Early Learning Network Year 1 Results:

Preschool Educational Practices and Child Outcomes

Society for Research on Educational Effectiveness

February 28, 2018
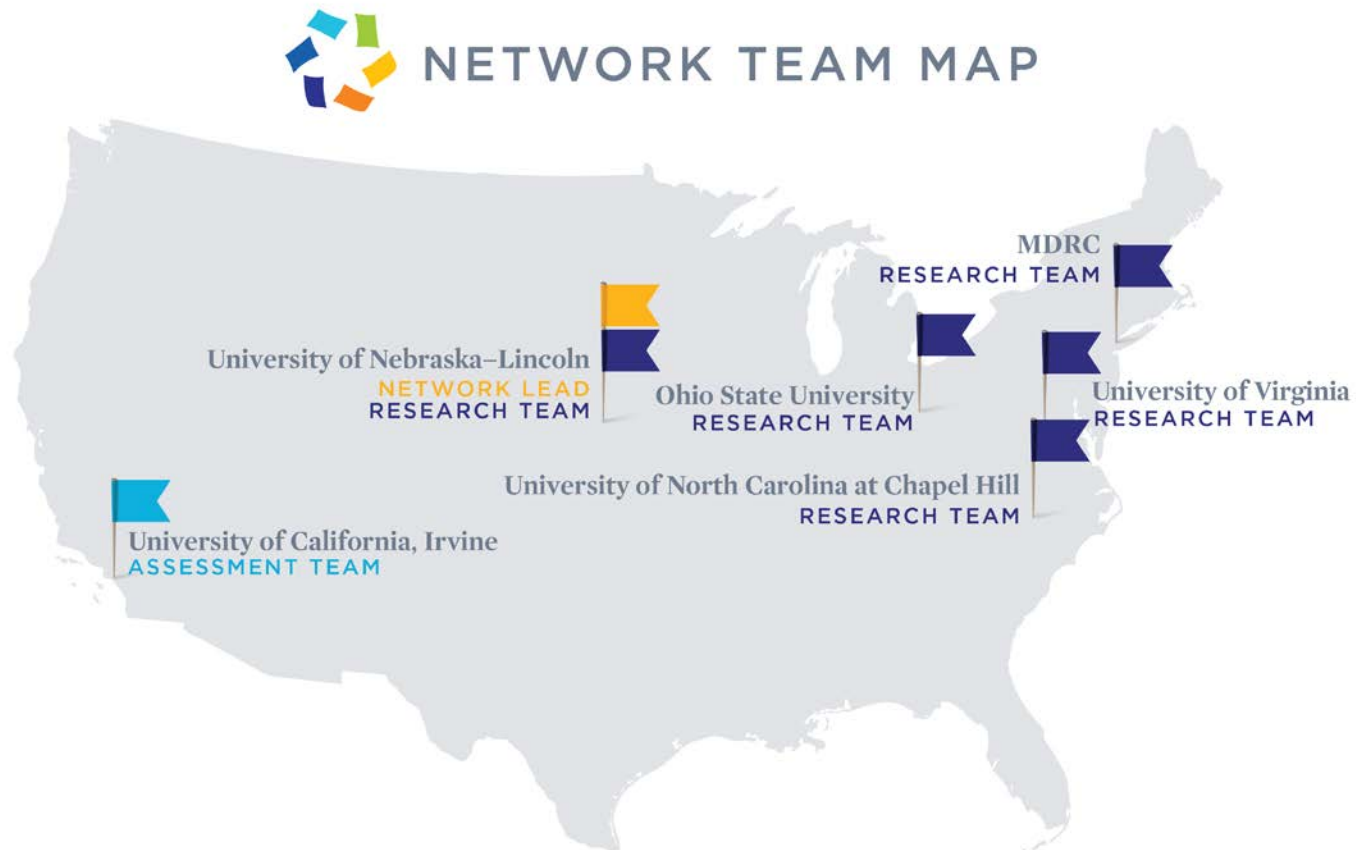
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The Early Learning Network aims to advance the understanding of *policies and practices* that narrow the achievement gap and *maintain early learning success* as children transition *from preschool to elementary school* and beyond.

- ◆ Five Research Teams
  - ◆ One Assessment Team
    - ◆ Network Lead

NETWORK TEAM MAP

MDRC
RESEARCH TEAM

University of Nebraska–Lincoln
NETWORK LEAD
RESEARCH TEAM

Ohio State University
RESEARCH TEAM

University of Virginia
RESEARCH TEAM

University of North Carolina at Chapel Hill
RESEARCH TEAM

University of California, Irvine
ASSESSMENT TEAM

Complementary Research Studies

- ## Descriptive study:

  Identify systems-level policies and practices that support early learning

- ## Classroom observation study:

  Identify teaching practices and other classroom-level malleable factors associated with children's school readiness and achievement in preschool and early elementary school

- ## Longitudinal study:

  Identify malleable factors associated with early learning and school achievement over time from preschool through the early elementary school grades

Symposium Agenda

- **Paper 1:** Pre-Kindergarten Classroom Characteristics and Pre-Kindergarten Gains of Children Living in Rural Areas
  University of North Carolina – Chapel Hill (Irina Mokrova, Margaret Burchinal, Mary Bratsch-Hines, & Ellen Peisner-Feinberg)

- **Paper 2:** How Does Quality of Curricular Implementation Support Diverse Children's Skills in Pre-Kindergarten? Evidence from Boston
  MDRC/University of Michigan (Meghan McCormick, Michelle Maier, Christina Weiland, JoAnn Hsueh, Jason Sachs, & Catherine Snow)

- **Paper 3:** Understanding the Effects of Classroom Processes on Child Outcomes in Pre-Kindergarten
  University of Virginia (Robert Pianta, Jessica Whittaker, Virginia Vitiello, Erik Ruzek, Arya Ansari, & Tara Hofkens)

- **Paper 4:** Classroom Quality and Classroom Network Structure Predicting Student Outcomes
  Ohio State University (Jessica Logan Kelly Purtell, Tzu-Jung Lin, & Laura Justice)

- **Discussant**
  Carol Connor (University of California-Irvine)

Pre-K classroom characteristics and Pre-K gains of children living in rural areas

Irina Mokrova
Peg Burchinal
Mary Bratsch-Hines
Ellen Peisner-Feinberg
University of North Carolina at Chapel Hill

Educational practices and child outcomes in Pre-K

- ECE can reduce achievement gap
- State and federal pre-kindergarten (Pre-K) programs
- But – questions remain:
  - which dimensions of ECE experiences relate to which Pre-K skills

ECE quality dimensions

- Process quality
  - Widely examined; modest associations
- Verbal interactions with adults
  - Associations with language and literacy skills
  - Basis for teacher scaffolding
- Instruction time
- Setting
  - Small groups help young children learn
- Curriculum
  - Wide-scale belief in whole child curricula
  - Evidence for domain-specific curricula

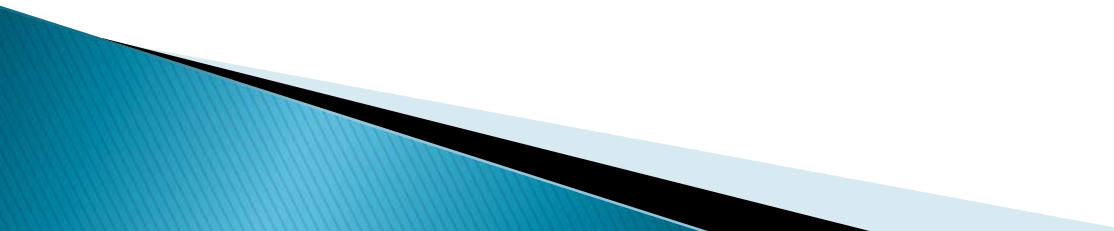# Types of child early academic and cognitive skills

- Academic skills
  - Increasing attention in Pre-K classrooms
    - Phonemic skills and letter-word recognition
    - Early numeracy
- Cognitive skills
  - Higher-order cognitive skills
    - Language
    - Executive functioning

Specific Classroom Practices Predict Specific Outcomes?

- ▶ Domain specificity
  - Instruction time in that domain
  - Use of domain-specific curriculum
- ▶ Academic skills related to
  - Classroom process quality
  - Small group settings
- ▶ Cognitive skills related to
  - Classroom process quality
  - Complex conversations with teacher
  - Small group settings

Design and participants

- Cohort study of rural NC
  - 6 NC rural counties
  - 63 randomly selected NC Pre-K classrooms
- Pre-K children
  - 351 randomly selected children
    - 34% Spanish-English dual language learners
- Classroom quality, observed 2 days
  - CLASS
  - Boston Pre-K "fidelity" checklist
  - Language Interactions Snapshot (LISn)
  - Teacher report of curriculum

Classroom Quality

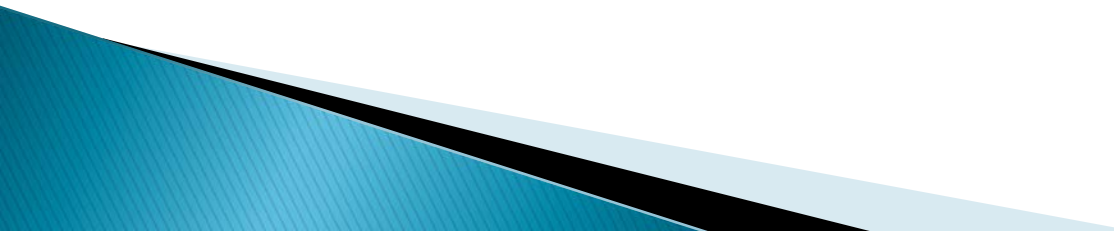Factor analysis of classroom observation measures

1. Process Quality
   - CLASS Domains – ES, CO, IS
   - Boston pre-K "fidelity" checklist
2. Complex conversations with adults - LISn
   - any adult elicited, elaborated, and had sustained conversation
3. Instruction – LISn
   - Literacy activities (print, writing, sound)
   - Math activities

Classroom Quality

4. Curriculum: teacher report
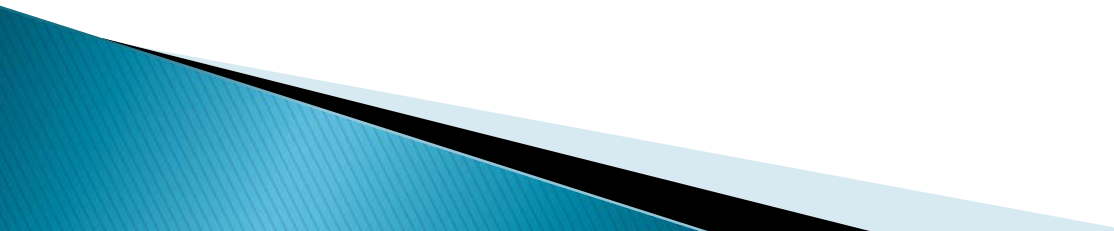 - Creative Curriculum used in 78% classrooms
5. Setting: LISn
  - large group
  - small group

Correlations among Quality Dimensions

	Process Quality	Complex conver-sation	Literacy Activities	Sounds Activities	Math Activities	Small Group	Whole Group	Creative Curric.
Process quality		.27*	.16	−.04	.13	−.10	.25*	.20
Complex conver-sation			.34**	.24+	.47***	.35**	.07	−.18
Literacy Activities				.63***	.05	.01	.21+	−.24+
Sounds Activities					.12	.00	.05	−.37**
Math Activities						.50***	.06	−.34**
Small group							−.27*	−.24+
Whole group								−.13

Child Outcomes

- Children assessed fall and spring – gain scores
- Academic skills
  - Literacy
    - WJ Letter-word ID
    - DIBELS First sound fluency
    - DIBELS Phonemic fluency
  - Numeracy
    - WJ Applied problems
- Cognitive skills
  - Language
    - Expressive One Word (English and Spanish)
    - WJ Picture vocabulary
  - Executive function
    - Inhibitory control (Flanker)
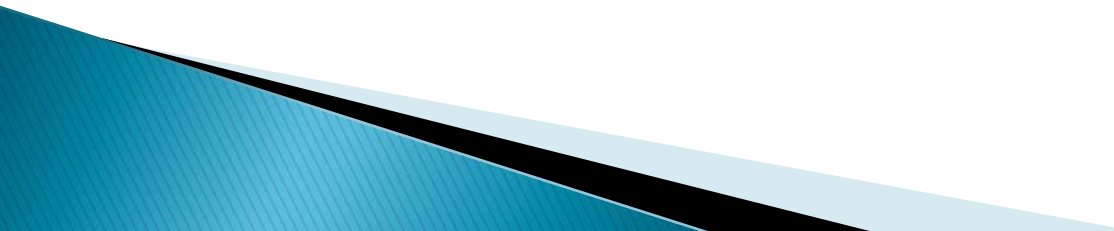   - Cognitive Flexibility (Card sort)

HLMs: Backward Elimination Process

- Children nested in classrooms
- First model: All quality dimensions and controls
- Subsequent models: Taking out quality dimensions one at a time
- Reduced model: One or more dimensions became significant

HLM Results, Reduced models

	Letter-Word ID	Applied Problems	1st Sound Fluency	Phoneme Fluency	Picture Vocab	EOW English	EOW Span.	Inhibitory Control	Cognitive Flexibility
Process Quality	.23***								
Complex Conversation							.18*		
Literacy Activities						.26**			
Math Activities									
Sound Activities			.16**	.14*					
Small Group Setting									.14*
Whole Group		-.13*				-.17*			
Creative curriculum	-.21***							-.14*	
n	351	349	350	349	334	240	103	273	227
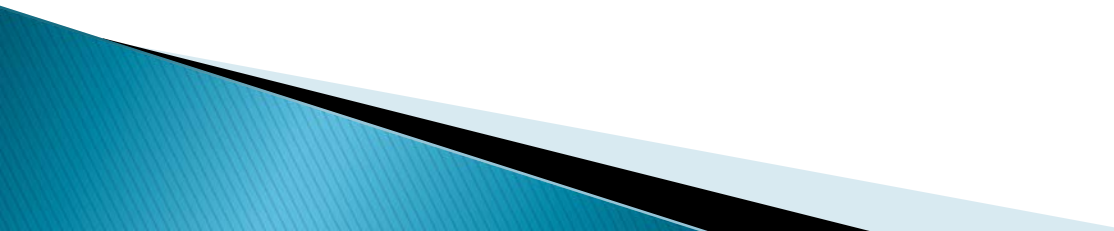
Conclusions

- All but one outcome related to at least one quality dimension
  - No clear pattern
    - Most outcomes related to a single dimension
    - No single quality dimension dominated
- Predictors of academic skills are not clearly different from cognitive skills

Take-away message

- Focus on other dimensions in addition to process quality may be warranted
  - Time in content-related instruction
  - Type of setting
  - Language as a tool for scaffolding
- Whole child curriculum negatively related to some academic or cognitive gains
  - Scaffolding needs to be a process behind any curriculum

Our appreciation

- To all participating families, teachers, and school administrators
- To all research assistants and project staff
- To the Institute of Education Sciences

How Does Quality of Curricular Implementation Support Diverse Children's Skills in Prekindergarten?: Evidence from Boston

Meghan McCormick
Michelle Maier
Christina Weiland
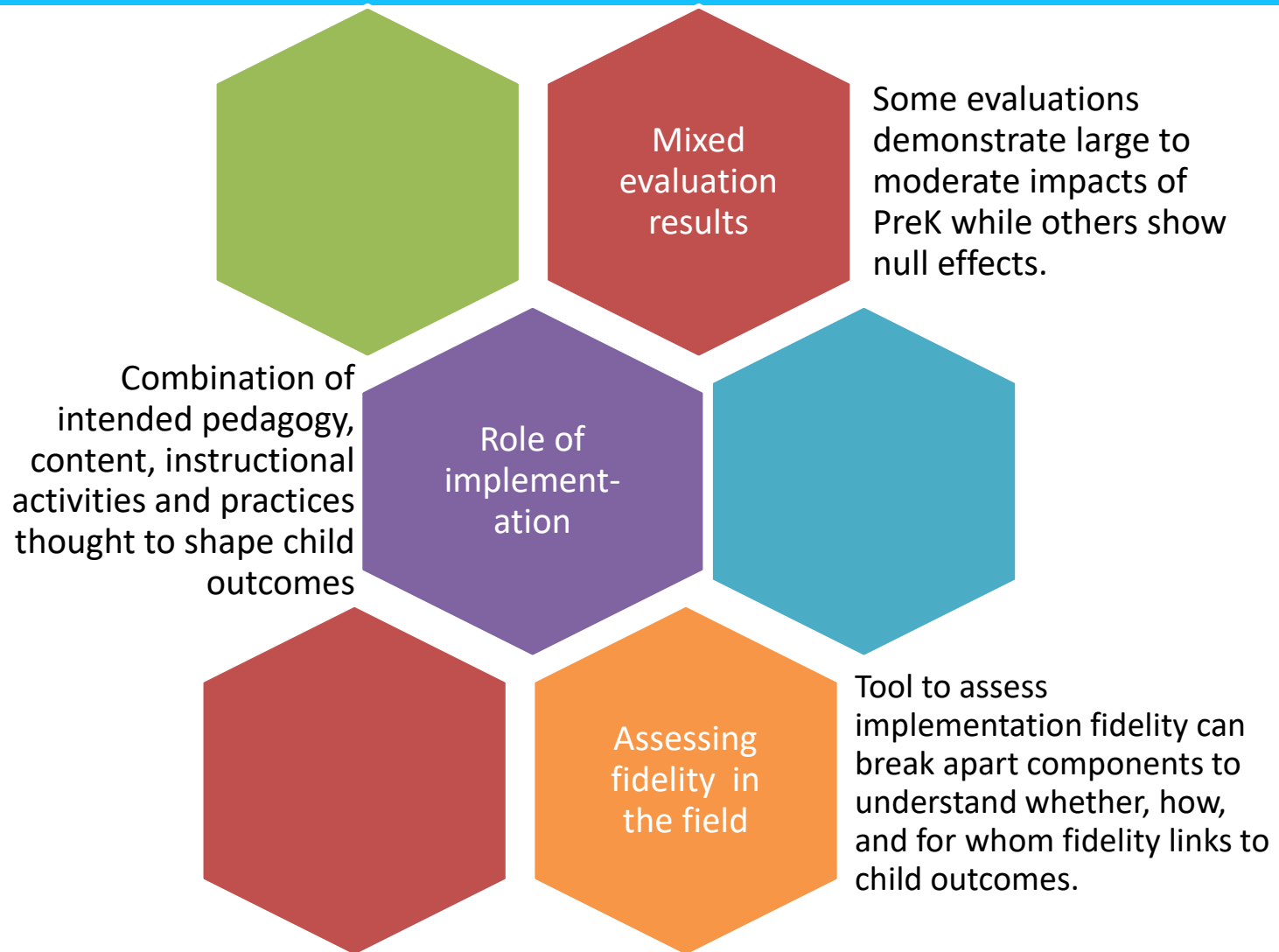JoAnn Hsueh
Jason Sachs
Catherine Snow

February 28th, 2018
2018 Society for Research on Educational Effectiveness
Washington, DC

Current issues in the field of early education

Mixed evaluation results

Some evaluations demonstrate large to moderate impacts of PreK while others show null effects.

Combination of intended pedagogy, content, instructional activities and practices thought to shape child outcomes

Role of implement-ation

Assessing fidelity in the field

Tool to assess implementation fidelity can break apart components to understand whether, how, and for whom fidelity links to child outcomes.

The BPS Model as a Case Study for Examining Fidelity of Implementation

Curriculum in place	Example components adapted from OWL	Example Building Blocks components	Example district-developed components
Focus on K1 (district-adapted version of Opening the World of Learning & Building Blocks). Thematic curriculum that cuts across ELA, math, science, social study, and arts.	Centers & Introduction to Centers	Building Blocks centers	Thinking & feedback
	Read Aloud	Building Blocks whole group activities	Storytelling
	Small Groups to support language/literacy	Building Blocks small group activities	Storyacting

Research questions

1. What does fidelity look like across prekindergarten public school classrooms in BPS?

    – Does fidelity vary systematically by classroom composition?

2. What measures of fidelity are most closely associated with CLASS?

3. Is fidelity to the BPS PreK model associated with children's language and math scores in the Spring of PreK?

    – For which groups of students does fidelity appear most predictive of Spring outcomes (e.g., dual language learners, racial/ethnic minority students)?

Schools participating in study
(*N* = 20 public schools with prekindergarten program)

School-level characteristic	% for study schools	% for school district
School structure: PreK – 5th grade	30%	50%
School structure: PreK – 1st grade	5%	8%
School structure: PreK – 8th grade	55%	32%
% Students economically disadvantaged	48.38%	51.05%
% Students Black	25.59%	31.60%
% Students White	15.70%	16.17%
% Students Hispanic	46.43%	42.37%
% Students Asian	8.50%	5.99%
% Students whose first language is not English	49.15%	41.90%
% Met or exceeded expectations on 2015 – 2016 ELA exam	39.74%	35.95%
% Met or exceeded expectations on 2015 – 2016 math exam	44.47%	41.48%

Classroom & teacher participants
(*N* = 41 public school classrooms across 20 schools)

Teacher characteristic	%age/Mean
Teacher age	43.95 (SD = 9.37)
Years teaching	14.79 (SD = 9.25)
Years teaching prekindergarten	8.6 (SD = 7.37)
Years teaching at current school	7.79 (SD = 8.01)
Teacher has master's degree	90%
Teacher female	100%
Teacher Black	22%
Teacher White	49%
Teacher Hispanic	13%
Teacher Asian or other race	16%
Classrooms per school	1.35 (SD = .42)

Student sample
(N = 299 BPS prekindergarten students)
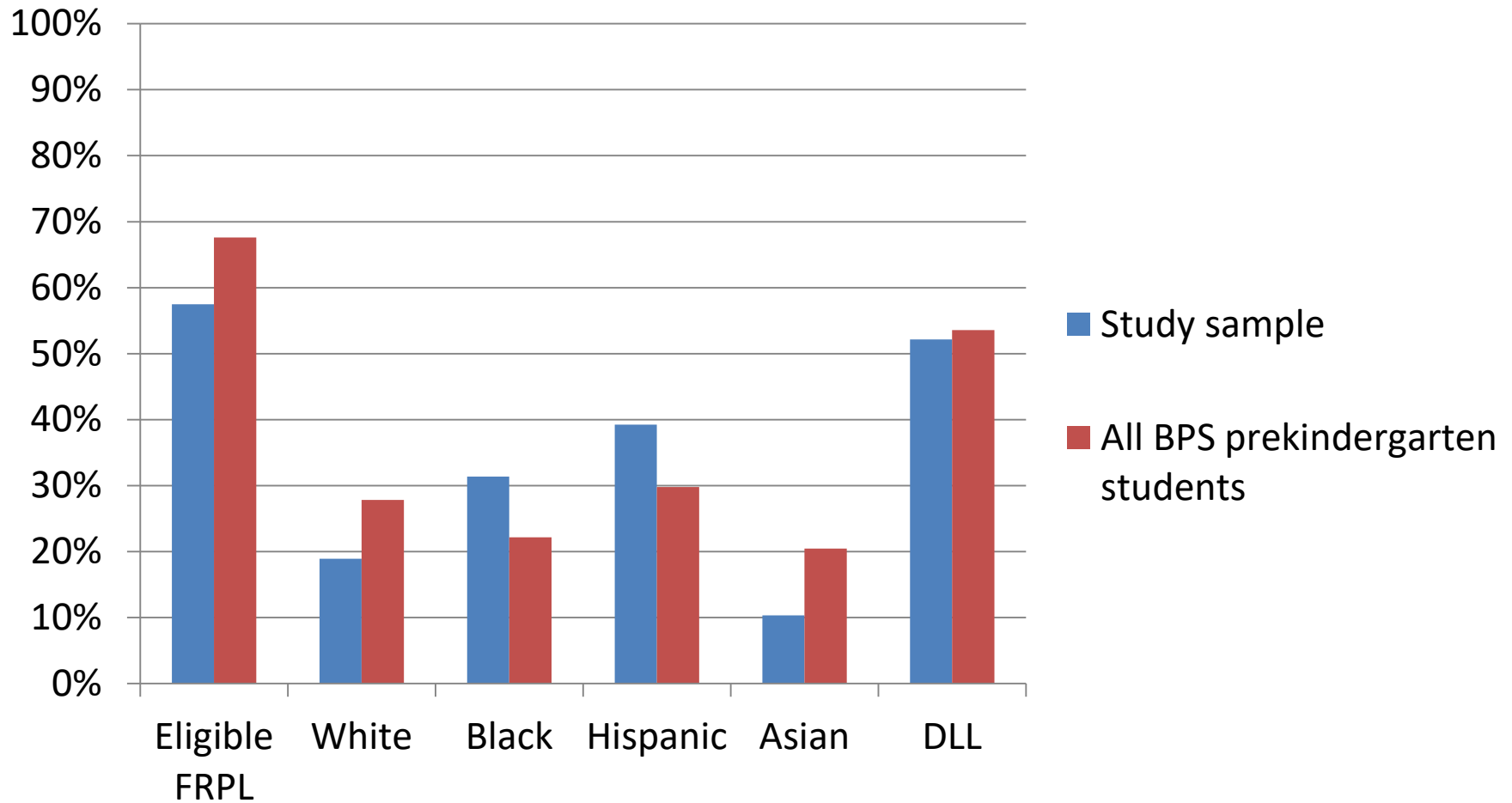
Research & BPS teams Co-construct Tool to Measure Fidelity of Implementation

Research team conducts in-depth curriculum review and meets with BPS staff

Research team develops fidelity tool and iteratively edits it following meetings with BPS staff

Further edits and adaptation following field-based piloting with BPS staff

Training and reliability procedures take into account BPS staff feedback

BPS instructional coaches collect data in classrooms

Fidelity Data in Public School Classrooms

N = 41 classrooms in 20 schools

41 total public prekindergarten classrooms participated (97% of teachers in participating schools)

Each classroom observed on two separate days for 2 – 3 hours/obs. Observation data averaged across days.

Classrooms observed 2x

Reliability

20% of observational visits were coded by two BPS coaches; Reliability analysis suggests high agreement.

Procedure (thus far) for analyzing fidelity data

1. Examine dosage, adherence, and quality of implementation

2. Examine fidelity scores within curriculum components

3. Consider variation within and across components

4. In order to make fidelity relevant to district - create measures that **cut across components** and **operationalize core practices** that are central to curriculum

Cross-component fidelity measures

Vocabulary (α = .91)

Extending/Building (α = .91)

Summary/Reflection/Making Connections (α = .79)

Scaffolding/Differentiation (α = .82)

What does fidelity look like overall in BPS public school prekindergarten classrooms?
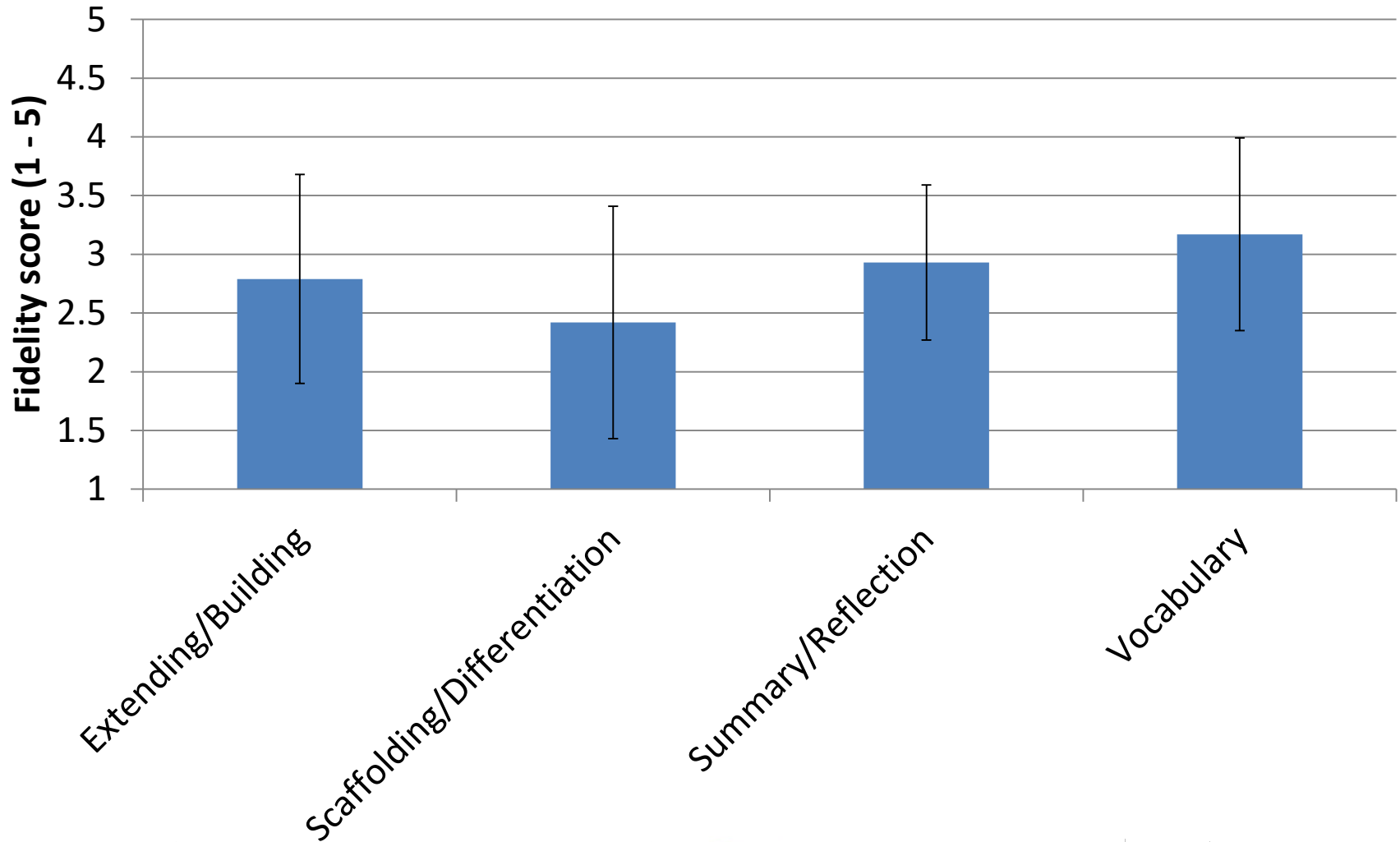
How does this compare to CLASS scores?
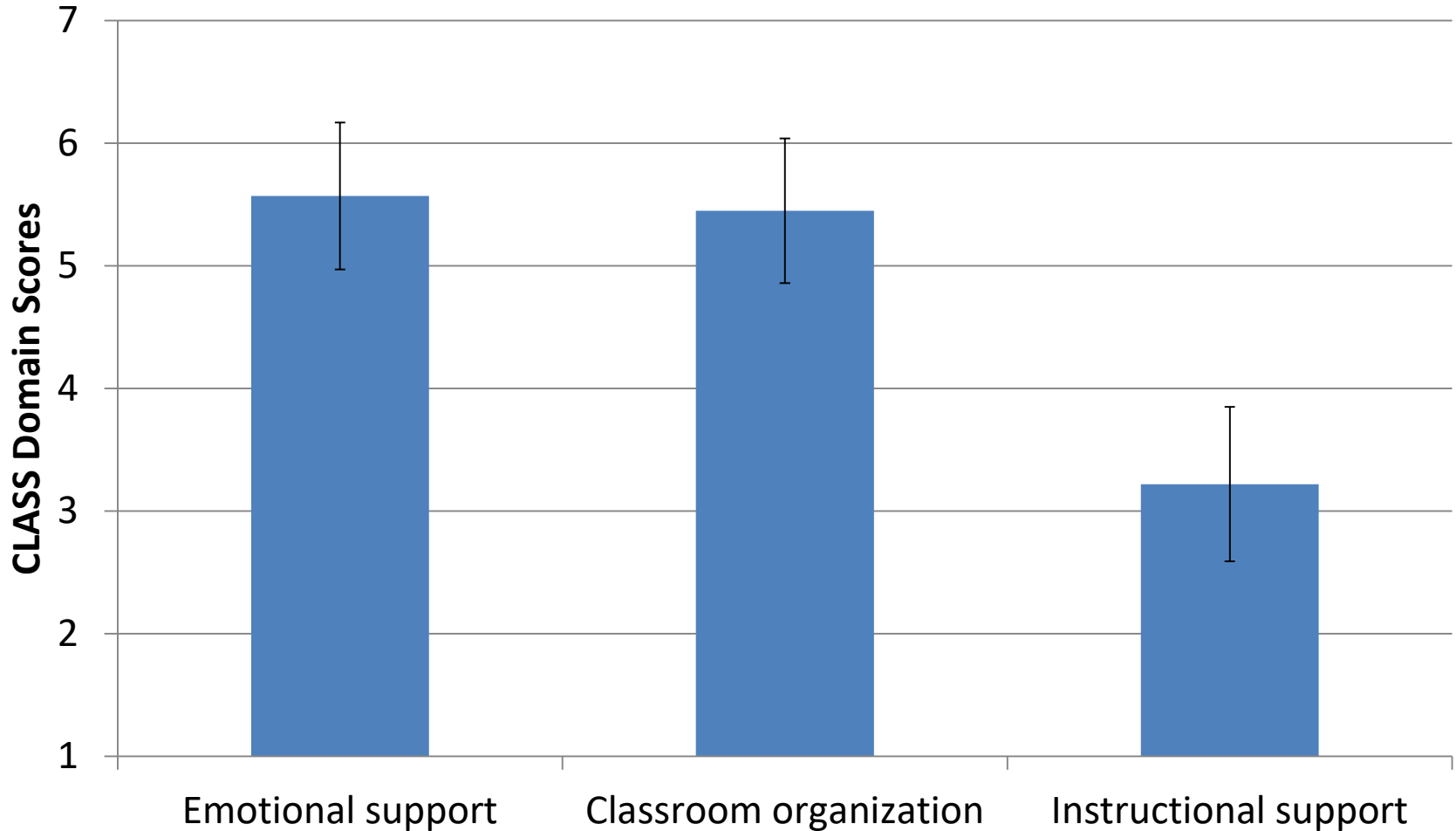
- There are some differences in implementation between classrooms. **<u>On average</u>**:

  – Classrooms with higher percentages of white students have higher quality of implementation

  – Classrooms with higher percentages of black and Hispanic students have lower quality of implementation

  – Classrooms with higher percentages of DLLs have similar quality of implementation as classrooms with fewer DLLs, but more variation across classrooms.

Example of variation in fidelity by classroom composition: Eligibility for free/reduced price lunch
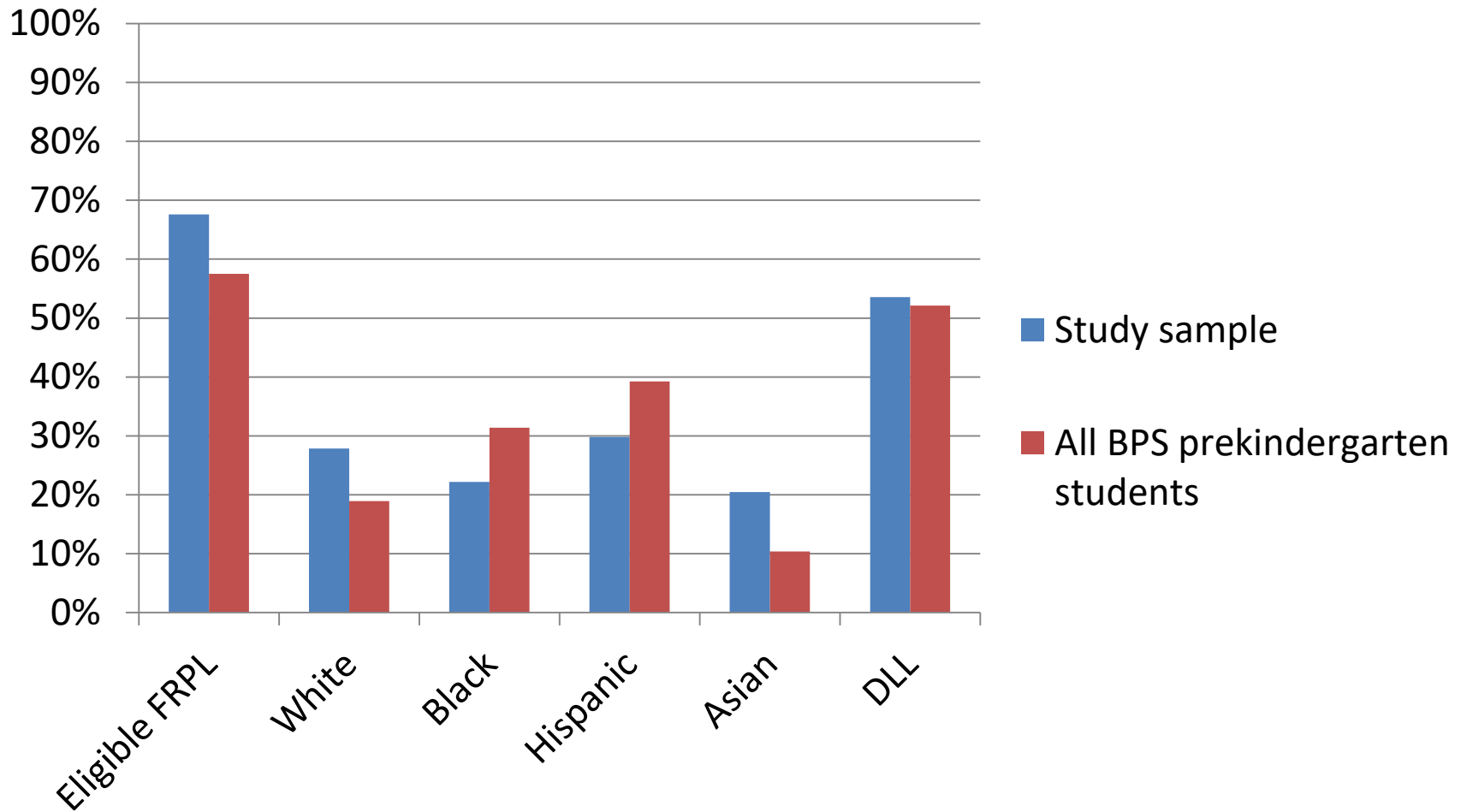
How do fidelity measures relate with CLASS?

	Instructional support	Emotional support	Classroom org.
Instructional support	1.0		
Emotional support	.67	1.0	
Classroom org.	.69	.85	1.0
Extending/Building	.18	.16	.10
Summary/Reflection	.22	.10	.14
Vocabulary	.01	.01	-.07
Scaffolding/Differentiation	.35	.21	.22

Is fidelity associated with children's language/math skills in the Spring of PreK?: Some preliminary findings

- Two-level models with classroom-level random intercepts.

- Outcomes:
  - PPVT assessed in the Spring of 2017
  - Woodock Johnson Applied Problems (5% of sample tested in Spanish) from Spring 2017

- Covariates: Fall 2016 level of the outcome, child race (white reference group), FRPL eligibility, DLL status, female, child age, CLASS domains

- Interactions used to test how associations vary by race/ethnicity, FRPL, and DLL status

Student math skills across the prekindergarten year
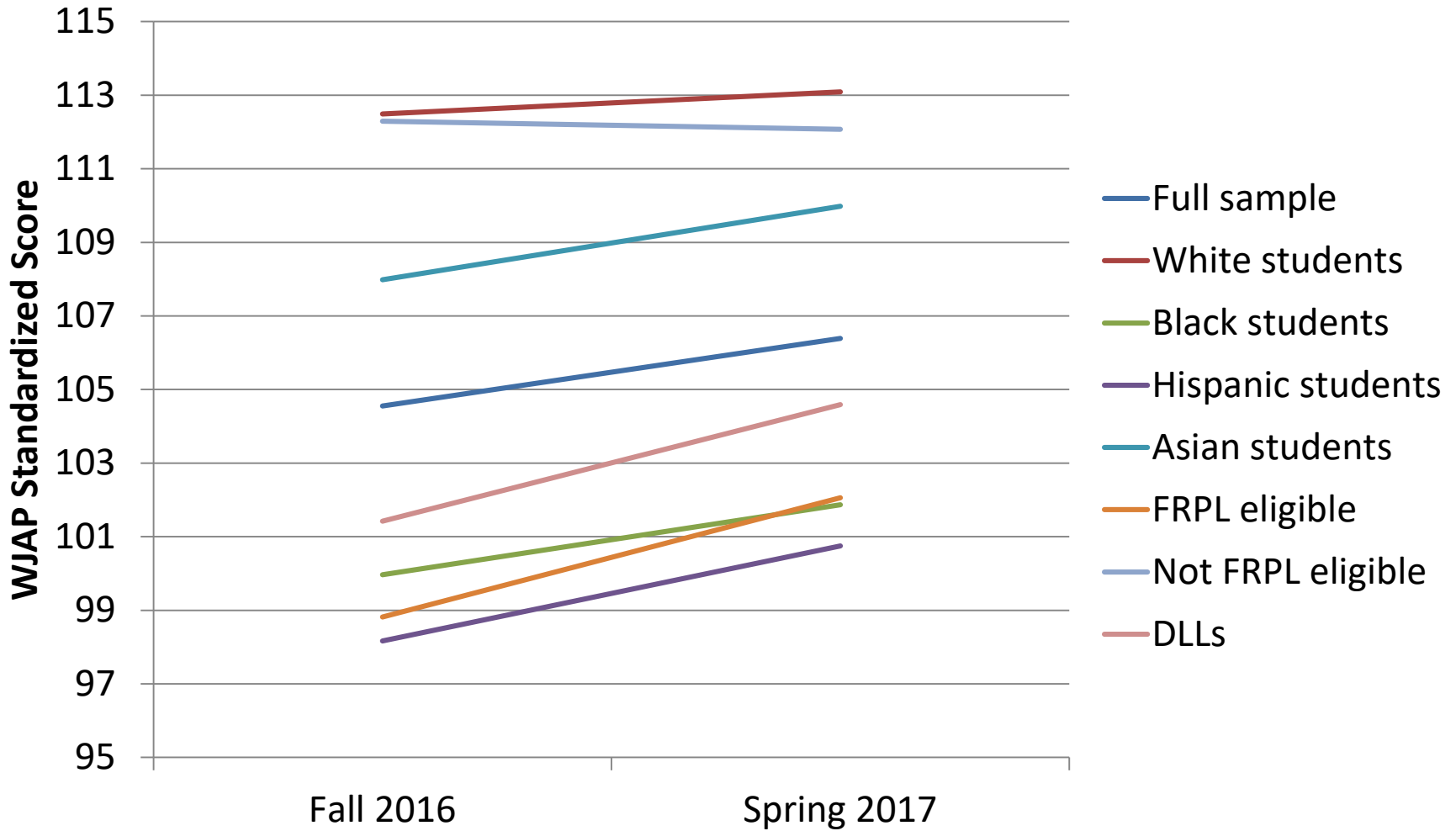
Links between fidelity of implementation and improvements in language and math across prekindergarten year

- Full sample of students - no significant associations between cross-component fidelity measures and gains in language or math across prekindergarten year

- No significant associations detected in this preliminary work using cross-component fidelity constructs to predict PPVT outcomes

- Statistically significant interactions between fidelity of implementation, Hispanic and DLL status, and math outcome

Example of Predicted Math Skills for Hispanic Students at End of Prekindergarten Year
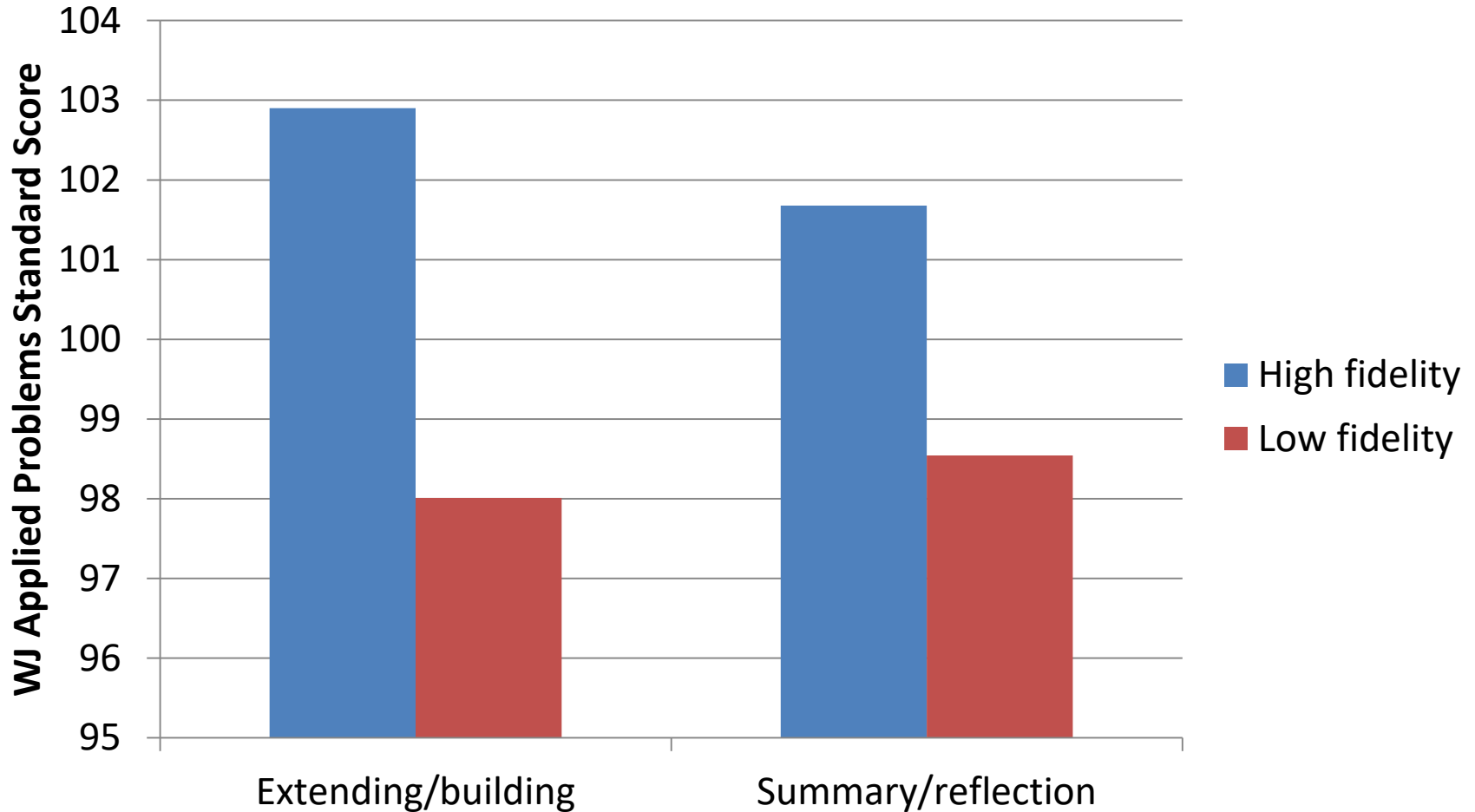
Example of Predicted Math Skills for White Students at End of Prekindergarten Year
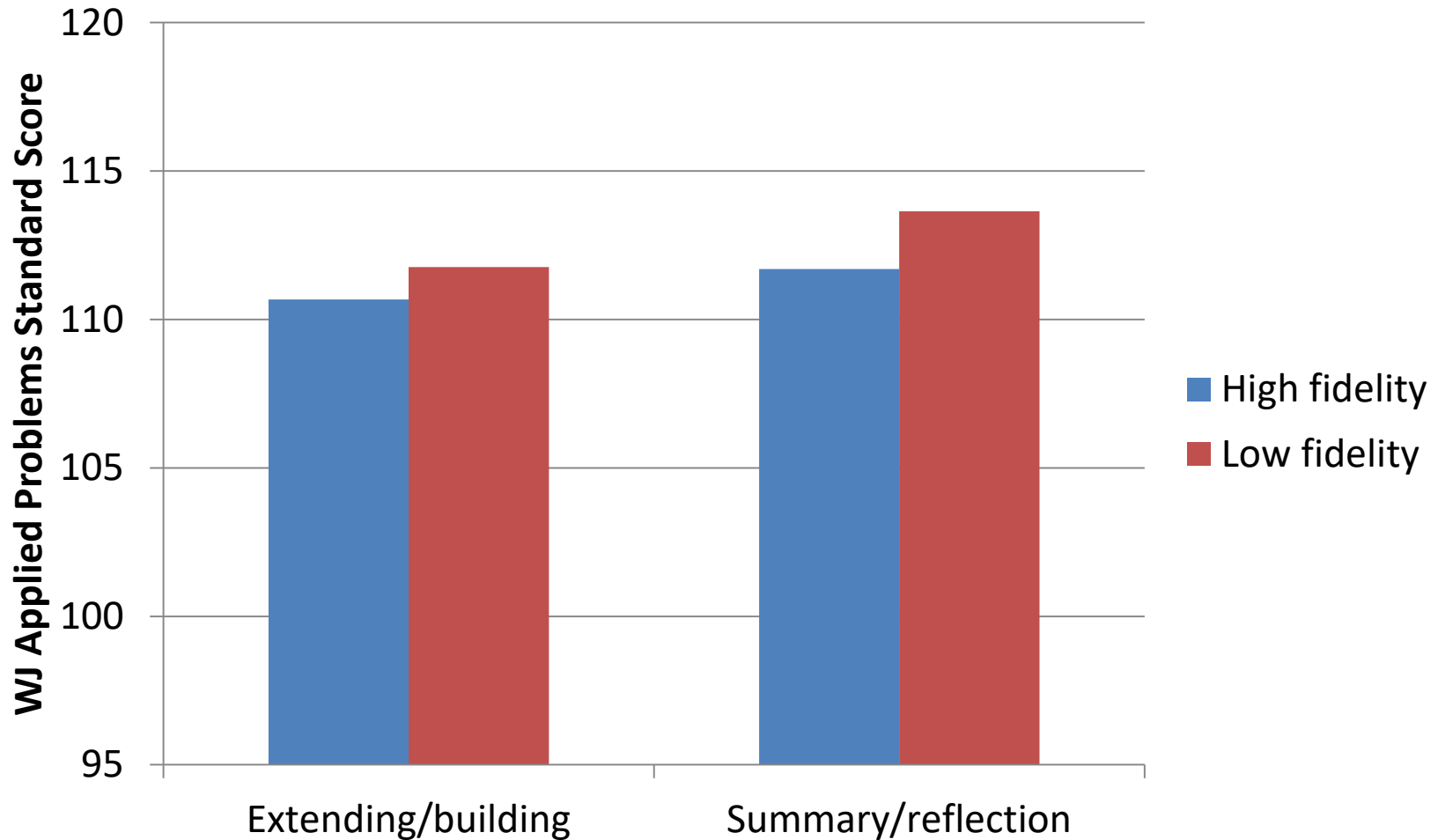
Example of Predicted Math Skills for Dual Language Learner Students at End of Prekindergarten Year
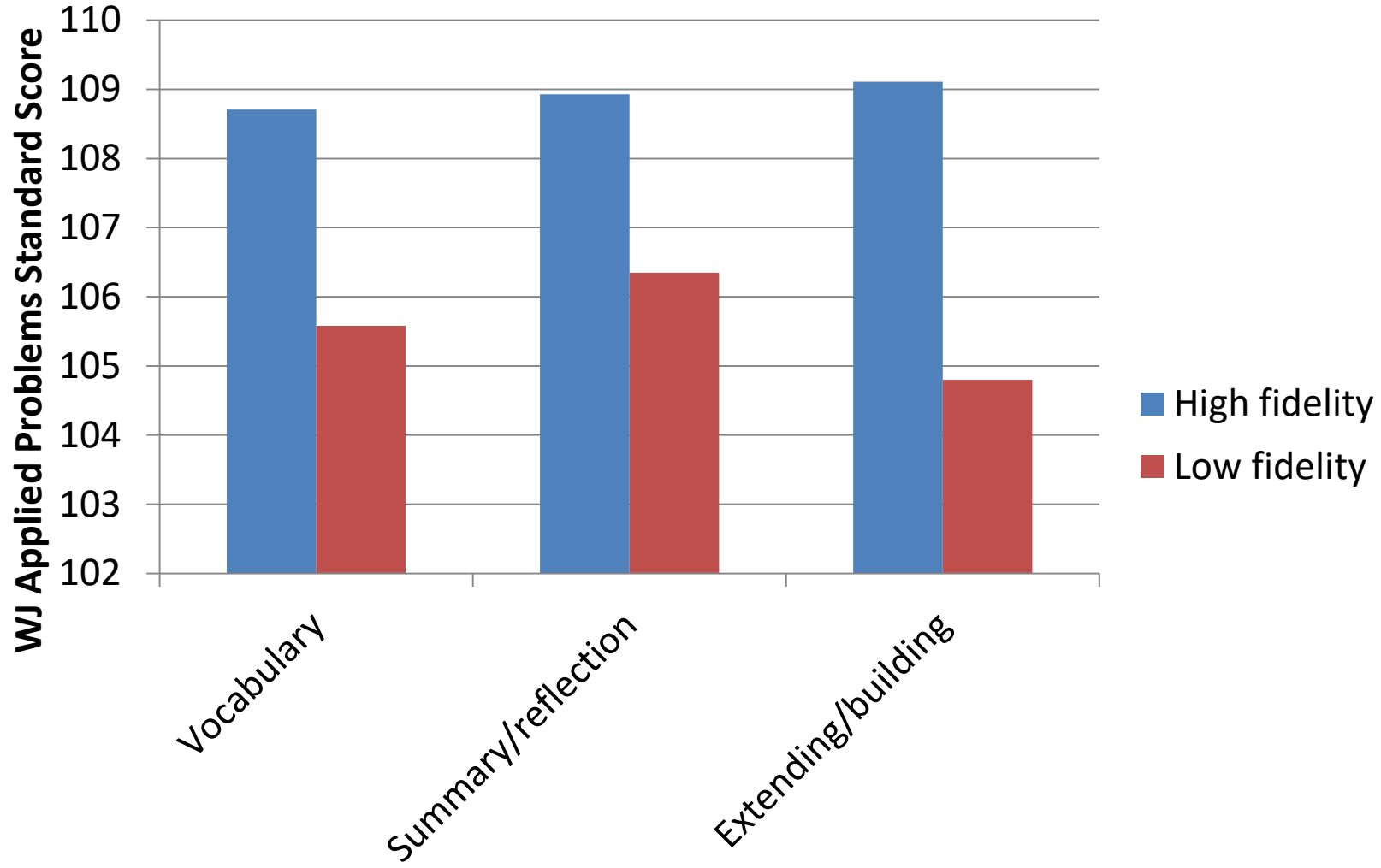
Limitations & Next Steps

- Work is **very preliminary** and in early stages

  - Future models will include more rigorous work to determine covariates and alternative model fits.

- More measurement work needed to operationalize fidelity constructs and consider any within-component measures of adherence, dosage, quality

- Data are correlational across one school year

- Sample is fairly small in Year 1 study (particularly for subgroups); future years will include larger samples for subgroup examination

Some preliminary conclusions

Reliable fidelity data can be collected by district staff.

Systematic variation in fidelity across classrooms.

Fidelity may predict math outcomes (on a small magnitude) but story is likely in the subgroups for a diverse sample with varying skill levels at baseline and follow-up.

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Questions?

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Understanding the effects of classroom processes on child outcomes in pre-kindergarten

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February 28, 2018

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Partners: School district, IES, ELN

FP3 – Pre-K Year Early Results

- Sample information

- Descriptions of classroom practices and opportunity

- Early results from outcome analyses

Study Context

- Large county in urban ring

- Economically, ethnically, racially, linguistically diverse

- 15+ years experience operating two pre-k program types
  - Programs for 4-year-olds in public schools, run by schools
  - Programs operated in community-based centers, including HS and community child care

- Experienced teaching staff
  - Mean years of education: 16.8
  - 39% have a major in EC
  - Mean years teaching experience: 15.6
  - 43% of teaching staff non-white

Pre-k – K Procedures

- Recruited teachers, schools, families

- Assess children's skills fall and spring

- Observe classrooms

- Recruit all eligible children in any pre-k classroom with more than five such children

- Teachers/classrooms enrolled: 115

- Children/families enrolled: 1,575

- Exclude children with IEPs
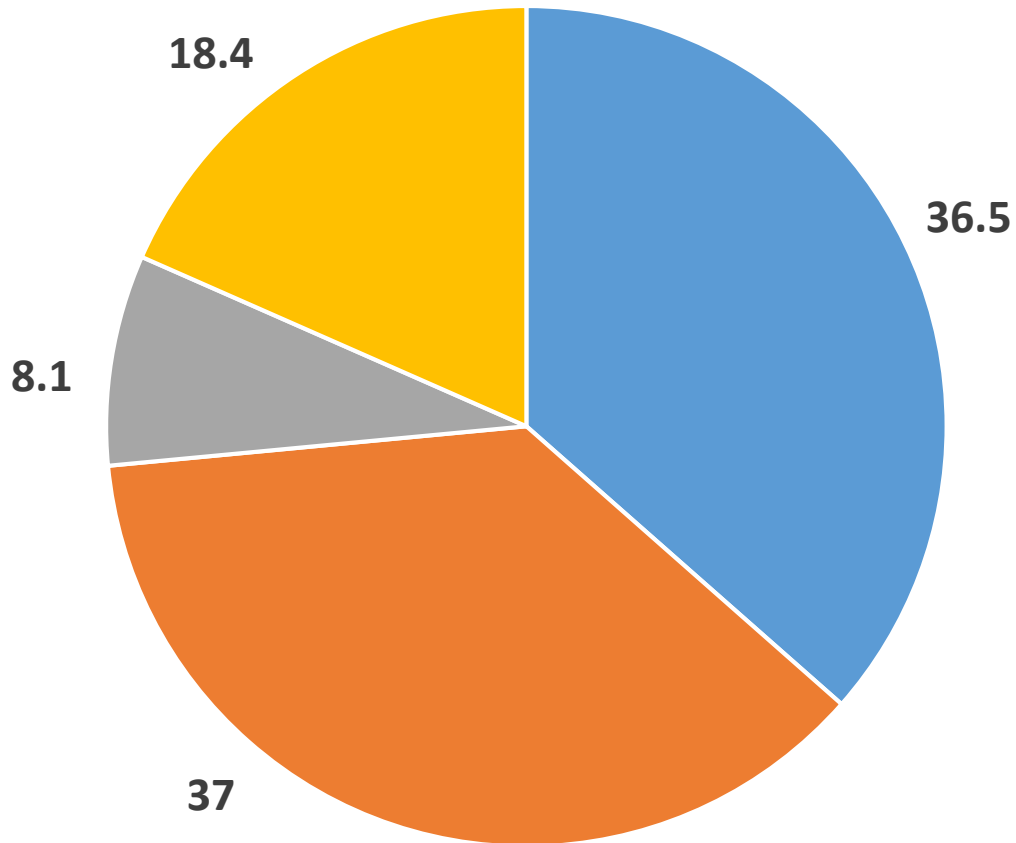
Children's Race/Ethnicity

14
1.4
5.1
42.8
8.1
4
3.1
21.5
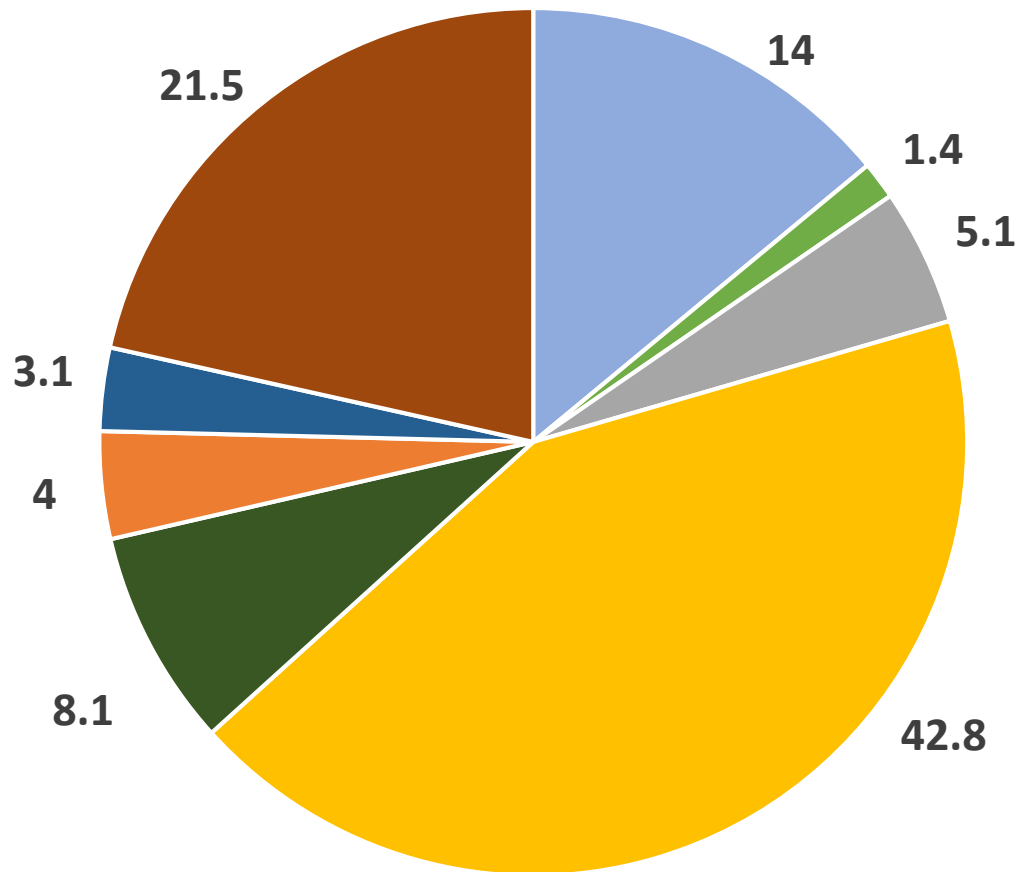
- ■ Black/African American
- ■ White/Caucasian
- ■ Asian
- ■ Other
- ■ Native American/American Indian
- ■ Latino/Hispanic/Spanish
- ■ Multiracial
- ■ Missing

Primary Language Spoken at Home

18.4

36.5

8.1

37

■ English ■ Spanish ■ Other ■ Missing

Characteristics by Program

|	Public School Pre-K	Community-Based
	Mean/Percent	Mean/Percent
Hispanic	16%	26%
Black	55%	52%
Asian American	11%	5%
Mixed Race	4%	9%
Other Race	4%	2%
English Language	18%	34%
Spanish Language	56%	47%
Other Language	26%	19%
Percent LEP	71%	24%
Income/Needs	0.84	0.97

Classroom Observations

- Teacher-Child Interactions - *Classroom Assessment Scoring System* Overall total score

- Content, Dosage, and Activity Setting – *Behavioral Coding System* adapted from the NICHD SECCYD Classroom Observation System and the Observational Record of the Caregiving Environment (NICHD Early Child Care Research Network, 2003)

- Rigor of Literacy and Mathematics Instruction – ECLS-K teacher survey items ($\overline{x}$ 1.522; 1.88 respectively); reflect teaching at preK – K level

- Observed time spent on teaching analysis, inference, and basic skills- *Behavioral Coding System*
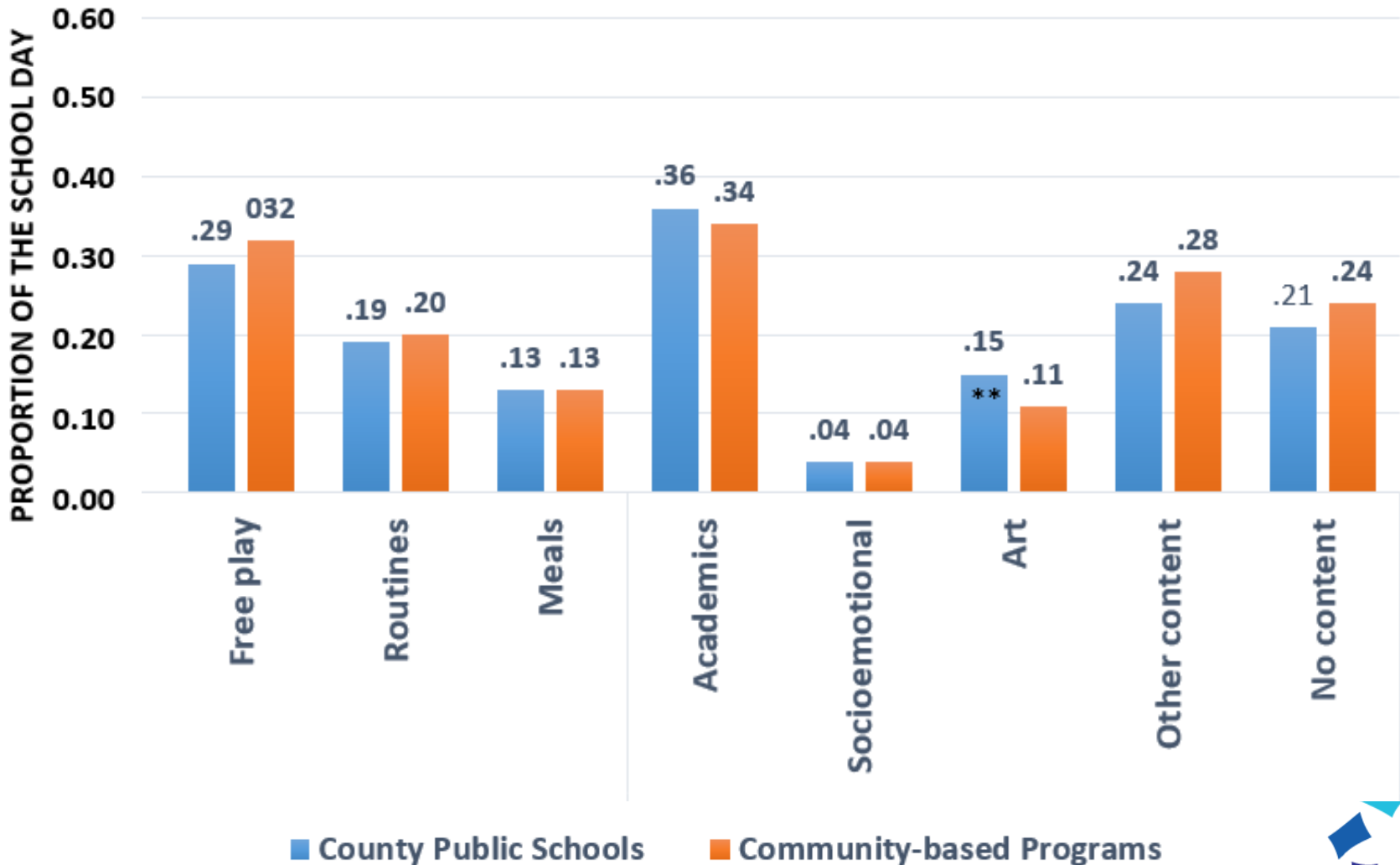
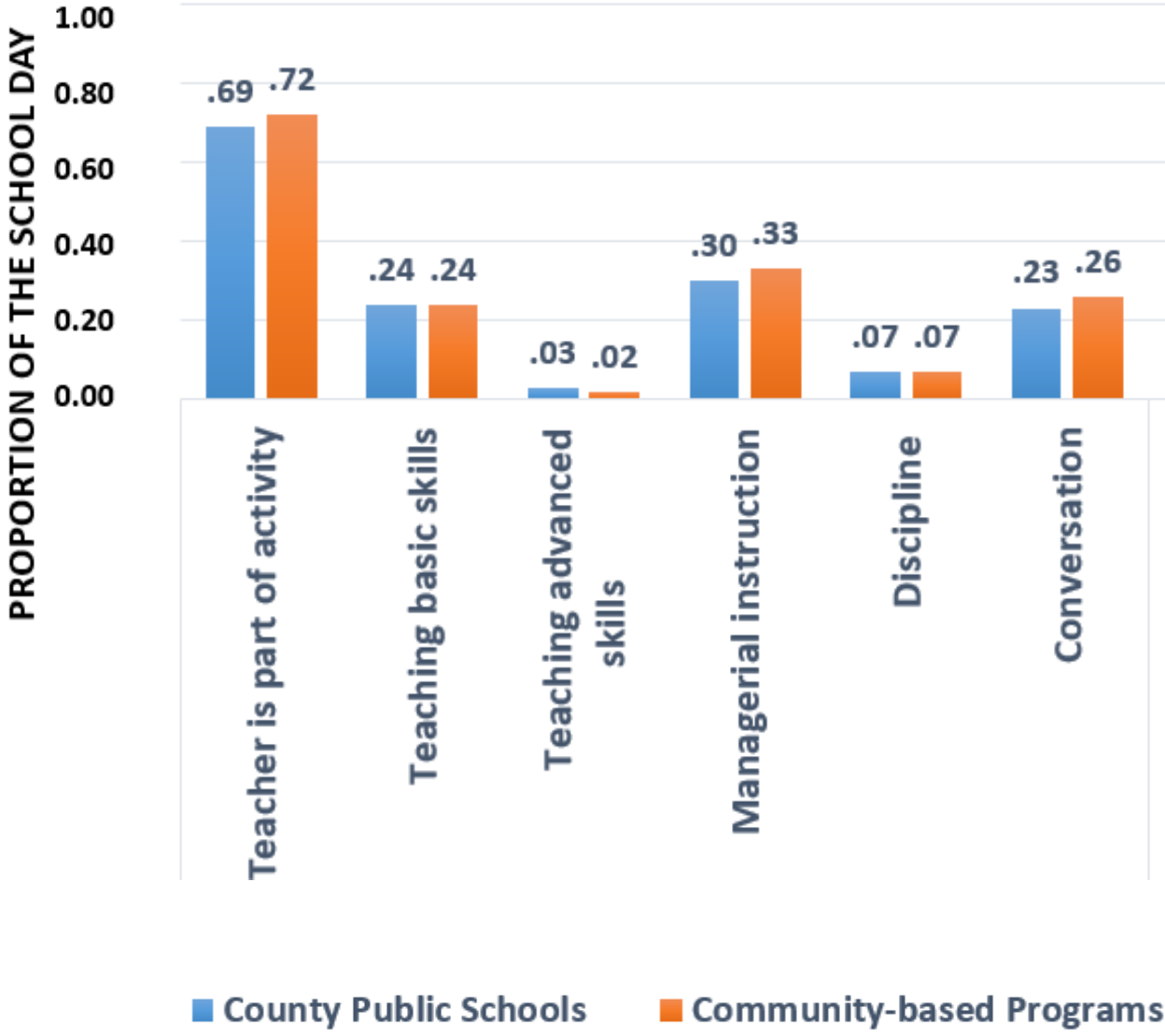# Activity Settings in Public Pre-K Programs
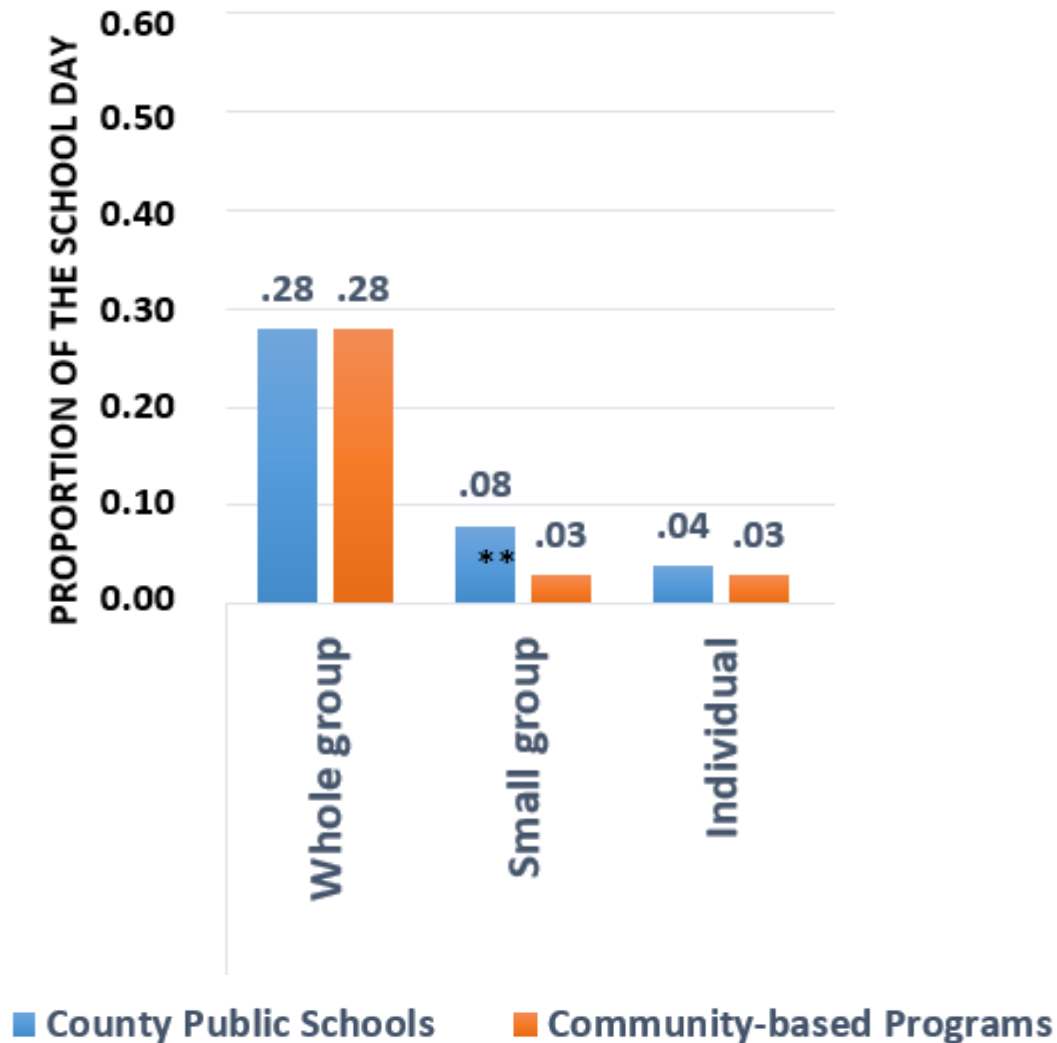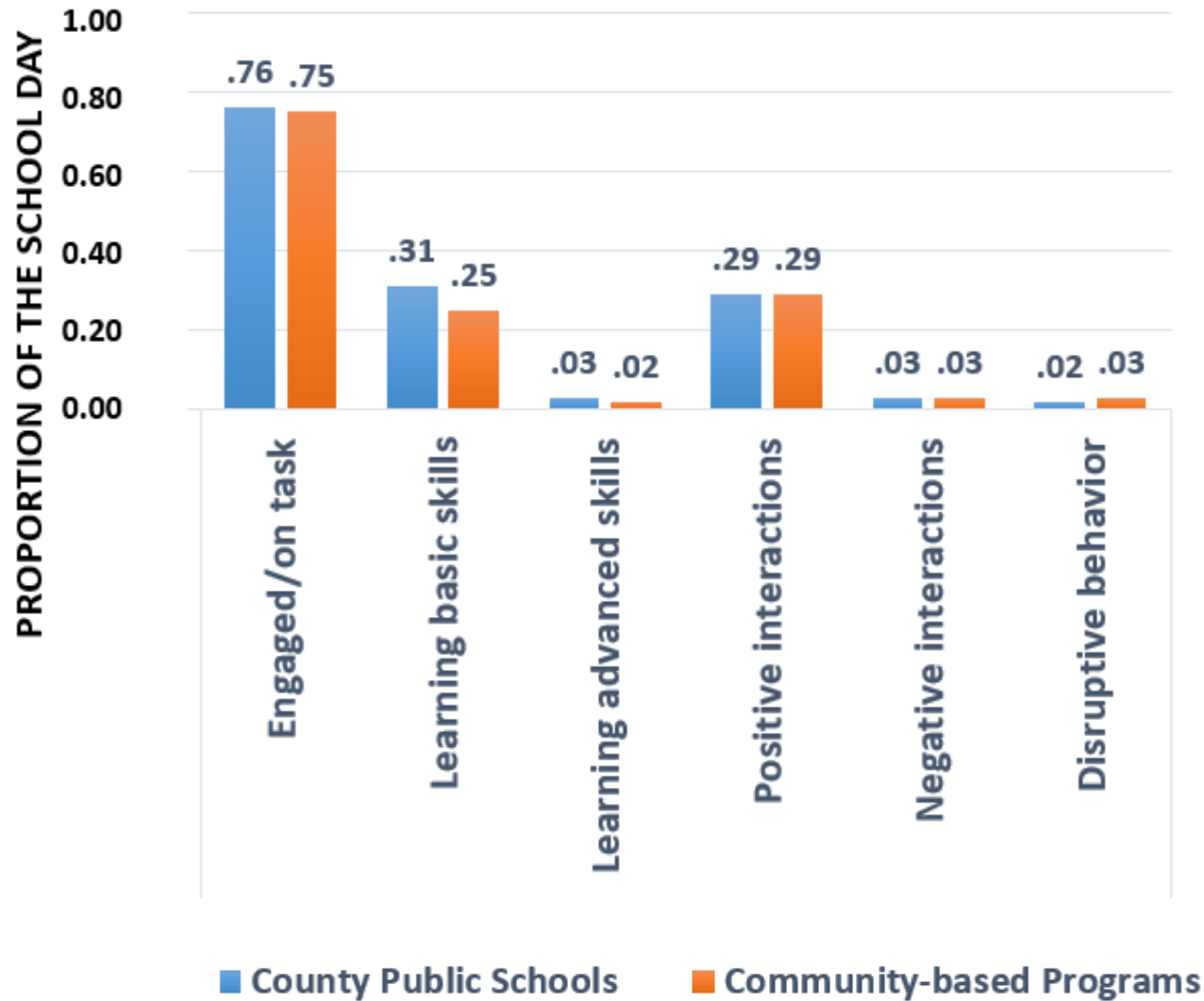

*Notes. ** p < .01*

Activities in Public Pre-K Programs

Teacher Behavior in Public Pre-K Programs

Child Behavior in Public Pre-K Programs

Bar chart titled with y-axis "PROPORTION OF THE SCHOOL DAY" (0.00 to 1.00).

Categories and values:
- Engaged/on task: County Public Schools .76, Community-based Programs .75
- Learning basic skills: County Public Schools .31, Community-based Programs .25
- Learning advanced skills: County Public Schools .03, Community-based Programs .02
- Positive interactions: County Public Schools .29, Community-based Programs .29
- Negative interactions: County Public Schools .03, Community-based Programs .03
- Disruptive behavior: County Public Schools .02, Community-based Programs .03

Legend: ■ County Public Schools   ■ Community-based Programs

Differences in Classroom Process and Practices in Public Pre-K Programs

- Very few differences emerged in the classroom processes across public and community-based programs

  - Community programs spent less time in small group and art

- Few teacher and classroom characteristics were predictive of classroom processes, but:

  - More educated and experienced teachers spent more time teaching and in teacher-directed instruction (+5-6% of the day)

  - Teachers' adult centered beliefs were associated with greater time spent in managerial instruction (+6% of the day)

Are malleable classroom factors (teacher-child interactions, instructional content and dosage of instruction, activity setting, and rigor of instruction) positively associated with changes in the quality of children's relationships with teachers, social skills, and executive function skills over the pre-k year?

Measures – Child Outcomes

- Teacher-Child Relationships – *Student Teacher Relationship Scale* (Pianta, 2001)

- Social Skills and Conduct Problems – *Teacher Child Rating Scale* (Hightower et al., 1986)

- Executive Function
  - *Head, Toes, Knees, Shoulders* (McClelland et al., 2007)
  - *Pencil Tap* (Smith-Donald, Raver, Hayes, & Richardson, 2007)
  - *Backward Digit Span*
  - *Woodcock Johnson – Literacy (2), Math (2) subtests*

Analyses

Hierarchical linear models (nesting students in classrooms)

Models control for:

- Baseline measure of each outcome in the fall

- Student characteristics (gender, age, race/ethnicity, SES, language)

- Classroom characteristics (aggregated student gender, age, race/ethnicity, income, special needs,

- Teacher characteristics (race, education, experience, beliefs about children)

- Program type

Teacher-Child Relationships

		Closeness			Conflict		
		Estimate	p	S.E.	Estimate	p	S.E.
Fall Pretest		.675	***	.026	.715	***	.020
Teacher-Child Interactions	Overall Quality				-0.38	**	0.11
Content Dosage	Proportion Academics						
	Proportion SEL						
Activity Setting	Proportion Teacher-Structured						
	Proportion Routines						
Rigor	Literacy Level						
	Math Level						

*p<.10, **p<.05, ***p<.01

Social and Emotional Skills

		Task Orientation			Social Skills			Conduct Problems		
		Estimate	*p*	S.E.	Estimate	*p*	S.E.	Estimate	*p*	S.E.
Fall Pretest		**.726**	*******	**.018**	**.714**	*******	**.025**	**.728**	*******	**.023**
Teacher-Child Interactions	**Overall Quality**									
Content Dosage	**Proportion Academics**									
	Proportion SEL									
Activity Setting	**Proportion Teacher-Structured**	**-.241**	*****	**.118**						
	Proportion Routines									
Rigor	**Literacy Level**							**-.263**	*****	**.133**
	Math Level				**.281**	*****	**.122**			

*p<.10, **p<.05, ***p<.01

Executive Function Skills

		Backward Digit Span			HTKS			Pemcil Tap		
		Estimate	*p*	S.E.	Estimate	*p*	S.E.	Estimate	*p*	S.E.
Fall Pretest		.200		.152	.579	***	.092	.644	***	.094
Teacher-Child Interactions	**Overall Quality**	.334	*	.154						
Content Dosage	**Proportion Academics**									
	Proportion SEL									
Activity Setting	**Proportion Teacher-Structured**									
	Proportion Routines									
Rigor	**Literacy Level**									
	Math Level									

*p<.10, **p<.05, ***p<.01

Academic Skills

		Letter-Word			Picture Vocab			Applied Problem			Quant. Concepts		
		Estimate	*p*	S.E.	Estimate	*p*	S.E.	Estimate	*p*	S.E.	Estimate	*p*	S.E.
Fall Pretest		.714	***	.028	.759	***	.026	.680	***	.022	.706	***	.016
Teacher-Child Interactions	**Overall Quality**										.418	**	.146
Content Dosage	**Proportion Academics**	.254	*	.135									
	Proportion SEL												
Activity Setting	**Proportion Teacher-Structured**	.376	**	.134							.338	*	.153
	Proportion Routines	.354	**	.138							.385	*	.178
Rigor	**Literacy Level**												
	Math Level												

*p<.10, **p<.05, ***p<.01

Conclusions

- Classroom practice and process findings remarkably similar to those from NCEDL Multi-State Study
  - ~40% time in management, and routines; or no content-focused activity
  - Teachers: teaching basic skills and managerial (50%)
  - Some rise in exposure to academic content; teaching focused on basic skills

- Still sorting out how best to design and deliver programs that are both educational and developmental

- Curriculum use still highly varied

- Some early evidence that exposures to effective teacher-child interaction and educational content and structured setting promote greater performance in EF and academic skills

- Focus on examining moderated effects

- In Kindergarten, increase observation of child experience

Thank You

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Classroom quality and classroom network structure:
Interplay and prediction of student outcomes

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The Ohio State University

SREE Meeting

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THE OHIO STATE UNIVERSITY
COLLEGE OF
EDUCATION AND HUMAN ECOLOGY

EarlyLearning
NETWORK

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Early Learning Ohio

Broad goal: Expand our understanding of classroom ecology

A comprehensive examination of the classroom ecology and its r   n's learning PreK – grade three.

Classroom Ecology: Theorized Dimensions

Classroom Composition	Classroom Network & Norms
Teacher Practices	Student Experiences
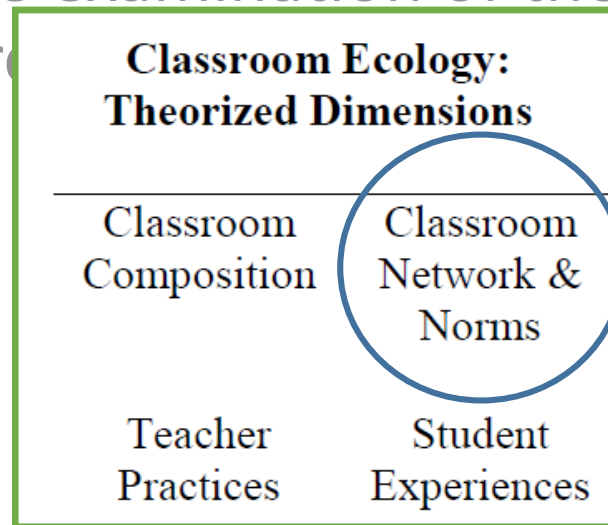
Classroom Network

- Children's language and social skills are shaped by who is around them
  - Complexity of teacher talk (e.g., Justice et al., 2013)
  - The skills of their peers (e.g., Justice, Logan, Lin, & Kaderavek, 2016)

- Classroom social networks *directly* measure who children spend time with, and can be characterized

- Children's academic growth is likely affected by both classroom quality *and* the nature of the social network created by their peers (Gest et al., 2014)

- Children's language is significantly predictive of classroom density in preschool (Chen et al., 2017).
  - Higher language scores → more dense classrooms

Classroom Density

A Dense Network
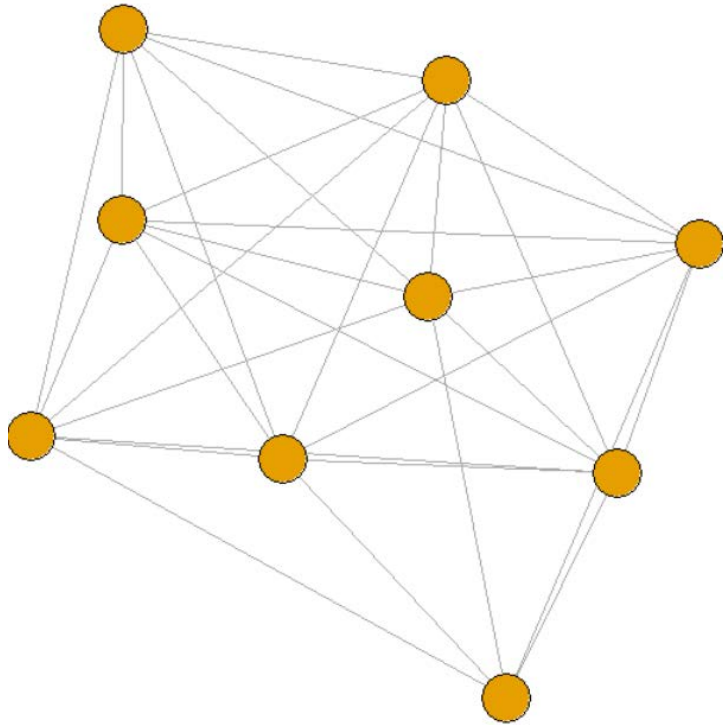
A Sparse Network
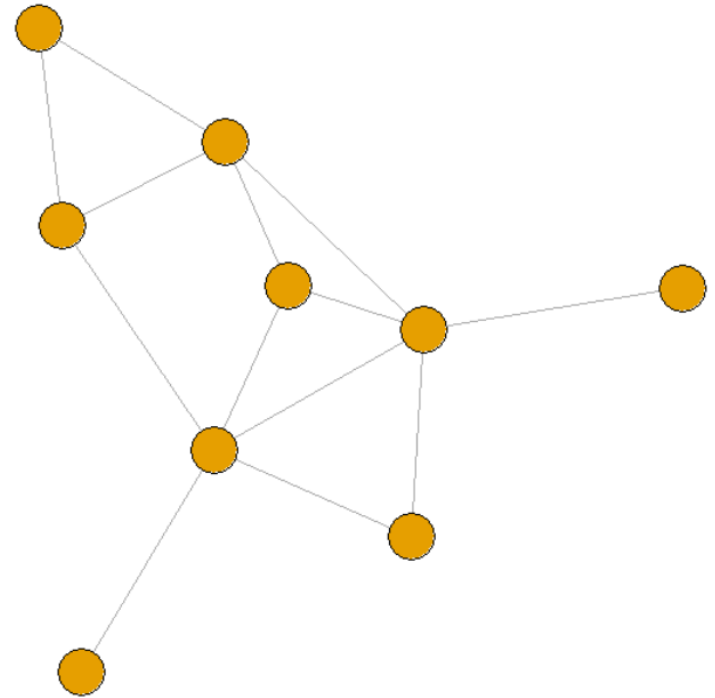
ELO: Cross-Sectional Study Numbers

Study Year 1 (2016-2017 school year)

- One school district
  - Private PreK programs

- 79 classrooms in five grades: (Prek – 3rd Grade)
  - Attempted to enroll all children in each classroom

- 1,142 students with active and passive consent
  - 80% consent rate
  - Used for social network measures

- 915 with active consent
  - Used for child outcomes
  - 58% white, 78% speak fluent English, 60% moms have HS degree or less

Quality

- Classroom quality rated by the CLASS (Pianta, La Paro, & Hamre, 2008)
- Live coded by trained observers, 2 cycles per classroom

Density

- Rated per classroom in two ways:
  - <u>Students</u>: Viewed a class roster and asked them who they like to play with.
  - <u>Teachers</u>: Asked to rate how frequently each pair of students in their class play or work together

- Network density generated using SNA package in R (Butts 2016)

Capturing the classroom network

	Stella	D'Andre	Poppy	Lake	Destiny	Dylan	Serenity
Stella	X	X	X	X	X	X	X
D'Andre	0	X	X	X	X	X	X
Poppy	2	0	X	X	X	X	X
Lake	0	2	1	X	X	X	X
Destiny	1	1	1	2	X	X	X
Dylan	1	1	0	0	1	X	X
Serenity	1	0	0	1	2	1	X

Results: Student Ratings

- This is the network of a randomly selected Preschool Classroom

- Children were asked: "who do you like to play with the most"

- Children with no paths didn't select anyone and no one selected them.

- Bi-directional arrows are reciprocal friendships.

- Directional arrows show child A likes to play with child B.

girl

boy
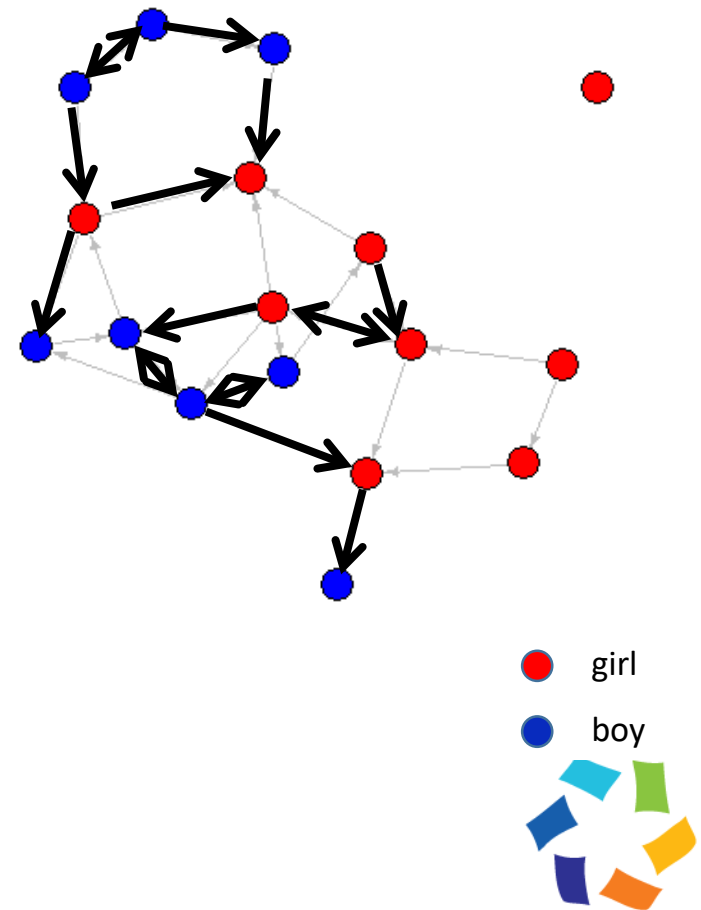
Teacher Ratings

- The same Preschool Classroom

- Teacher reported who plays and works together

- Frequency is collapsed for this analysis:
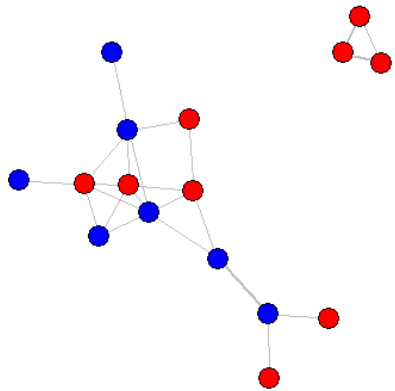   - A pair of children is rated as either having a tie (1) or not (0).

girl

boy
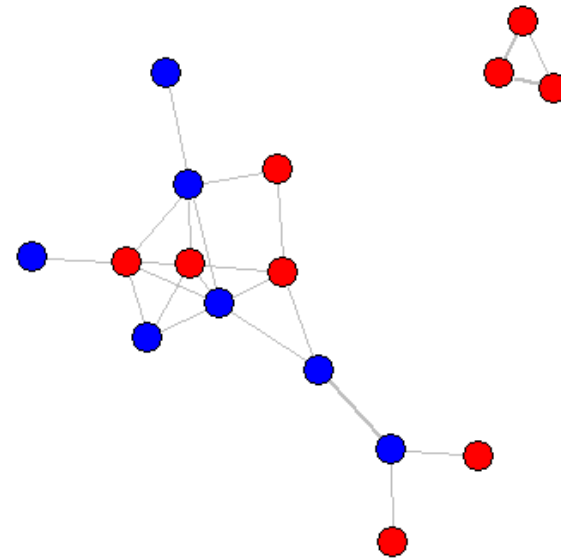
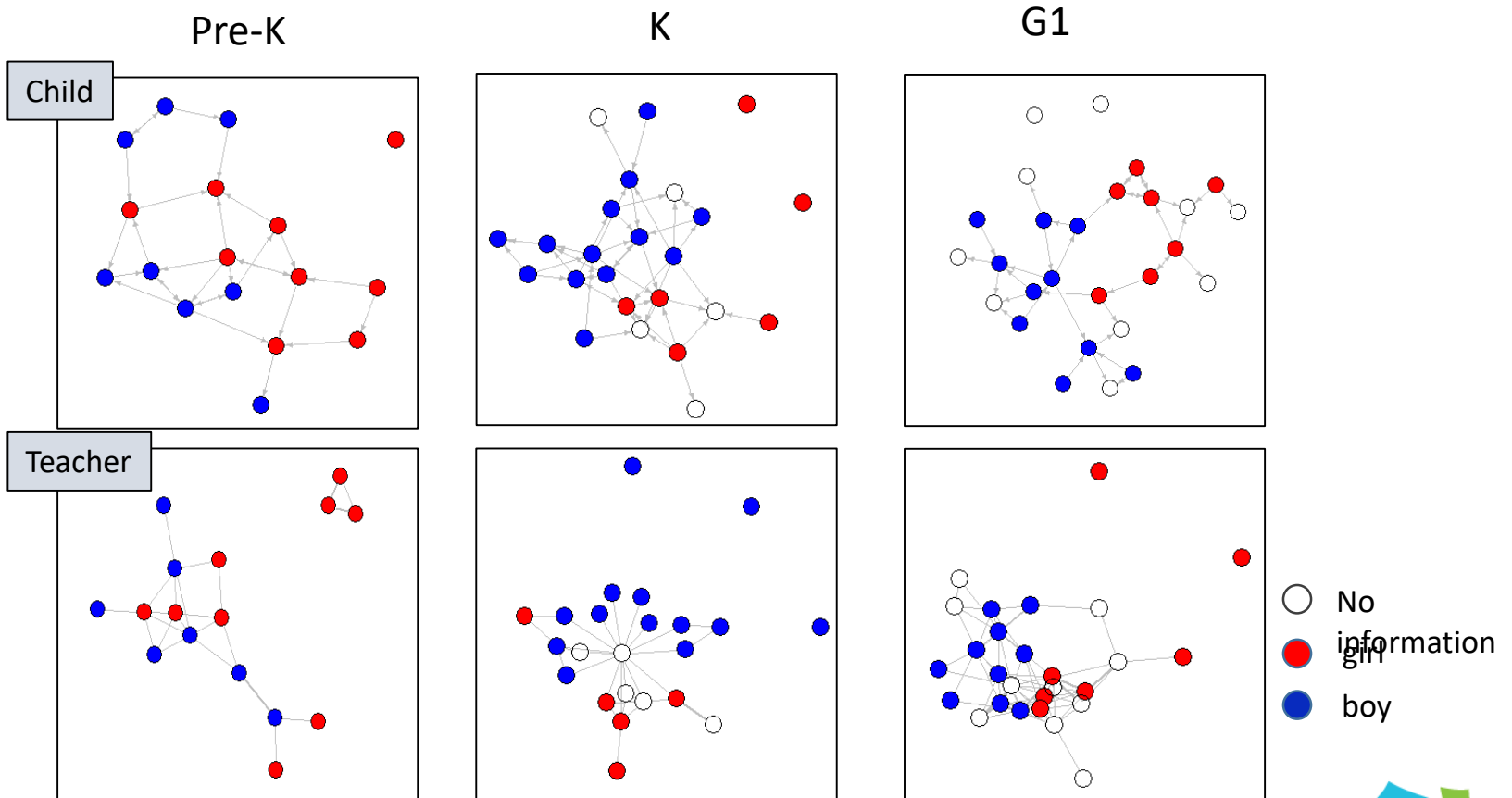# Results: Teacher Ratings of Density

Pre-K

K

G1

G3
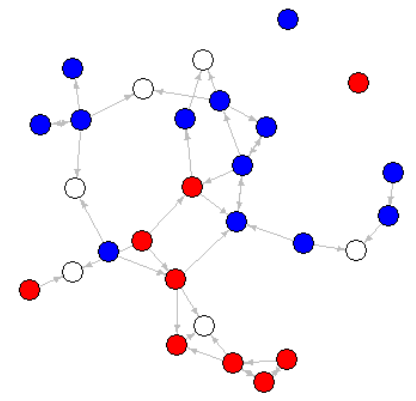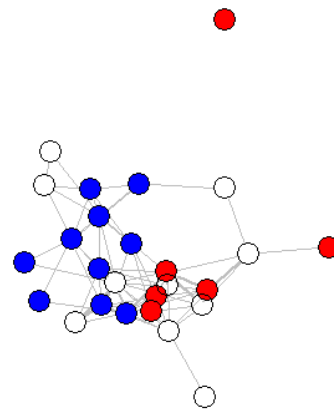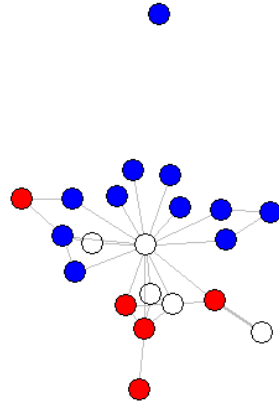
On average, density is significantly higher in PreK compared to all other grades.

No information
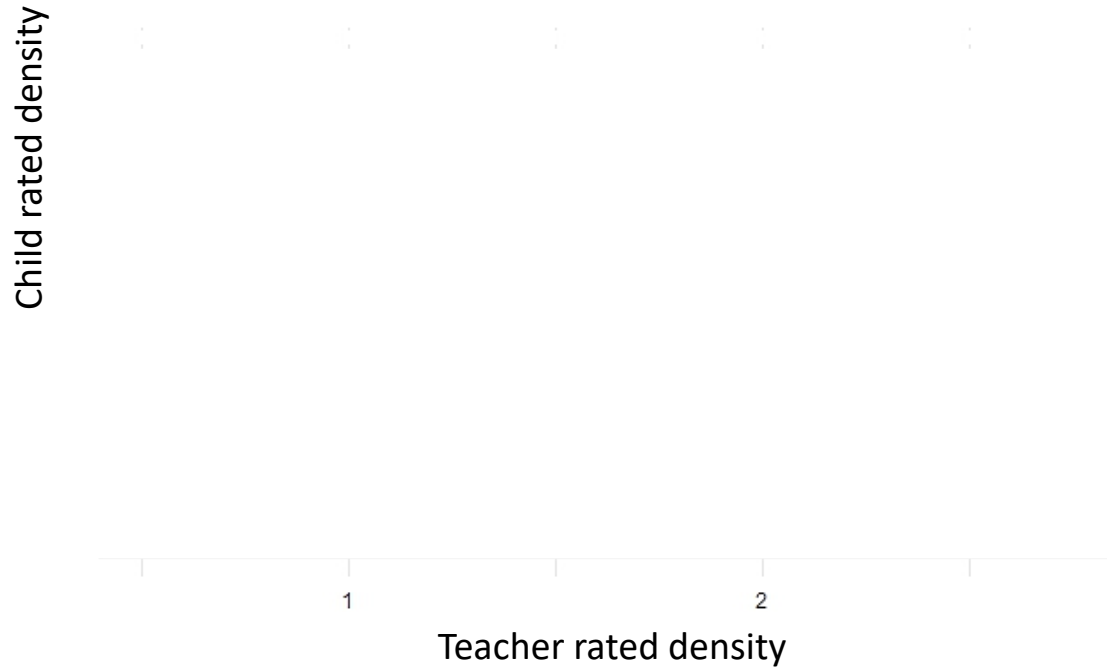
girl

boy

Results: Child Report vs Teacher Report

Pre-K

K

G1

Child

Teacher

No information

girl

boy

Child Report vs Teacher Report

Teacher Report vs CLASS

Teacher rated density

CLASS

3 4 5 6

Predicting Student Outcomes: Model building

- HLM models nesting students within classrooms.
- Outcomes (raw scores):
  - Social Skills, Problem Behaviors: TCRS (Hightower, 1986)
  - Vocabulary, Reading, Math: Woodcock Johnson III (Woodcock, McGrew, & Mather, 2007)
- Covariates: Pretest, Gender, Age, Grade, Class size
- Predictors of interest:
  1) CLASS composite, Child-rated density, Teacher rated density
  2) Interaction between pretest and density
  3) Interaction between CLASS and density

Results: Main Effects

	SS	PB	PV	LW	AP
Intercept	-7.08	-0.42	3.06	-12.88	4.88
Pretest	1.03*	0.88*	0.74*	0.88*	0.78*
CLASS	0.08	0.14	0.23	1.29*	-0.25
Child Density	13.91	7.89	-1.94	19.68	5.43
Teacher Density	3.53*	0.64	0.00	1.12	0.004

*$p < .05$, HLMs also included several covariates not pictured here.

Results: Pretest Interaction

	SS	PB	PV	LW	AP
Intercept	-7.08	-0.42	3.06	-12.88	4.88
Pretest	1.03*	0.88*	0.74*	0.88*	0.78*
CLASS	0.08	0.14	0.23	1.29*	-0.25
Child Density	13.91	7.89	-1.94	19.68	5.43
Teacher Density	3.53*	0.64	0.00	1.12	0.004
Pretest*Teacher Interaction	-0.14*	-0.01	-0.02	0.02	-0.07

*$p < .05$, HLMs also included several covariates not pictured here.

Denser classrooms matter more for children with a low pretest

Q3: Interactions of CLASS with density: None were significantly different from zero.

Conclusions

- This is a preliminary look at these data.
  - Another 90 classrooms are currently being collected.
  - For academic outcomes, will use W-scores (not yet all calculated)

- Only one of several proposed network-based predictors
  - Classroom hierarchical vs egalitarian
  - Norms (social and academic)

- Will also examine student-level network inform
  - Number of ties a child has
  - Position within the network
  - Victimization

girl
boy
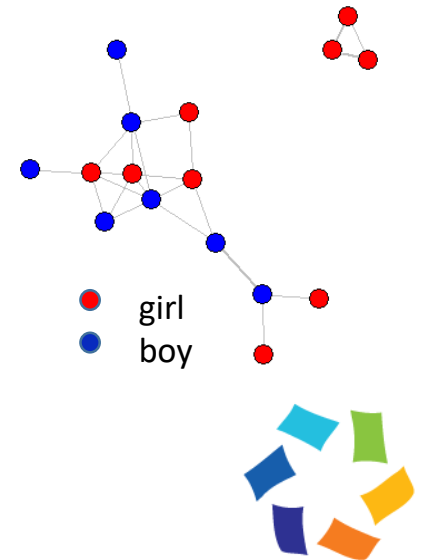
Future Directions

- We are also simultaneously conducting a longitudinal study
  - 240 preschool children
  - 160 non-preschool attending peers (recruited in K)

- Does the classroom ecology look different for students who attended PreK and those who did not?

- Does the classroom ecology play a special role in students' transitions to Kindergarten?
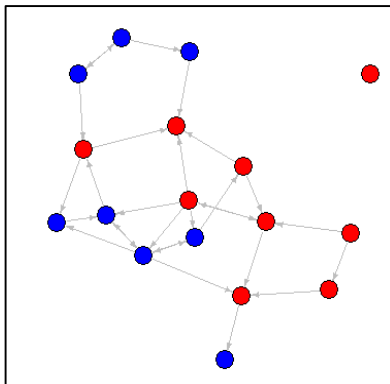
THE OHIO STATE UNIVERSITY
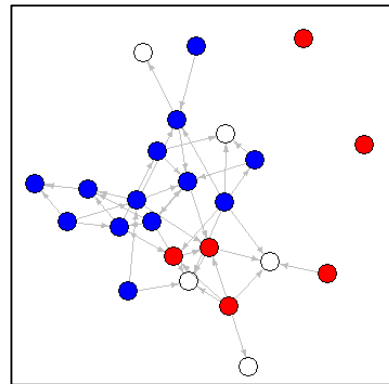COLLEGE OF
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N E T W O R K

Thank you!

Pre-K   K   G1