      | Jeon 2010<sup>41</sup>                                                               | ★                  |                                |            |
|                 | Sylva 2006<sup>69,E</sup>                                                            | ★                  |                                |            |
| Interactions     | Burchinal 2011<sup>19</sup> – NCEDL<sup>Λ</sup>                                      | ★★                |                                |            |
|                 | Burchinal 2011<sup>19</sup> – FACES 1997<sup>74</sup>                               | ★★                |                                |            |
|                 | Burchinal 2011<sup>19</sup> – FACES 2000<sup>8</sup>                                | ★★                |                                |            |
|                 | Jeon 2010<sup>41</sup>                                                               | ★★                |                                |            |
|                 | Sylva 2006<sup>69,E</sup>                                                            | ★                  |                                |            |
| Language-Reasoning | Burchinal 2011<sup>19</sup> – NCED<sup>Λ</sup>                                       | ★★                |                                |            |
|                 | Burchinal 2011<sup>19</sup> – FACES 1997<sup>74</sup>                               | ★★                |                                |            |
|                 | Burchinal 2011<sup>19</sup> – FACES 2000<sup>8</sup>                                | ★★                |                                |            |
|                 | Jeon 2010<sup>41</sup>                                                               | ★★                |                                |            |
|                 | Sylva 2006<sup>69,E</sup>                                                            | ★                  |                                |            |
|                 | Zill 2003<sup>74,K</sup>                                                             | ★                  |                                |            |
|                 | Zill 2006<sup>73,K</sup>                                                             | ★                  |                                |            |
### Table H. ECERS Predicting all Language Outcomes M to S

| ECERS Factors | Parents and Staff | Personal Care Routines | Program Structure | Space and Furnishings | ECERS-R Factors |
|---------------|-------------------|------------------------|-------------------|-----------------------|----------------|
|               | Sylva 2006⁶⁹,E     | Sylva 2006⁶⁹,E         | Jeon 2010⁴¹       | Sylva 2006⁶⁹,E        |                |
| Developmentally Appropriate Activities | Lyon 1995⁴⁶        | Lyon 1995⁴⁶            | Whitebook 1989²²,Ο |                        |                |
| Preschool Appropriate Caregiving | Lyon 1995⁴⁶        |                        | Whitebook 1989²²,Ο |                        |                |
| Provisions for Learning | Auger 2014¹⁰,U     | Dotterer 2012²⁵,A      | Early 2006²⁸,A    | Howes 2008³⁹,A        | Aikens 2010⁴,Β |
| |                  |                        |                   | Weiland 2013⁷⁰    |                        |                |
| |                  |                        |                   | West 2010¹¹,B      |                        |                |
| Teaching & Interactions | Aikens 2012⁶,Μ      | Auger 2014¹⁰,U        | Burchinal 2008¹⁸,A| Dotterer 2012²⁵,A     |                 |
| |                  |                        |                   | Early 2006²⁸,A    | Howes 2008³⁹,A        |                 |
| |                  |                        |                   |                   | Sabol 2013⁶⁵,A        |                 |
| |                  |                        |                   |                   | Weiland 2013⁷⁰       |                 |
| |                  |                        |                   |                   | West 2010¹¹,B         |                 |
## The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

### Table H. ECERS Predicting all Language Outcomes M to S

| Legend for Table | Significant and Positive | Significant and Negative | Non-Significant | Statistic                  |
|------------------|--------------------------|--------------------------|-----------------|----------------------------|
| ★                | ★                        | ★                        | ★               | r - Zero Order Pearson’s Correlation |
| ○                | ○                        | ○                        | ○               | Beta                       |
| ■                | ■                        | ■                        | ■               | B (Unstandardized Coefficient) |
| ◆                | ◆                        | ◆                        | ◆               | T-Test                     |
| ★                | ★                        | ★                        | ★               | Partial Correlation        |
| ★                | ★                        | ★                        | ★               | F-Ratio                    |
| ★                | ★                        | ★                        | ★               | Effect Size                |

★ This paper is one of a series of Meta-Analyses and Systematic Reviews assessing the relationship between child care quality and children’s outcomes; therefore, superscript letters below are in reference to various large databases that samples in these papers were drawn from. These letters have been kept consistent across the series for our readers.

b Samples within papers are described in more detail in S3.

c Acronyms for child outcomes are listed in S4.

A National Center for Early Development and Learning Dataset (NCEDL, 2002, 2004); B Head Start Family and Children Experiences Survey (FACES, 2006) Cohort; C Bermuda Preschool Study (1980); D Cost, Quality and Outcomes Study (CQO, 1993-1994); E Effective Preschool and Primary Education Study (EPPE, 1997-1998); F Georgia Early Childhood Study (GECS, 2002); G Early Head Start (EHS, 2001-2003 Cohort); H Head Start Family and Children Experiences Survey (FACES, 1997) Cohort; I Head Start Family and Children Experiences Survey (FACES, 2000) Cohort; J Head Start Family and Children Experiences Survey (FACES, 2009) Cohort; K Head Start Family and Children Experiences Survey (FACES, 2001-2006, Birth Cohort); L National Child Care Staffing Study (NCCSS, 1988); M Otis Media Study (Year NR); Preschool Curriculum Evaluation Research (PCER, 1999-2003); N Five Rural Districts of Bangladesh (2006-2008); O National Child Care Staffing Study (NCCSS, 2002); P More is Four North Carolina Study (2002-2003) Cohort; Q More is Four North Carolina Study (2003-2004) Cohort; R More is Four North Carolina Study (2005-2006) Cohort; S Colorado QRIS.
## Supplemental Information 5

### Systematic Review Results: All Outcomes

### Table I. ECERS Predicting all Language Outcomes S to V

| ECERS Measurement Level | STUDY | LANGUAGE<sup>b</sup> |
|-------------------------|-------|----------------------|
| **ECERS Total Score**   |       |                      |
| Bryant 1994<sup>12</sup> – NonSuspect Homes | | ⭕ |
| Bryant 1994<sup>12</sup> – Suspect Homes | | ⭕ |
| Herrera 2005<sup>15</sup> | | ⭕ |
| Kontos 1991<sup>41</sup> | | ⭕ ⭕ |

| ECERS - Total Score (Parents Staff Subscale not included) |       |                      |
|----------------------------------------------------------|-------|----------------------|
| Bryant 2003<sup>13</sup> - Whole Sample | ⭕ | ⭕ |
| Bryant 2003<sup>13</sup> - Males | | ⭕ |
| Bryant 2003<sup>13</sup> - Females | | ⭕ |

| ECERS-R Total Score |       |                      |
|---------------------|-------|----------------------|
| Abreu-Lima 2013<sup>3</sup> | ⭕ ⭕ | |
| Assel 2008<sup>9</sup> | | ⭕ |
| Henry 2003<sup>34,35</sup> | ⭕ | |
| Henry 2005<sup>34,35</sup> | ⭕ | |
| Jackson 2006<sup>10</sup> | | |

<sup>b</sup> LANGUAGE: Story and Print Concepts, Story and Print Concepts - Book Knowledge, Story and Print Concepts - Print Awareness, Story and Print Concepts - Story Comprehension, Teacher Rating of Oral Language and Literacy, Test for Early Language Development, Test of Early Reading Ability - Alphabet & Convention, Test of Early Reading Ability - Reading Quotient, TOPEL - Phonological Awareness, TOPEL - Print Knowledge, Vineland Adaptive Behavior Scales - Communication.
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

**Table I. ECERS Predicting all Language Outcomes S to V**

| ECERS-R – Total Score (Parents Staff Subscale not included) | Pinto 2013$^{53}$ (Portuguese ver.) |  |  |  |
|-------------------------------------------------------------|--------------------------------------|---|---|---|
| Mashburn 2008$^{17,F}$                                    |                                       |  |  |  |
| Peisner-Feinberg 2006$^{57,YA, YC}$                       |                                       |  |  |  |
| Peisner-Feinberg 2007$^{58,YC}$                            |                                       |  |  |  |
| Peisner-Feinberg 2008$^{59}$ NC 03/07 $^{YB, YC}$         |                                       |  |  |  |
| Peisner-Feinberg 2008$^{59}$ NC 07/08 $^{YB, YC}$         |                                       |  |  |  |

| ECERS-R subscales | Language-Reasoning | Jackson 2006$^{50}$ | Zill 2006$^{75,K}$ |
|-------------------|--------------------|--------------------|-------------------|
|                   |                    |                    |                   |

**Legend for Table**

| Significant and Positive | Significant and Negative | Non-Significant | Statistic |
|--------------------------|--------------------------|-----------------|-----------|
| ★                        | ★                        | ★               | r - Zero Order Pearson’s Correlation |
| ★                        | ★                        | ★               | Beta      |
| ★                        | ★                        | ★               | B (Unstandardized Coefficient) |
| ★                        | ★                        | ★               | Partial Correlation |
| ★                        | ★                        | ★               | Effect Size |
| ★                        | ★                        | ★               | t-test    |

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bSamples within papers are described in more detail in S3.

Acronyms for child outcomes are listed in S4.

Georgia Early Childhood Study (GECS, 2002); KHead Start Family and Children Experiences Survey (FACES, 2000) Cohort; YAMore is Four North Carolina Study (2002-2003) Cohort; YBMore is Four North Carolina Study (2003-2004) Cohort; YCMore is Four North Carolina Study (2005-2006) Cohort; ZColorado QRIS.
# The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

## Supplemental Information 5
Systematic Review Results: All Outcomes

## Table J. ECERS Predicting all Language Outcomes W to Z

| ECERS Measurement Level | Studya,b | Languagec |
|-------------------------|----------|-----------|
| ECERS Total Score       | Burchinal, Peisner 2000\(^{15}\) - CQO\(^{D}\) | ★ |
|                         | Burchinal, Peisner 2000\(^{15}\) - NC PS | ★ |
|                         | Burchinal 2011 - CQO\(^{19}\) | [ ] [ ] |
| ECERS - Total Score (Parents and Staff Subscale not included) | Peisner-Feinberg 1997\(^{55,D}\) | ★ |
| ECERS - Mean 5 Items    | Peisner-Feinberg 1999\(^{56,D}\) | ★↓ |
| ECERS-R Total Score     | Aboud 2006\(^{1,V}\) | ★ |
|                         | Assel 2008\(^9\) | [ ] |
|                         | Barnett 2007\(^{11}\) - Whole Sample | [ ] |
|                         | Barnett 2007\(^{11}\) - Spanish | [ ] |
|                         | Burchinal 2011\(^{19}\) - NCEDL\(^A\) | [ ] [ ] [ ] |
|                         | Burchinal 2011\(^{19}\) - FACES 1997\(^{l}\) | [ ] [ ] [ ] |
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

Table J. ECERS Predicting all Language Outcomes W to Z

| ECERS-R - Total Score (Parents and Staff subscale not included) | Interactions (Author Created) | Language-Reasoning | ECERS Subscales | Interactions | Language-Reasoning |
|---------------------------------------------------------------|-------------------------------|-------------------|-----------------|--------------|-------------------|
| Aboud 2011^{2,v}                                             | Burchinal 2011^{19} - CQO^{D} |                   |                 | Burchinal 2011^{19} - NCEDL^{A} |                   |
| Hindman 2010^{45,2}                                          |                               |                   |                 | Burchinal 2011^{19} - FACES 1997^{l} |                   |
| Le 2015^{45,2}                                                |                               |                   |                 | Burchinal 2011^{19} - FACES 2000^{K} |                   |
| Mashburn, Pianta 2008^{58,2}                                 |                               |                   |                 | Burchinal 2011^{19} - FACES 2000^{K} |                   |
| Peisner-Feinberg 2006^{5, Y, YC}                             |                               |                   |                 | Burchinal 2011^{19} - FACES 1997^{l} |                   |
| Peisner-Feinberg 2007^{58, YC}                               |                               |                   |                 | Burchinal 2011^{19} - FACES 2000^{K} |                   |
| Peisner-Feinberg 2008^{56} NC 07/08                           |                               |                   |                 | Burchinal 2011^{19} - FACES 2000^{K} |                   |
| Peisner-Feinberg 2008^{56} NC 03/07^{YR, YC}                 |                               |                   |                 | Burchinal 2011^{19} - FACES 2000^{K} |                   |
| Zellman 2008^{23,2}                                          |                               |                   |                 | Burchinal 2011^{19} - FACES 2000^{K} |                   |
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

### Table J. ECERS Predicting all Language Outcomes W to Z

| Provisions for Learning | Teaching & Interactions | Significant and Positive | Significant and Negative | Non-Significant | Statistic |
|-------------------------|-------------------------|--------------------------|--------------------------|-----------------|-----------|
| Zill 2003JK             |                         | ★                        |                          |                 | r - Zero Order Pearson’s Correlation |
| Zill 2006JK             |                         |                          |                          |                 | r - Zero Order Pearson’s Correlation |
| Auger 201410U           |                         |                          |                          |                 | Beta |
| Dotterer 201225A        |                         |                          |                          |                 | Beta |
| Early 200628A           |                         |                          |                          |                 | B (Unstandardized Coefficient) |
| West 201011B            |                         |                          |                          |                 | T-Test |
| Aikens 20104H           |                         | ★                        |                          |                 | Partial Correlation |
| Aikens 20125M           |                         | ★                        |                          |                 | Partial Correlation |
| Auger 201410U           |                         |                          |                          |                 | Effect Size |
| Dotterer 201225A        |                         |                          |                          |                 | Effect Size |
| Early 200628A           |                         |                          |                          |                 | Effect Size |
| Sabol 201365A           |                         |                          |                          |                 | Effect Size |
| West 201011B            |                         |                          |                          |                 | Effect Size |

**Legend for Table**
- ★: Significant and Positive
- †: Significant and Negative
- ▲: Non-Significant
- r: r - Zero Order Pearson’s Correlation
- Beta: Beta
- B: B (Unstandardized Coefficient)
- T-Test: T-Test
- Partial Correlation: Partial Correlation
- Effect Size: Effect Size

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The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

References

1. Aboud F. Evaluation of an early childhood preschool program in rural Bangladesh. Early Child Res Q. 2006;21(1):46-60. doi:10.1016/j.ecresq.2006.01.008.
2. Aboud F, Hossain K. The impact of preprimary school on primary school achievement in Bangladesh. Early Child Res Q. 2011;26(2):237-246. doi:10.1016/j.ecresq.2010.07.001.
3. Abreu-Lima I, Leal T, Cadima J, Gamelas A. Predicting child outcomes from preschool quality in Portugal. Eur J Psychol Educ. 2013;28(2):399-420. doi:10.1007/s10212-012-0120-y.
4. Aikens N, Tarullo L, Hulsey L, Ross C, West J, Xue Y. A Year in Head Start: children, families and programs. ACF-OPRE report. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research and Evaluation; 2010. http://files.eric.ed.gov/fulltext/ED517213.pdf. Accessed July 1, 2015.
5. Hulsey L, Aikens N, Xue Y, Tarullo L, West J. ACF-OPRE report: data tables for FACES 2006: a year in Head Start report. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research and Evaluation; 2010. http://www.acf.hhs.gov/sites/default/files/opre/year_data_tables.pdf.
6. Aikens N, Moiduddin E, Xue Y, Tarullo L, West J. Data tables for child outcomes and classroom quality in FACES 2009 Report. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research and Evaluation; 2012. http://www.acf.hhs.gov/sites/default/files/opre/data_tables_for_child_outcomes_and_classroom_quality_in_faces_2009.pdf. Accessed July 1, 2015.
7. Moiduddin E, Aikens N, Tarullo L, West J, Xue Y. Child outcomes and classroom quality in FACES 2009. OPRE Report 2012-37a. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research and Evaluation; 2012. http://eric.ed.gov/?id=ED539265.
8. Anders Y, Rossbach H, Weinert S, et al. Home and preschool learning environments and their relations to the development of early numeracy skills. Early Child Res Q. 2012;27(2):231-244. doi:10.1016/j.ecresq.2011.08.003.
9. Assel M, Landry S, Swank P. Are early childhood classrooms preparing children to be school ready? The circle teacher behavior rating scale. In: Justice L, Vukelic C, eds. Achieving Excellence in Preschool Literacy Instruction. New York, NY: Guilford Press; 2008:120-135.
10. Auger A, Farkas G, Burchinal M, Duncan G, Vandell D. Preschool center care quality effects on academic achievement: an instrumental variables analysis. Dev Psychol. 2014;50(12):2559-2571. doi:10.1037/a0037995.
11. Barnett W, Yarosz D, Thomas J, Jung K, Blanco D. Two-way and monolingual English immersion in preschool education: an experimental comparison. Early Child Res Q. 2007;22(3):277-293. doi:10.1016/j.ecresq.2007.03.003.
12. Bryant D, Burchinal M, Lau L, Sparling J. Family and classroom correlates of Head Start children’s developmental outcomes. Early Child Res Q. 1994;9(3-4):289-304. doi:10.1016/0885-2006(94)90011-6.
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

13. Bryant D, Maxwell K, Taylor K, Poe M, Peisner-Feinberg E, Bernier K. Smart Start and preschool child care quality in North Carolina: change over time and relation to children’s readiness. Chapel Hill, NC: FPG Child Development Institute; 2003. http://files.eric.ed.gov/fulltext/ED473699.pdf.

14. Burchinal M, Nelson L. Family selection and child care experiences: implications for studies of child outcomes. Early Child Res Q. 2000;15(3):385-411. doi:10.1016/S0885-2006(00)00072-7.

15. Burchinal M, Peisner-Feinberg E, Bryant D, Clifford R. Children’s social and cognitive development and child-care quality: testing for differential associations related to poverty, gender, or ethnicity. Appl Dev Sci. 2000;4(3):149-165. doi:10.1207/S1532480XADS0403_4.

16. Burchinal M, Roberts J, Riggins Jr R, Zeisel S, Neebe E, Bryant D. Relating quality of center-based child care to early cognitive and language development longitudinally. Child Dev. 2000;71(2):339-357. doi:10.1111/1467-8624.00149.

17. Burchinal M, Roberts J, Zeisel S, Hennon E, Hooper S. Social risk and protective child, parenting, and child care factors in early elementary school years. Parenting. 2006;6(1):79-113. doi:10.1207/s15327922par0601_4.

18. Burchinal M, Howes C, Pianta R, et al. Predicting child outcomes at the end of kindergarten from the quality of pre-kindergarten teacher–child interactions and instruction. Appl Dev Sci. 2008;12(3):140-153. doi:10.1080/10888690802199418.

19. Burchinal M, Kainz K, Cai Y. How well do our measures of quality predict child outcomes? A meta-analysis and coordinated analysis of data from large-scale studies of early childhood settings. In: Zaslow M, Martinez-Beck I, Tout K, Halle T, eds. Quality Measurement in Early Childhood Settings. Baltimore, MD: Paul H Brookes Publishing; 2011:11-31.

20. Chang F, Crawford G, Early D, et al. Spanish-speaking children’s social and language development in pre-kindergarten classrooms. Early Educ Dev. 2007;18(2):243-269. doi:10.1080/10409280701282959.

21. Chin-Quee D, Scarr S. Lack of early child care effects on school-age children’s social competence and academic achievement. Early Dev Parent. 1994;3(2):103-112. doi:10.1002/edp.2430030207.

22. Clawson C, Luze G. Individual experiences of children with and without disabilities in early childhood settings. Top Early Child Spec Educ. 2008;28(3):132-147. doi:10.1177/0271121407311482.

23. Dang T, Farkas G, Burchinal M, et al. Preschool center quality and school readiness: quality main effects and variation by demographic and child characteristics. Evanston, IL: Society for Research on Educational Effectiveness; 2011. http://eric.ed.gov/?id=ED519004.

24. Dickinson D, Tabors P, eds. Beginning Literacy with Language: Young Children Learning at Home and School. Baltimore, MD: Brookes Publishing; 2001.

25. Dotterer A, Burchinal M, Bryant D, Early D, Pianta R. Universal and targeted pre-kindergarten programmes: a comparison of classroom characteristics and child outcomes. Early Child Dev Care. 2012;183(7):931-950. doi:10.1080/03004430.2012.698388.

26. Dunn L. Proximal and distal features of day care quality and children’s development. Early Child Res Q. 1993;8(2):167-192. doi:10.1016/S0885-2006(05)80089-4.
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

27. Dunn L, Beach S, Kontos S. Quality of the literacy environment in day care and children’s development. *J Res Child Educ.* 1994;9(1):24-34. doi:10.1080/025685494095959490.

28. Early D, Bryant D, Pianta R, et al. Are teachers’ education, major, and credentials related to classroom quality and children’s academic gains in pre-kindergarten? *Early Child Res Q.* 2006;21(2):174-195. doi:10.1016/j.ecresq.2006.04.004.

29. Epstein A. *Training for Quality: Improving Early Childhood Programs through Systematic Inservice Training.* High/Scope Educational Research Foundation, Ypsilanti, MI.; 1993.

30. Fiorentino L, Howe N. Language competence, narrative ability, and school readiness in low-income preschool children. *Can J Behav Sci Can Sci Comport.* 2004;36(4):280-294. doi:10.1037/h0087237.

31. Goelman H, Pence A. Children in three types of day care: daily experiences, quality of care and developmental outcomes. *Early Child Dev Care.* 1988;33(1-4):67-76. doi:10.1080/0300443880330105.

32. Gordon R, Fujimoto K, Kaestner R, Korenman S, Abner K. An assessment of the validity of the ECERS–R with implications for measures of child care quality and relations to child development. *Dev Psychol.* 2013;49(1):146-160. doi:10.1037/a0027899.

33. Henry G, Henderson L, Ponder B, Gordon C, Mashburn A, Rickman D. Report of the findings from the Early Childhood Study: 2001-02. Georgia State University, School of Policy Studies; 2003:Atlanta, GA. http://eric.ed.gov/?id=ED481261.

34. Henry G, Rickman D, Ponder B, Henderson L, Mashburn A, Gordon C. The Georgia Early Childhood Study. Atlanta, GA: Georgia State University, School of Policy Studies; 2005.

35. Herrera M, Mathiesen M, Merino J, Recart I. Learning contexts for young children in Chile: process quality assessment in preschool centres. *Int J Early Years Educ.* 2005;13(1):13-27. doi:10.1080/09669760500048253.

36. Hestenes L, Kintner-Duffy V, Wang Y, et al. Comparisons among quality measures in child care settings: understanding the use of multiple measures in North Carolina’s QRIS and their links to social-emotional development in preschool children. *Early Child Res Q.* 2015;30:199-214. doi:10.1016/j.ecresq.2014.06.003.

37. Hindman A, Skibbe L, Miller A, Zimmerman M. Ecological contexts and early learning: contributions of child, family, and classroom factors during Head Start, to literacy and mathematics growth through first grade. *Early Child Res Q.* 2010;25(2):235-250. doi:10.1016/j.ecresq.2009.11.003.

38. Howes C, Sakai L, Shinn M, Phillips D, Galinsky E, Whitebook M. Race, social class, and maternal working conditions as influences on children’s development. *J Appl Dev Psychol.* 1995;16(1):107-124. doi:10.1016/0193-3973(95)90019-5.

39. Howes C, Burchinal M, Pianta R, et al. Ready to learn? Children’s pre-academic achievement in pre-kindergarten programs. *Early Child Res Q.* 2008;23(1):27-50. doi:10.1016/j.ecresq.2007.05.002.

40. Jackson B, Larzelere R, St. Clair L, Corr M, Fichter C, Egertson H. The impact of HeadsUp! reading on early childhood educators’ literacy practices and preschool children’s literacy skills. *Early Child Res Q.* 2006;21(2):213-226. doi:10.1016/j.ecresq.2006.04.005.

41. Jeon H, Langill C, Peterson C, Luze G, Carta J, Atwater J. Children’s individual experiences in early care and education:
relations with overall classroom quality and children’s school readiness. *Early Educ Dev.* 2010;21(6):912-939. doi:10.1080/10409280903292500.

42. Keys T, Farkas G, Burchinal M, et al. Preschool center quality and school readiness: quality effects and variation by demographic and child characteristics. *Child Dev.* 2013;84(4):1171-1190. doi:10.1111/cdev.12048.

43. Kontos S. Child care quality, family background, and children’s development. *Early Child Res Q.* 1991;6(2):249-262. doi:10.1016/0885-2006(91)90011-9.

44. Kwan C, Sylva K, Reeves B. Day care quality and child development in Singapore. *Early Child Dev Care.* 1998;144(1):69-77. doi:10.1080/0300443981440108.

45. Le V, Schaack D, Setodji C. Identifying baseline and ceiling thresholds within the Qualistar Early Learning Quality Rating and Improvement System. *Early Child Res Q.* 2015;30:215-226. doi:10.1016/j.ecresq.2014.03.003.

46. Lyon M, Canning P. *Atlantic Day Care Study.* Halifax: Mount Saint Vincent University; 1995.

47. Mashburn A. Quality of social and physical environments in preschools and children’s development of academic, language, and literacy skills. *Appl Dev Sci.* 2008;12(3):103-127. doi:10.1080/10888690802199392.

48. Mashburn A, Pianta R, Hamre B, et al. Measures of classroom quality in prekindergarten and children’s development of academic, language, and social skills. *Child Dev.* 2008;79(3):732-749. doi:10.1111/j.1467-8624.2008.01154.x.

49. McCartney K, Scarr S, Grajek S, Schwarz J. Environmental differences among day care centers and their effects on children’s development. In: Zigler E, Gordon E, eds. *Day Care: Scientific and Social Policy Issues.* Boston, MA: Auburn House Publishing Company; 1982.

50. McCartney K. Effect of quality of day care environment on children’s language development. *Dev Psychol.* 1984;20(2):244-260. doi:10.1037/0012-1649.20.2.244.

51. McWayne C, Fantuzzo J, McDermott P. Preschool competency in context: an investigation of the unique contribution of child competencies to early academic success. *Dev Psychol.* 2004;40(4):633-645. doi:10.1037/0012-1649.40.4.633.

52. Moller A, Forbes-Jones E, Hightower A. Classroom age composition and developmental change in 70 urban preschool classrooms. *J Educ Psychol.* 2008;100(4):741-753. doi:10.1037/a0013099.

53. Moller A, Forbes-Jones E, Hightower A, Friedman R. The developmental influence of sex composition in preschool classrooms: boys fare worse in preschool classrooms with more boys. *Early Child Res Q.* 2008;23(3):409-418. doi:10.1016/j.ecresq.2008.05.001.

54. Montes G, Hightower A, Brugger L, Moustafa E. Quality child care and socio-emotional risk factors: no evidence of diminishing returns for urban children. *Early Child Res Q.* 2005;20(3):361-372. doi:10.1016/j.ecresq.2005.07.006.

55. Peisner-Feinberg E, Burchinal M. Relations between preschool children’s child-care experiences and concurrent development: the cost, quality, and outcomes study. *Merrill-Palmer Q.* 1997;43(3):451-477.

56. Peisner-Feinberg E, Burchinal M, Clifford R, et al. The children of the Cost, Quality, and Outcomes Study go to school: technical report. Chapel Hill, NC: FGP Child Development Center; 1999.
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

http://fpg.unc.edu/sites/fpg.unc.edu/files/resources/reports-and-policy-briefs/NCEDL_CQO_technical_report.pdf.

57. Peisner-Feinberg E, Maris C, More at Four Evaluation team. Evaluation of the North Carolina More at Four pre-kindergarten program: children’s longitudinal outcomes and classroom quality in kindergarten. Chapel Hill, NC: FPG Child Development Institute; 2006. http://fpg.unc.edu/sites/fpg.unc.edu/files/resources/reports-and-policy-briefs/MAF_Yr4_pt2_full_report.pdf.

58. Peisner-Feinberg E, Schaaf J, The More at Four evaluation team. Children’s outcomes & program quality in the fifth year. Evaluation of the North Carolina More at Four pre-kindergarten program, year 5 report (July 1, 2005-June 30, 2006). Chapel Hill, NC: FPG Child Development Institute, University of North Carolina; 2007. http://eric.ed.gov/?id=ED499809.

59. Peisner-Feinberg E, Schaaf J. Evaluation of the North Carolina More at Four pre-kindergarten program year 6 report (July 1, 2006-June 30, 2007): Children’s longitudinal outcomes and program quality over time (2003-2007). Chapel Hill, NC: FPG Child Development Institute; 2008. http://ea.niusileadscape.org/docs/FINAL_PRODUCTS/LearningCarousel/maf_Yr6_rpt.pdf.

60. Peisner-Feinberg E, Schaaf J. Evaluation of the North Carolina More at Four pre-kindergarten program year 7 report (2007-2008): performance and progress in the seventh year (2007-2008). Chapel Hill, NC: FPG Child Development Institute. University of North Carolina; 2008. http://www.ncga.state.nc.us/documents/sites/committees/JLEOC/Reports%20Received/Archives/2009%20Reports%20Received/More%20At%20Four%20Program%20Review/Year%2007%20Performance%20and%20Progress.pdf. Accessed November 24, 2015.

61. Peisner-Feinberg E, Schaaf J, LaForett D. Children’s growth and classroom experiences in Georgia’s pre-k program: findings from the 2011–2012 evaluation study. Chapel Hill, NC: FPG Child Development Institute; 2013. http://files.eric.ed.gov/fulltext/ED541933.pdf.

62. Phillips D, McCartney K, Scarr S. Child-care quality and children’s social development. Dev Psychol. 1987;23(4):537-543. doi:10.1037/0012-1649.23.4.537.

63. Pinto A, Pessanha M, Aguier C. Effects of home environment and center-based child care quality on children’s language, communication, and literacy outcomes. Early Child Res Q. 2013;28(1):94-101. doi:10.1016/j.ecresq.2012.07.001.

64. Reid J, Ready D. High-quality preschool: the socioeconomic composition of preschool classrooms and children’s learning. Early Educ Dev. 2013;24(8):1082-1111. doi:10.1080/10409289.2012.757519.

65. Sabol T, Hong S, Pianta R, Burchinal M. Can rating pre-k programs predict children’s learning? Science. 2013;341(6148):845-846. doi:10.1126/science.1233517.

66. Sabol T, Pianta R. Do standard measures of preschool quality used in statewide policy predict school readiness? Educ Finance Policy. 2014;9(2):116-164. doi:10.1162/EDFP_a_00127.

67. Schliecker E, White D, Jacobs E. The role of day care quality in the prediction of children’s vocabulary. Can J Behav Sci Can Sci Comport. 1991;23(1):12-24. doi:10.1037/h0078960.

68. Seppanen P, Godin K, Metzger J, Bronson M, Cichon D. Observational study of early childhood programs. Dover, NH:
The Relationship between the Early Childhood Environment Rating Scale and its Revised Form and Child Outcomes: a Systematic Review and Meta-Analysis

Development of Assistance Corp.; 1993:222. http://files.eric.ed.gov/fulltext/ED366469.pdf.

69. Sylva K, Siraj-Blatchford I, Taggart B, et al. Capturing quality in early childhood through environmental rating scales. *Early Child Res Q.* 2006;21(1):76-92. doi:10.1016/j.ecresq.2006.01.003.

70. Weiland C, Ulvestad K, Sachs J, Yoshikawa H. Associations between classroom quality and children’s vocabulary and executive function skills in an urban public prekindergarten program. *Early Child Res Q.* 2013;28(2):199-209. doi:10.1016/j.ecresq.2012.12.002.

71. West J, Malone L, Hulsey L, Aikens N, Tarullo L. ACF-OPRE report: Head Start children go to kindergarten. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research and Evaluation; 2010. http://www.acf.hhs.gov/sites/default/files/opre/hs_kindergarten.pdf.

72. Whitebook M, Howes C, Phillips D. Who cares? Child care teachers and the quality of care in America. Final report National Child Care Staffing Study. Berkely, CA: Child Care Employee Project; 1989:41-45.

73. Zellman G, Perlman M, Le V, Setodji C. Assessing the validity of the Qualistar Early Learning Quality Rating and Improvement System as a tool for improving child-care quality. Santa Monica, CA: RAND Education; 2008. http://www.rand.org/content/dam/rand/pubs/monographs/2008/RAND_MG650.pdf.

74. Zill N, Resnick G, Kim K, et al. Head Start FACES 2000: A whole-child perspective on program performance. Fourth progress report. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research and Evaluation; 2003. http://eric.ed.gov/?id=ED478791.

75. Zill N, Resnick G, Kim K, et al. Head Start performance measures center Family and Child Experiences Survey (FACES 2000): technical report. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research and Evaluation; 2006. http://www.acf.hhs.gov/sites/default/files/opre/tech2k_final2.pdf.