

Examining the fit between teachers' and children's classroom interactions observed at the classroom and individual child level



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Background

- Preschoolers who experience higher quality interactions show greater academic and social-emotional development
 - Particularly true for children at risk due to low SES (Mashburn et al., 2008)
- Observational studies of preschools at the classroom level show wide variability in children's interaction (Pianta et al., 2005)
- Children are active participants in their environments—individual children within the same classroom have disparate experiences
 - For example, teachers exhibit different patterns of interactions with certain students, such as those with and without behavioral deficits (Howes et al., 2000)

Research Aims

- To explore how the fit between the quality of teacher and child interactions assessed at the classroom and individual child levels impacts children's language and self-regulation development during preschool

Child- & Classroom-level Interactions

The *Classroom Assessment Scoring System* (CLASS) measures teacher-child interaction quality at the classroom level using 3 domains and 10 dimensions (Pianta et al., 2008; see Figure 1)

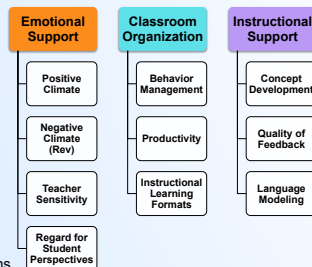


Figure 1: CLASS Domains & Dimensions

The *Individualized Classroom Assessment Scoring System* (inCLASS) measures an individual child's interactions in the classroom using 4 domains and 10 dimensions (Downer et al., 2010; see Figure 2)

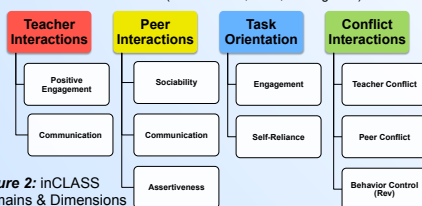


Figure 2: inCLASS Domains & Dimensions

Methods

- 610 preschool children randomly sampled from 314 early childhood classrooms (across 10 sites). The sample of children was diverse, tended to be from lower SES families, and equal across gender.
 - 47% Black/African-American, 30% Latino/Hispanic, 12% White, 9% other, 2% no response
 - Mother's years of education ($M = 12.82$, $SD = 2.10$)

Procedure: Data were collected during the 08-09 & 09-10 academic years. Child covariates were collected in the fall. CLASS and inCLASS observations were conducted in the winter. Outcome data were collected in the spring.

Outcome Measures:

Language & Literacy	Self-Regulation
Receptive Vocabulary – PPVT-III	Inhibitory Control – Pencil Tap
Expressive Vocabulary – Picture Vocabulary, WJ-III	Working Memory – Backward Digit Span
Phonological Awareness – TOPEL	Learning Behaviors – Preschool Learning Behaviors Scale
Emergent Language and Literacy – Academic Rating Scale	

Data Analysis

- Multilevel latent class analysis using Mplus Version 6.1 (Muthén & Muthén, 1998-2010)
 - Identify classes of children based on the 3 CLASS and 4 inCLASS domains
 - Take into account the nested structure of the data
- Covariates tested: child-level (age, sex, ethnicity, mother's education) and class-level (site, intervention)
 - Class-level covariates: intervention and site removed from the model
- Different class solutions were compared by examining relative fit indices (e.g., AIC, BIC, and adjusted BIC) and classification quality (i.e., entropy)
- Class posterior probabilities (probability each child belonged to each class) used as predictors of children's gains in language and self-regulation skills, controlling for child covariates

Results

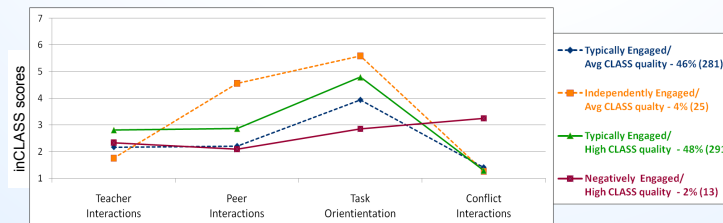
- Four-class solution (two within classes and two between classes) indicated best fit to the data
 - Entropy = .877
- Four child profiles: two in classrooms with "high" classroom quality ratings and the other two in classrooms with "average" classroom quality ratings

High CLASS quality ratings:

- Emotional support – 5.707
- Classroom organization – 5.506
- Instructional support – 2.821

Average CLASS quality ratings:

- Emotional support – 4.492
- Classroom organization – 4.540
- Instructional support – 1.903



Results

- Some differences on language and literacy and self-regulation skills at the beginning of the year
- Children in the **Typically Engaged/High Quality** profile had significantly higher receptive and expressive vocabulary and phonological awareness in the Fall, compared to children in the **Typically Engaged/Average Quality** profile
- Children in the **Negatively Engaged/High Quality** profile had significantly lower learning behaviors in the Fall, compared to children in the other profiles
- Probability of belonging to a profile was related to gains in language and self-regulation skills, controlling for fall scores and child covariates
- Probability of being in the **Typically Engaged/High Quality** profile was associated with significant gains in receptive language ($B = .08$, $SE = .03$), expressive language ($B = .07$, $SE = .03$), phonological awareness ($B = .08$, $SE = .03$), and working memory ($B = .11$, $SE = .04$)
- Probability of being in the **Typically Engaged/Average Quality** profile was related to significantly fewer gains in receptive language ($B = -.07$, $SE = .03$), expressive language ($B = -.08$, $SE = .03$), phonological awareness ($B = -.11$, $SE = .03$), and working memory ($B = -.12$, $SE = .04$)
- Probability of being in the **Independently Engaged/Average Quality** profile was related to significant gains in phonological awareness ($B = .07$, $SE = .03$)
- Probability of being in the **Negatively Engaged/High Quality** profile was unrelated to any of the outcomes

Discussion

Results suggest:

- Comparison of **typically engaged children for an average quality classroom** with **typically engaged children for a high quality classroom** suggests:
 - The quality of interactions at the classroom level may serve to increase children's individual engagement in the classroom as well as children's gains in school readiness skills during preschool
- Children who are **independently engaged within an average quality classroom** made significant gains in phonological awareness and so may show some resilience to exposure to a lower quality classroom environment

Limitations and Future Directions:

- The small group sizes for the **Independently Engaged/Average Quality** and **Negatively Engaged/High Quality** profiles limited our power to detect effects for these groups
- Future analyses may look at prediction of profiles of children based solely on the inCLASS moderated by continuous CLASS scores
- This examination is observational in nature and so causal claims cannot be made

Acknowledgements

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