CENTER FOR RESPONSE TO INTERVENTION IN EARLY CHILDHOOD

Tier 1 Instruction in Early Education Classrooms:

Implications for Response to Intervention

Presentation prepared for RTI Early Childhood Summit
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Our Key Partners

- University of Kansas
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- Dynamic Measurement Group; Eugene, OR
  - Ruth Kaminski
- University of Minnesota
  - Scott McConnell
- Ohio State University
  - Howard Goldstein
- Division for Early Childhood-CEC

What does Tier 1 Instruction look like in preschool classrooms?

- What does Tier 1 (universal) look like in a broad sampling of preschool programs?
- Who are the children?
  - What are their entering characteristics?
  - How are 4 year olds performing on early literacy/language measures in Fall before kindergarten?
- What is the quality of their early literacy/language experience in preschool classrooms?
- How much do they grow in early literacy/language in the school year before kindergarten?
- How is that growth influenced by their instructional experiences?

Agenda

- Judy Carta:
  - Introduce the study
  - Describe children
  - Describe the programs
- Jane Atwater:
  - Describe children's early literacy and language instructional experiences
  - Describe how experiences differ by preschool program type
- Charlie Greenwood
  - Describe children's growth during a preschool year
  - Describe how growth is influenced by instructional experiences in Tier 1

Important Acknowledgments

- Work has been coordinated by: Jane Atwater, Tracy Bradfield, Alisha Wackerle-Hollman, Annie Hommel, Naomi Schneider, Beth Spencer and a host of dedicated research assistants at University of Kansas, University of Minnesota, the Ohio State University, and the Dynamic Measurement Group.
- We want to acknowledge the partnership of the many early education programs that collaborated with us on this important study.

Underlying Assumptions of RtI

- RTI will reduce the need for special education by through early identification of children needing additional support to succeed.
- A critical assumption is that instruction at the universal level is of high quality based on an evidence-based core curriculum implemented with high fidelity.
- RTI services will be individualized and based on evidence-based strategies.

RtI services assume a high quality of general instruction or core curriculum.

- We assume *most* children will demonstrate adequate growth in response to core curriculum
- Resources and services will be added as needed to increase instructional opportunities.
- We assume more intensive tiers of instruction will be needed by smaller proportions of students.

Overarching Question 1

- **What proportion of children can we expect in each of the tiers in a three-tier RtI model**;
  - what proportion of children will fail to meet cut points on screening measures in early literacy and language development, and thus be identified for Tier 2 or Tier 3 level of early literacy and language intervention?

Overarching Question 2

- **Will the proportions of children at risk will be influenced by students' characteristics at program entry as well as instructional quality and quantity?**
  - the quality of curriculum (evidence base for its skill content and instructional delivery);
  - instructional interactions (i.e., teachers' use of evidence-based teaching procedures);

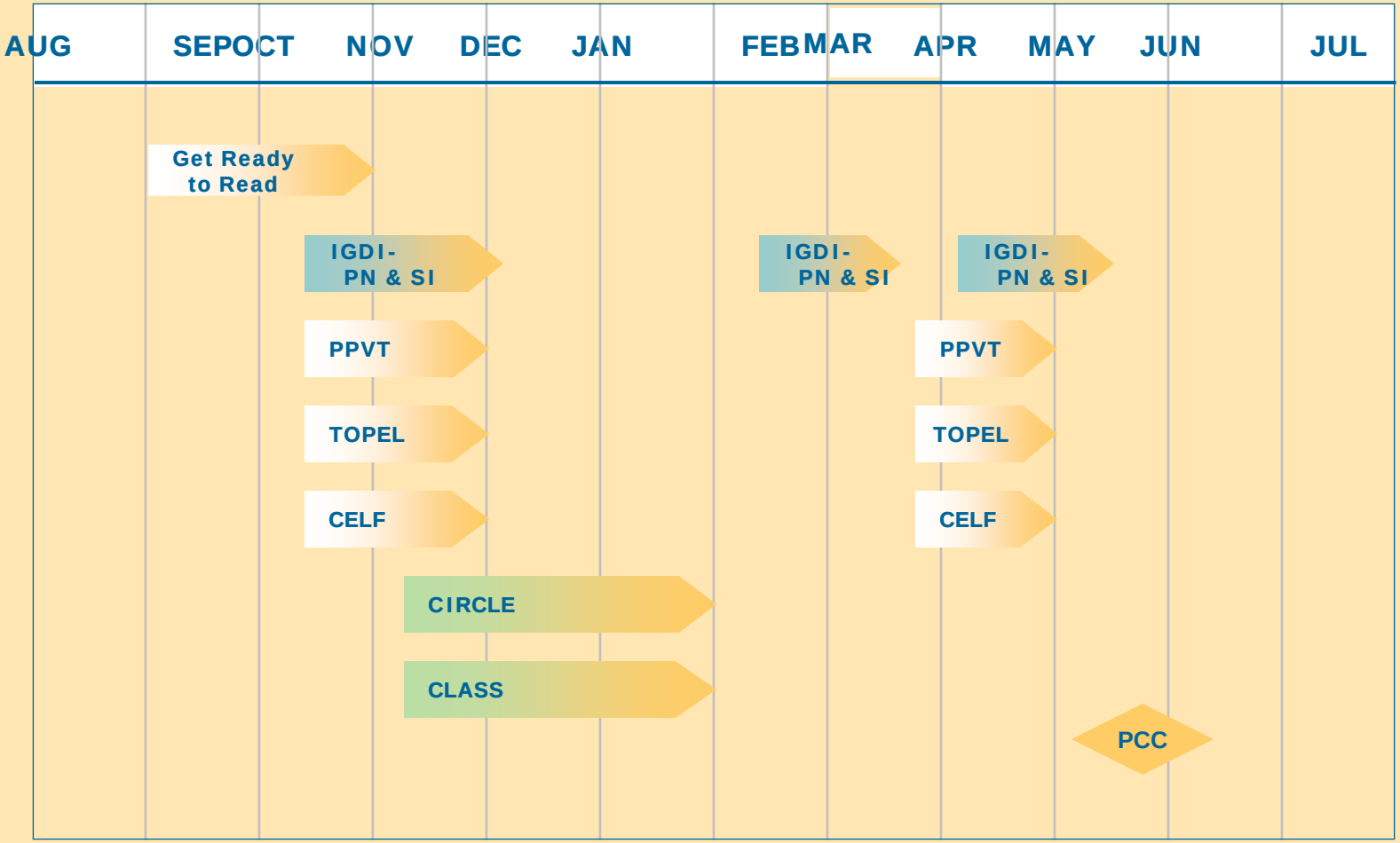
Design

- Descriptive study of 68 classrooms in 4 regions of U.S
- Standardized early literacy and language measures collected on all consented children at the beginning and end of the school year
- Observation data collected on classrooms and 6 randomly selected children in each classroom
- At least 3 waves of IGDIs collected on all children across the school year

Measurement

- *Child Level*
  - *Get Ready to Read* early literacy screen in the Fall
  - IGDIs (Picture Naming; Sound Identification) 3 repeated measures of Oral Language and Alphabet Knowledge
  - Fall and Spring standardized early language and literacy measures (*TOPEL, PPVT, CELF*) on all consented children
  - *Classroom Code for Interactive Recording of Children's Language Environment (CIRCLE*) on 6 randomly selected children
- *Classroom Level*
  - *Classroom Assessment Scoring System (CLASS)*
  - *Preschool Curriculum Checklist (PCC)*

Measurement Timeline



Child Participants

- 840 children embedded in 68 classrooms
- Ethnicity
  - 35.2% African-American
  - 30.7% Caucasian
  - 20.2% Hispanic/Latino
  - 10.2% Multi-ethnic
  - 3.7% Other
- IEP status: 11.1% had IEP
- Language status: 15.8% most comfortable with language other than English
- Parent education: 21.7% did not have HS diploma or GED
- Age at beginning of school year: mean = 4.5 years (range = 3.7 – 5.6)

Classroom Inclusionary Criteria

These were classrooms where RTI might occur.

- They were implementing an early literacy curriculum that had a specific scope and sequence.
- Majority of early literacy instruction was in English.
- The included at least 10 students who would be age-eligible for kindergarten in the fall of 2010 and communicate primarily in either English or Spanish.
- The majority of children did not have identified disabilities but could include children with disabilities
- They operated at least 12 hours/week.

Settings

- 68 classrooms selected to broadly represent the types of classrooms where children might receive literacy instruction during their pre-kindergarten year
  - 26 State-funded Pre-K classrooms
  - 17 Head Start classrooms
  - 15 Title 1 classrooms
  - 10 Private tuition early childhood education classrooms

Number of Classrooms Across Sites

	KS	OH	OR	MN
Full-Day		12	1	14
Half-Day	22		16	3
State-Funded Pre-K	18	1		7
Head Start			17	
Title 1	4	11		
Private Tuition				10

Demographics Across Program Types

	Pre-K %	Head Start %	Title 1 %	Private Tuition %
IEP	15	14	6	5
Parent has not completed HS diploma or GED	23	31	18	0
Child most comfortable with language other than English	28	16	4	0
Ethnicity:				
African American	29	3	72	0
Caucasian	24	49	14	90
Hispanic/Latino	32	27	6	0
Multi-ethnic	10	19	6	5
Other	6	2	2	5

Fall Language and Early Literacy Scores

		PreK	Head Start	Title 1	Private Tuition	All
PPVT		**87.4**	**84.7**	**90.5**	**103.8**	**89.6**
	SD	*23.9*	*17.4*	*14.5*	*13.6*	*19.6*
CELF Core Skills		**80.2**	**85.3**	**89.4**	**102.3**	**86.6**
	SD	*20.1*	*19.7*	*14.3*	*11.1*	*18.7*
TOPEL Print Knowledge		**93.4**	**90.5**	**97.2**	**104.4**	**94.9**
	SD	*14.3*	*12.1*	*14.6*	*13.7*	*14.4*
TOPEL-PhonoAwareness		**84.2**	**92.0**	**89.6**	**98.0**	**89.0**
	SD	*15.1*	*15.3*	*14.5*	*15.3*	*15.5*
Get Ready to Read		**10.8**	**10.3**	**11.2**	**14.4**	**11.1**
	SD	*4.2*	*4.3*	*4.1*	*4.1*	*4.3*

What Proportion of Children are At-Risk at the Start of PreK?

Measure/Domain	Cut Points	Standard/Risk Basis	Tier 1	Tier 2-3	Total
Fall-Get Ready to Read Screener	LT or Equal to 8 (0 – 20)	Fall, Total Score Cut Point	71%	29%	100%
Fall - Picture Naming IGDI Oral Language)	LT or Equal to 26 (0 to 40)	Spring PPVT Standard Score of 85 (-1.0 SD)	72%	28%	100%
Fall -Sound ID IGDI (Alphabet Knowledge)	LT or Equal to 9 (0 to 20)	Spring TOPEL-PA Standard Score of 85 (-1.0 SD)	67%	33%	100%

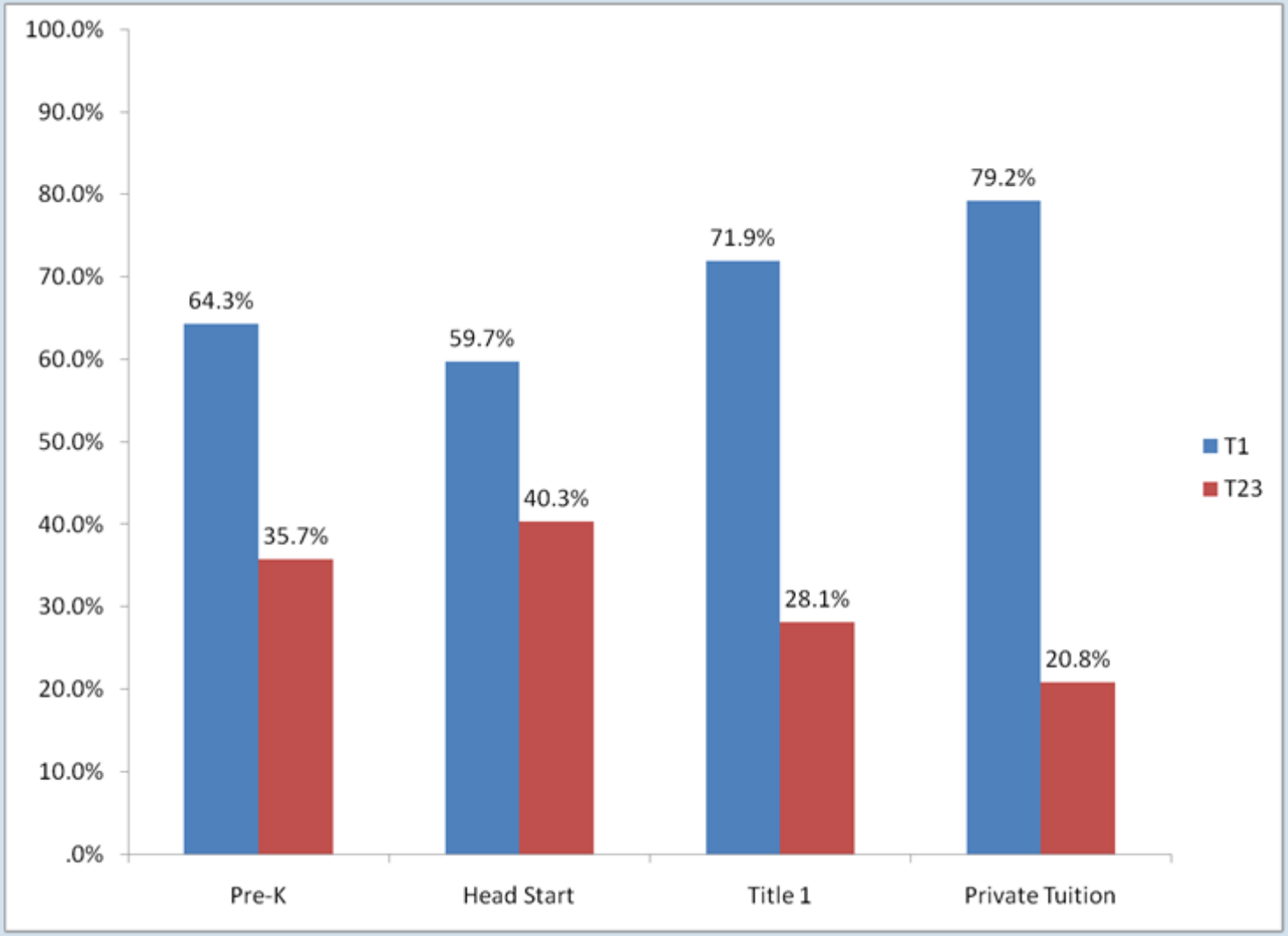
Fall Language and Literacy Outcomes Associated with Tiers Based on Fall Picture Naming IGDI

Measure	Tier 1 Mean	Tier 2/3 Mean
PPVT Receptive Language	97	70*
CELF Core Language Skills	95	72*
TOPEL Print Knowledge	98	88
TOPEL Phonological Awareness	93	79*
	Norm = 100	-1SD = 85*

Fall Language and Literacy Outcomes Associated with Tiers Based on Fall Sound ID IGDI

Measure	Tier 1 Mean	Tier 2/3 Mean
PPVT Receptive Language	93	83*
CELF Core Language Skills	89	82*
TOPEL Print Knowledge	99	88
TOPEL Phonological Awareness	92	84*
	Norm = 100	-1 SD = 85*

Are Proportions At-Risk Related to Program Types? (Based on Fall Picture Naming IGDI)



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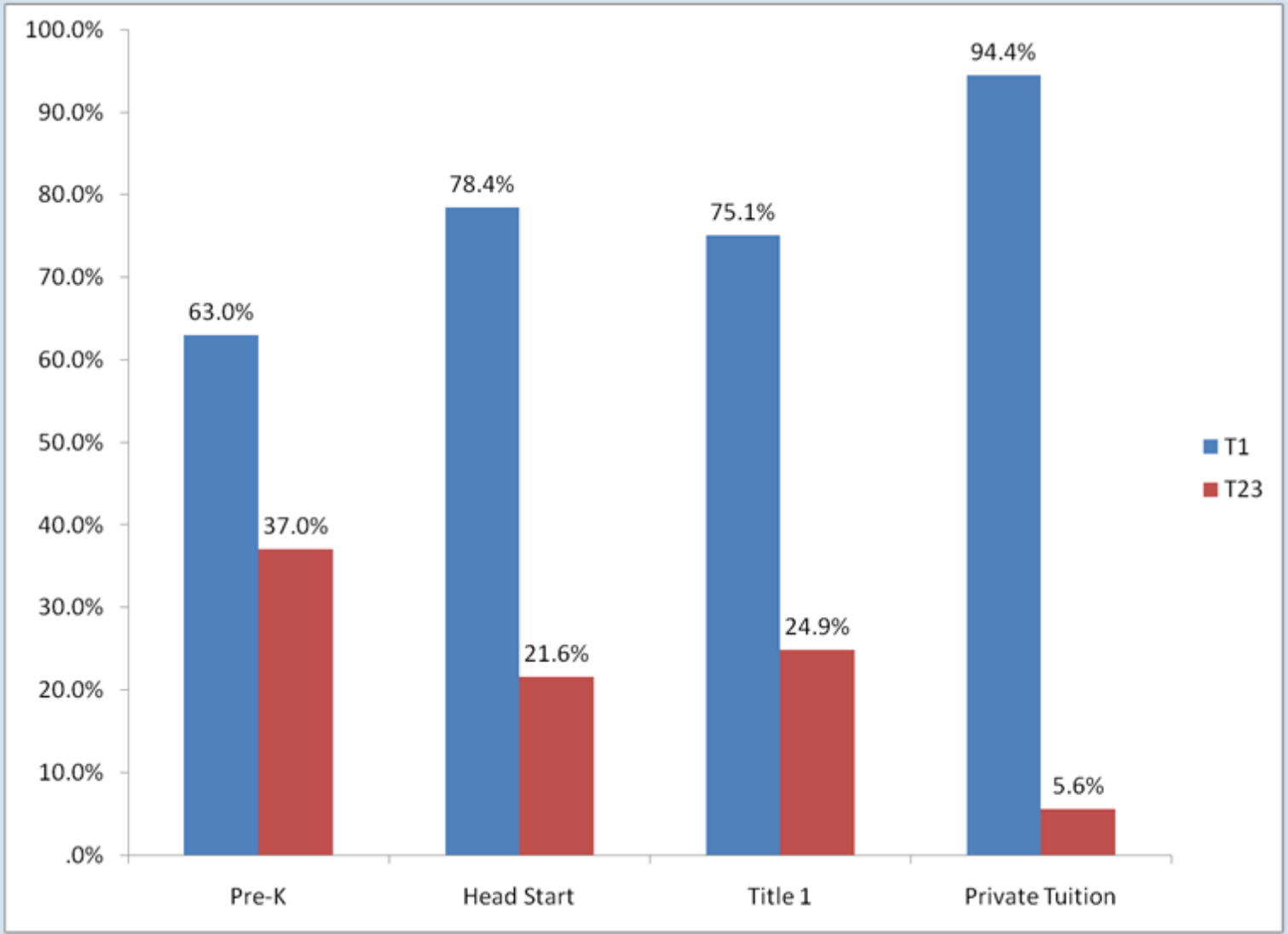


What are the Characteristics of Children in These Tiers?

Tiers Based on Fall Picture Naming IGDI		
	Tier 1	Tier 2/3
% with IEP	12	9
% with low parent education (parent has not completed a HS diploma or GED)	15	41
% most comfortable with a language other than English	6	39
% with limited literacy opportunities at home (no one has read to child at home during the past week)	4	9

Summary

- Not surprisingly, using the various measures used to identify children who may need more instructional support, we found higher proportions of children in pre-k than we would typically see in K-5 grades.
- Children with more family risk factors are more likely to be identified for Tier 2/3.
- Children with IEPs as likely to be identified for Tier 1 as tier 2/3.
- Differences in proportion of children identified for Tier 2/3 by program type is likely a reflection of their entering characteristics.

Coming Up……

- Jane will describe the instruction children were likely to experience during their pre-kindergarten year.
- Charlie will describe their growth in early literacy and language and how this was influenced by their instructional experience.

CHILDREN'S EXPERIENCES IN TIER 1 INSTRUCTION

Research Questions

- What is Tier 1 instruction like in preschool programs across our local communities?
- In their interactions with children, how often do teachers employ strategies for promoting language and early literacy?
- How often are children actively engaged in activities related to early literacy?
- What experiences are associated with a higher level of child engagement?

Measures of Tier 1 Instruction

Preschool Curriculum Checklist (PCC) (Kaminski & Carta, 2010)

- Document review of curricular support for language and literacy

CLASS Pre-K (Pianta, La Paro & Hamre, 2008)

- Ratings of support for learning in the classroom as a whole

Classroom CIRCLE (Atwater, Lee, Montagna, Reynolds & Tapia, 2009)

- Time-sampled recording of individual children's behaviors and experiences in the classroom

Preschool Curriculum Checklist

- Evaluates curricula on 10 curriculum design features that support the development of early literacy skills: phonological awareness, alphabet knowledge, vocabulary and oral language, and listening comprehension
- Based on a detailed review of curriculum materials by trained staff who met reliability standards
- Scores represent the percentage of criteria met by each curriculum, with a possible range from 0 to 100

Curricula Used for Teaching Early Literacy

	Number of Classrooms
AEPS: Assessment, Evaluation and Programming System	6
Brookes: Ladders to Literacy + Handwriting Without Tears	17
Creative Curriculum	2
Creative Discoveries + SEEDS of Early Literacy Supplement	10
Harcourt Brace: StoryTown	12
Houghton Mifflin	2
Jolly Phonics	2
Lucy Calkins Writers' and Readers' Workshop	1
Scholastic: Building Language and Literacy	11
SRA: Open Court	4

PCC Scores Across Classrooms

	Mean	Std Deviation	Minimum	Maximum
Phonological Awareness	63.0	17.9	25	83
Alphabet Knowledge	62.5	18.6	0	83
Vocabulary and Oral Language	63.9	18.3	0	83
Listening Comprehension	60.2	22.0	0	83

Classroom Assessment Scoring System: CLASS Pre-K

- Provides ratings (1-7) of support for learning in the classroom
  - Emotional Support
  - Classroom Organization
  - Instructional Support

- Based on 80 minutes of observation in each of 67 classrooms

Components of Instructional Support

- Concept Development

  Analysis and reasoning, creating, integration, connections to the real world

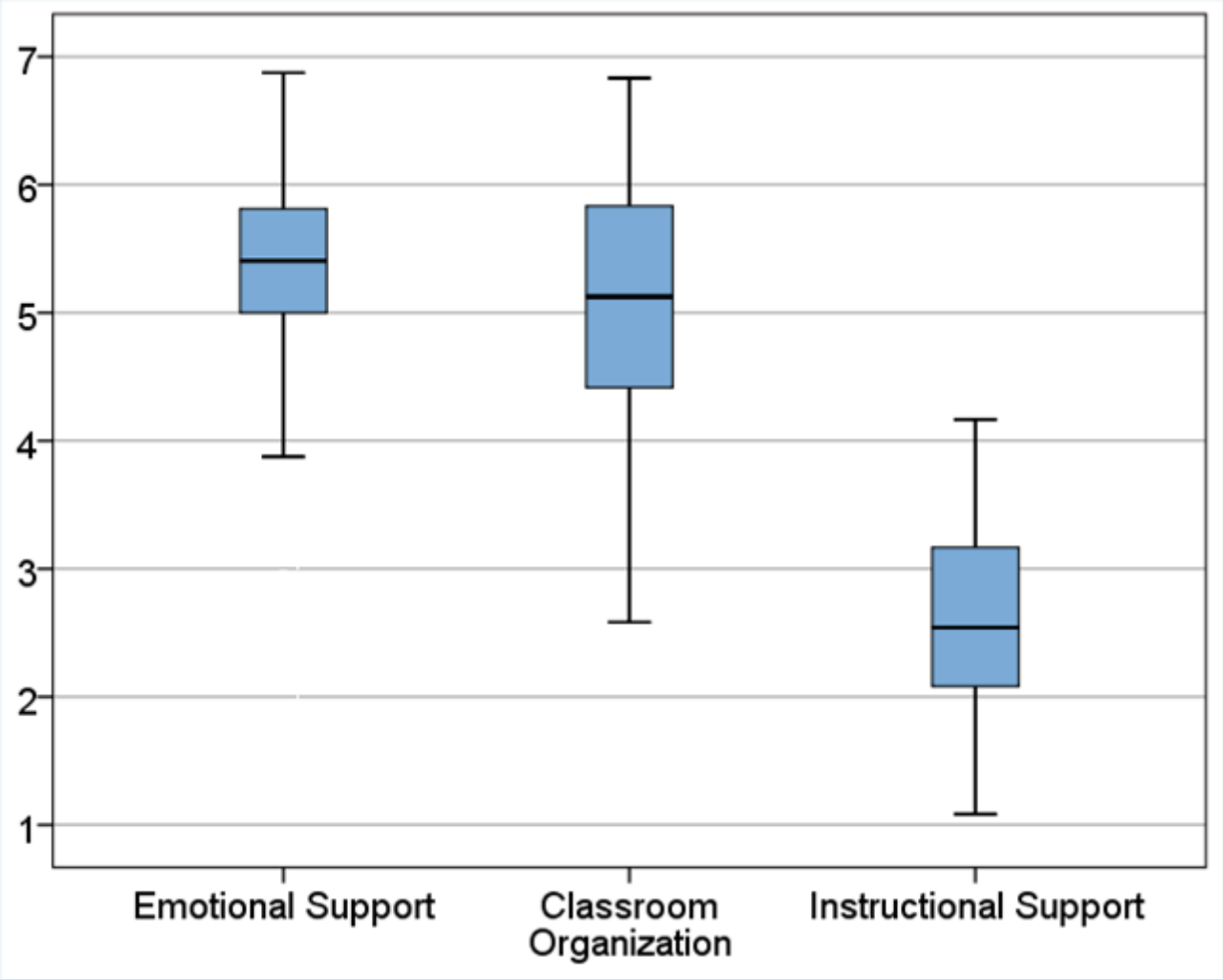
- Quality of Feedback

  Scaffolding, feedback loops, prompting thought processes, providing information, encouragement and affirmation

- Language modeling

  Frequent conversation, open-ended questions, repetition and extension, self- and parallel talk, advanced language

CLASS Ratings Across Classrooms



Classroom CIRCLE

- Computerized observation system for recording the classroom experiences and behaviors of individual focus children
- 6 focus children randomly selected in each classroom (n=353)
- 30-minutes of observation for each focus child – sampled broadly across the typical program day, including any time designated for literacy learning by the teacher

Classroom CIRCLE

- Classroom Context
- Teacher Behavior
  - Verbal Response
  - Recipient of Verbal Response (focus child or child's group)
  - Focus on Early Literacy
  - Involvement
- Child Behavior
  - Communication and Social Behavior
  - Social Partner
  - Engagement in Classroom Activities

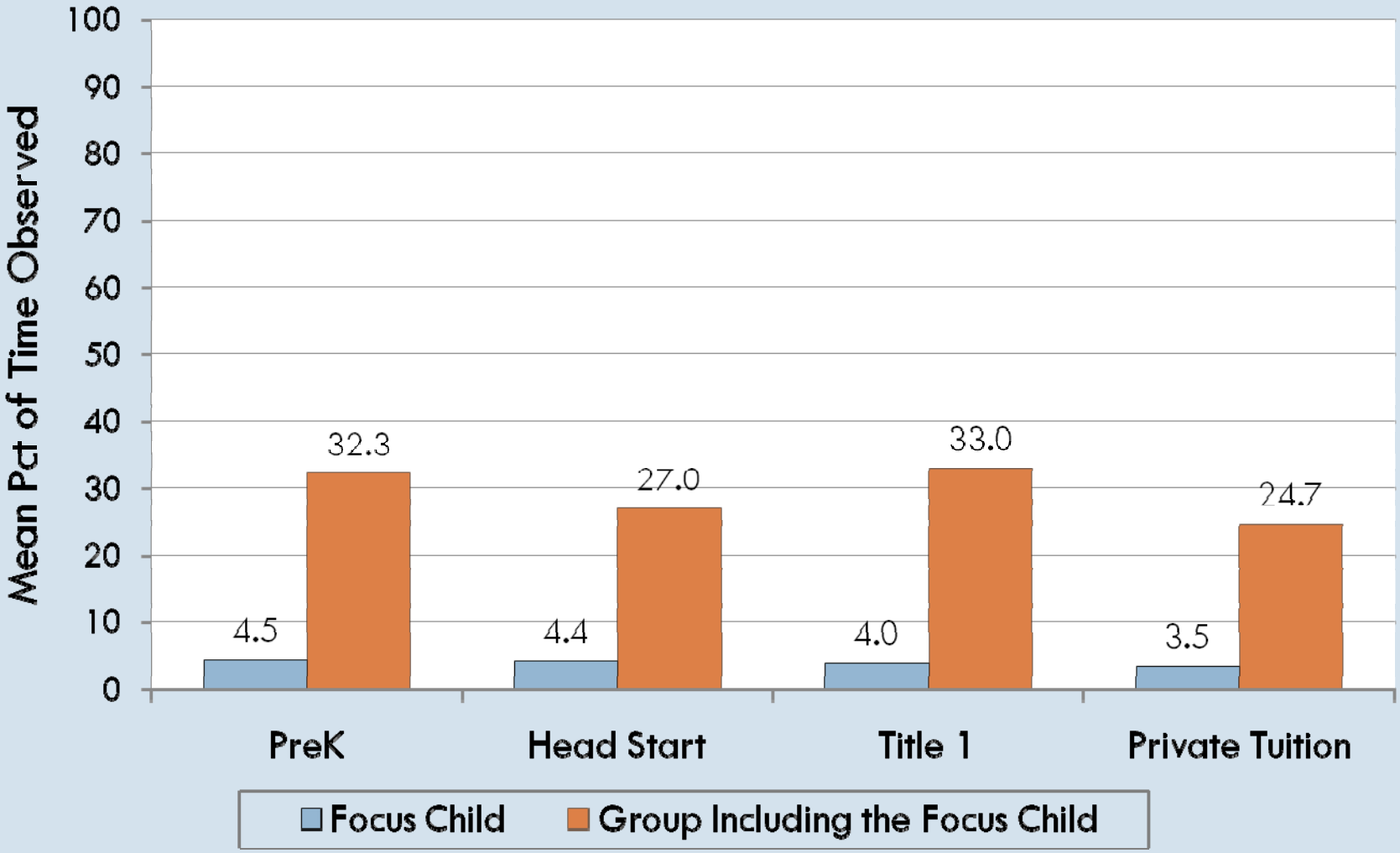
Classroom Characteristics Across Programs

	Pre-K %	Head Start %	Title 1 %	Private Tuition %
Includes dual language learners	84	88	80	44
Language of instruction includes some non-English	4	6	0	0
Includes children with IEP	53	93	40	33
Uses strategies to identify children who need additional support for language and literacy	68	82	69	56
Uses small groups or embedded instruction to provide additional support	100	35	100	43

Key Measures Related to Language Support

- The amount of teacher talk to the focus child
- Teacher verbal input that may support language development
  - Asking questions, expanding and extending child language, and engaging in positive conversation
- Child verbal communication

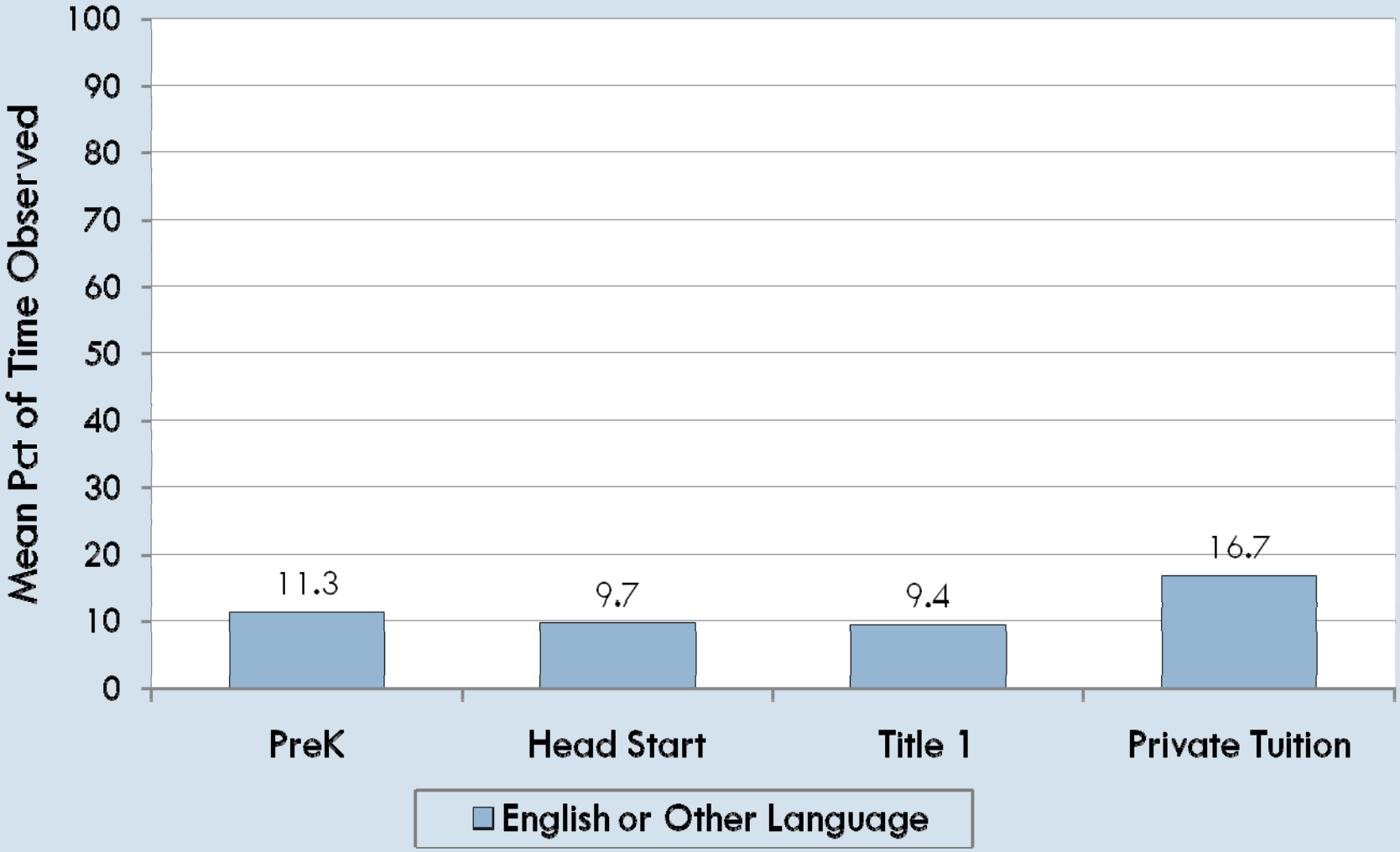
How often was a teacher talking to the focus child?



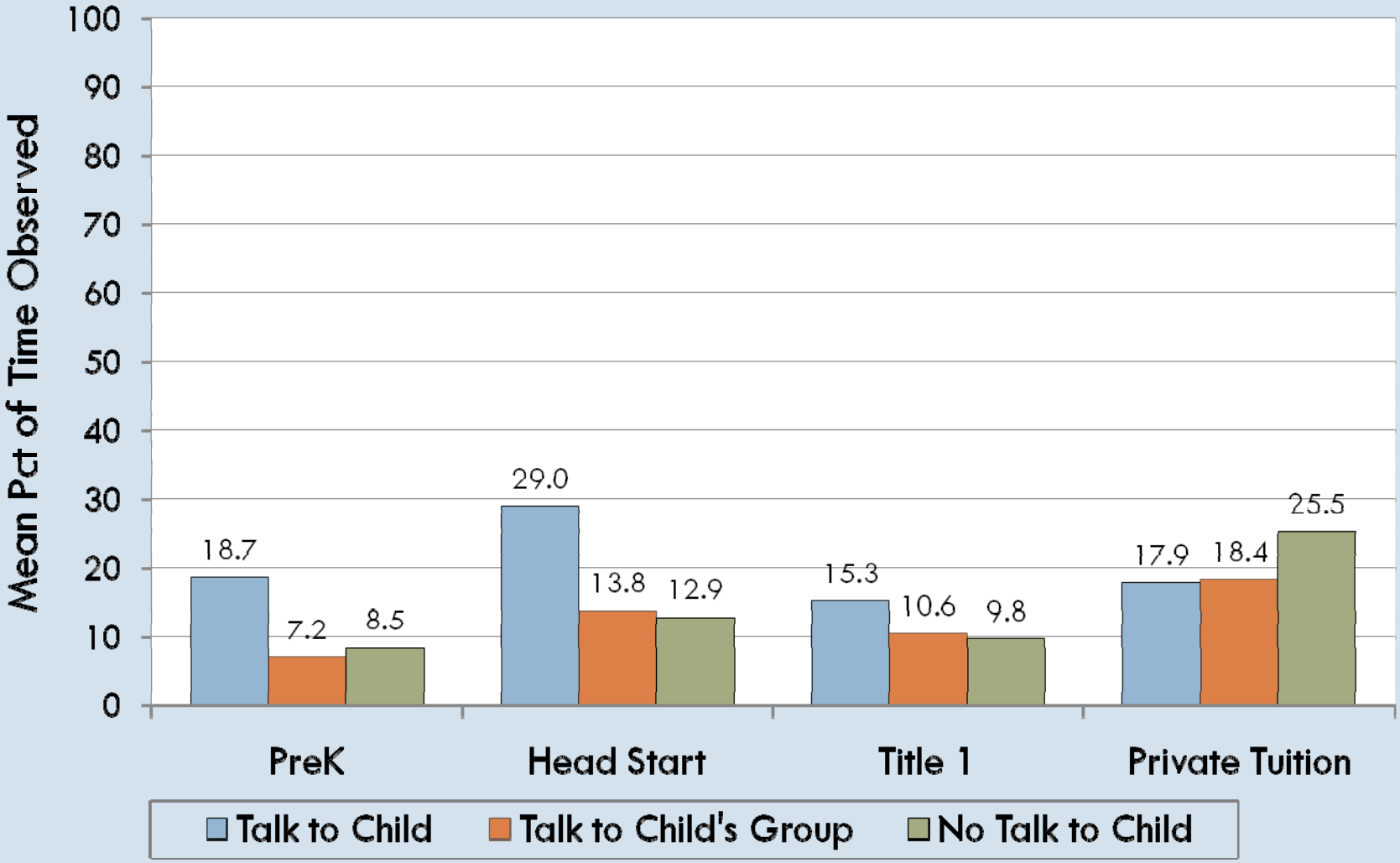
What types of teacher verbal response did children receive?

Verbal Response Composites	Pre-K %	Head Start %	Title 1 %	Private Tuition %
Prompting and expanding child language	7.0	4.2	5.4	3.6
Positive feedback and conversation	18.4	18.8	18.8	13.9
Reading, reciting, and singing	6.9	4.9	8.1	4.6
Directives and negative feedback	4.5	3.9	4.6	6.2

How often did children talk to teachers and peers?



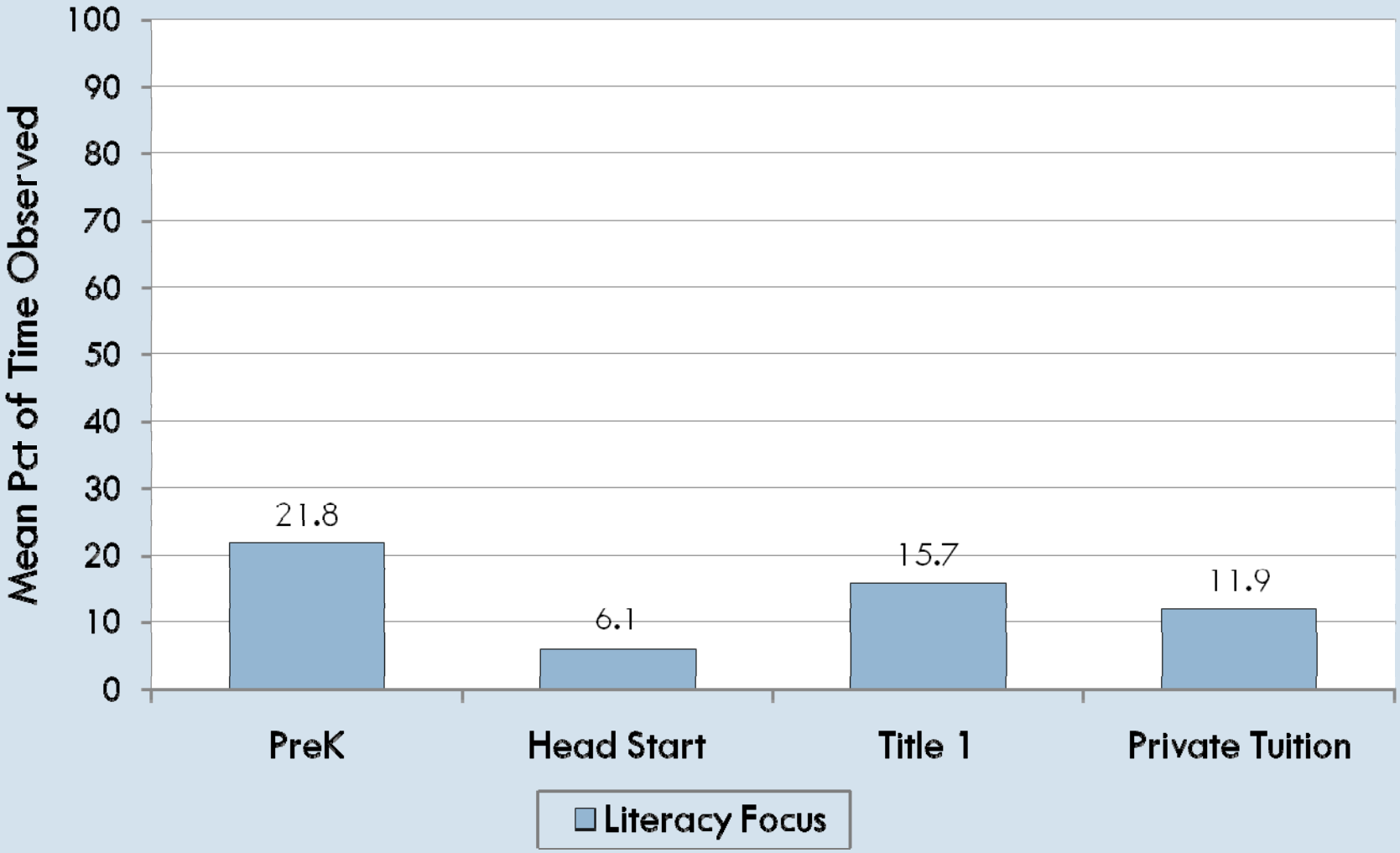
Child verbal communication given teachers' prior verbal response (n=55)



Key Measures Related to Early Literacy Support

- Literacy Focus of Instruction
  - Teacher focuses on phonological awareness, alphabetic/print concepts, vocabulary, comprehension, or reading
- Child Academic Engagement
  - Early writing, early reading, manipulation, verbal response, or attention related to an academic topic
  - Academic topics: early literacy, numeracy, science, and social studies

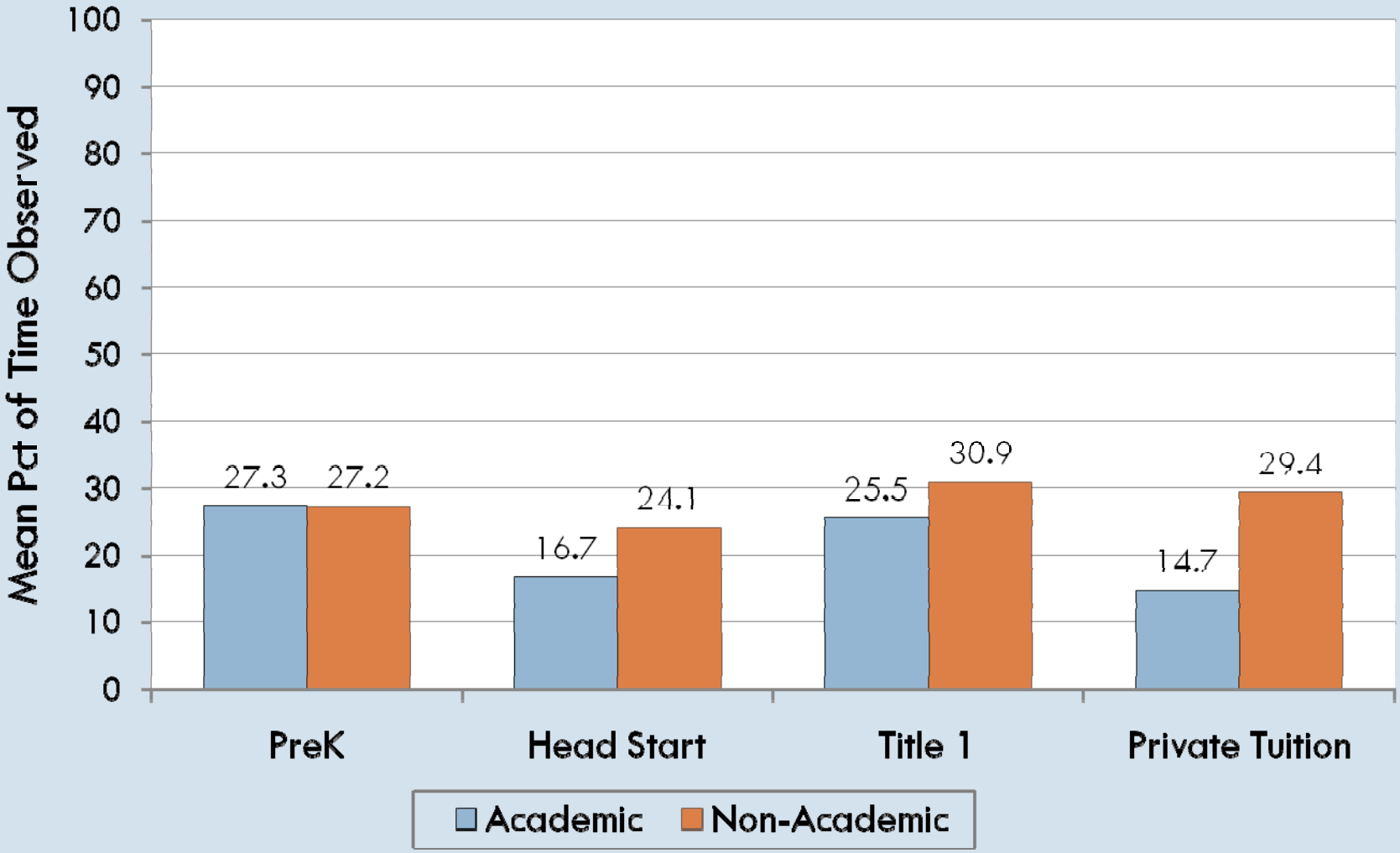
How often did teachers focus on literacy with the children observed?



What aspects of early literacy did teachers focus on most often?

	Pre-K %	Head Start %	Title 1 %	Private Tuition %
Phonological awareness	1.6	0.2	1.7	0.2
Alphabet knowledge	4.2	1.1	3.3	2.9
Comprehension	11.5	1.8	7.1	4.6
Vocabulary	1.7	0.1	0.3	0.3
Reading	2.8	2.9	3.3	3.8

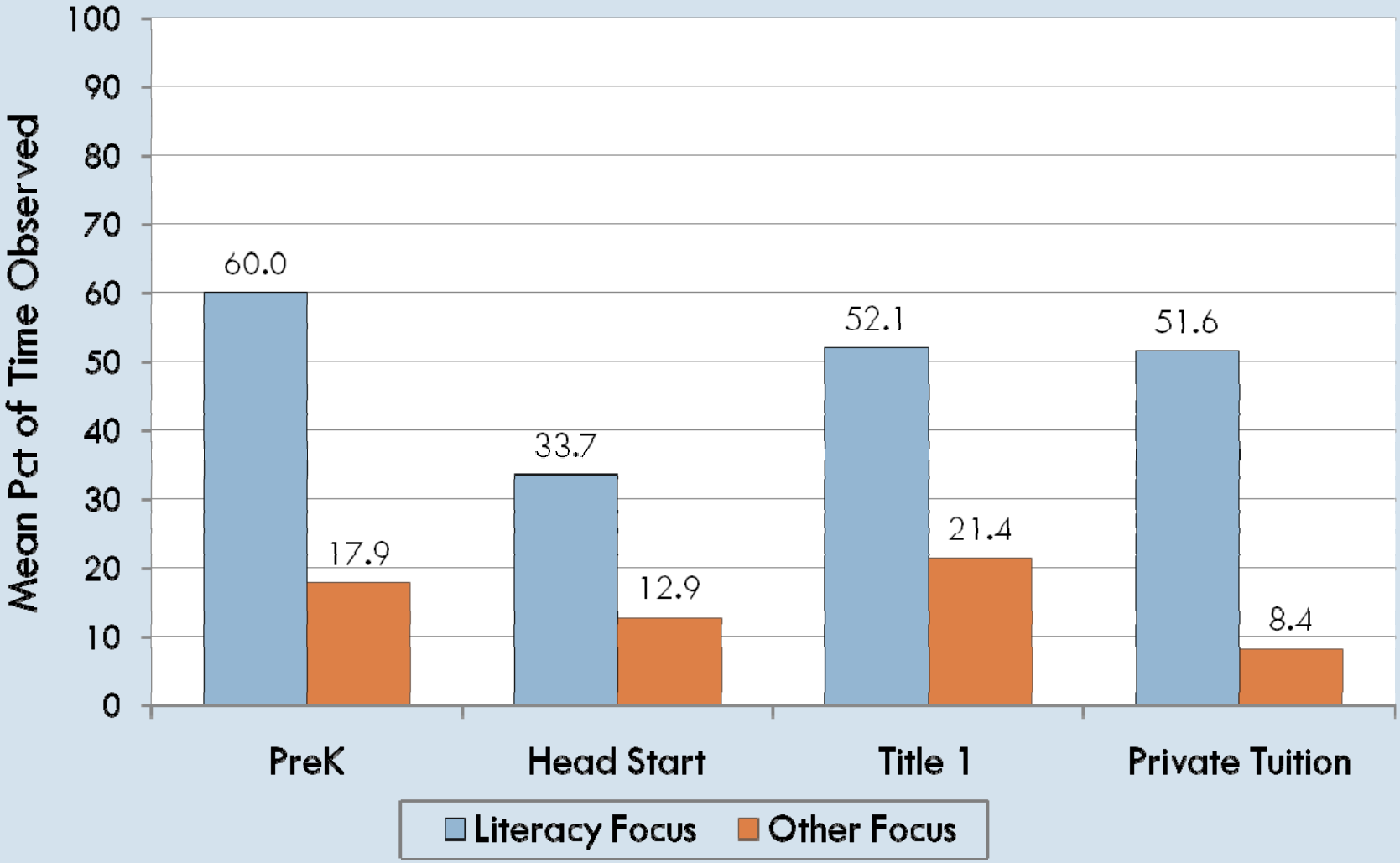
What was the level of children's engagement?



What were the components of academic engagement?

	Pre-K %	Head Start %	Title 1 %	Private Tuition %
Writing	1.2	0.5	1.6	1.2
Reading	0.8	0.6	0.8	0.1
Manipulating materials	5.0	9.2	3.7	3.1
Responding verbally	2.5	0.2	1.5	0.6
Attending	17.7	6.7	17.8	9.2

Children's Academic Engagement Given Teachers' Prior Focus on Literacy (n=289)



What we have learned so far

- Community-based classrooms in our sample differed considerably in children served, in curricula, and in support for learning.
- We found consistently lower ratings for instructional support, the CLASS measure most closely related to support for early literacy.
- From the perspective of individual children, teacher support for language and literacy varied considerably within and across program types.

What we have learned so far

- Teacher talk to the individual child was associated with an increased likelihood of child communication in most classrooms.
- Teacher focus on literacy skills was associated with a sizeable increase in children's academic engagement
- But, these teacher behaviors were relatively infrequent in occurrence, highlighting potentially fruitful targets for intervention:
  - Talk to the individual child – occurred 4% of the time, or approximately 7 minutes during a 3-hour classroom period
  - Literacy focus – 16% of the time, or less than 30 minutes during a 3-hour period

What more do we need to learn?

- How Tier 1 classroom experiences may vary for different groups of children (i.e., dual language learners, children with IEPs, and children who may need Tier 2 and Tier 3 intervention)
- Instructional features and classroom experiences that are predictive of children's progress and eventual readiness for kindergarten
- How factors, such as dual language status, may moderate the relationships among classroom experiences, engagement, and outcomes
- Implications for the development and implementation of Tier 2 and 3 interventions

WHAT WERE THE FALL TO SPRING FINDINGS?

Charles R. Greenwood

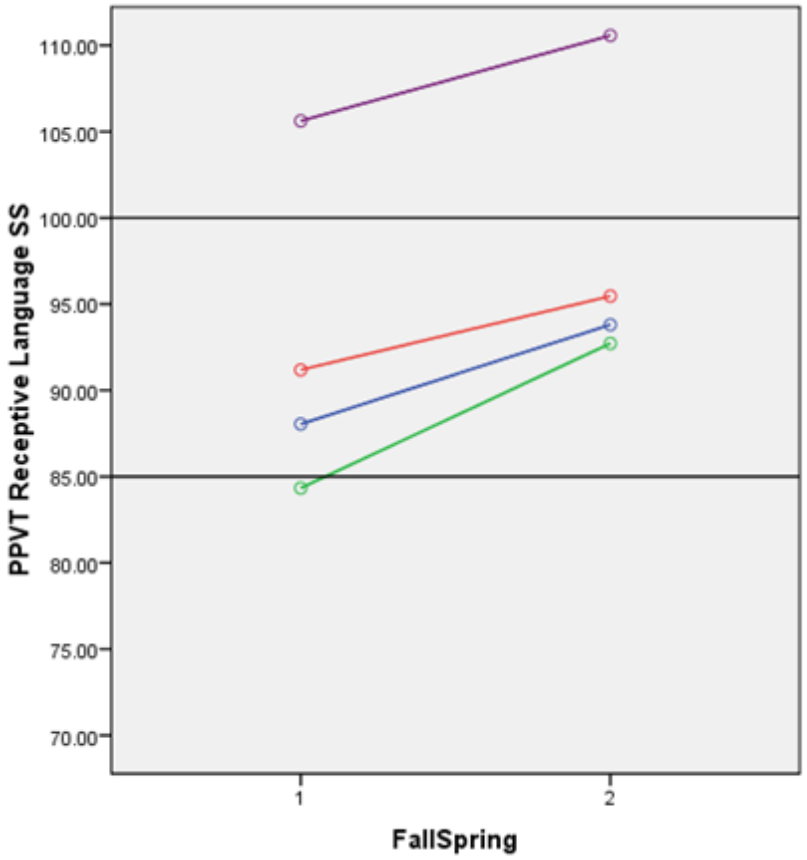
Tier 1 Instruction Questions Addressed

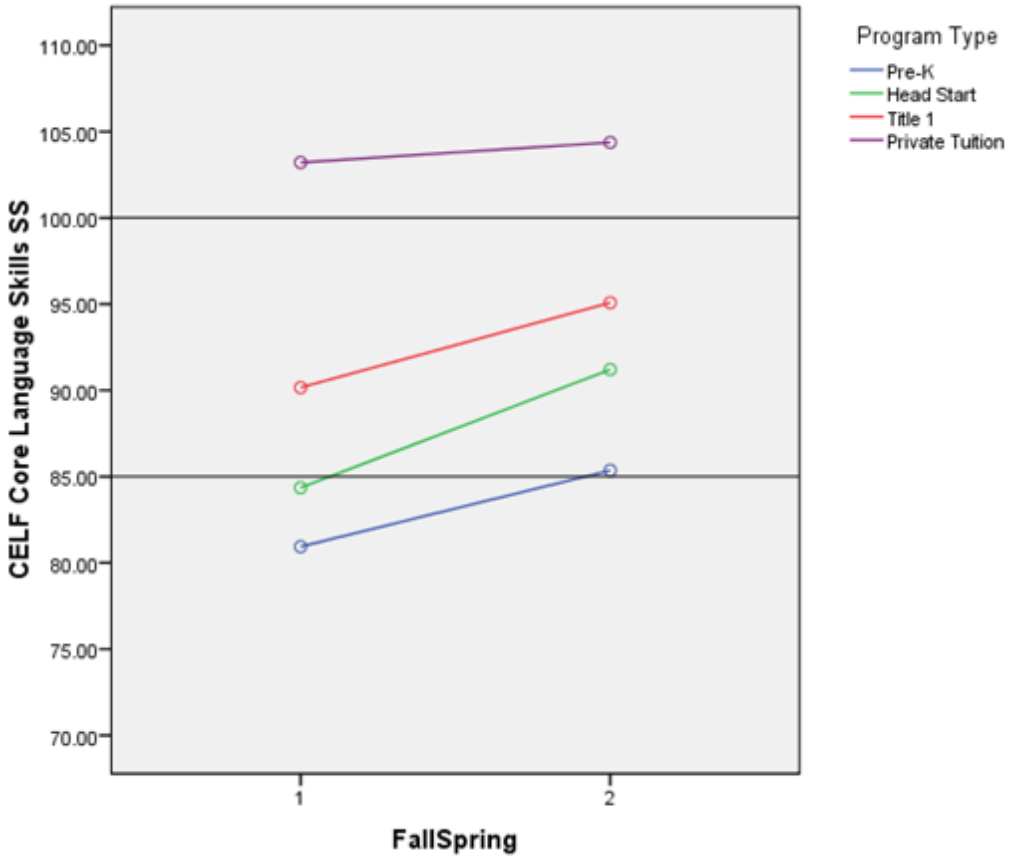
- What was the extent of children's growth and gain in outcomes in the year before kindergarten?
- What was the pattern in Tier group transitions from Fall to Spring?
- Do alterable classroom instructional experiences (variation in intensity) influence children's growth as we expect them to in RTI?

How Large were Children's Gains in Language and Alphabet Knowledge Overall?

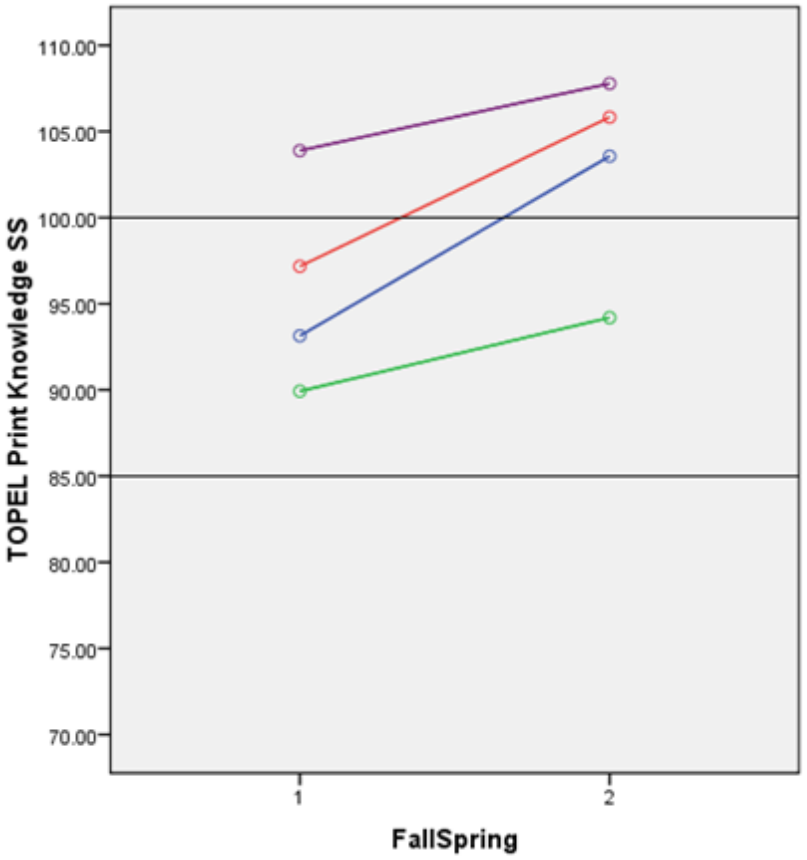
Outcome	Measure	Fall	Spring	Gain	*t*	*p*
Receptive Language	PPVT*	90.2	96.0	5.8	-7.83	0.0001
Language Core Skills	CELF*	86.9	91.6	4.7	-6.21	0.0001
Phonological Awareness	TOPEL*	88.7	93.5	4.8	-4.53	0.0001
Print Knowledge	TOPEL*	94.6	102.5	7.9	-9.81	0.0001
*Standard Scores						
Note. PPVT = Preschool Picture Vocabulary Test, TOPEL = Test of Preschool Early Literacy, CELF = Clinical Evaluation of Language Function						

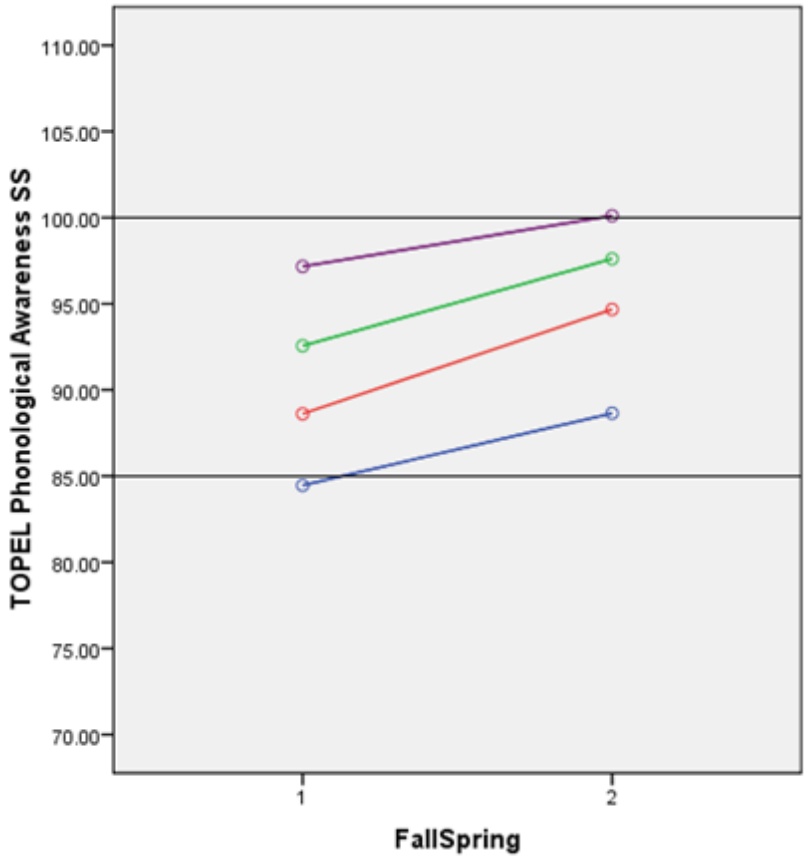
Growth in Language Standard Scores by Program Type



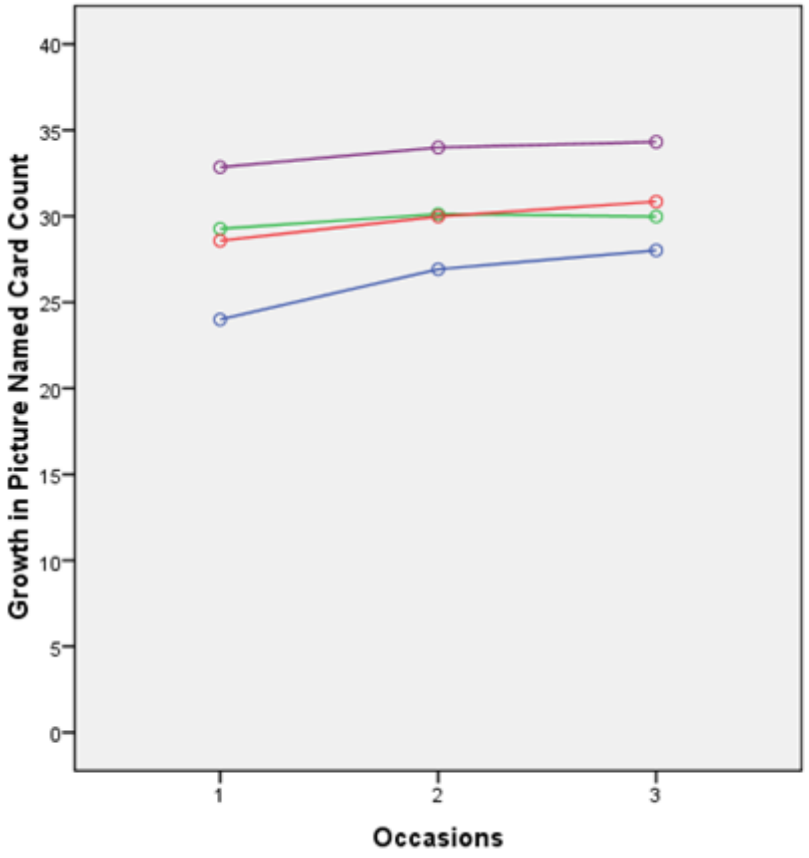


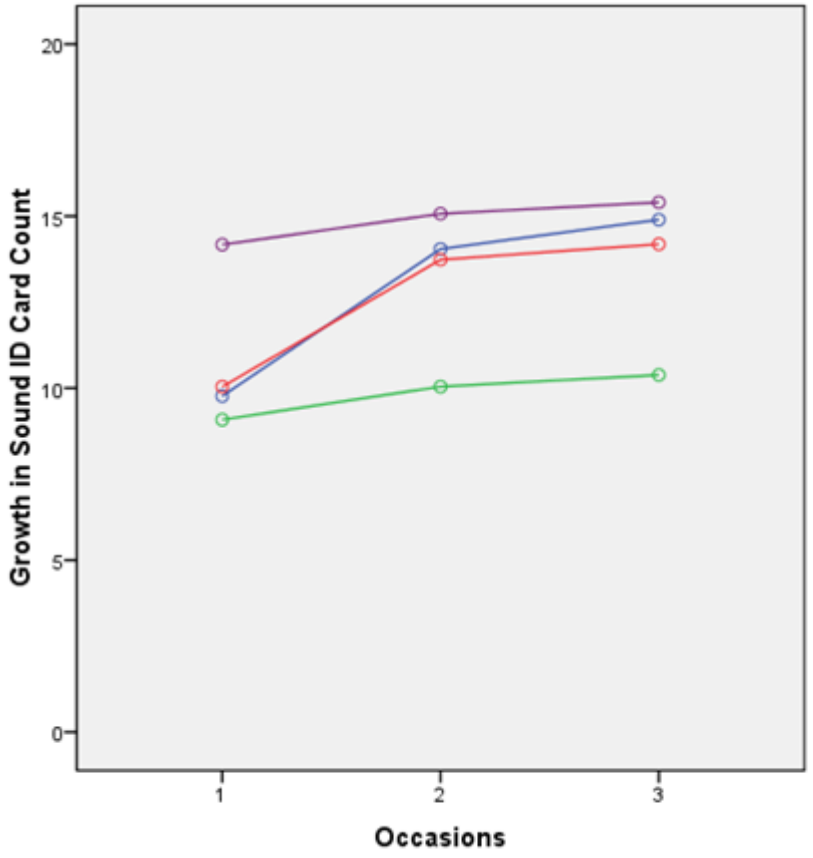
Children's Growth in Alphabet Knowledge by Program Type



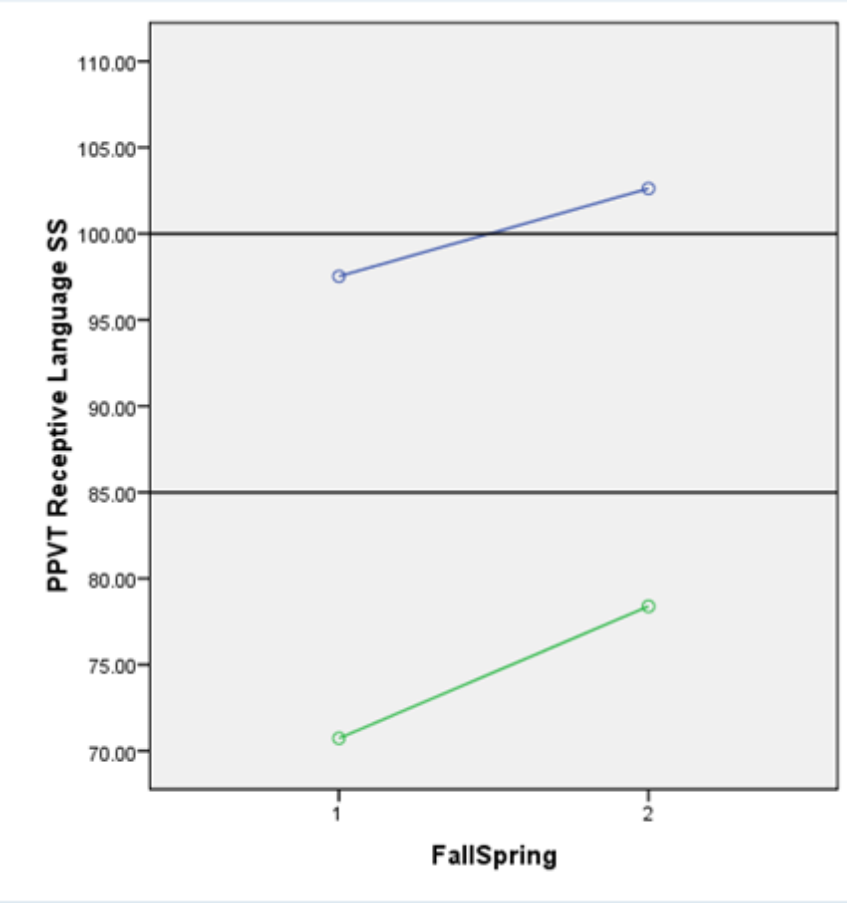


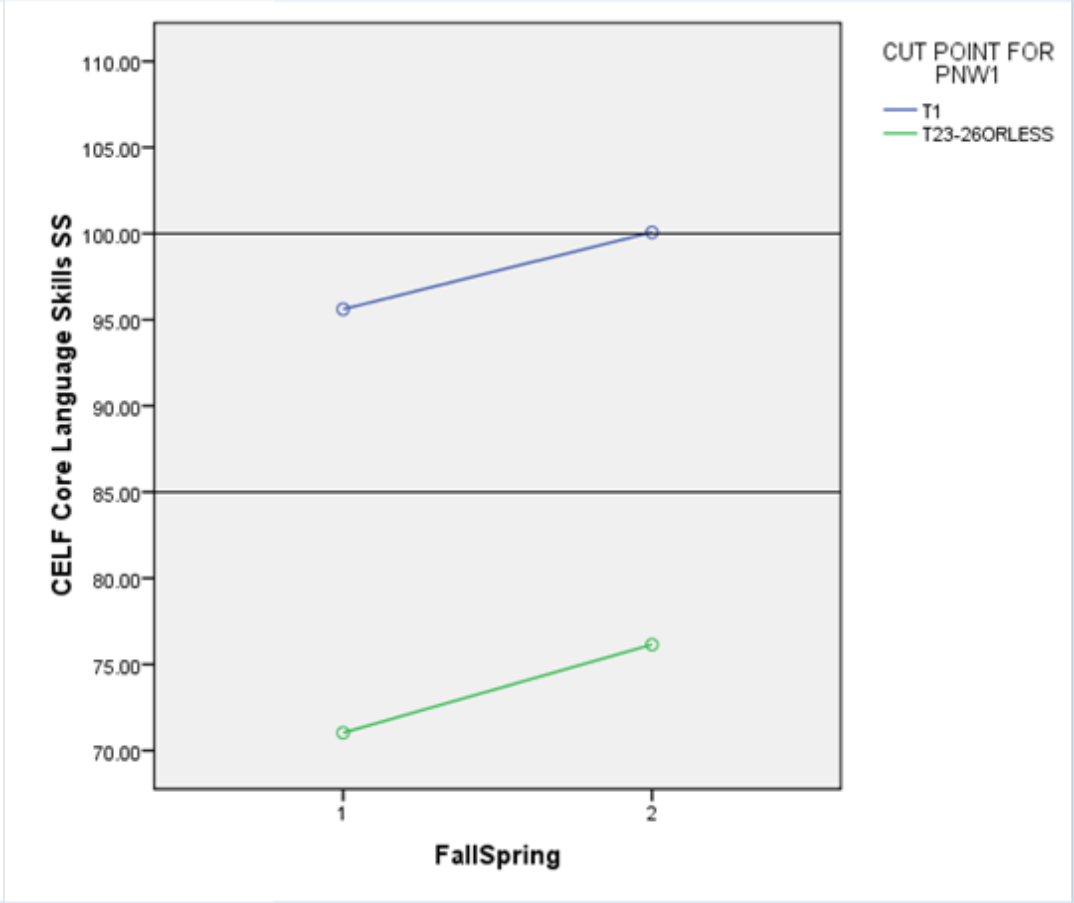
Children's Growth in the Picture Naming and Sound ID IGDIs



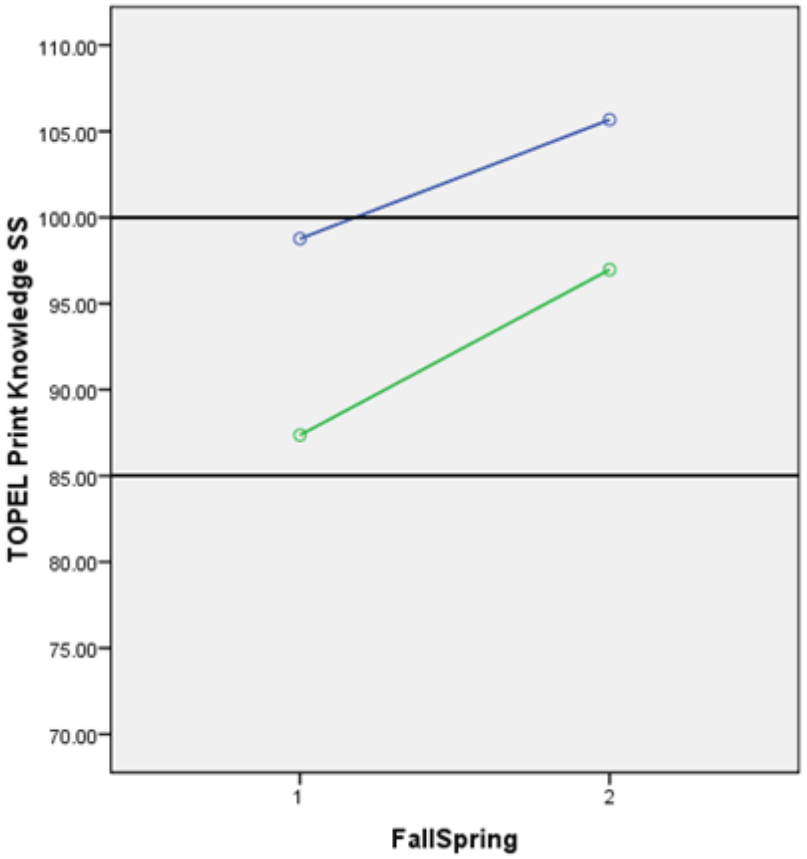


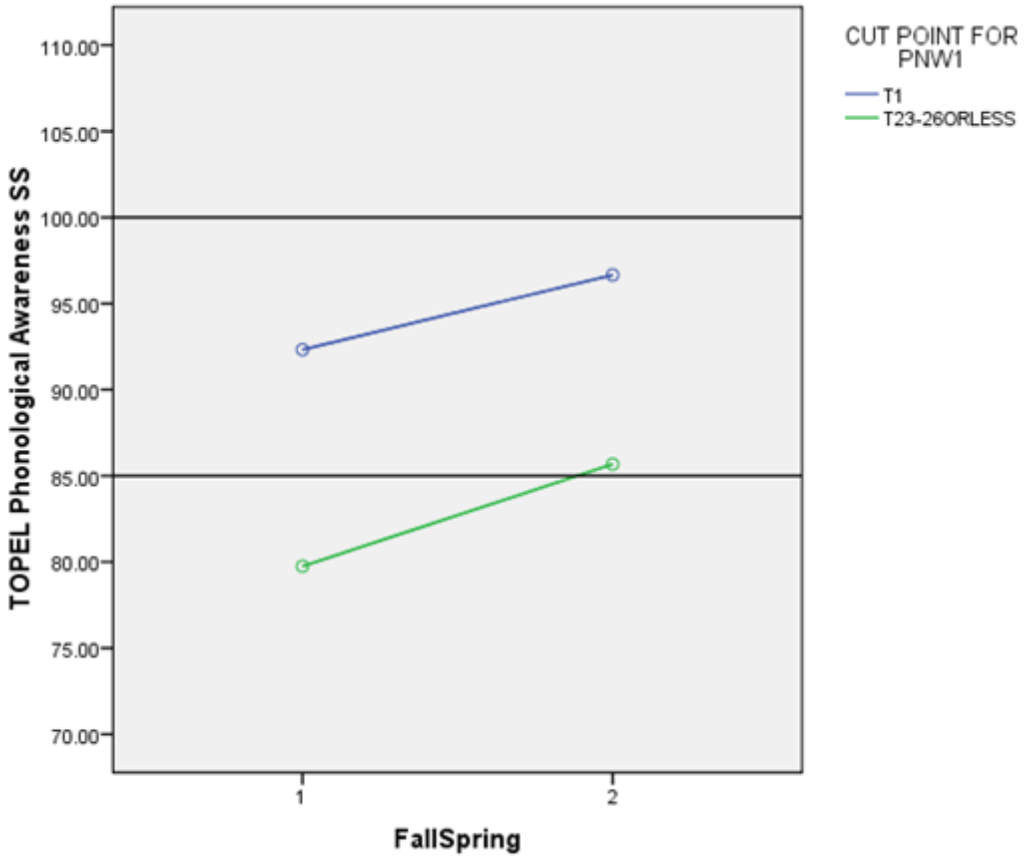
Oral Language Outcomes by Tier



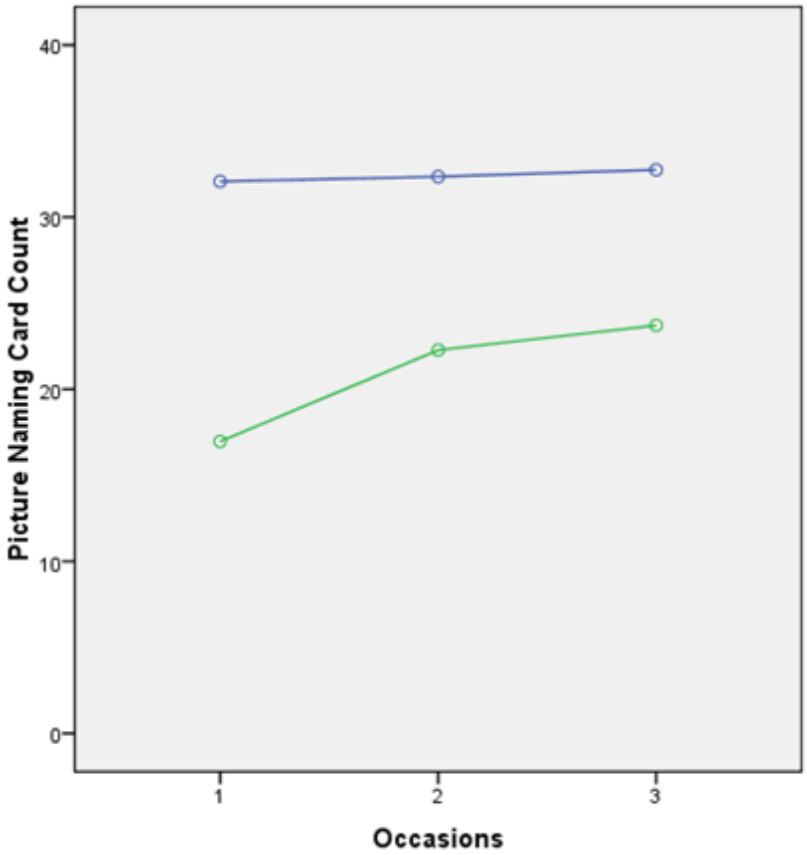


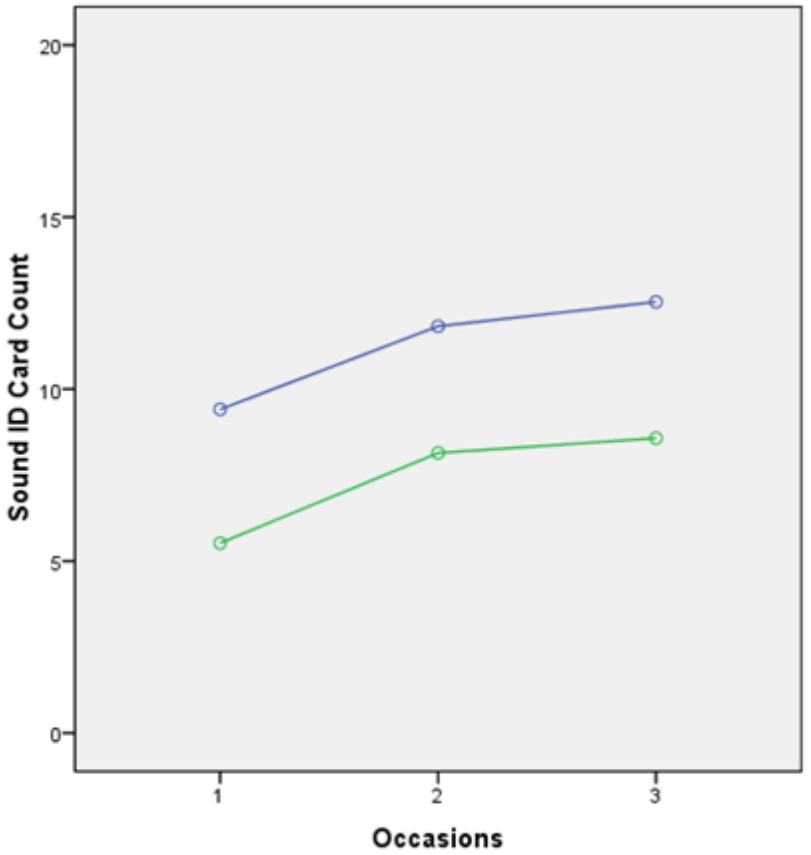
Alphabet Knowledge by Tier





IGDIs by Tier





Sum Up!

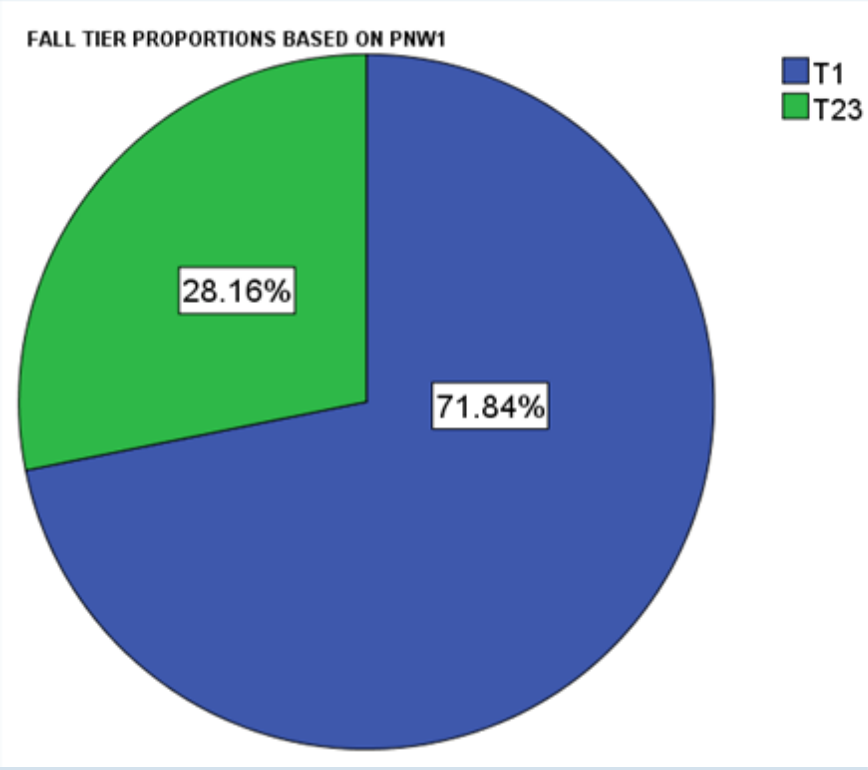
- What was the extent of children's growth and gain in outcomes in the year before kindergarten?
  - Overall, children made gains in standard scores doing better on average, closing the gap on the normative groups.
  - Children in different program types start at different levels in the Fall and make comparatively different gains by Spring
  - Children qualifying for Tier 23 start significantly lower (normatively) than Tier 1 children, make progress by Spring but do not close the gap with the Tier 1 group with the exception of Print Knowledge

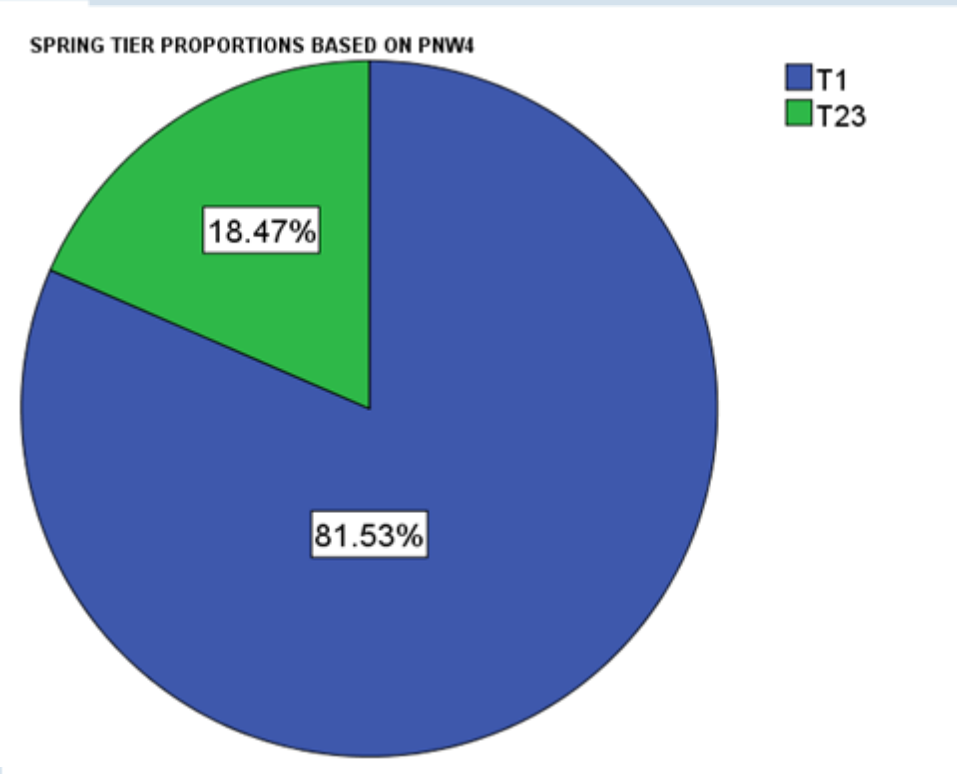
Tier 1 Instruction Questions Addressed

- What was the pattern in Tier group transitions in one preschool year?

Change in Tier Proportions Fall to Spring Based on Picture Naming

Fall





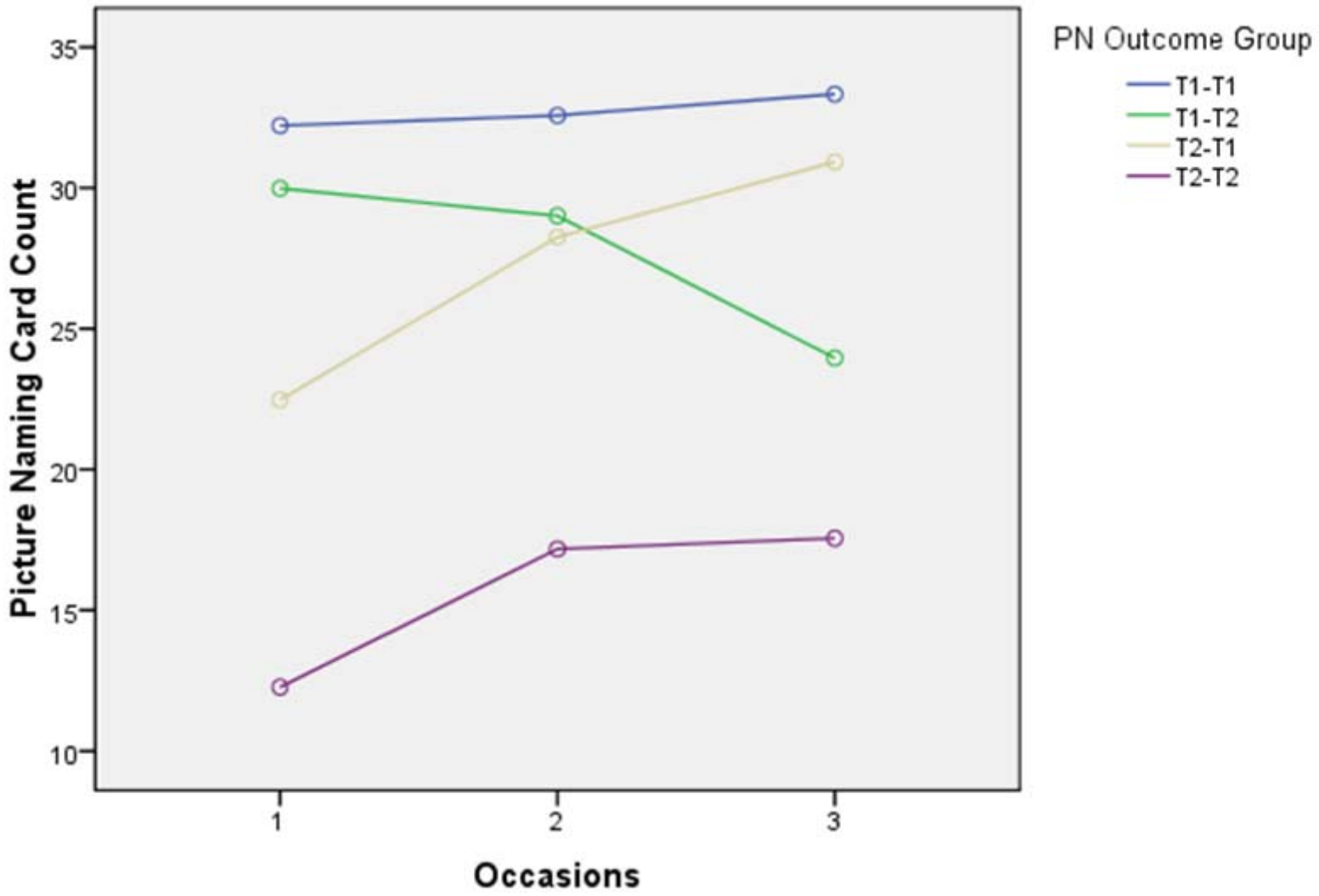
Change in Tier Proportions Fall to Spring on Picture Naming

- Of 602 Children in T1 @ Fall, 92% stayed in T1, and 9% moved down to Tier 23
- Of 236 Children in T2 @ Fall, 55% improved, moving to T1, while 45% remained in Tier 23

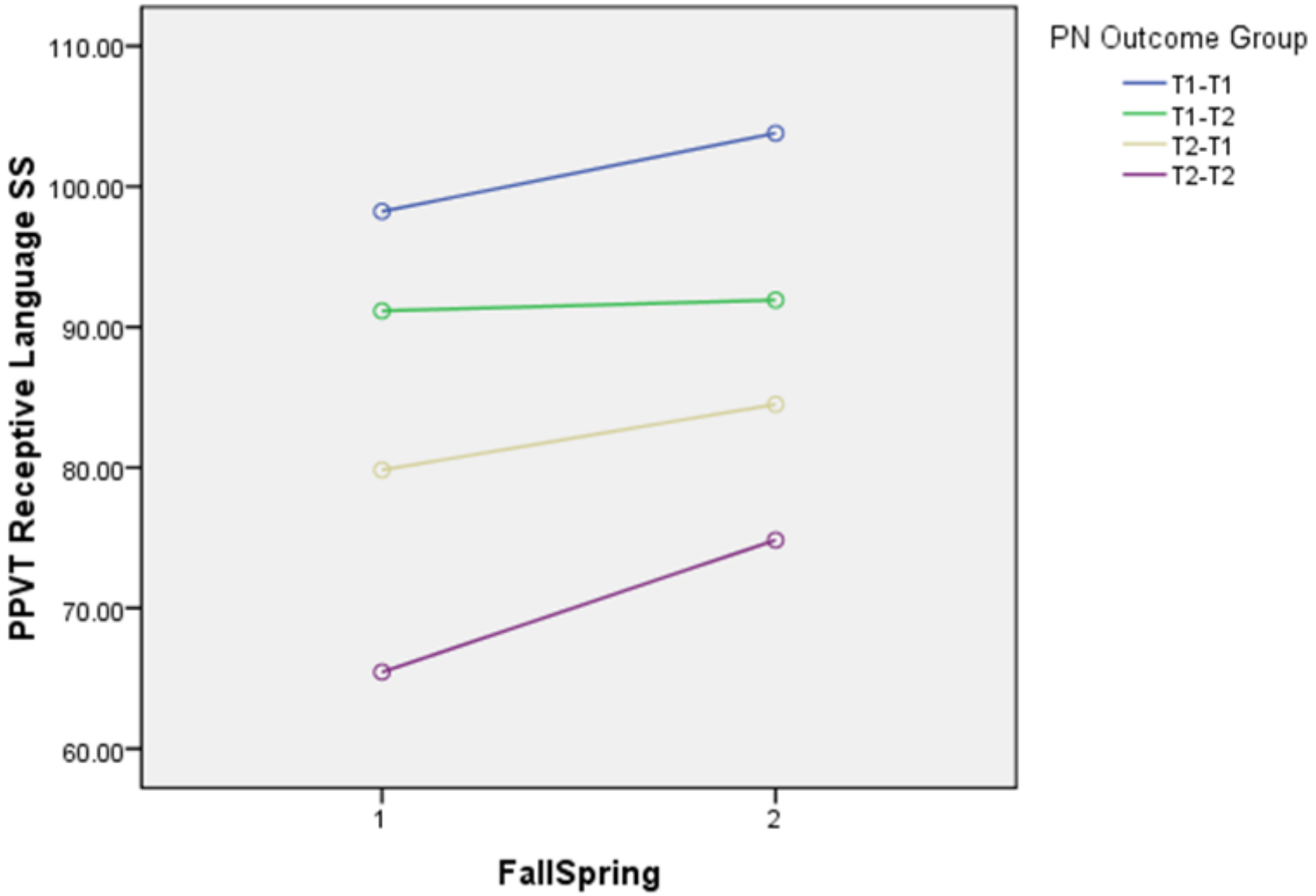
CUT POINT FOR PNW1 * CUT FOR PNW4 Crosstabulation

			CUT FOR PNW4		
			T1	T23-26ORLESS	Total
CUT POINT FOR PNW1	T1	Count	551	51	602
		% within CUT POINT FOR PNW1	91.5%	8.5%	100.0%
	T23-26ORLESS	Count	132	104	236
		% within CUT POINT FOR PNW1	55.9%	44.1%	100.0%
Total		Count	683	155	838
		% within CUT POINT FOR PNW1	81.5%	18.5%	100.0%

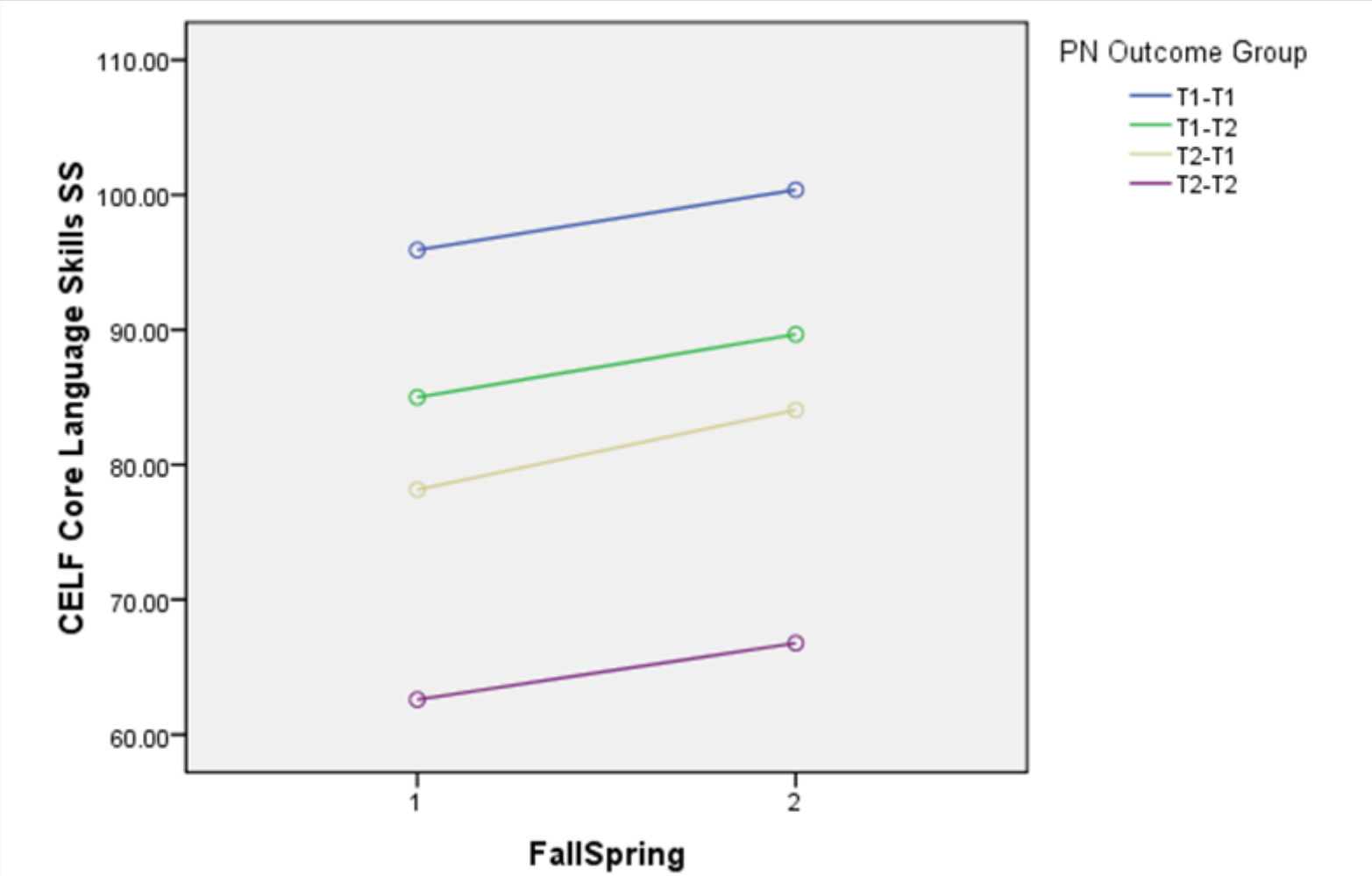
Trends in Picture Naming by Fall to Spring Outcome Groups



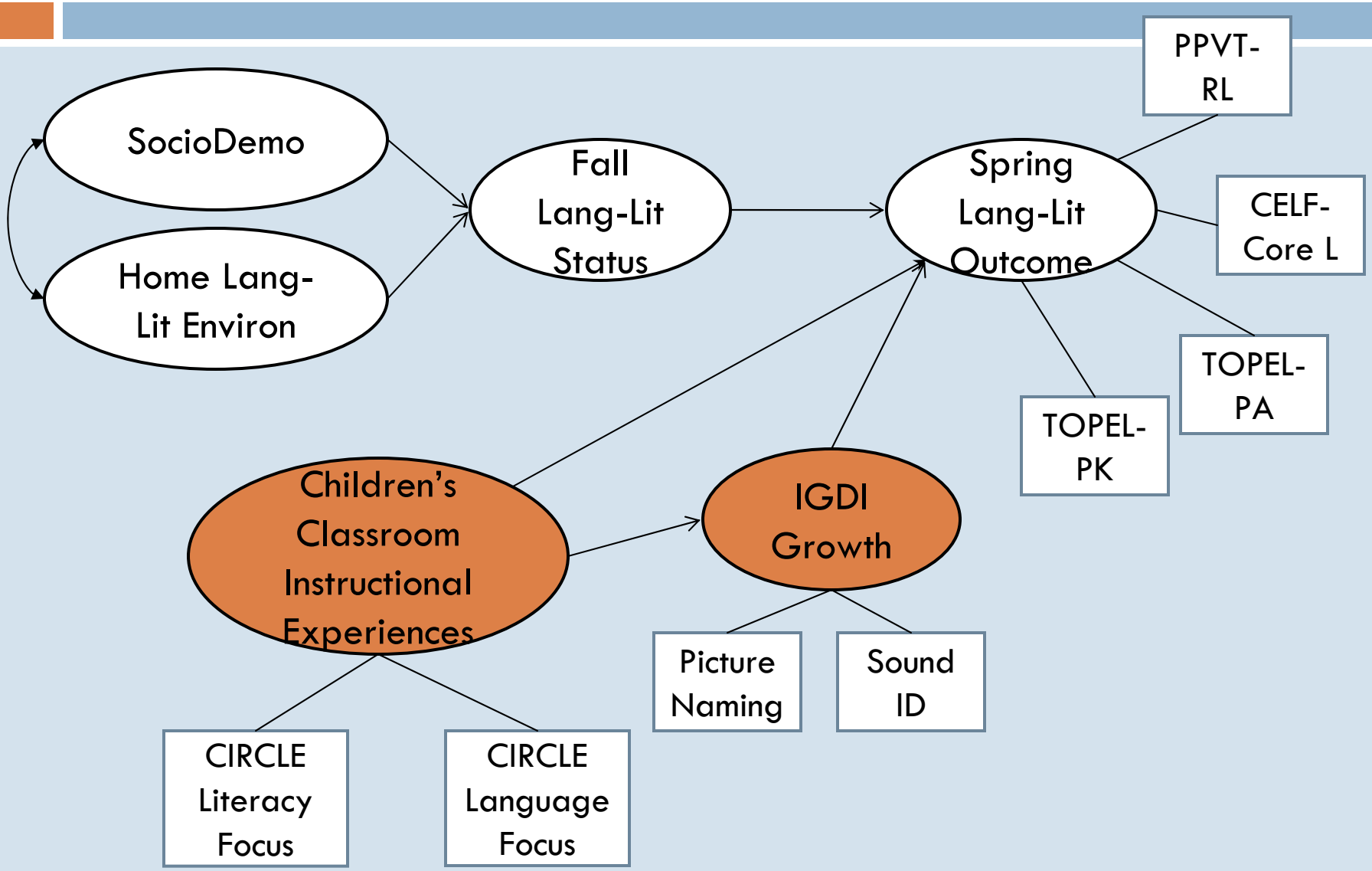
Fall to Spring Growth in PPVT by Picture Naming IGDI Outcome Groups



Fall to Spring Growth in CELF Core Language Sills by Picture Naming IGDI Outcome Groups



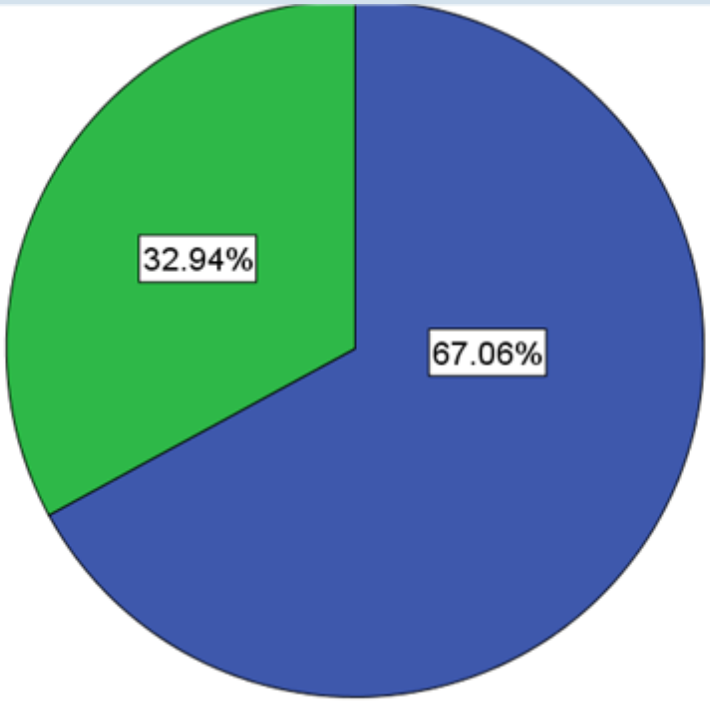
Is the Path to Improved Child Outcomes Through Children's Alterable Instructional Experience and Short-term IGDI Growth?

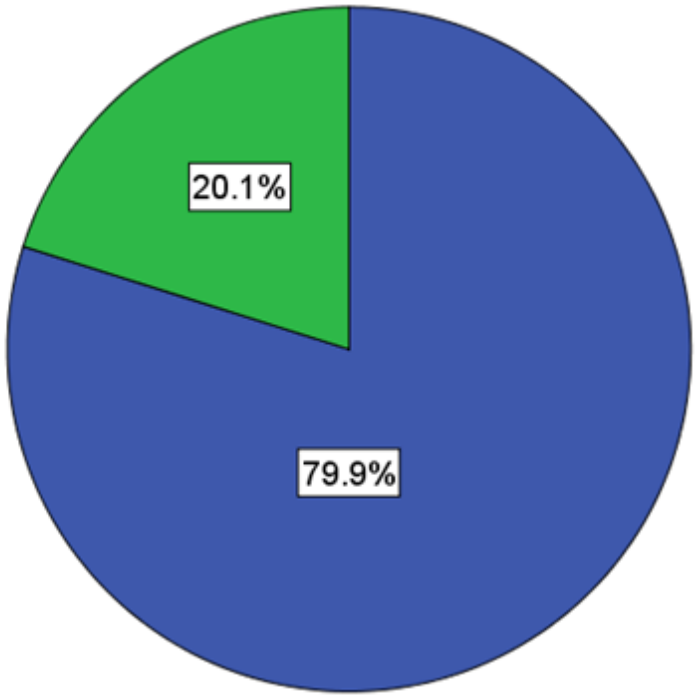


Change in Tier Proportions Fall to Spring Based on Sound ID

Fall

Spring





Change in Tier Proportions Fall to Spring on Sound ID

- Of 562 Children in T1 @ Fall, 97% stayed in T1, and 13% moved down to Tier 23
- Of 276 Children in T2 @ Fall, 65% improved, moving to T1, while 35% remained in Tier 23

CUT POINT FOR SIDW1 * CUTPOINT FOR SIDW4 Crosstabulation

			CUTPOINT FOR SIDW4		
			T1	T23 10.4 or less	Total
CUT POINT FOR SIDW1	T1	Count	490	72	562
		% within CUT POINT FOR SIDW1	87.2%	12.8%	100.0%
	T23 10.4 or less	Count	179	97	276
		% within CUT POINT FOR SIDW1	64.9%	35.1%	100.0%
Total		Count	669	169	838
		% within CUT POINT FOR SIDW1	79.8%	20.2%	100.0%

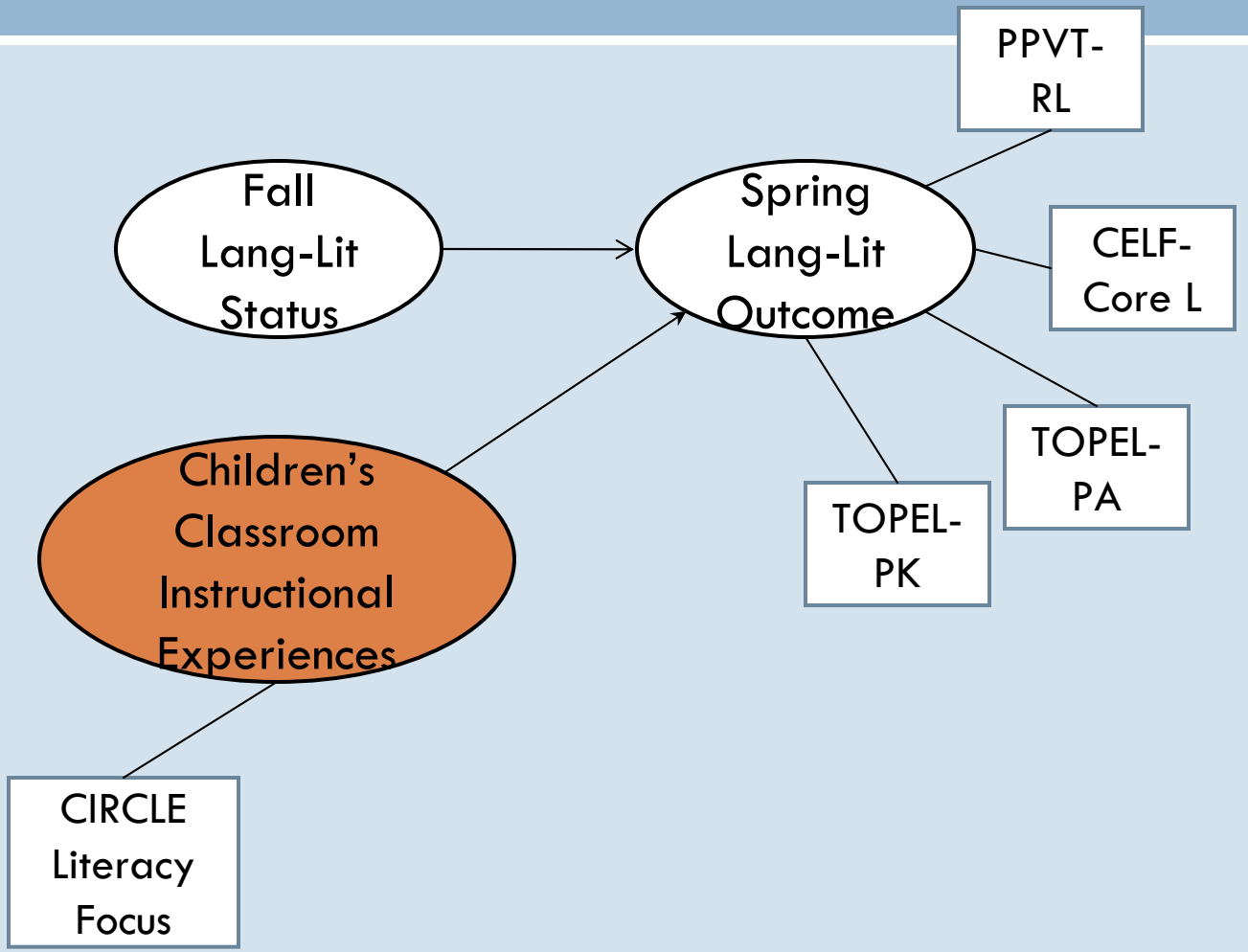
Sum Up!

- What was the pattern in Tier group transitions in one preschool year?
  - Relevance: A goal of RTI is to reduce the numbers of children not responding to intervention.
  - The size of T23 groups in any program is a baseline for marking future program progress in its reduction
  - Depending on the IGDI (PN vs Sound ID)
    1. Some Tier 1 qualified children in Fall qualified for Tier23 by Spring (9%, 13% respectively by IGDI)
    2. Some Tier 23 qualified children in Fall, remained in Tier 23 by Spring (35%, 45% respectively by IGDI)

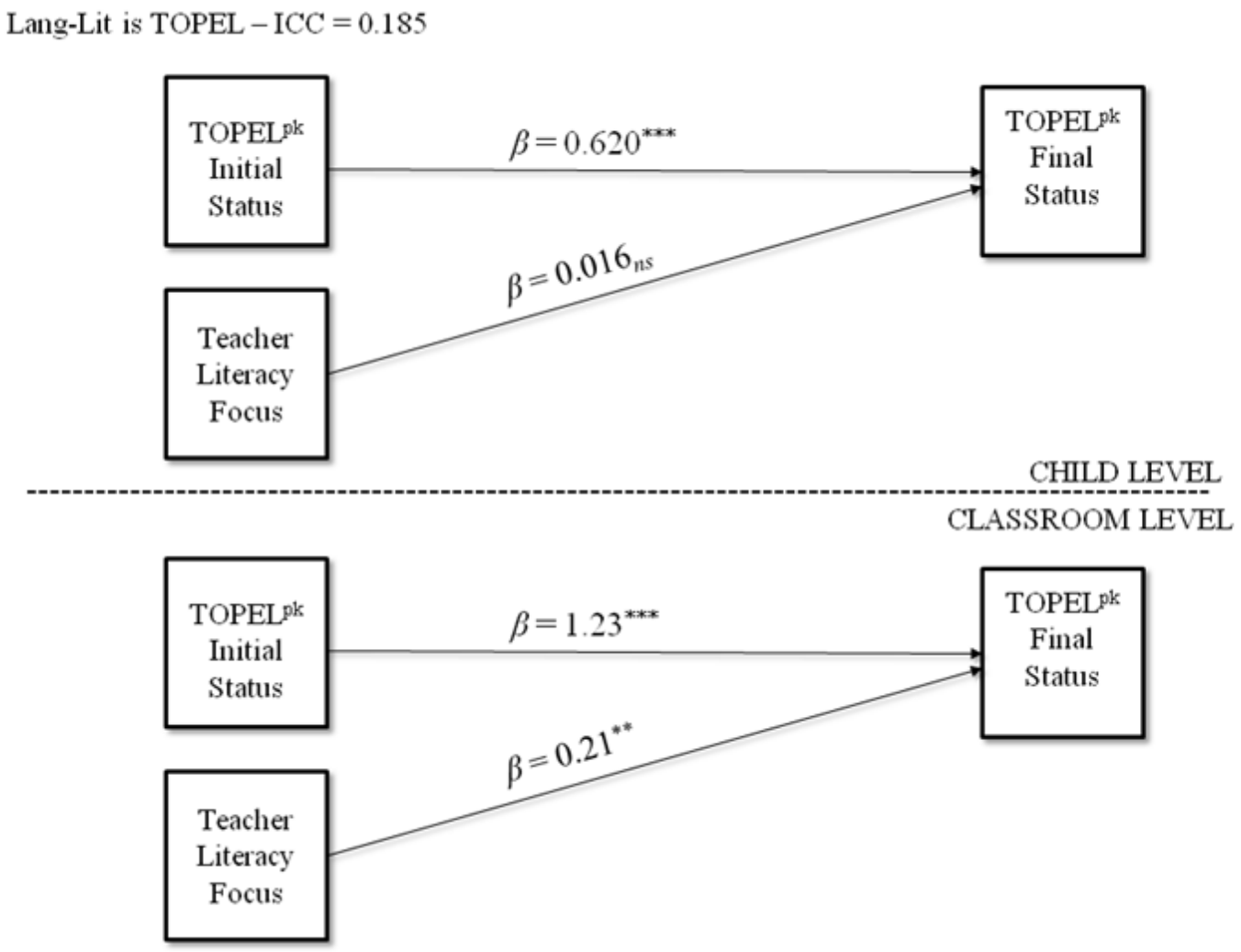
Tier 1 Instruction Questions Addressed

- Do alterable classroom instructional experiences in Tier 1 appear to influence children's growth as we expect?
  - For example, does the Amount of Literacy Focus impact IGDI growth and Spring outcomes?
- We are exploring the answer to this and related questions relevant to RTI currently.
- We offer some preliminary findings and explanation

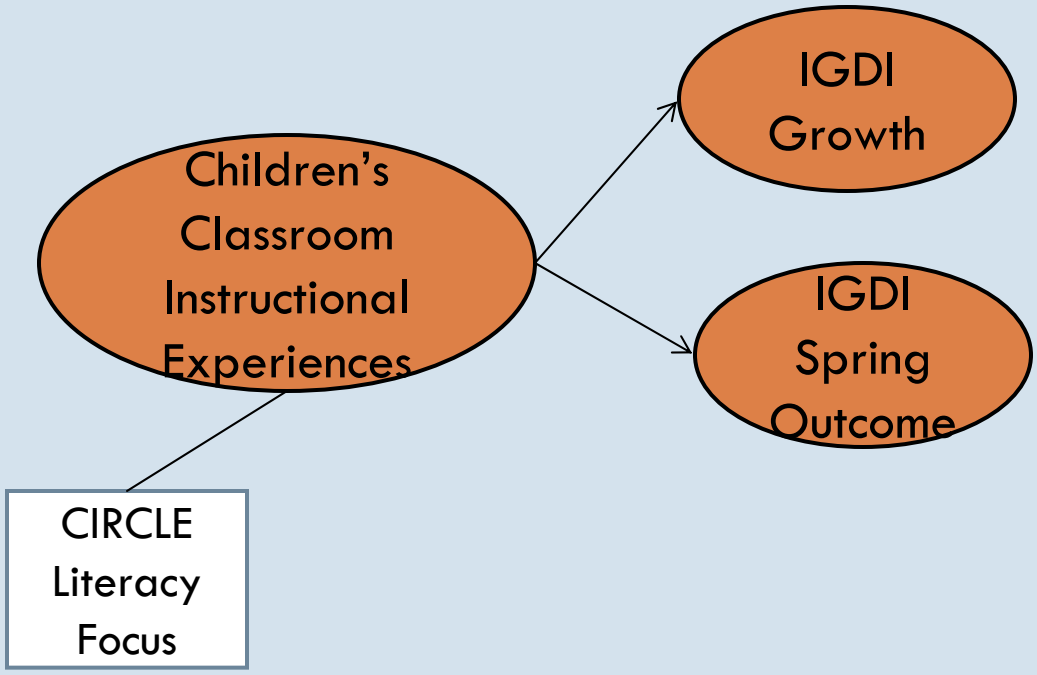
Is the Path to Improved Child Outcomes Through Children's Alterable Instructional Experience?



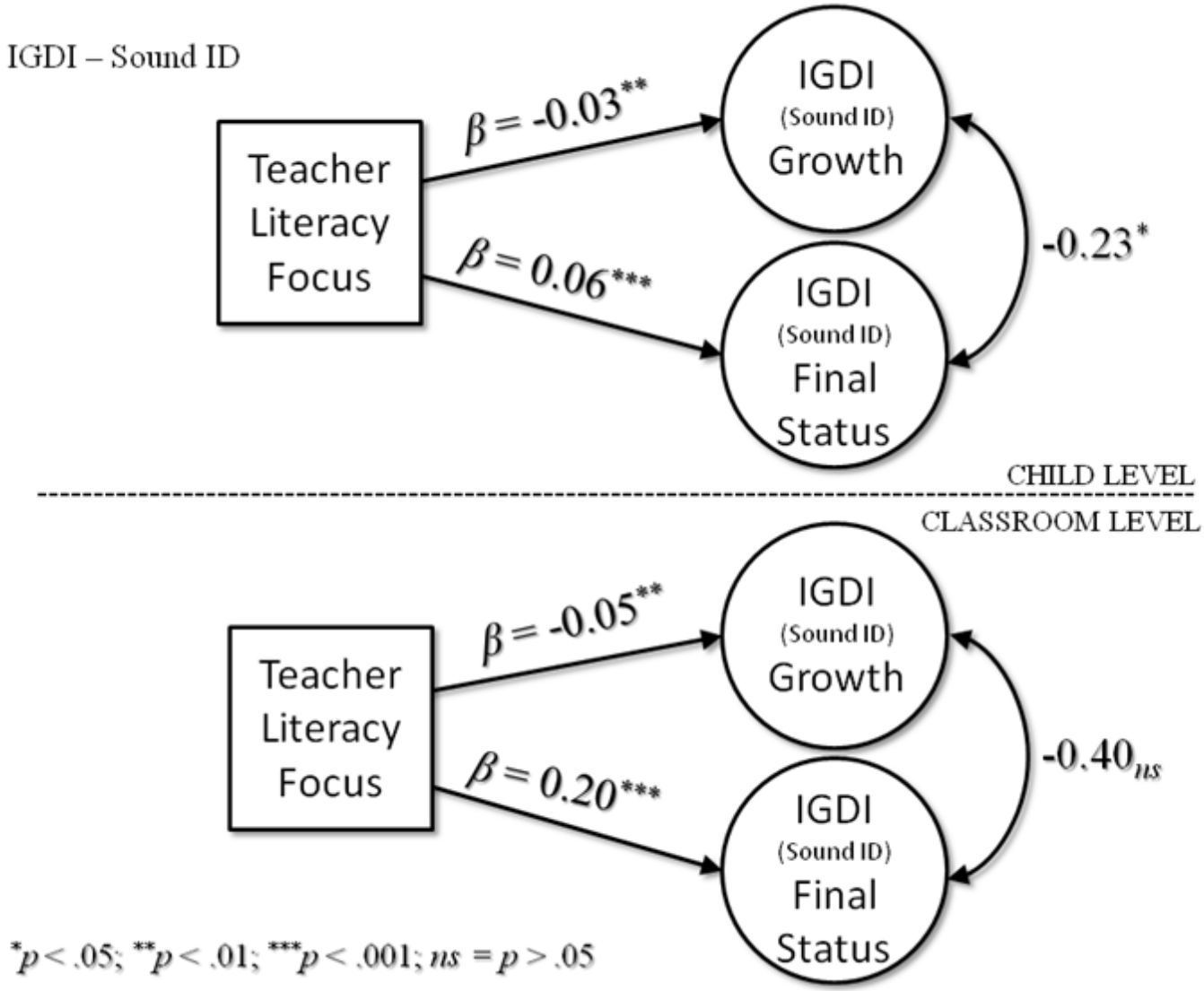
Does the Amount of Literacy Focus Influence Outcome After Accounting for Initial Status?



Is the Amount of Literacy Focus Influencing Short-term IGDI Growth and Spring Outcome?

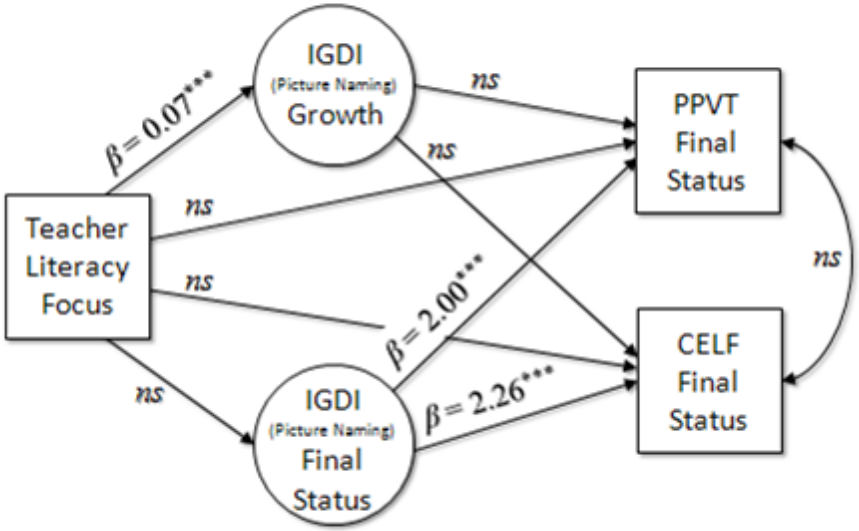


Does Teacher Literacy Focus Influence Sound ID Growth and Spring IGDI Outcome?



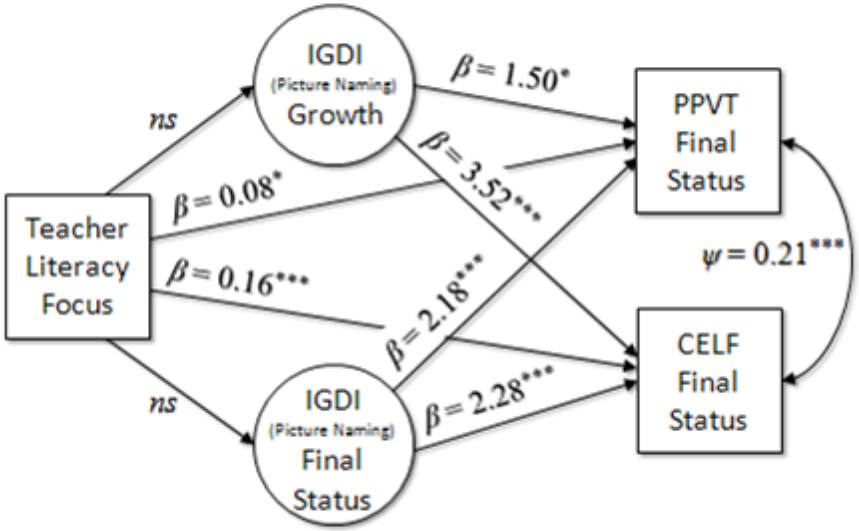
Is the Path from Literacy Focus to Spring Outcomes Direct or Through IGDI Progress?

Classroom effects



*p < .05; **p < .01; ***p < .001; ns = p > .05

Children effects



*p < .05; **p < .01; ***p < .001; ns = p > .05

Sum Up and Discussion

- The intensity of classroom instruction in terms of classroom time focused on language and early literacy and student engagement in academic responding is an issue in RTI
- Preliminary findings are suggesting that amount of literacy focus is one alterable factor at the classroom and student levels of analysis in students' IGDI growth and year-end outcomes
- We are examining others in our measurement model with implications for RTI