

Evaluating LENA Grow's impact on early childhood education classrooms

LENA[®]



Presenters:



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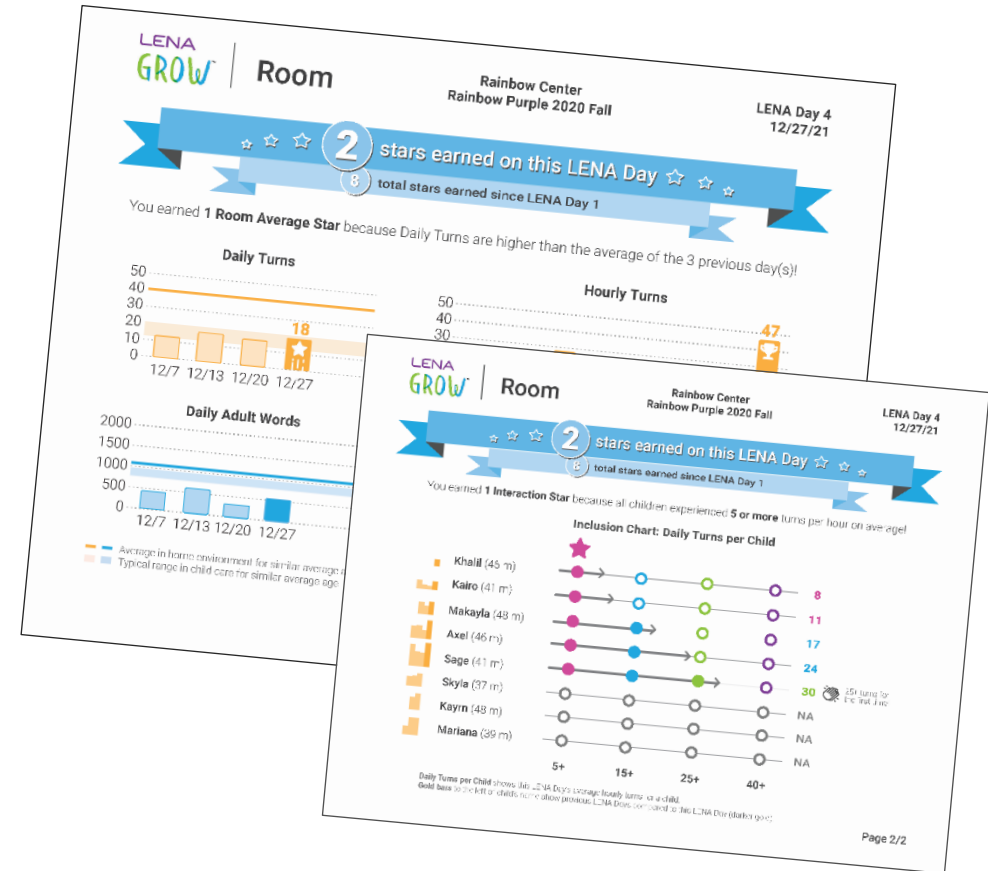


Michael McConeghy

Child Care Partnership
Manager, Next Door
Milwaukee

Please use the Q&A feature to ask any questions you have during the webinar!

“Talk pedometer” technology



What is LENA measuring?

- Detail in “The Design and Purpose of the LENA System”
 - www.lena.org/technology
- Algorithm automatically parses daylong recording into "speaker"
- Key child and Adult are identified, but *what* is said is not
 - Audio data deleted after processing
- **Adult Word Count:** Estimated number of adult words spoken near the child
 - Words are not identified; estimates are based on acoustic variables like vowel/consonant distributions and adult segment duration

Conversational Turns

- Alternations between key child and adult – one initiation and one response
 - Key Child → Adult = 1 turn
 - Key Child → Adult → Key child = 1 turn
 - Key Child → Adult → Key Child → Adult = 2 turns

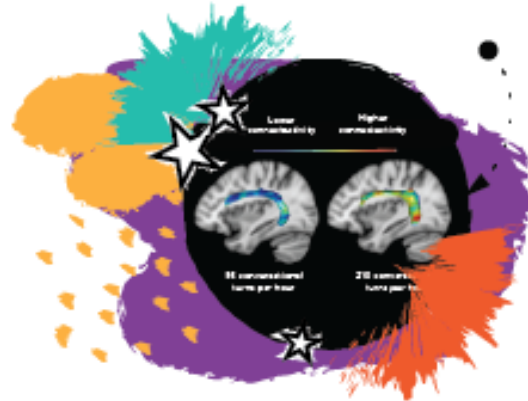


= 1 turn

Confirming the power of turns



Brain function – Romeo et al., 2018a



Brain structure – Romeo et al., 2018b



Long term outcomes – Gilkerson et al., 2018



Brain structure & reading skills – Merz, et al. 2019



Executive Functioning — Romeo et al., 2021



Socioemotional Skills — Gómez Muzzio et al., 2021

***PREDICTORS OF PRESCHOOL
LANGUAGE ENVIRONMENTS AND
THEIR RELATIONS TO CHILDREN'S
VOCABULARY***

Rob Duncan, PhD

Assistant Professor in HDFS and Public
Health, Purdue University

Preschool Experiences as Important Contexts of Development

- Majority of preschool-aged children attend some form of child care
- Limited evidence using the LENA in preschool classrooms
- Limitations to classroom-based measures that are typically used

Research Objectives

1. Descriptively, what do children's language environments look like over the preschool day and between- and within-classrooms?
2. How do socio-demographic characteristics relate to children's language environments?
3. How do language environments (child-level and classroom-level) relate to children's vocabulary when controlling for socio-demographic characteristics?

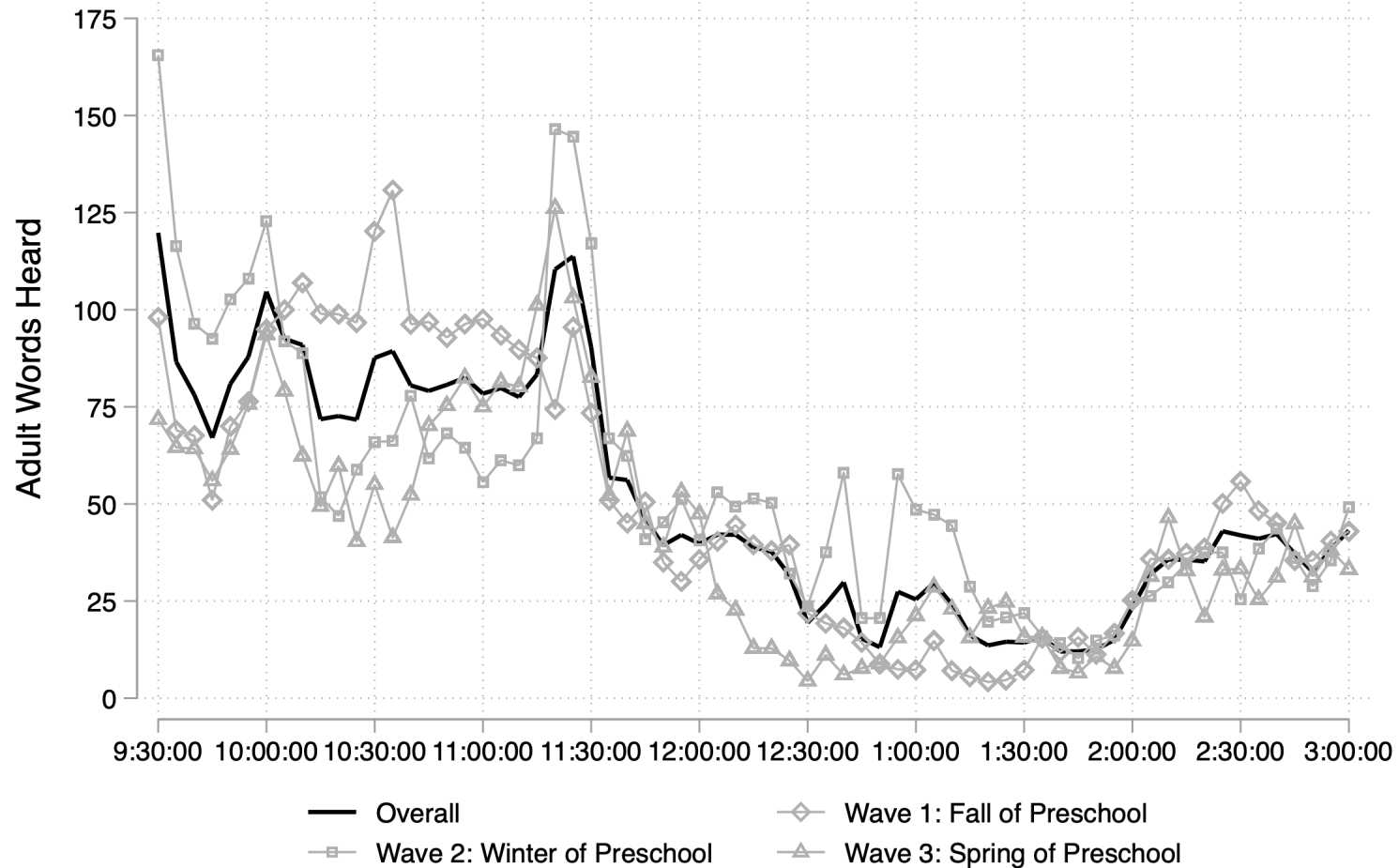
Participants and Measures

- LENA data from 91 preschool-aged children in 23 classrooms
- LENA at 3 waves (two days per wave) during the preschool year
 - Nearly 1500 hours of valid LENA recordings in preschool classrooms!
- Vocabulary assessed (PPVT) in the fall and spring of preschool year
- Study cut short due to COVID-19 pandemic
 - 2nd year data missing all spring LENA and PPVT data unfortunately

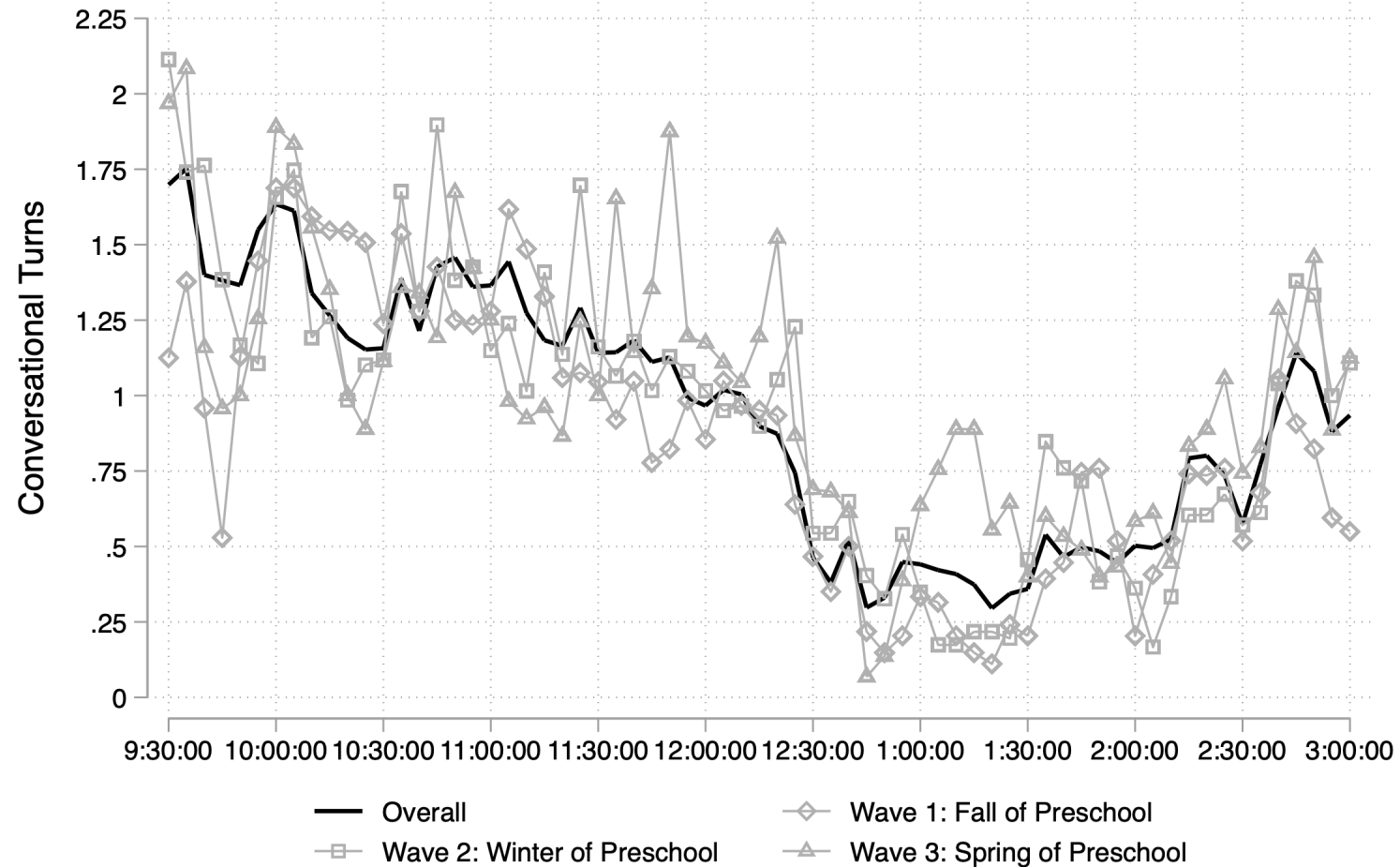
Analytic Plan

- Descriptively examine language environments during the preschool day, across the preschool year, and between- and within-classrooms (RQ1)
- Examine whether socio-demographic characteristics predicted language environments using structural equation modeling (RQ2)
- Examine whether language environments, when controlling for socio-demographic characteristics, relate to vocabulary using structural equation modeling (RQ3)

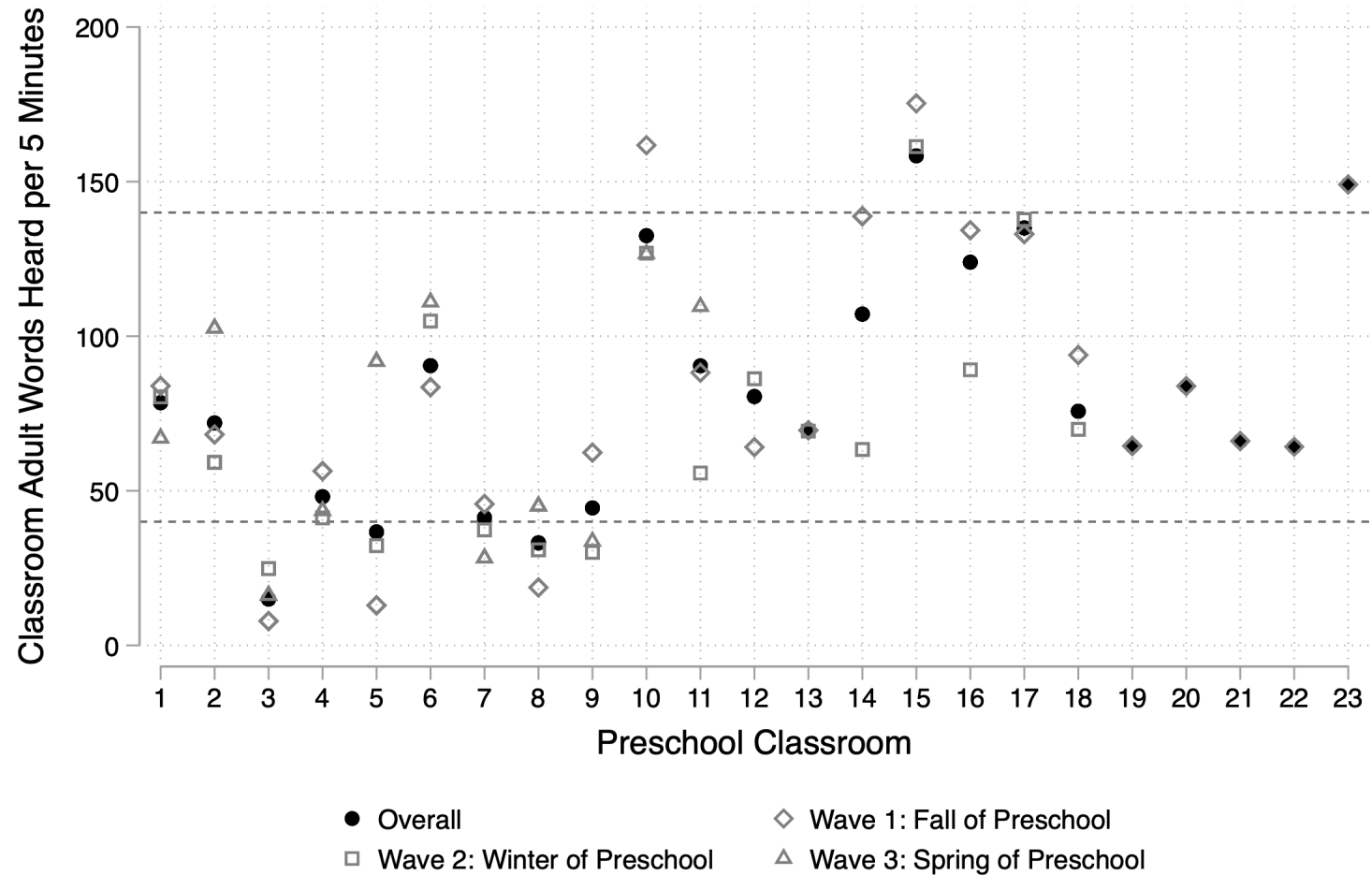
Variability in Adult Words Heard Throughout the Day



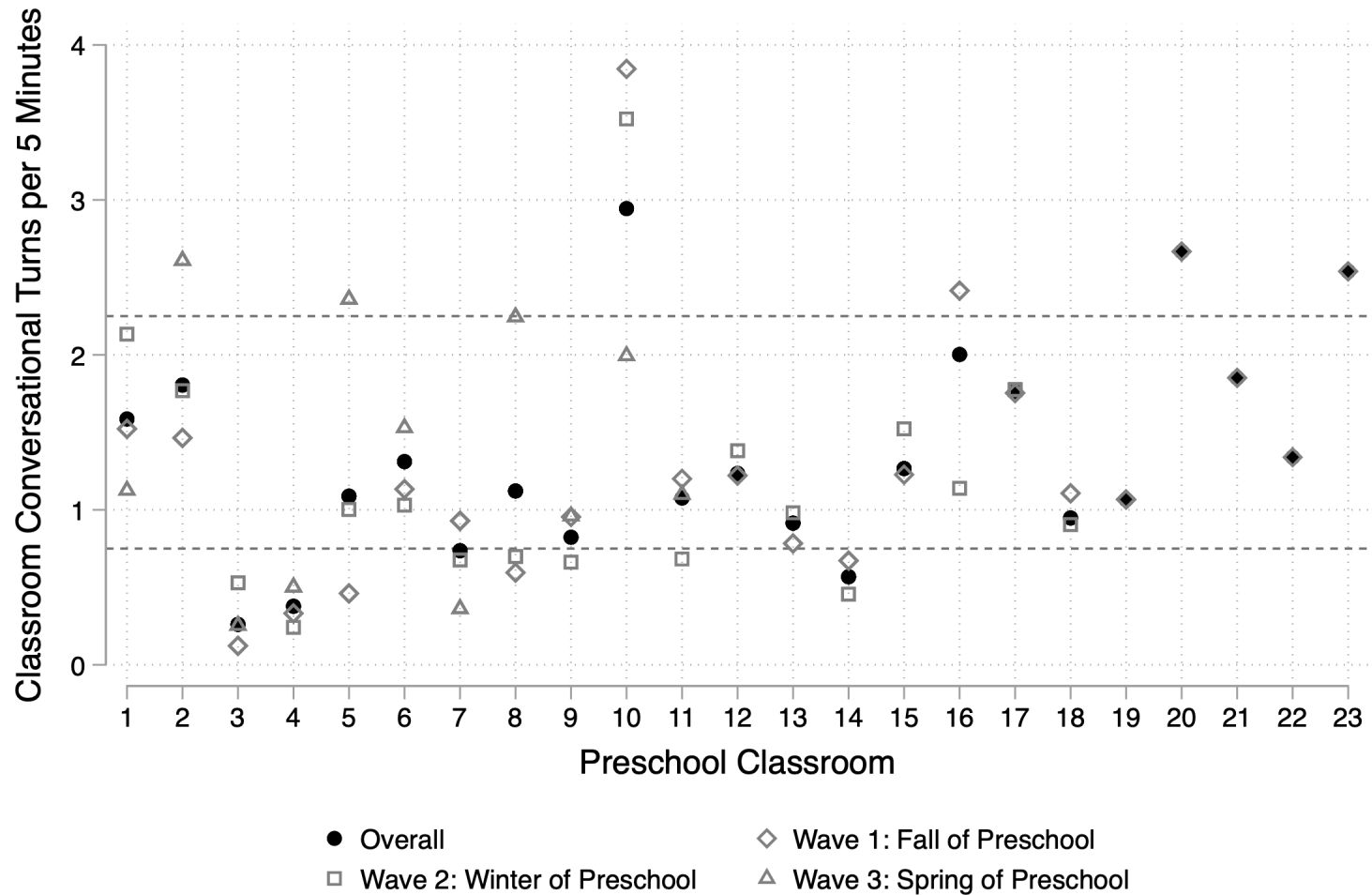
Variability in Conversational Turns Throughout the Day



Variability in Adult Words by Classroom



Variability in Conversational Turns by Classroom



Family Income Predicts Language Environments

Socio-demographic factors as predictors of language environments

	Adult Words Heard		Conversational Turns	
	Wave 1	All	Wave 1	All
Male	-.19*	-.07	.03	.21 [†]
Age	.12	.18	-.08	-.03
Income	.36**	.46***	.21	.32*
Parent Ed	.10	.11	.03	-.08
White	.19*	.08	-.07	-.18
Married	.11	.01	.07	.04
English	-.02	-.04	.17 [†]	.13

[†] $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

Child-Level Conversational Turns Predicts Vocabulary

Language environments as predictors of vocabulary

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CV	.12	.11	-.01	-.00	.02	.01
AW	.16*	.01			.06	-.09
CT			.21*	.16	.17	.17
AW Class		.15				.15
CT Class				.07		.01

† $p < .10$

* $p < .05$

THANK YOU

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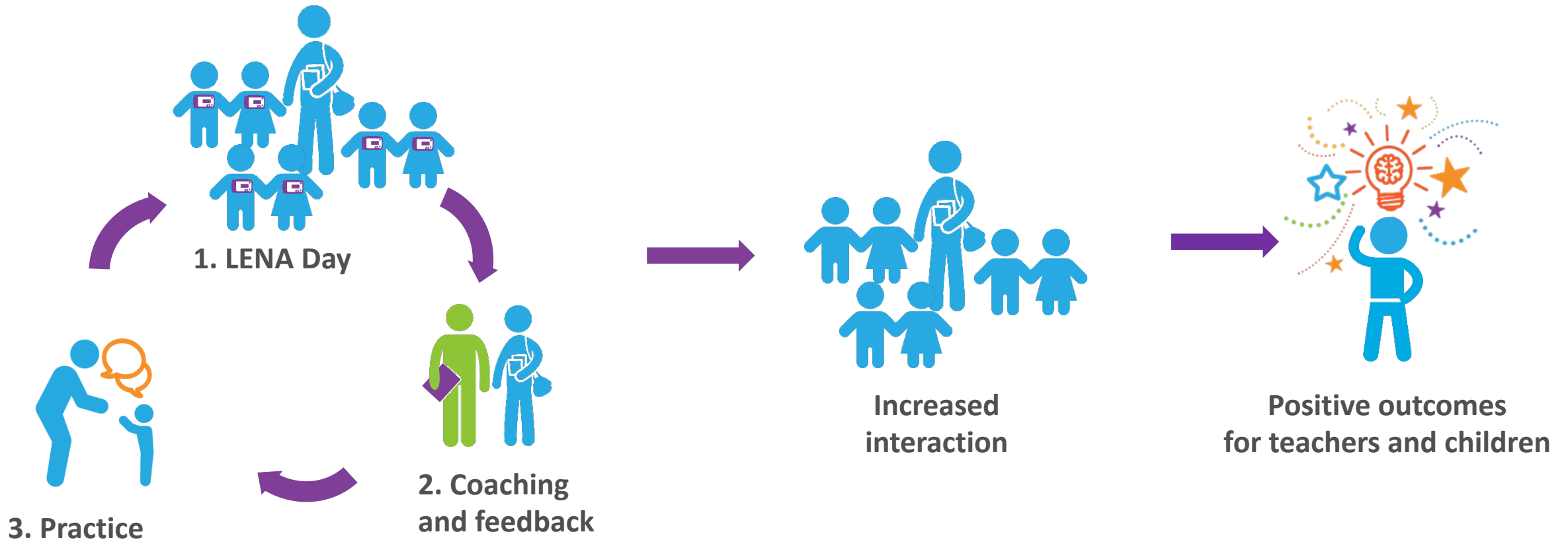
Child care settings



- Professional development for early childhood educators
- Regular feedback on interactive talk through coaching and reflection
- Coaching modules designed to fit existing routines

LENA
GROW™

How it works

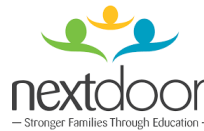


2021 RFP — LENA Grow Evaluation

- Two sites were selected to conduct an evaluation of LENA Grow, chosen to reflect LENA Grow partners nationwide



Next Door
Milwaukee, Wisconsin



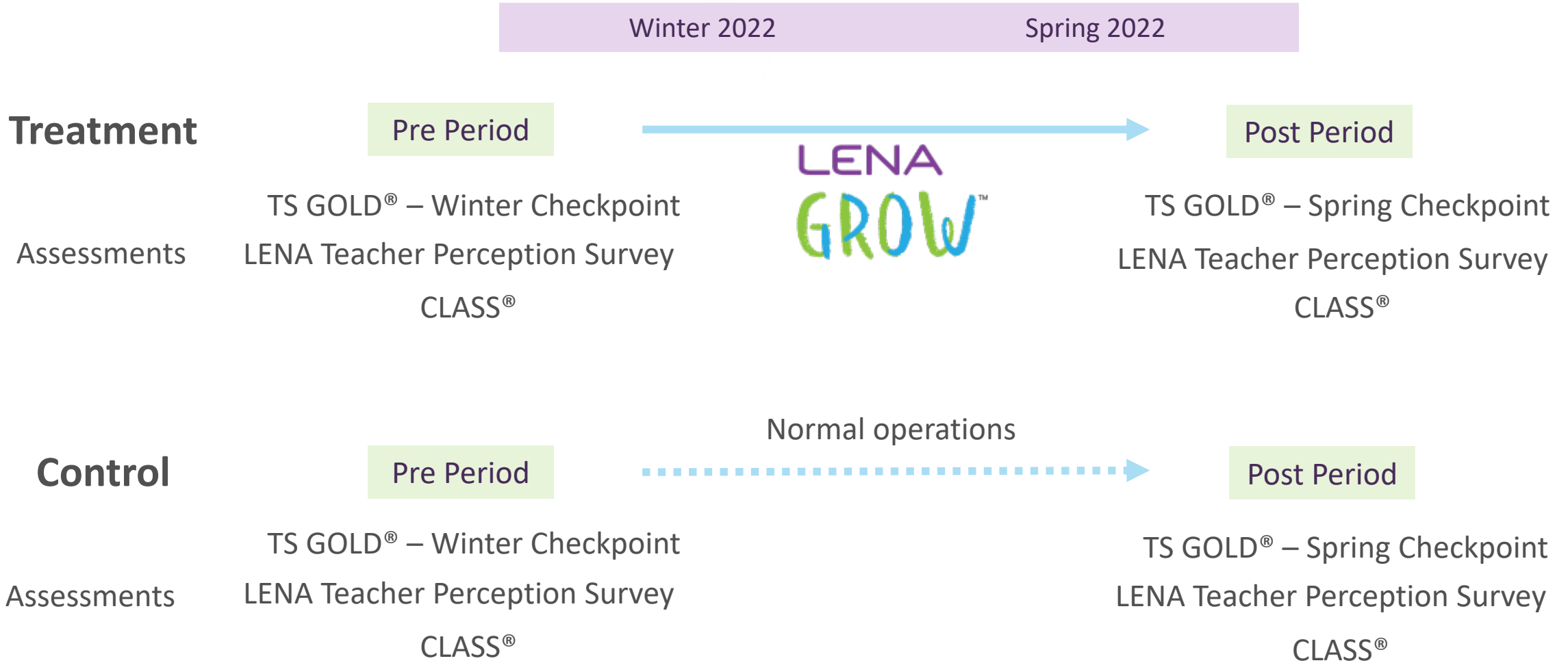
Next Door is a leading provider of high quality early childhood education in Milwaukee. Next Door has served the community for more than 50 years, supporting children and families in Milwaukee’s most under-resourced neighborhoods. Today, Next Door serves more than 900 children from birth to age five through two centers, a home visitation program, and 13 early childhood partnership sites across the city.

SproutFive
Columbus, Ohio



Since 1922, SproutFive (formerly South Side Early Learning) has ensured that every child benefits from a holistic, high-quality early education. SproutFive’s model combines data-informed decision-making, embedded professional development, integrated family engagement, and evidence-based best practices, yielding impressive results.

Grow Evaluation Grant Design



Pre-post Child Outcomes

1. LENA Conversational Turns per hour
 - All children
 - Bottom third of classroom
2. Teaching Strategies GOLD[®]
 - Language Domain
 - Literacy Domain

Pre-post Teacher Outcomes

1. LENA Teacher Perceptions Survey
 - Self-efficacy
 - Job Satisfaction
 - Stress
 - Reading
 - Hope for children
 - Interpreting graphs
2. CLASS[®]
 - Toddler classrooms
 - Emotion/Behavior Domain
 - Engaged Support Domain

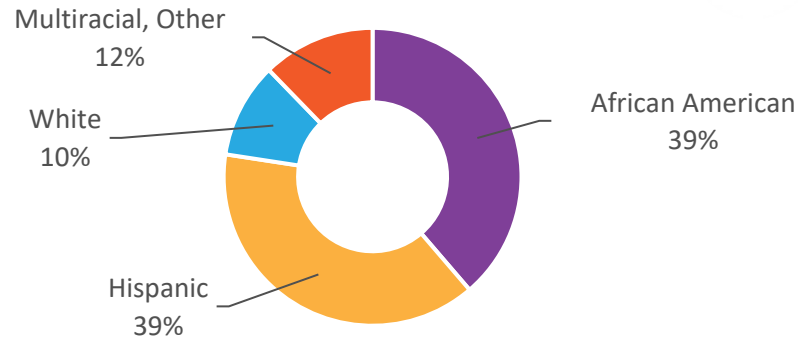
Next Door Child Demographics

Treatment: N=79 children, 3 centers and 10 classrooms.

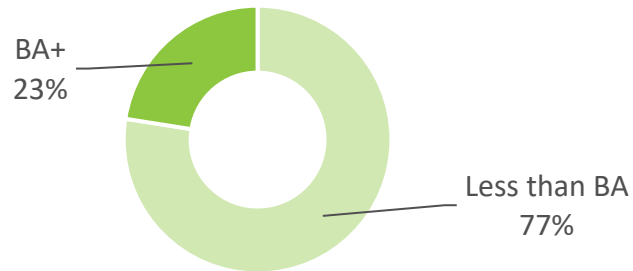
Control: N=77 children, 3 centers and 10 classrooms.

Age: 6 to 65 months; Mean = 32

Child's Race/Ethnicity



Parent Education



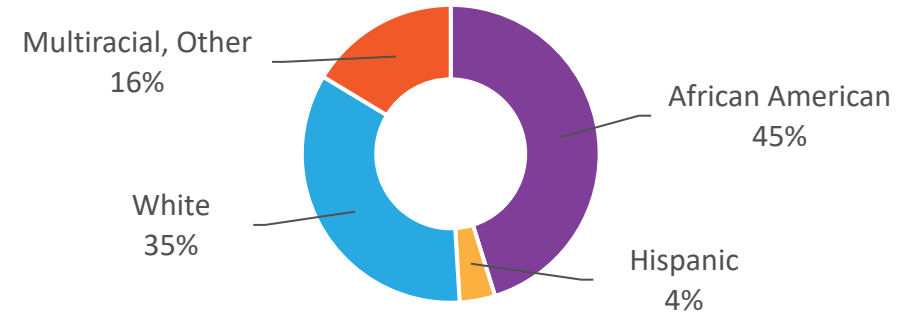
SproutFive Child Demographics

Treatment: N=58 children, 4 classrooms.

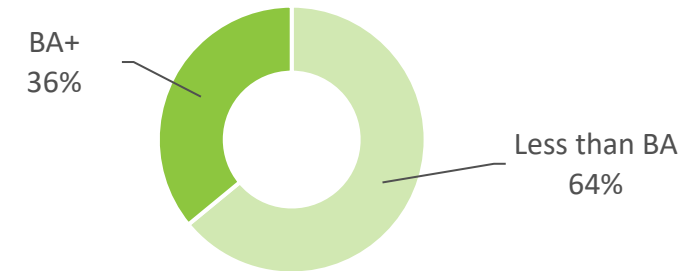
Control: N=48 children, 4 classrooms.

Age: 2 to 63 months; Mean = 40

Child's Race/Ethnicity

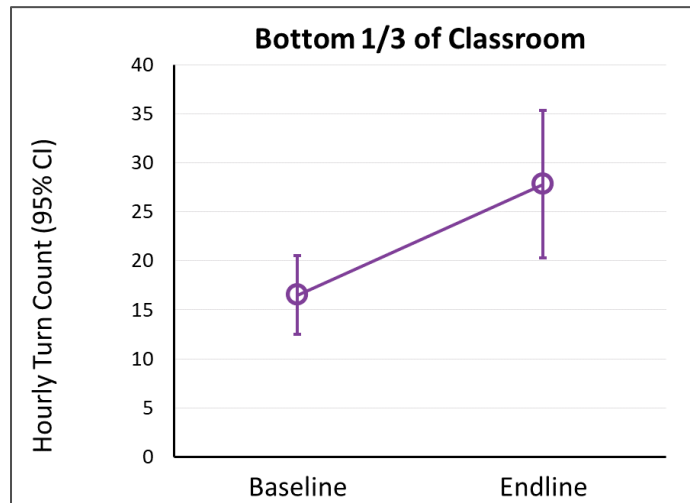
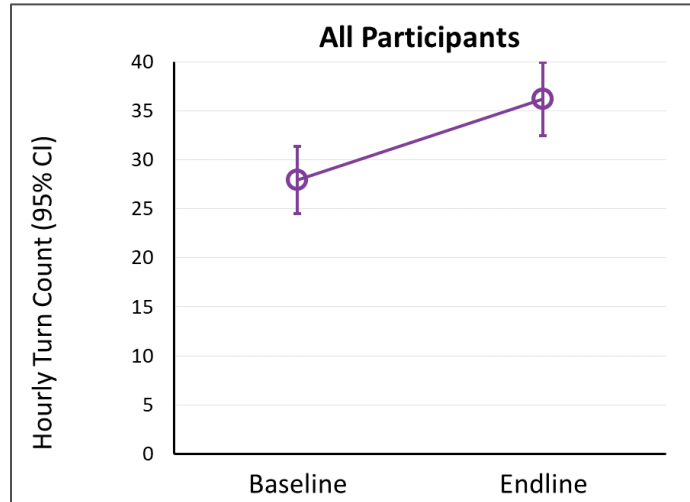


Parent Education



Next Door: Change in Turns

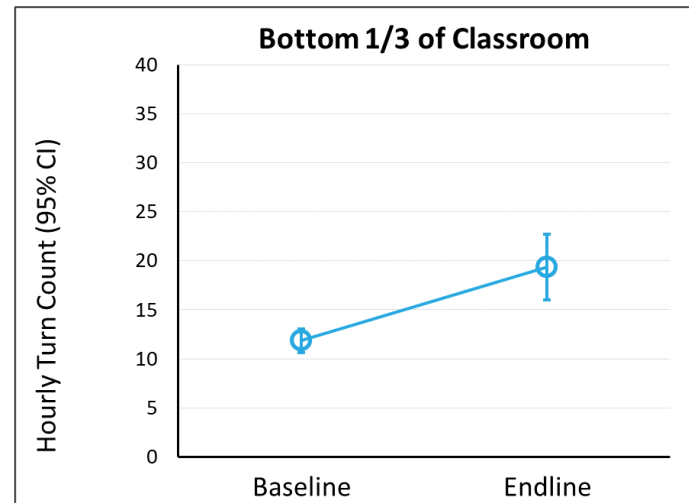
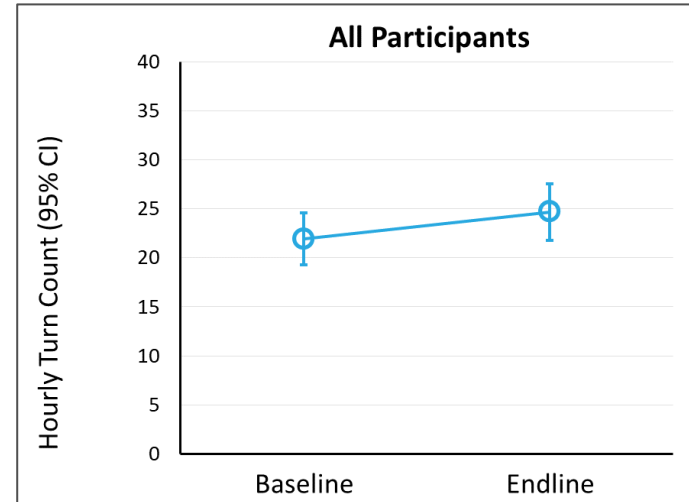
+30%



+68%

SproutFive: Change in Turns

+13%

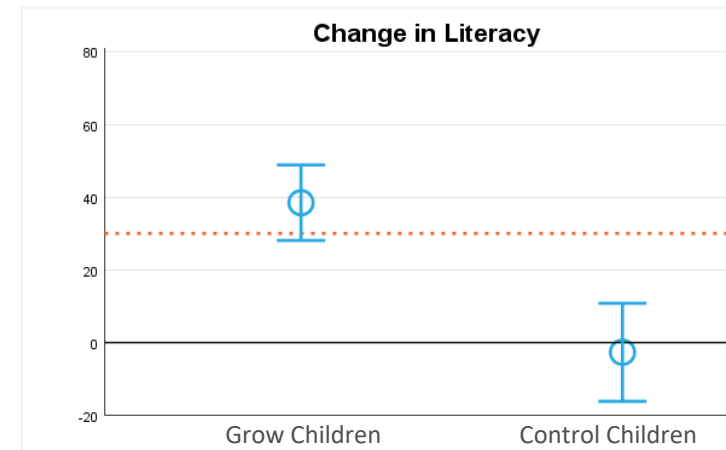
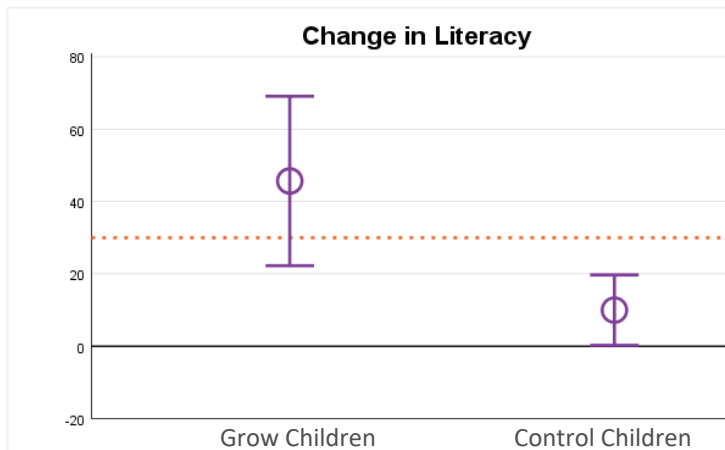
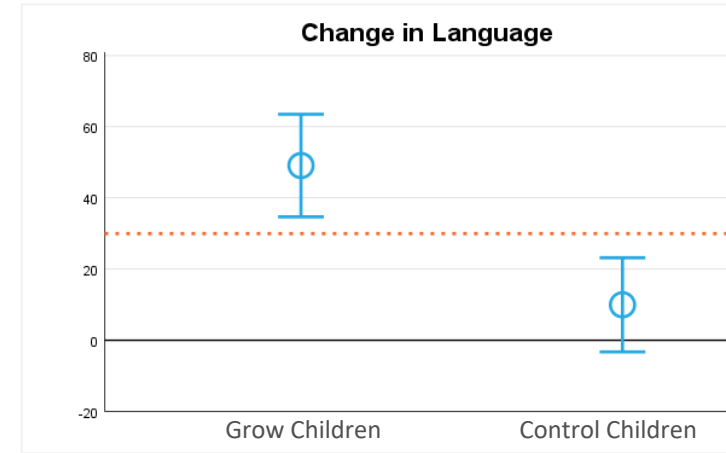
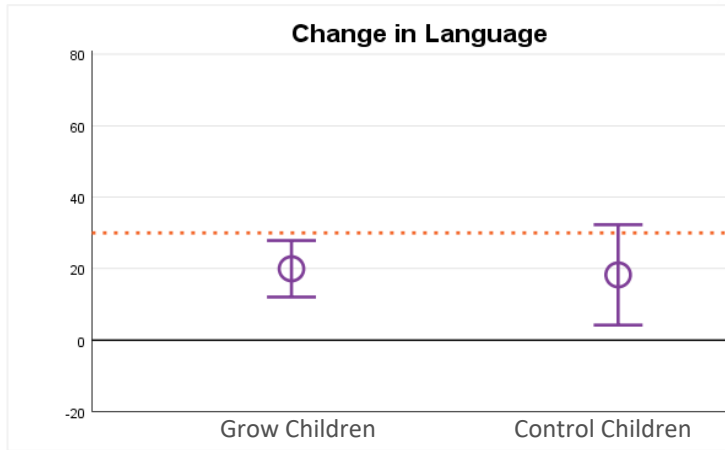


+63%

LENA Grow children increased significantly in TS GOLD Language and Literacy Domains

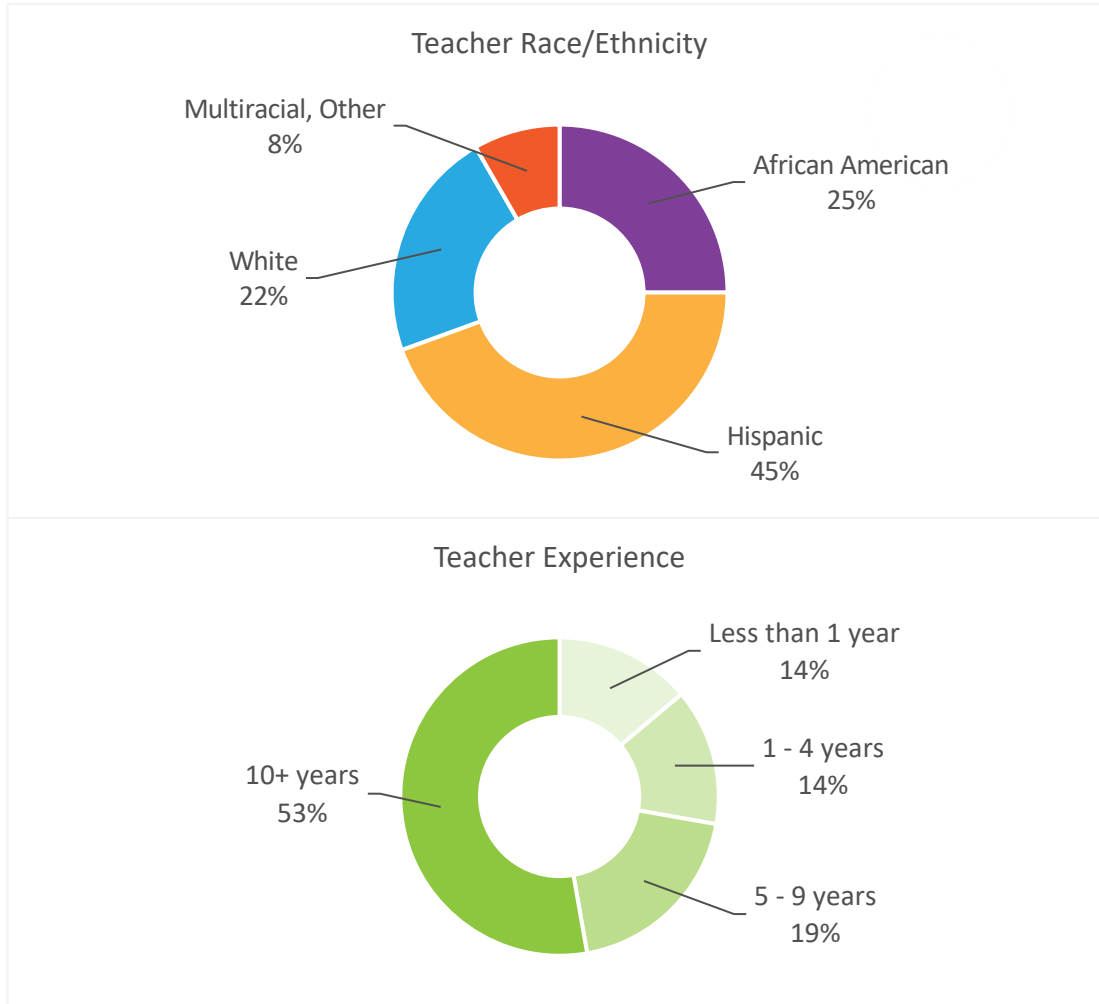
Next Door

SproutFive



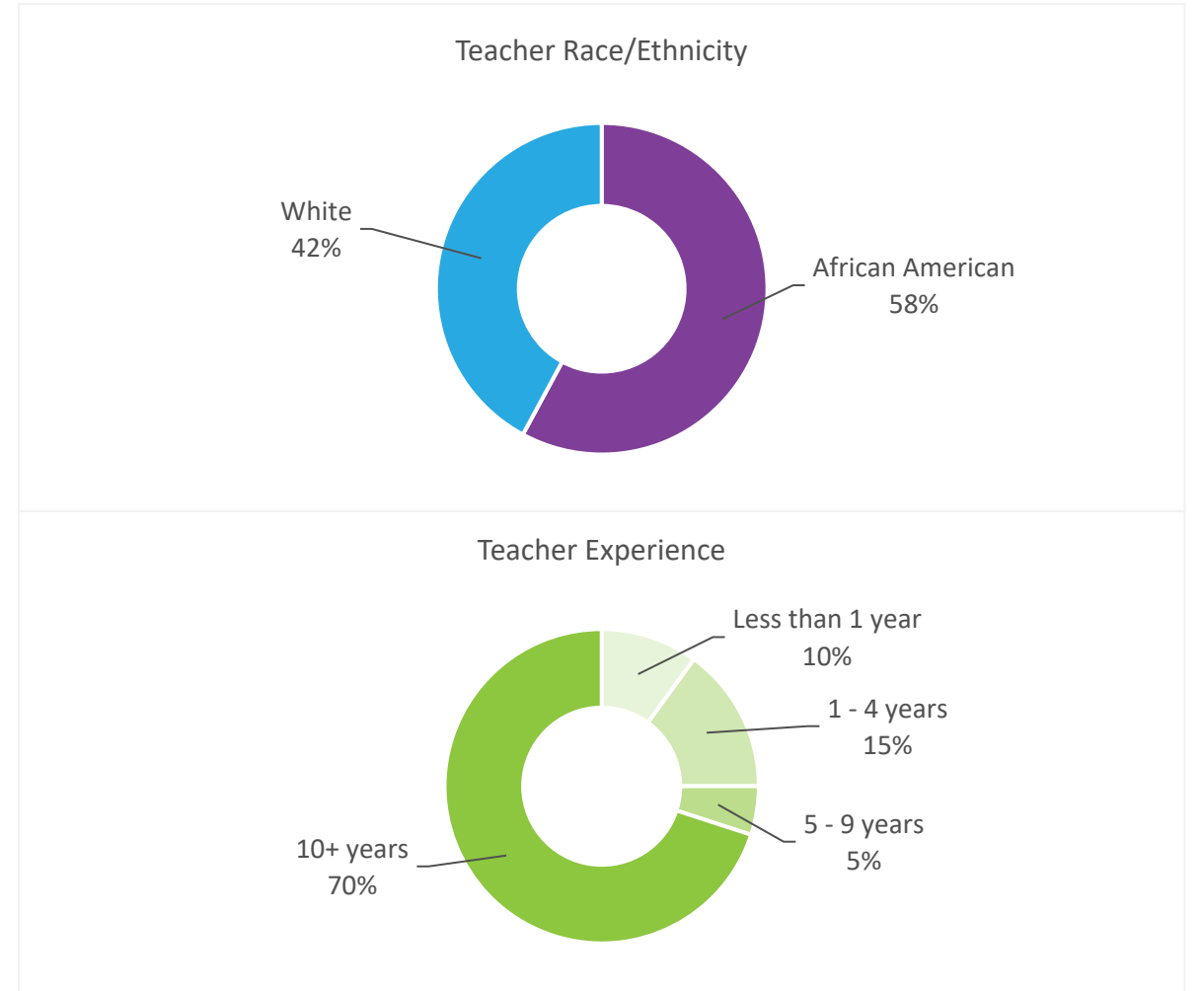
Next Door Teacher Demographics

18 Treatment teachers and 18 Control teachers.

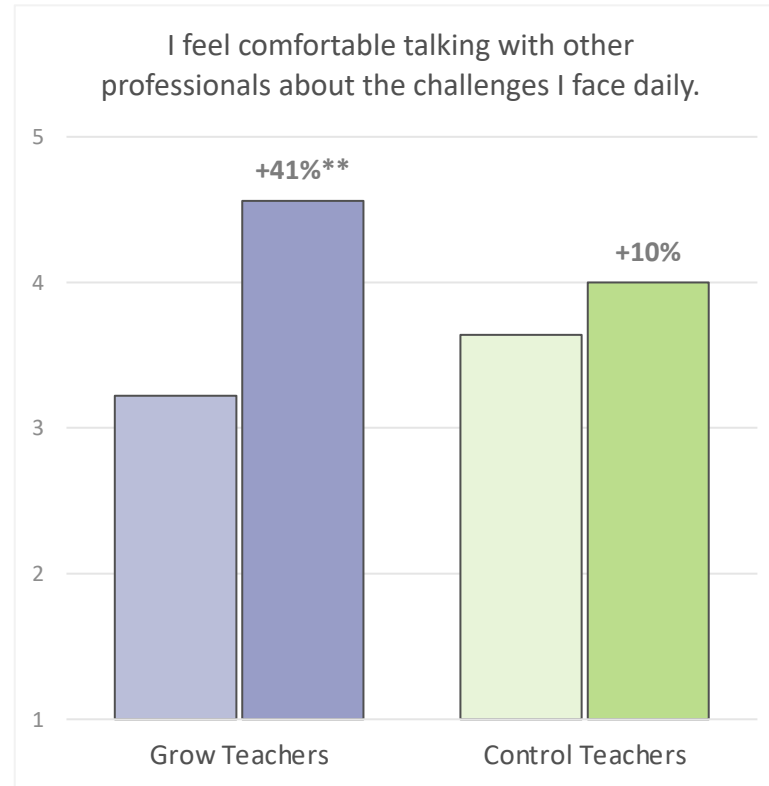
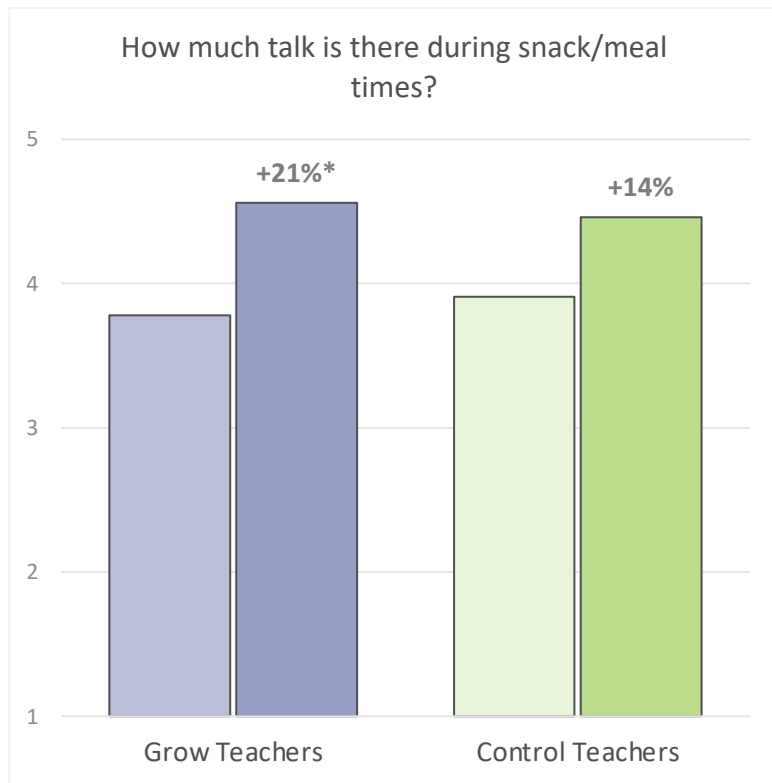


SproutFive Teacher Demographics

9 treatment teachers and 11 control teachers

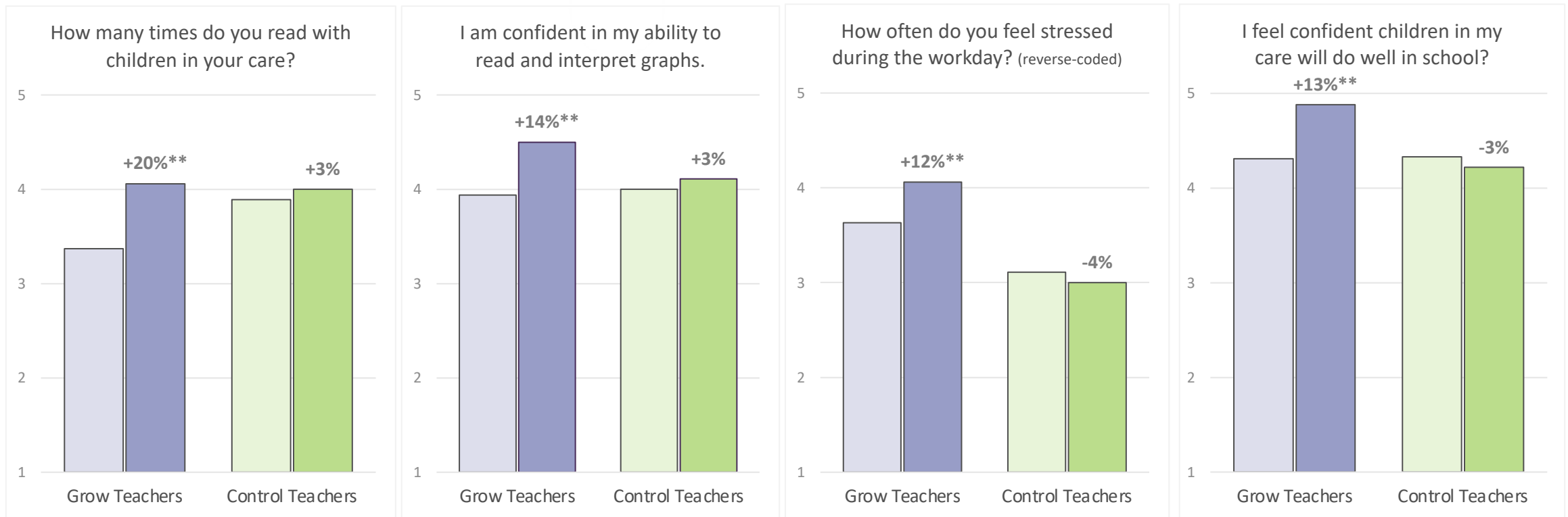


SproutFive Teachers increased self-efficacy, job satisfaction



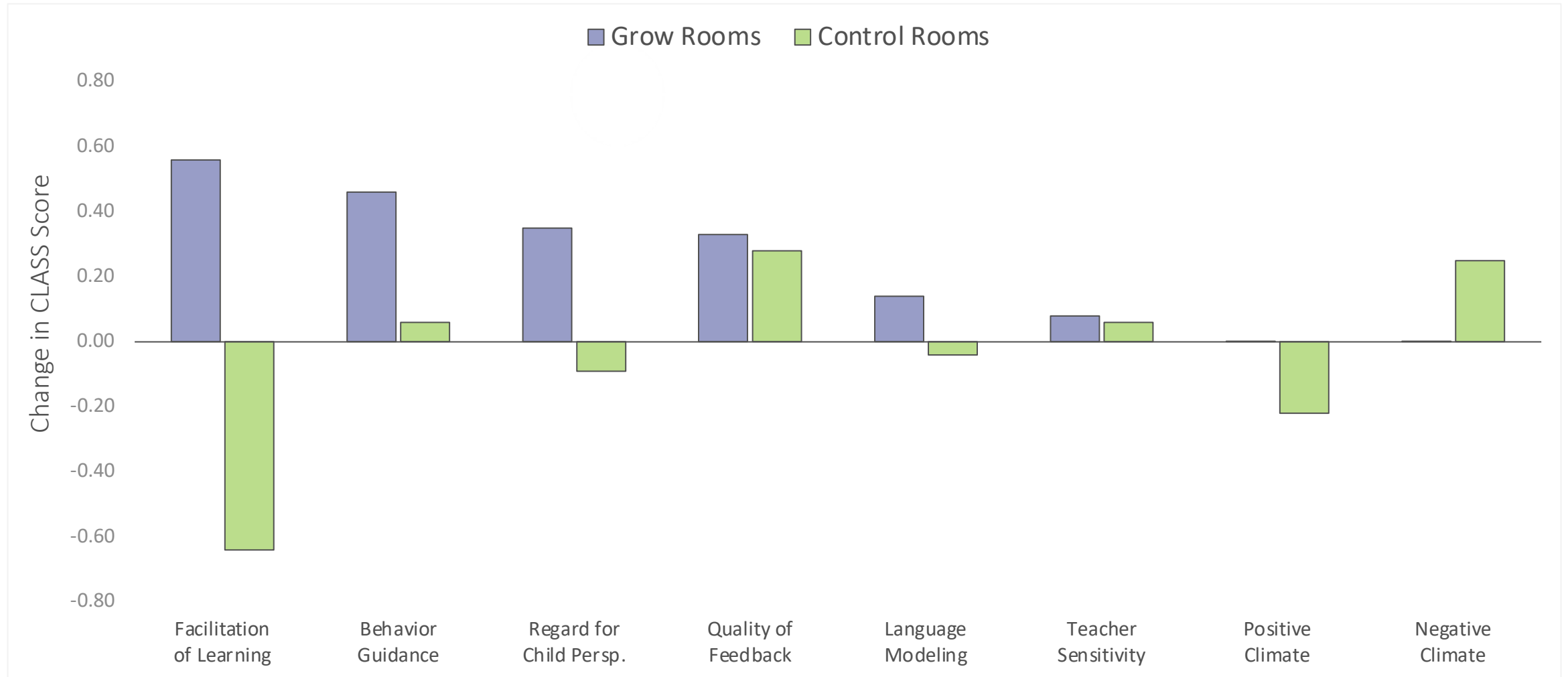
* change is significant at the p < 0.10 level
 ** change is significant at the p < 0.05 level

Next Door Teachers decreased stress, more confident about children's futures



* change is significant at the p < 0.10 level
 ** change is significant at the p < 0.05 level

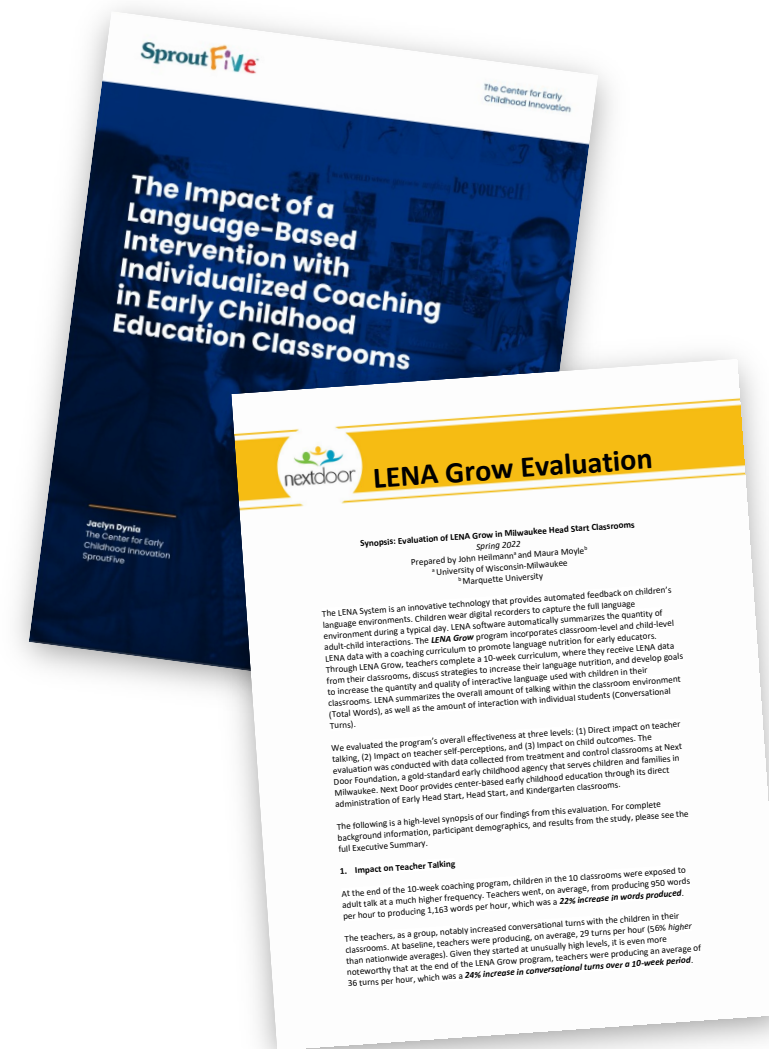
Grow rooms increased in 6/8 CLASS domains



- SproutFive evaluation summary
<https://bit.ly/SproutFiveLENAGrow>
- Next Door evaluation summary
<https://bit.ly/NextDoorLENAGrow>

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Maura Moyle, PhD, Marquette University



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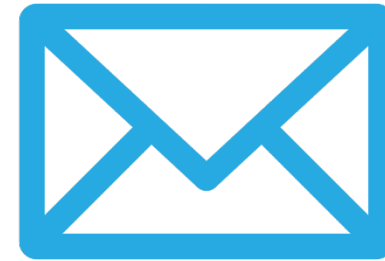
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