Relationships between Language Skills and Behavior Problems among Preschool Children: Classroom Emotional Support as a Moderator

Cathy H. Qi, Almut Zieher, and Lee van Horn\textsuperscript{1}, Rebecca Bulotsky-Shearer\textsuperscript{2}, Judith Carta\textsuperscript{3}

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Panel Discussion Presented at the 2020 CRIEI
Funding Support

• This research was supported by the Eunice Kennedy Shriver National Institute of Child Health & Human Development under the Exploratory/Development Grant [NICHD; 1R21HD069759-01A1] awarded to:
  
  • Cathy H. Qi, PI (University of New Mexico)
  • Judith Carta, Co-PI (University of Kansas)
Research has identified links between language skills and behavior problems in children.¹

Young children from low-income families are at increased risk for developing language difficulties and behavior problem.²

¹(Bornstein, Hahn, & Suwalsky, 2013; Chow & Wehby, 2018; Petersen et al., 2013; Qi, van Horn, Selig, & Kaiser, 2019).

²(Hart & Risley, 1995; (Burchinal, Peisner-Feinberg, Bryant, & Clifford, 2000; Qi, Kaiser, & Milan, 2006)
Unidirectional association: Early receptive language → later internalizing behavior

Bi-directional association: Between expressive language and internalizing behavior

**p < .01, *p < .05
Classroom Quality and Behavior Problems

• Features of classroom quality differentially predicted children’s academic and social behavioral outcomes.

  • Instructional support promotes academic skills such as language, literacy, and math skills.

  • High quality of emotional support provided by teachers promotes social skills and reduces behavior problems.

  • (National Institute of Child Health and Human Development Early Child Care Research Networks, [NICHD, ECCRN], 2002)
  • (Mashburn et al., 2008; Pianta, La Paro, Payne, Cox, & Bradley, 2002).
Moderating Role of Classroom Emotional Support

• Children with lower language skills tend to experience difficulties in social behavioral adjustment.

• Teacher warmth and emotional support may
  • promote children’s adjustment
  • buffer the effects of language delays on the development of behavior problems.

(Hamre & Pianta, 2005).
## Theoretical Framework

### Bioecological models\(^1\):  
Children's characteristics interact with their immediate environment to influence children’s behavior.

### Attachment theory \(^2\):
Sensitive, secure and consistent interactions with caregivers promote children’s social-emotional adjustment.

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1. (Bronfenbrenner & Morris, 2006; Sameroff, 2009)
2. (Ainsworth, 1989).
Gaps in the Literature

It is not clear to what extent the relationship between language skills and behavioral problems depends upon the level of teachers’ emotional support among preschool children from low-income families.
Research Question 1

What were the relationships between language skills and behavior problems?
To what extent did emotional support moderate the relationship between language skills and behavior problems?
Methods

• Participants
  • $N = 242$
  • 47.9% female
  • $M_{\text{age}} = 43.49$ months (range: 36 to 54)

• Settings
  • 41 classrooms in 14 Head Start centers in a midsized city in the southwestern United States

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic</td>
<td>74.7%</td>
</tr>
<tr>
<td>European American</td>
<td>5.4%</td>
</tr>
<tr>
<td>Native American</td>
<td>3.3%</td>
</tr>
<tr>
<td>African American</td>
<td>2.9%</td>
</tr>
<tr>
<td>Asian</td>
<td>1.7%</td>
</tr>
<tr>
<td>Other</td>
<td>12%</td>
</tr>
</tbody>
</table>
Procedures and Measures

- **Preschool Language Scale-5** (PLS-5 English or Spanish; Zimmerman, Steiner, & Pond, 2011, 2012)

- **Classroom Assessment Scoring System for Prekindergarten** (CLASS Pre-K; Pianta, La Paro, & Hamre, 2008).
  - Emotional Support, Classroom Organization, and Instructional Support

- **Child Behavior Checklist for Ages 1½-5** (CBCL 1½-5; Achenbach & Rescorla, 2000)

- **Caregiver-Teacher Report Form** (C-TRF 1½-5; Achenbach & Rescorla, 2000)
  - Teachers and parents each completed a child behavior checklist and a questionnaire about demographics.
Data Analysis Plan

• Multilevel analyses were conducted with language skills (Level 1) included as a predictor and Emotional Support (Level 2) as a moderator, controlling for child age and gender.

• To explore statistically significant cross-level interactions,
  • Simple slopes analyses

### Results: Descriptive Analyses

Table 1

Intercorrelations, Means, and Standard Deviations for Scores on the *PLS-5, CTRF* and *CBCL*, and the Means and Standard Deviations of *CLASS* Emotional Support

<table>
<thead>
<tr>
<th></th>
<th>C-TRF</th>
<th>CBCL</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLS-5 (n = 242)</td>
<td>-.30**</td>
<td>-.26**</td>
<td>92.05 (12.76)</td>
<td>50 - 129</td>
</tr>
<tr>
<td>C-TRF (n = 237)</td>
<td></td>
<td>.23**</td>
<td>47.98 (9.90)</td>
<td>29 - 86</td>
</tr>
<tr>
<td>CBCL (n = 202)</td>
<td></td>
<td></td>
<td>46.55 (10.97)</td>
<td>28 - 83</td>
</tr>
<tr>
<td>Emotional Support (n = 41)</td>
<td></td>
<td></td>
<td>5.56 (.46)</td>
<td>4.25 – 6.50</td>
</tr>
</tbody>
</table>

**Note.** The sample sizes indicated the number of participants or classrooms with valid data on each of the constructs or scores. PLS-5 = *Preschool Language Scale-5*; C-TRF = *Child Behavior Checklist Caregiver-Teacher Report Form*; CBCL = *Child Behavior Checklist-Parent Report*; CLASS PreK = *Classroom Assessment Scoring System for Prekindergarten*. **p < .01.**
Result 1A: Language and **Teacher-reported** Behavior Problems (CTRF)

<table>
<thead>
<tr>
<th>Table 2. Effects of language and emotional support on teacher-reported child behaviour problems (C-TRF).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Fixed effects</td>
</tr>
<tr>
<td>Intercept</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Language</td>
</tr>
<tr>
<td>Classroom Language mean</td>
</tr>
<tr>
<td>Emotional support</td>
</tr>
<tr>
<td>Language ( \times ) Emotional support</td>
</tr>
<tr>
<td>Random effects</td>
</tr>
<tr>
<td>Classroom (L2) mean variance</td>
</tr>
<tr>
<td>Language (L2) slope variance</td>
</tr>
<tr>
<td>Child (L1) variance</td>
</tr>
</tbody>
</table>

Note. \( N = 237 \) children in 41 classrooms. The child level variables (Age and Language) were grand mean centred. The classroom language mean was centred using the child level (grand) language mean. Emotional Support was centred by the teacher (classroom level) mean. * \( p < .05 \), ** \( p < .01 \).
Result 2A: Emotional support moderated the relationship between language skills and teacher-reported behavior problems (CTRF).

Notes. Low = 1 SD below the mean and High = 1 SD above the mean in CLASS Emotional Support. PLS-5 score was grand mean centered ($M = 92.05$, range: 50 - 129).
Table 3. Effects of language and emotional support on parent-reported child behaviour problems (CBCL).

<table>
<thead>
<tr>
<th>Fixed effects</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$ (SE)</td>
<td>95% CI</td>
</tr>
<tr>
<td>Intercept</td>
<td>46.90(1.05)**</td>
<td>[44.82, 48.98]</td>
</tr>
<tr>
<td>Age</td>
<td>0.19(0.20)</td>
<td>[−0.20, 0.59]</td>
</tr>
<tr>
<td>Female</td>
<td>−1.19(1.54)</td>
<td>[−4.24, 1.86]</td>
</tr>
<tr>
<td>Language</td>
<td>−0.23(0.08)**</td>
<td>[−0.39, −0.08]</td>
</tr>
<tr>
<td>Classroom Language mean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language × Emotional support</td>
<td>0.32(0.15)*</td>
<td>[0.02, 0.62]</td>
</tr>
</tbody>
</table>

Random effects

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom (L2) mean variance</td>
<td>1.43</td>
<td>1.92</td>
</tr>
<tr>
<td>Language (L2) slope variance</td>
<td>0.22</td>
<td>0.17</td>
</tr>
<tr>
<td>Child (L1) variance</td>
<td>10.10</td>
<td>10.07</td>
</tr>
</tbody>
</table>

[0.16, 12.85] [0.56, 6.52] [0.09, 0.56] [0.04, 0.76] [9.02, 11.31] [9.00, 11.26]

Note. $N = 202$ children in 40 classrooms. The child level variables (Age and Language) were grand mean centred. The classroom language mean was centred using the child level (grand) language mean. Emotional Support was centred by the teacher (classroom level) mean. * $p < .05$, ** $p < .01$. 
Result 2B: Emotional support moderated the relationship between language skills and parent-reported behavior problems (CBCL)

Notes. Low = 1 SD below the mean and High = 1 SD above the mean in CLASS Emotional Support. PLS-5 score was grand mean centered ($M = 92.05$, range 50 - 129).
Discussions

• Children with language delays are at increased risk for developing behavior problems.

• Emotional support provided by teachers is more critical to children with language delays than to their peers with typical language development.
Limitations and Future Research

• The study was conducted with a sample of children from low-income families, thus findings can only be generalized to similar populations.

• The quality of classroom emotional support was measured concurrently with child measures.
Implications for Practice

• Prevention and intervention programs directed at improving children’s language abilities would promote children’s social and behavioral development and better prepare them for school success.

• Professional development programs for teachers could emphasize the importance of providing emotional support to children who have low language abilities.
• Thank you!
Differences in Teacher Language Input as a Function of Child Problem Behavior

Conference on Research Innovations in Early Intervention
February 2020

Jason C. Chow\(^1\), Jennifer Cunningham\(^2\) (presenters), Erin S. Wallace\(^1\), & Reed Senter\(^1\)

\(^1\)Virginia Commonwealth University
\(^2\)University of Washington
(Brief) Introduction

• Adult communication behaviors are associated with children’s language growth:
  • Responsiveness
  • Modeling vocabulary and complex sentences
  • Question asking

• Children enrolled in classrooms where teachers are actively using specific language-supportive strategies are more likely to see child language gains
(Brief) Introduction

• We also know that children that exhibit challenging behavior are more likely to have lower language skills.

• Children with language delay are more likely to have or go on to develop both internalizing and externalizing behavior problems.

• Manifestations of challenging behavior likely change the quantity and quality of language interactions in preschool classrooms.
Purpose

• Given what we know about:
  • The importance of high-quality adult language in child language development
  • The challenges with language children who display problem behavior have
  • Individual children’s language experiences in the classroom vary

• Our Questions:
  • Do children who display challenging behavior experience different early educational environments than their peers?
  • Does this perhaps contribute to poor language outcomes for children with problem behavior?
Study Aims

• The aims of this pilot study were to:

1. Characterize the instructional quality of the teacher language input

2. Describe the quantity and quality of teacher language input that children at risk for EBD receive

3. *Pilot a measure* to explore differential teacher attention and instructional quality by setting
Sample

• Classroom videos
  • Videos collected during an IES Efficacy study (#R305A140487)
  • We used control group videos
  • Head Start and Virginia Preschool Initiative (VPI) classrooms

• The present sample
  • Representative pilot sample based on setting (large group, small group, centers)
  • Audio and video quality
Sample

- **Inclusion**
  - Minimum of 5 mins
  - Including target child and at least one other student
  - Classified as either:
    - Large group
    - Small group
    - Centers
  - No errors in audio or video recording
- **Pilot sample is 20 videos across settings**
Participants

• Teachers
  • 20 control group teachers
  • 90% female
  • 85% Bachelor’s degree or higher
  • Mean years of experience: 6.27 (range: 0-30)
Participants

• Children
  • 29 children
  • Identified using teacher nominations and the Early Screening Project
  • 48% male
  • ~60% African American
  • Mean age: 54 months ($SD = 5.16$)
  • Mean SSIS Social Skills Standard Score: $81.79$ ($SD = 12.73$)
  • Mean SSIS Problem Behavior Standard Score: $121.6$ ($SD = 14.5$)
  • Mean CTRF Externalizing Behavior T score: $66.16$ ($SD = 8.54$)
Pilot Measures

• **Differential attention** (average IOA = 93.6%)
  • Coded whether the teacher was directly addressing:
    1. Target child (TC)
    2. Child that was not TC
    3. TC in a group
    4. TC unengaged in a group
    5. Group with TC not included
    6. Adult or self
    7. No Code
Pilot Measures

• **Teacher language input** (average IOA = 88%)

  • *Language supportive* – contingently and semantically related comments, elicitations, expansions, recasts

  • *Not language supportive* – all other examples (e.g., singing, closed-ended questions, task directions)
Results

• Aim 1: Characterize the instructional quality of the teacher language input
  
• Mean total child-directed utterances = 155.1
• Sample length = 10-15 min
Results

• Aim 2: Describe the quantity and quality of teacher language input that children at risk for EBD receive

  • Teachers directed an average of 8 language-supportive utterances individually (range: 0-25)
  • Teachers directed an average of **10.3 language-supportive utterances** total (group plus individual)

  • Average total language-supportive utterances directed at non target children (group plus individual) was **22.5**
Results

• Aim 3: *Pilot a measure to explore differential teacher attention and instructional quality by setting*

• Centers
• Large Group
• Small Group
Limitations & Next Steps

• Limitations/considerations
  • Small sample (20 out of 336 videos)
  • Peers were any other children in the videos, not necessarily identified as “typical peers”

• Next steps
  • Code and describe different types of language-supportive teacher input
  • Define and code teacher and classroom and contextual variables
Discussant

• Dr. Ann Kaiser
Discussion Questions

- While children's classroom experiences may moderate the relationships among language, behavior, and social skills, there appear to be other factors that constitute "classroom experience."
  - What are these factors? Is there an underlying construct? Is one factor the potential active ingredient?

- Measurement continues to be a consideration in examining the relationships among language, behavior, and social skills.
  - To this list of measurement challenges, we have not added context. What recommendations can we make for future research regarding measurement of child and context characteristics?

- Because it is more likely that children will be screened for language development concerns than for behavioral concerns, what recommendations for support should be provided for children with early indicators of developmental language disorder?
  - How would these recommendations be implemented in the classroom context, as this seems to be a critical moderator of children's outcomes?
Promoting Resilience in Children at Risk for Problem Behavior

Conference on Research Innovations in Early Intervention (CRIEI) 2020
Presentation 1: *Teacher-child Interaction Quality Buffers Social and Academic Risks for Preschool Children Displaying Problem Behavior in Classroom Contexts*
- Rebecca Bulotsky Shearer (presenter), co-authors: Krystal Bichay Awadalla, Veronica Fernandez, Jhonelle Bailey, Jenna Futterer, and Cathy Huaqing Qi

Presentation 2: *Relationships between Language Skills and Behavior Problems among Preschool Children: Classroom Emotional Support as a Moderator*
- Cathy Huaqing Qi (presenter), co-authors: Almut Zieher, Lee van Horn, Rebecca Bulotsky-Shearer, & Judith Carta

Presentation 3: *Differences in Teacher Language Input and Instructional Quality as a Function of Child Problem Behavior*
- Jason Chow, Co-author: Jennifer Cunningham

Discussant: Ann Kaiser

Open audience discussion: 45 minutes
Discussion Questions

• While children's classroom experiences may moderate the relationships among language, behavior, and social skills, there appear to be other factors that constitute "classroom experience."
  • What are these factors? Is there an underlying construct? Is one factor the potential active ingredient?

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  • How would these recommendations be implemented in the classroom context, as this seems to be a critical moderator of children's outcomes?
Teacher-child Interaction Quality Buffers Social and Academic Risks for Preschool Children Displaying Problem Behavior in Classroom Contexts

Rebecca Bulotsky-Shearer¹ (presenter), co-authors: Krystal Bichay-Awadalla¹, Veronica Fernandez¹, Jhonelle Bailey¹, Jenna Futterer¹, and Cathy Huaqing Qi²

¹University of Miami, ²University of New Mexico
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Conference on Research Innovations in Early Intervention (CRIEI) 2020
Prevalence of Preschool Behavior Problems

10-14% of preschool children pose on-going social, emotional & behavior problems

16% to 30% in low-income communities

1 Blair & Raver (2012); 2 Graziano et al (2015)
Behavior Interferes with Classroom Learning and Social Relationships

Concurrent:
- Less close relationships with teachers\(^1,2\)
- More negative interactions with peers\(^1,2\)
- Lower engagement with learning tasks\(^1\)

Long-term:
- Academic underachievement \(^3\)
- Grade retention
- Placement in special education
- Peer rejection \(^3\)
- School dropout

\(^1\) Vitiello, Booren, Downer & Williford (2012)
\(^2\) Williford et al. (2017)
\(^3\) Bierman et al. (2013)
Challenging Behavior with Peers

- Impulsive
- Low frustration tolerance
- Angry
- Inattentive
- Defiant
- Aggressive
Challenging Behavior in Circle Time
From A Teacher’s Perspective

When I first started school… I took a look at this class and I said.. **the behavior**… it’s out of **control**. I was feeling frustrated… impatient… to the point that I would **need to say a prayer in the morning to get me through my day**.
Understanding Behavior in Context

Adaptive Behavior:
- Sits quietly
- Pays attention
- Listens
- Raises hand
- Keeps hands to self

Maladaptive Behavior:
- Gazes
- Restless
- Talks out of turn
- Kicks feet
- Disturbs neighbor

1. Developmental-Ecological Model (Bronfenbrenner, & Morris, 1998; Pianta, 2006)
Adjustment Scales for Preschool Intervention (ASPI): Developmental & Contextual Assessment

- Developed in partnership with Head Start
- Teacher measure- observation of children’s behavior as it occurs across multiple classroom situations
- 22 age-appropriate routine classroom situations
- Includes both adaptive and maladaptive behavior
- Face valid for early childhood educators
- Allows for study of children’s behavior across and within natural classroom situations
# ASPI SITUATIONAL DIMENSIONS

**Problem Behavior in Context**

## Problems in Structured Learning ($r = .84$)

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involvement in Class Activities</td>
<td>.60</td>
</tr>
<tr>
<td>Taking Part in Games with Others</td>
<td>.57</td>
</tr>
<tr>
<td>Maintaining Companions/Friends</td>
<td>.57</td>
</tr>
<tr>
<td>Paying Attention in Class</td>
<td>.57</td>
</tr>
<tr>
<td>Sitting During Teacher-Directed Activities</td>
<td>.55</td>
</tr>
<tr>
<td>Free Play/Individual Choice</td>
<td>.55</td>
</tr>
<tr>
<td>Working with Hands (Art)</td>
<td>.51</td>
</tr>
</tbody>
</table>

## Problems in Peer Interaction ($r = .81$)

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Getting along with Agemates</td>
<td>.71</td>
</tr>
<tr>
<td>Behaving in Classroom</td>
<td>.66</td>
</tr>
<tr>
<td>Respect for Others’ Belongings</td>
<td>.65</td>
</tr>
<tr>
<td>Reaction to Correction</td>
<td>.61</td>
</tr>
<tr>
<td>Telling the Truth</td>
<td>.60</td>
</tr>
<tr>
<td>Standing in Line</td>
<td>.49</td>
</tr>
</tbody>
</table>

## Problems in Teacher Interaction ($r = .75$)

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talking to Teacher</td>
<td>.68</td>
</tr>
<tr>
<td>General Manner with Teacher</td>
<td>.65</td>
</tr>
<tr>
<td>Answering Teacher Questions</td>
<td>.48</td>
</tr>
<tr>
<td>Greeting Teacher</td>
<td>.42</td>
</tr>
<tr>
<td>Seeking Teacher Help</td>
<td>.41</td>
</tr>
<tr>
<td>Helping Teacher with Jobs</td>
<td>.40</td>
</tr>
</tbody>
</table>

Prior Head Start Research: Situational Problem Behavior and School Readiness

- Structured learning & teacher $\Rightarrow$ lower literacy, language, mathematics skills, competence motivation
- Peer interactions $\Rightarrow$ social disruption (disruptive play, lower attitude toward learning)

(Fantuzzo et al., 2003; Bulotsky-Shearer, Fantuzzo, & McDermott, 2008; 2010; McDermott et al., 2014)
Protective Role of High Quality Preschool Classroom Interactions

- **Emotional Support & Classroom Organization**
  - Higher social skills, higher on-task and engaged behavior, lower behavior problems (Howes et al., 2011; Rimm-Kaufman et al., 2009)

- **Instructional Support**
  - Higher language, literacy, mathematics skills (Burchinal et al., 2008; Howes et al., 2008; Mashburn et al., 2008)

- **Differential benefits of Emotional Support to children at-risk**
  - Buffered academic & social risks in FG (Hamre & Pianta, 2005)
  - Academic & social risks associated with difficult behavioral style & temperament buffered by teacher sensitivity in pre-K and K (Curby et al., 2011; Rimm-Kaufman et al., 2002; Rudasill et al., 2010)
Research Question #1: What are associations between problems in learning, peer, and teacher contexts and academic and social outcomes?
Research Question #2: What is the moderating role of teacher-child interaction quality for children exhibiting problems in learning, peers, & teacher contexts?

High Quality Teacher-Child Interactions

Well-organized, predictable, emotionally supportive, consistently sensitive, & cognitively stimulating interactions with teachers
## Sample Demographics

<table>
<thead>
<tr>
<th>Head Start children</th>
<th>Direct Assessment Sub-sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>965 Head Start children</td>
<td>304 Head Start children</td>
</tr>
<tr>
<td>53 classrooms</td>
<td></td>
</tr>
<tr>
<td>50% girls</td>
<td>• Randomly selected, stratified by age, sex, ethnicity</td>
</tr>
<tr>
<td>$M$ age: 48.1 months ($SD=6.86$)</td>
<td>Miami-Dade HS Program</td>
</tr>
<tr>
<td>45% African-American</td>
<td>• Serves 7,000+ children/year</td>
</tr>
<tr>
<td>44% Latino</td>
<td>• Culturally &amp; linguistically diverse communities</td>
</tr>
<tr>
<td>6% Caucasian (non-Latino)</td>
<td>• Lead teachers</td>
</tr>
<tr>
<td>4% Asian or other</td>
<td>• 60% Latino, 80% BA</td>
</tr>
<tr>
<td>93% annual income $\leq$ $15,000$</td>
<td>• Assistant teachers</td>
</tr>
<tr>
<td></td>
<td>• 46% Latino, 11% BA</td>
</tr>
</tbody>
</table>
Procedures & Measures

- **Beginning of the Academic Year (Sept/Oct.)**
  - Teacher Ratings
    - Problem Behavior (ASPI)
      - Learning, Peer, & Teacher Contexts
    - Peer Play (PIPPS)
      - Interactive Play
      - Disruptive Play
      - Disconnected Play
    - Galileo
      - Mathematics
      - Lang & Literacy
  
- **Middle of the Academic Year (Dec/Jan.)**
  - Classroom Observation
    - Teacher-child Interaction Quality (CLASS)
      - Emotional Support
      - Classroom Organization
      - Instructional Support

- **End of the Academic Year (May)**
  - Direct Assessment (WJ/WM)
    - Letter-word recognition
    - Picture Vocabulary
    - Applied Problems
  - Teacher Ratings
    - Peer Play (PIPPS)
      - Interactive Play
      - Disruptive Play
      - Disconnected Play
Data Analytic Approach

• Multilevel modeling (HLM Version 7; Raudenbush, Bryk, & Congdon, 2011)
  • Child- & classroom-level direct associations
• Moderation
• Cross-level interactions

Problems in Learning, Peers, & Teacher Contexts

• Emotional Support
• Classroom Organization
• Instructional Support

Academic Skills

Peer Social Competence
## Final Multilevel Model: Child & Classroom Direct Associations with Spring Academic Skills (fixed effects)

<table>
<thead>
<tr>
<th></th>
<th>Applied Problems</th>
<th>Letter-Word Recognition</th>
<th>Picture Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed Effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>391.51*** 51 277.00</td>
<td>333.92*** 51 222.38</td>
<td>453.90*** 51 720.40</td>
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Cross level interaction: Emotional Support moderates associations between problems in teacher contexts and L/W recognition skills.
## Final Multilevel Model: Child & Classroom Direct Associations with Spring Peer Social Competence (fixed effects)

<table>
<thead>
<tr>
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<th>Interactive Play</th>
<th>Disruptive Play</th>
<th>Disconnected Play</th>
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</table>
Classroom Organization Moderates Association between Problem Behavior in Peer Context and Disruptive Play

Low classroom organization (25\textsuperscript{th} percentile)

High classroom organization (75\textsuperscript{th} percentile)
Instructional Support Moderates Association between Problem Behavior in Peer Context and Disconnected Play

Problems in Peer Context (ASPI)

- Low instructional support (25th percentile)
  - Spring Disconnected Peer Play (PIPPS)

- High instructional support (75th percentile)
Summary: Understanding Child Engagement in Classroom Context

- Unique & differential associations with school readiness
  - Problem behavior in learning contexts & academic risks
  - Problem behavior in teacher & peer contexts & social risks
- Direct Classroom-level supports
- Indirect influence of classroom quality for children displaying behavioral risks in learning, peer, & tasks?
  - No... and yes...
    - High quality instructional practices benefited all children’s academic skills, regardless of behavioral risk
    - For social skills, instructional & organizational support benefited children exhibiting problems in the peer context early in the year
Implications for Policy, Practice, & Future Research

- Importance of Teacher-Child Interaction Quality
  - High quality interactions can buffer early risks, differentially for children exhibiting difficulties in learning & social contexts
- Inform Early Intervention Efforts
  - Identify children with problems engaging within routine classroom contexts
  - Programmatically early childhood programs can target classrooms & children’s in greatest need
  - Professional development & training to teachers to address children’s needs in context

Stimulate *educational dialogue* so children engage in learning