



Tools of the Mind

Cohort 1: Kindergarten Follow Up

Cohort 2: Pre-K Results

PRI Research Staff

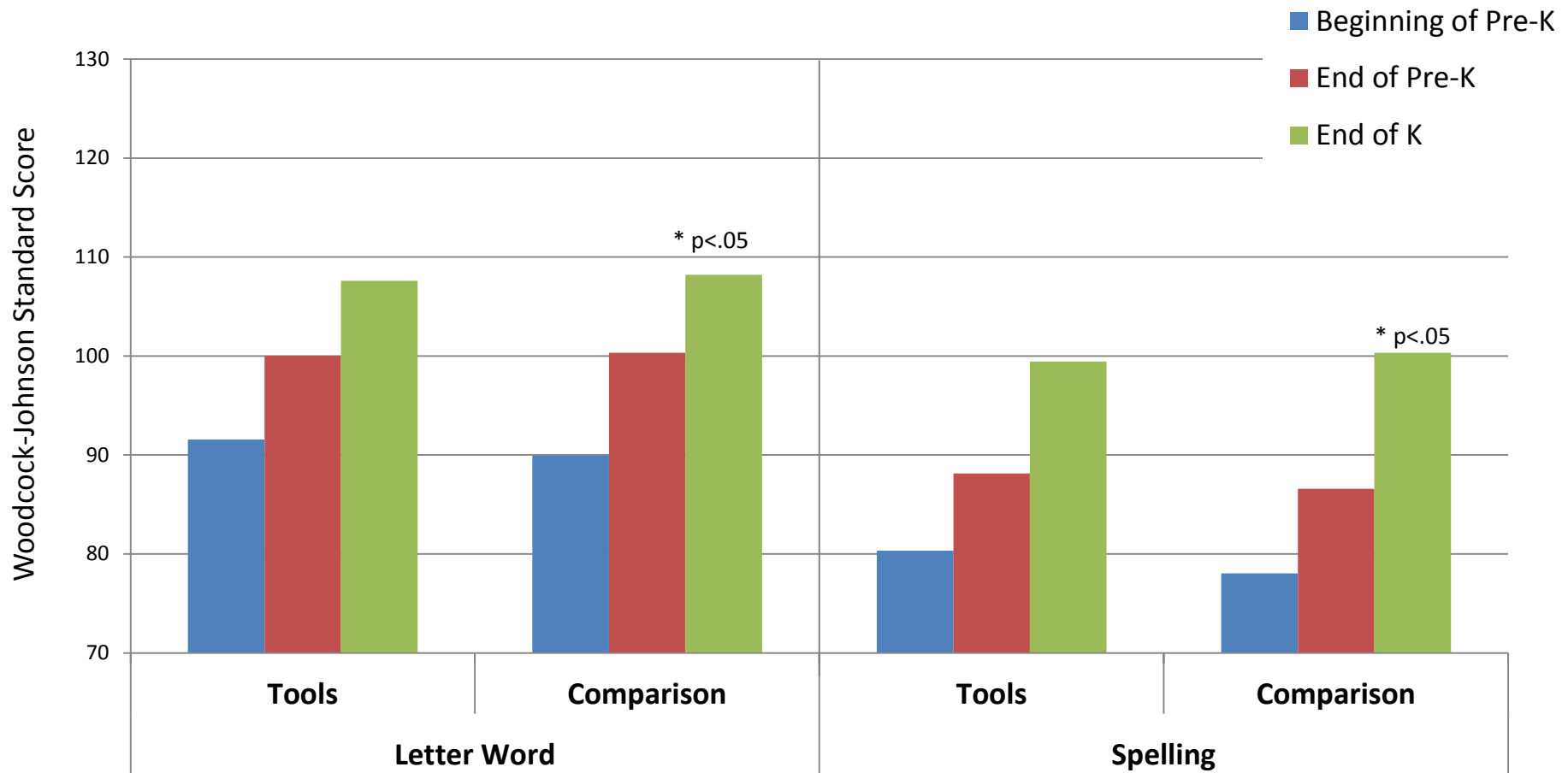
June 25, 2012

Report to Tools of the Mind Developers

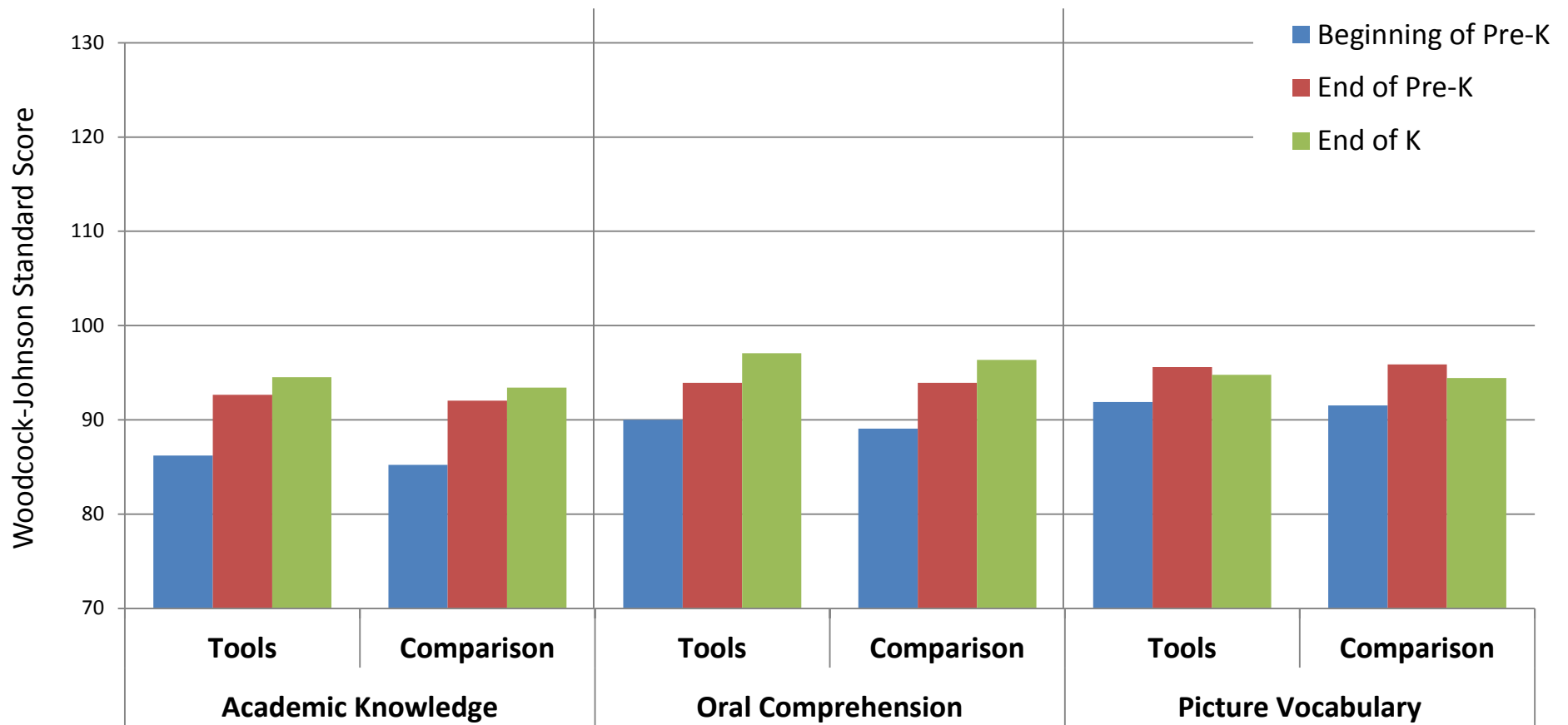
Kindergarten Analysis

- Multi-level regression models were used to test for the effects of the Tools curriculum on the outcomes.
 - Models adjust for clustering of students within classrooms, schools, and school systems.
 - Covariates include pretest, age, interval, gender, ethnicity, ELL status, and IEP status.
- Attrition from Fall of PreK to Spring of Kindergarten was about 6%.
 - We located about 810 of the original ~860 children.

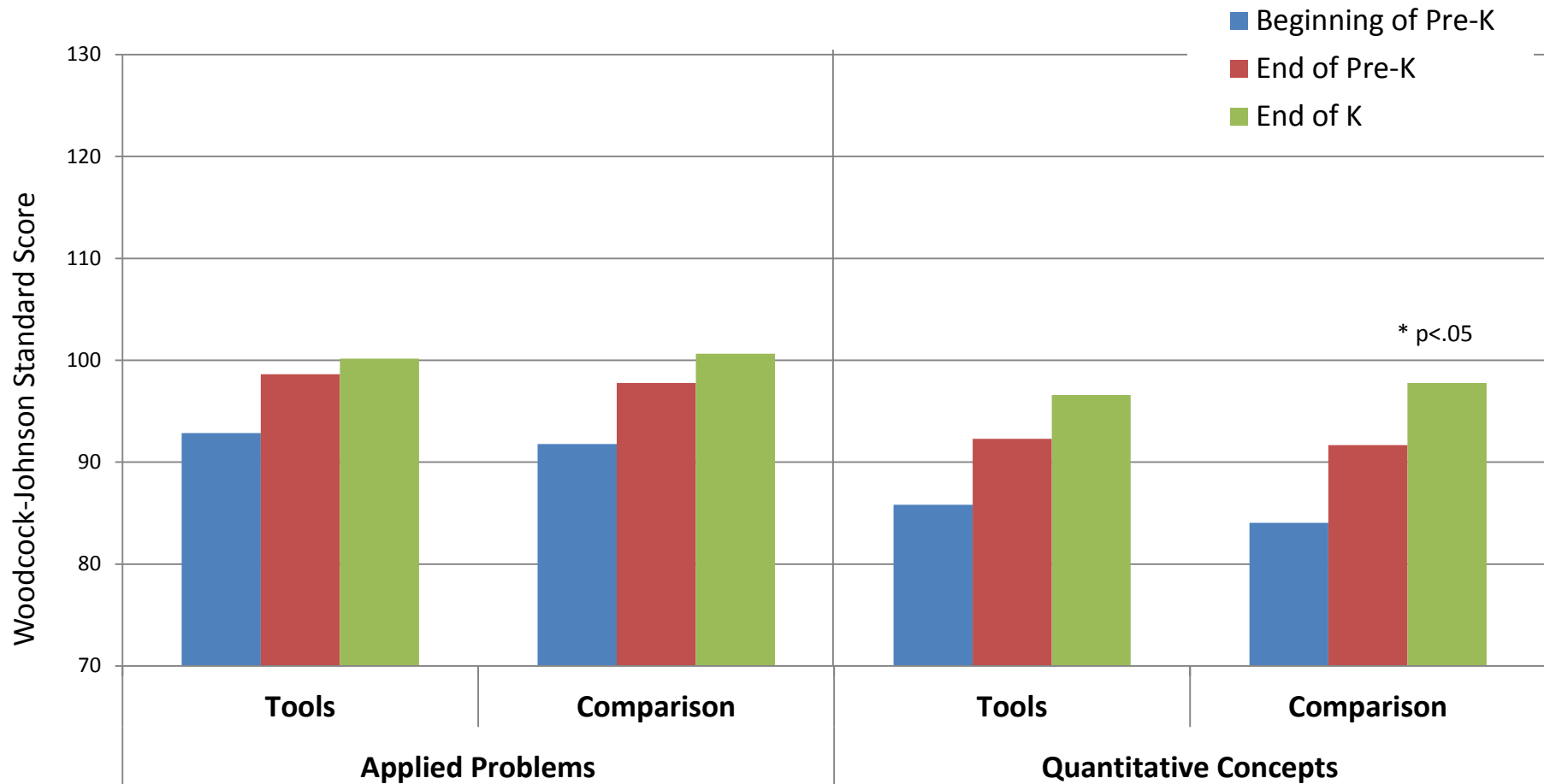
Performance from Beginning of Pre-K to End of K on Tests of LITERACY



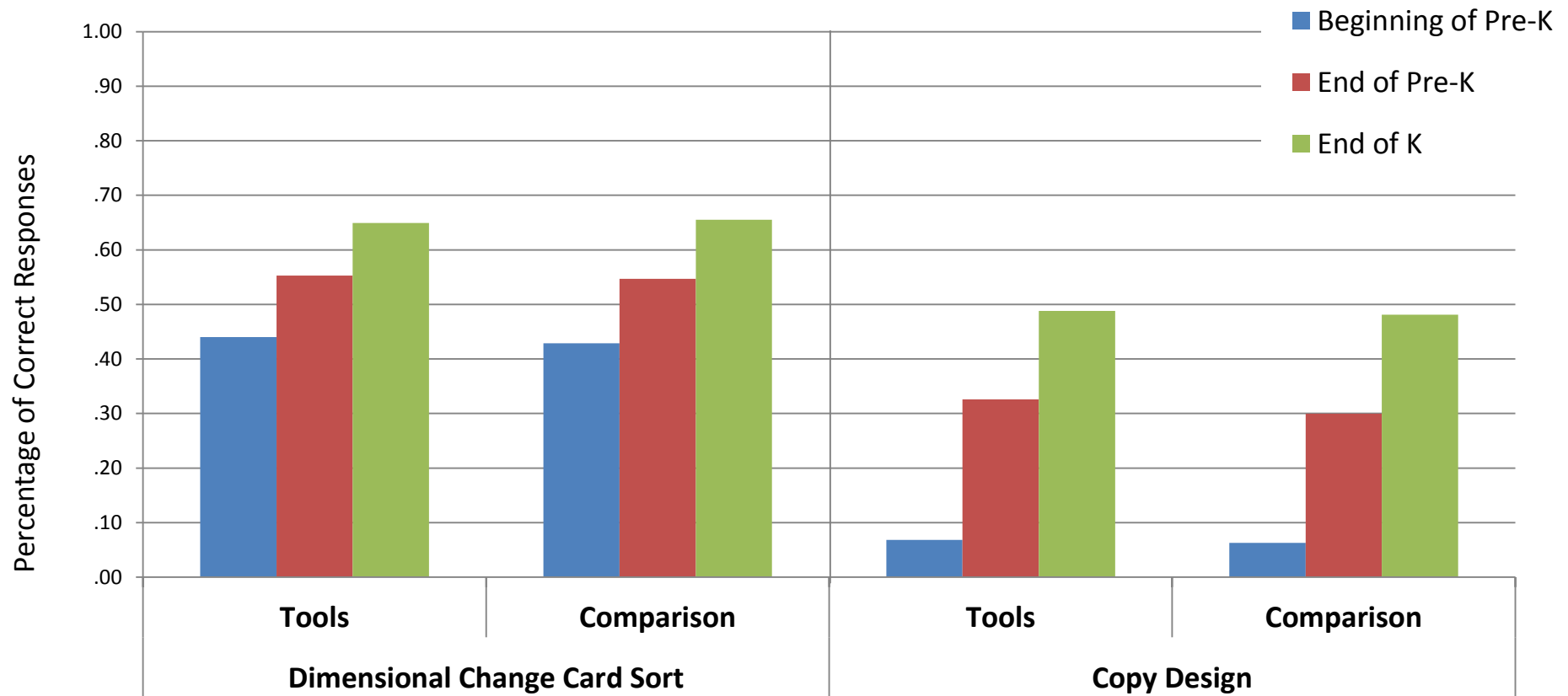
Performance from Beginning of Pre-K to End of K on Tests of LANGUAGE



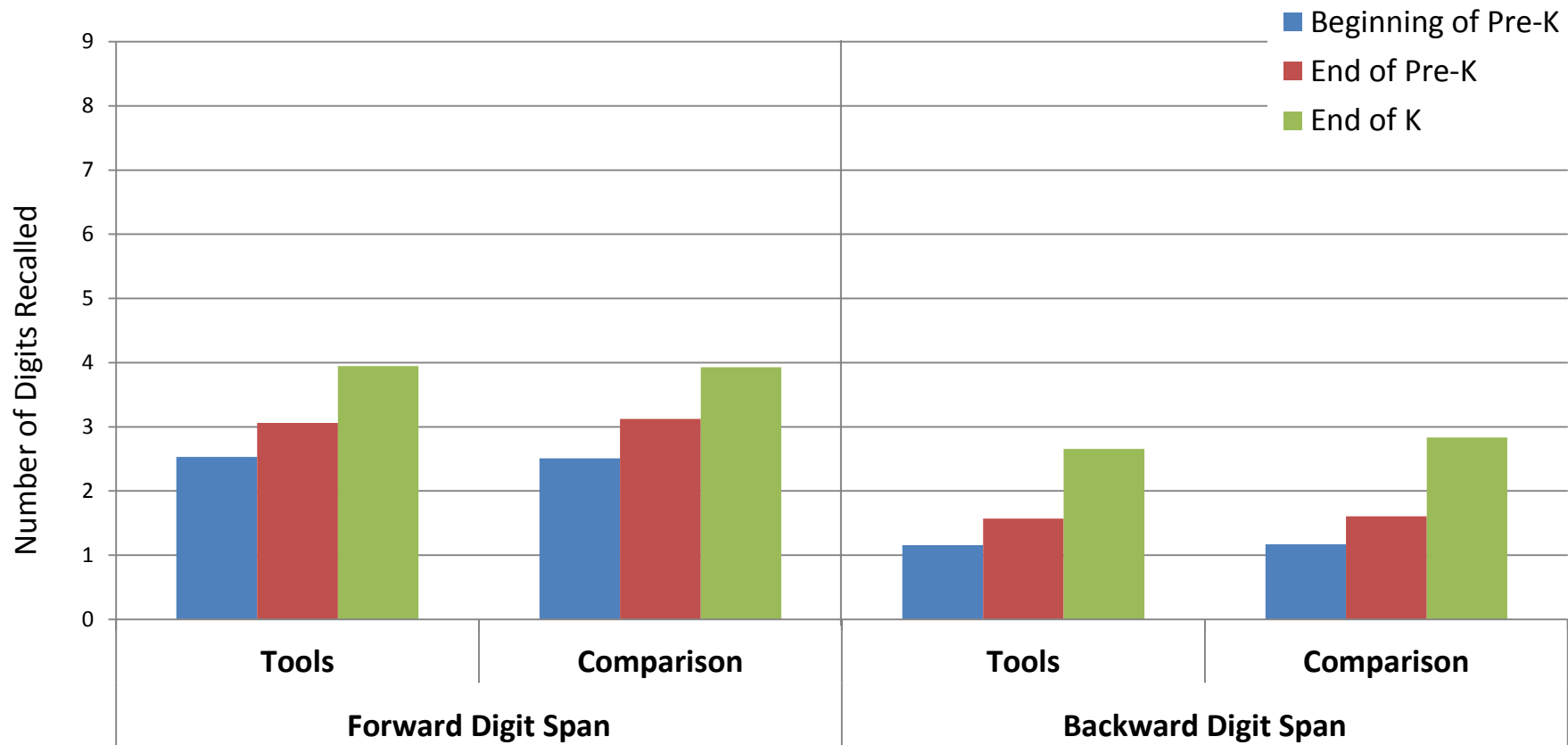
Performance from Beginning of Pre-K to End of K on Tests of MATHEMATICS



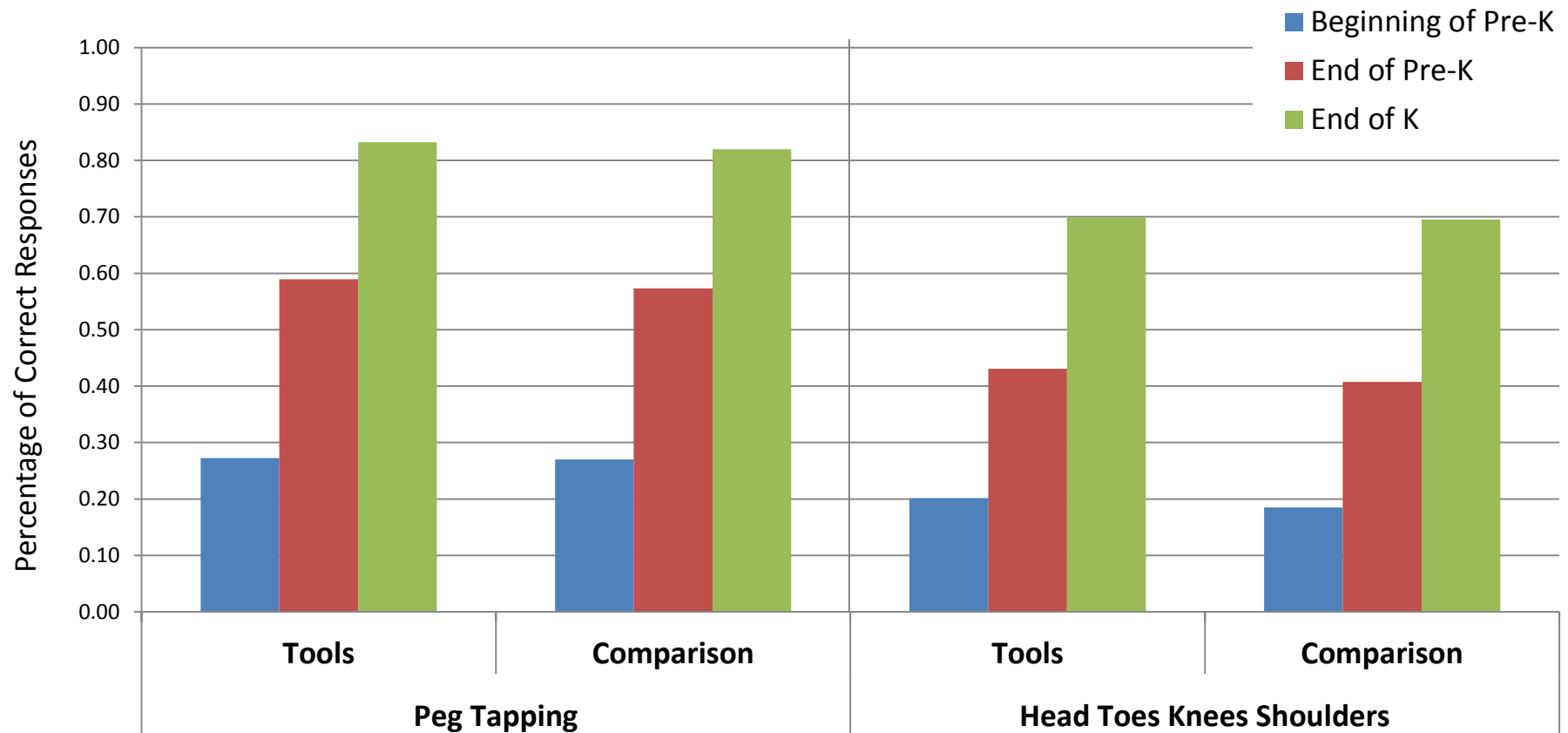
Performance from Beginning of Pre-K to End of K on ATTENTION



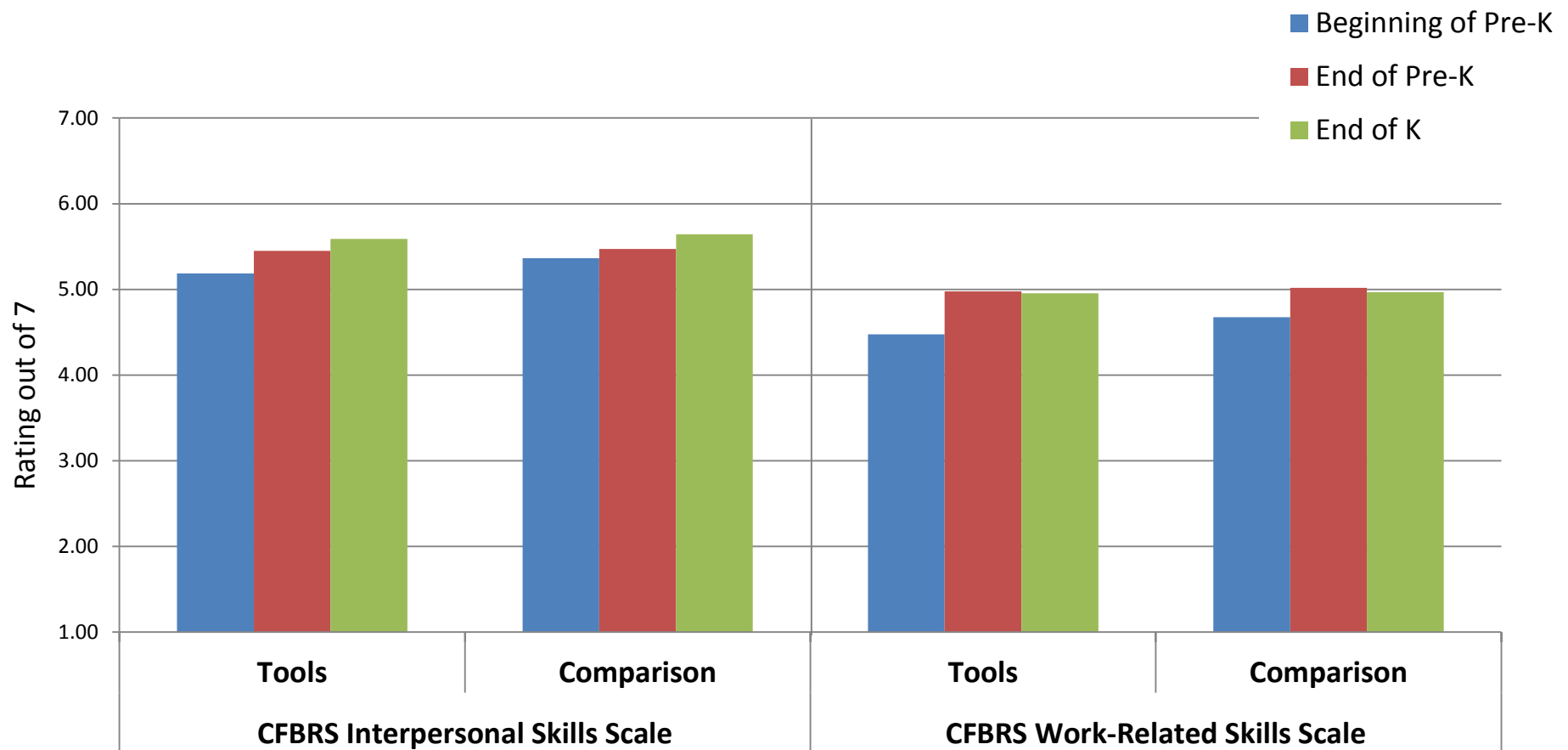
Performance from Beginning of Pre-K to End of K on WORKING MEMORY



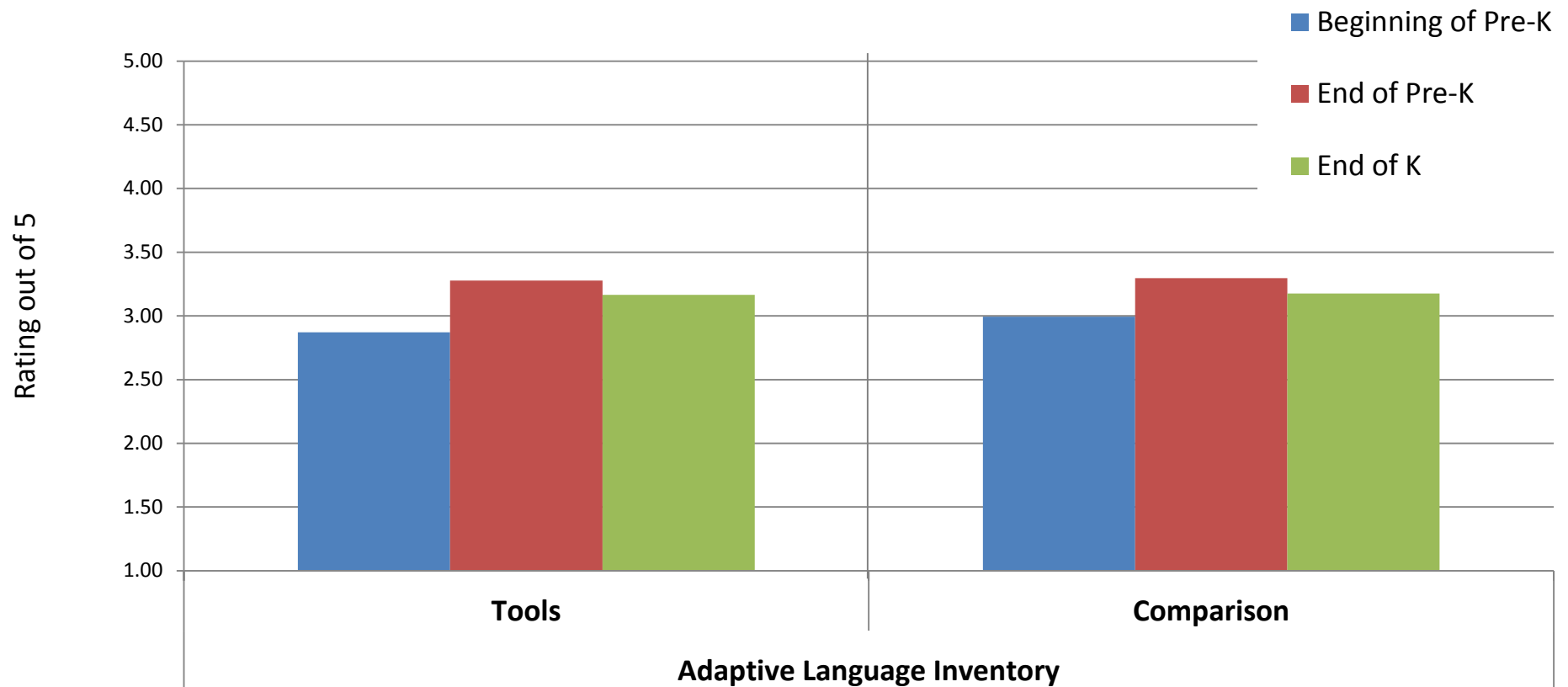
Performance from Beginning of Pre-K to End of K on INHIBITION



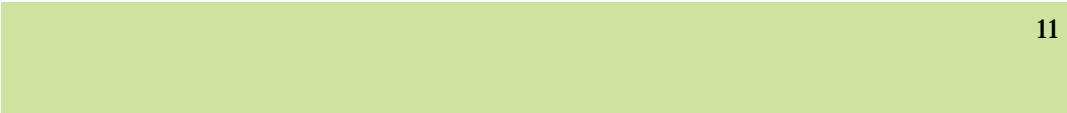
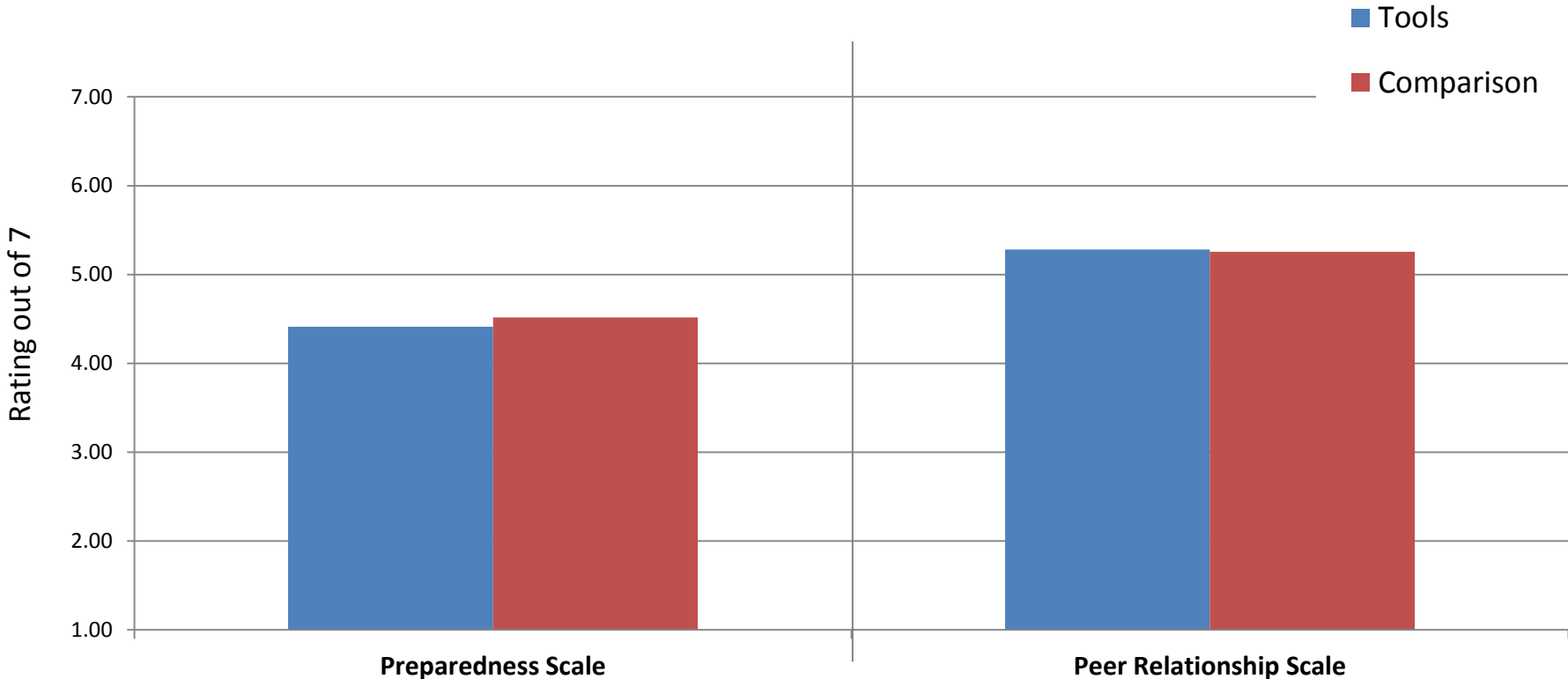
Performance from Beginning of Pre-K to End of K on SOCIAL AND BEHAVIORAL SKILLS



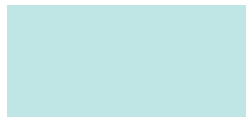
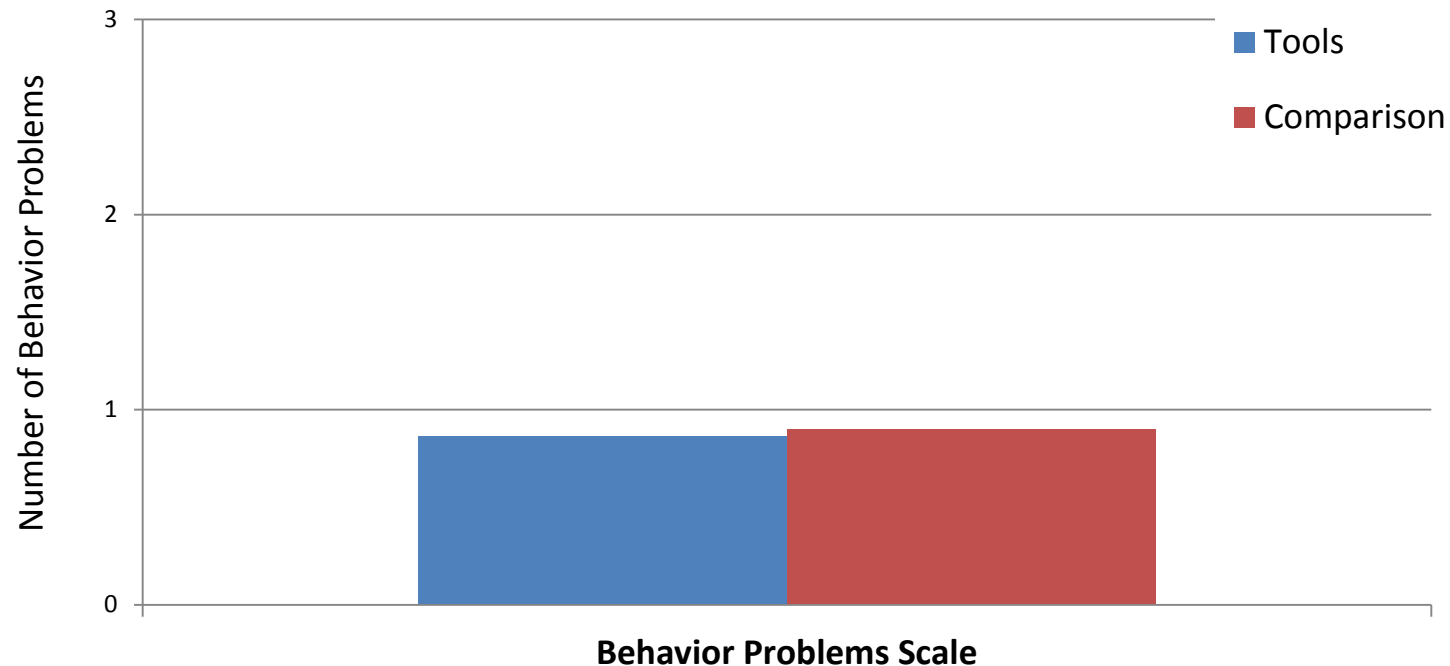
Performance from Beginning of Pre-K to End of K on ADAPTIVE LANGUAGE



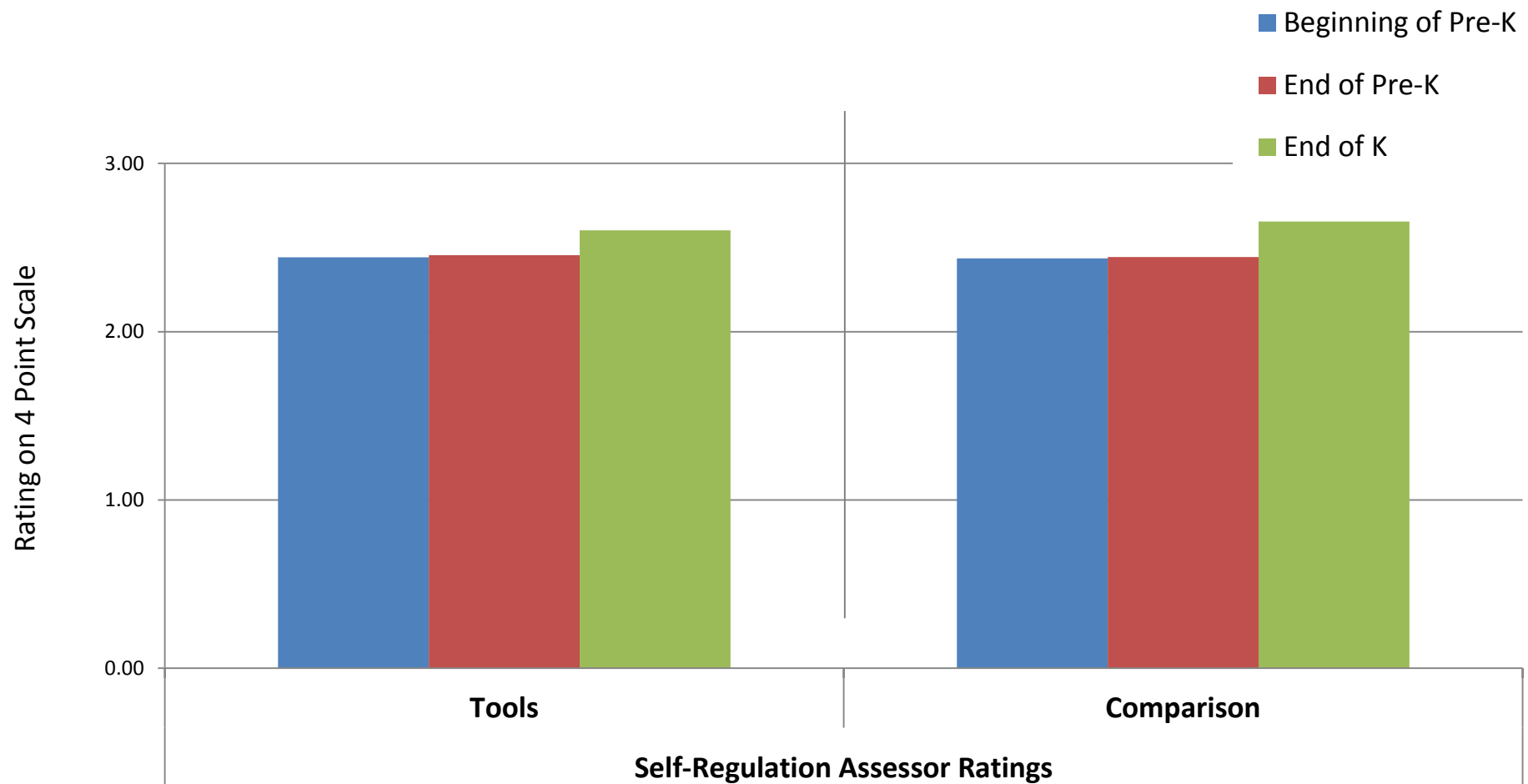
Performance at End of Kindergarten on ACADEMIC AND CLASSROOM BEHAVIOR (Teacher Ratings)



Performance at End of Kindergarten on ACADEMIC AND CLASSROOM BEHAVIOR (Teacher Ratings of Behavior Problems)



Performance from Beginning of Pre-K to End of K on SELF REGULATION Assessor Ratings

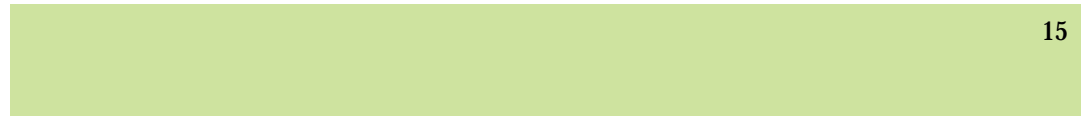
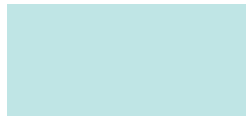


Kindergarten Results

- There were no statistically significant effects in favor of Tools of the Mind on any outcome at Kindergarten.
 - The comparison condition was favored on Letter-Word, Spelling, and Quantitative Concepts.
- Means show gains over time on achievement measures, self-regulation assessments, and teacher and assessor ratings that are similar for the Tools and comparison groups.



***ALAMANCE BURLINGTON
CITY SCHOOL SYSTEM YEAR 2***

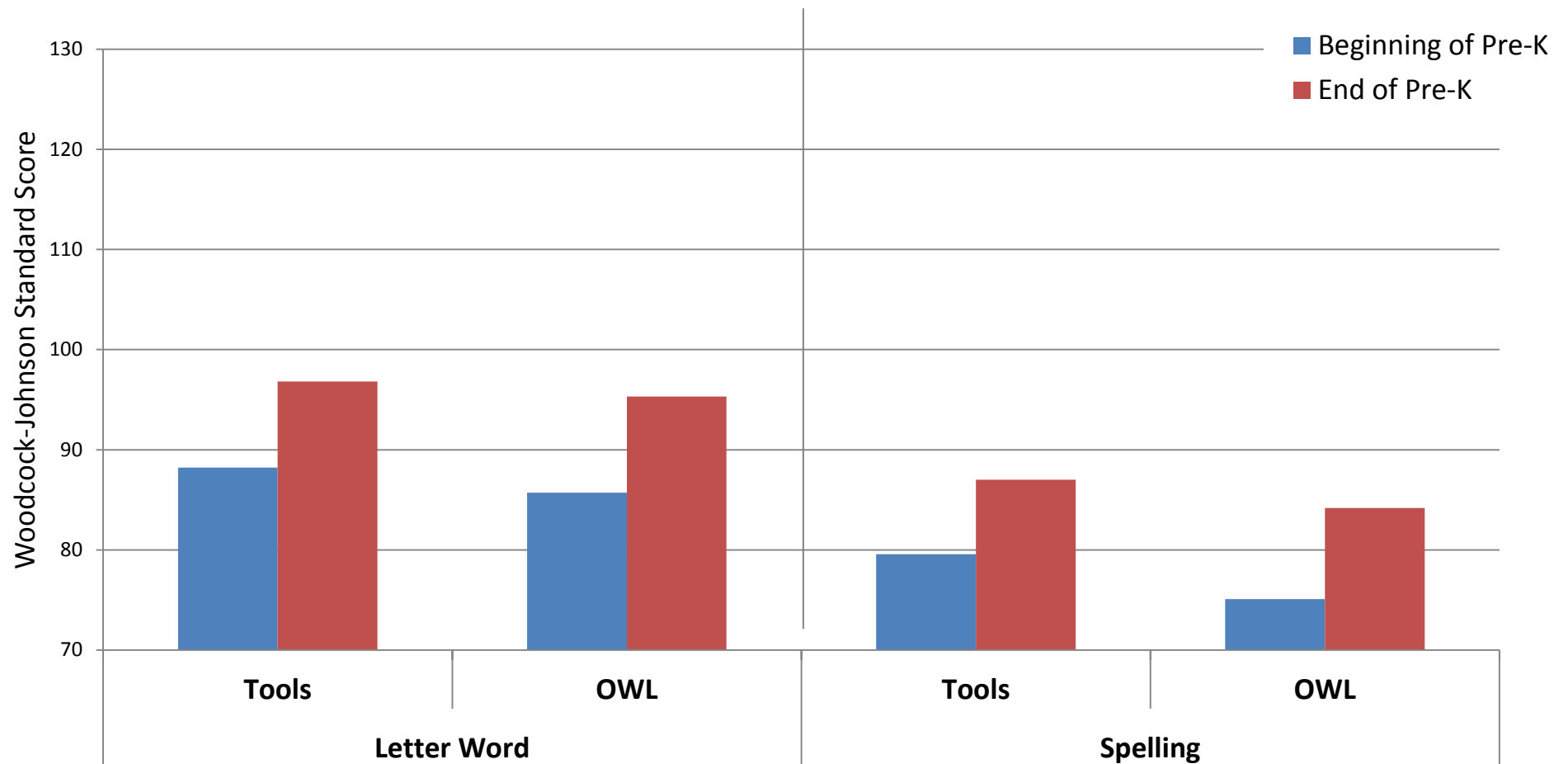


Cohort 2 Analysis

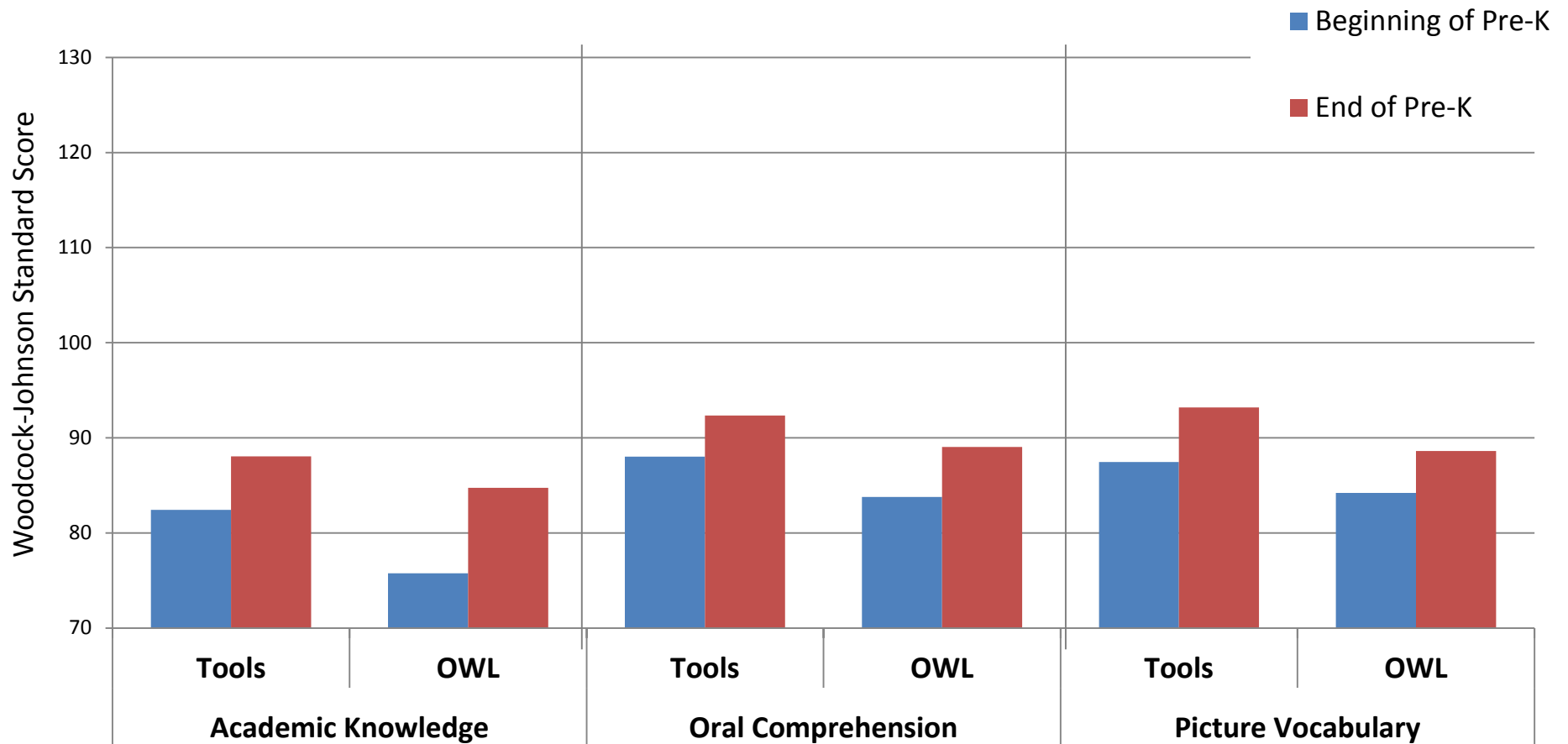
- Multi-level regression models were used to test for the effects of the Tools curriculum on the outcomes.
 - Models adjust for clustering of students within classrooms and schools.
 - Covariates include pretest, age, interval, and ELL status.
- Attrition was about 4%.
 - In Spring of PreK, we tested 255 of the original 265 children.



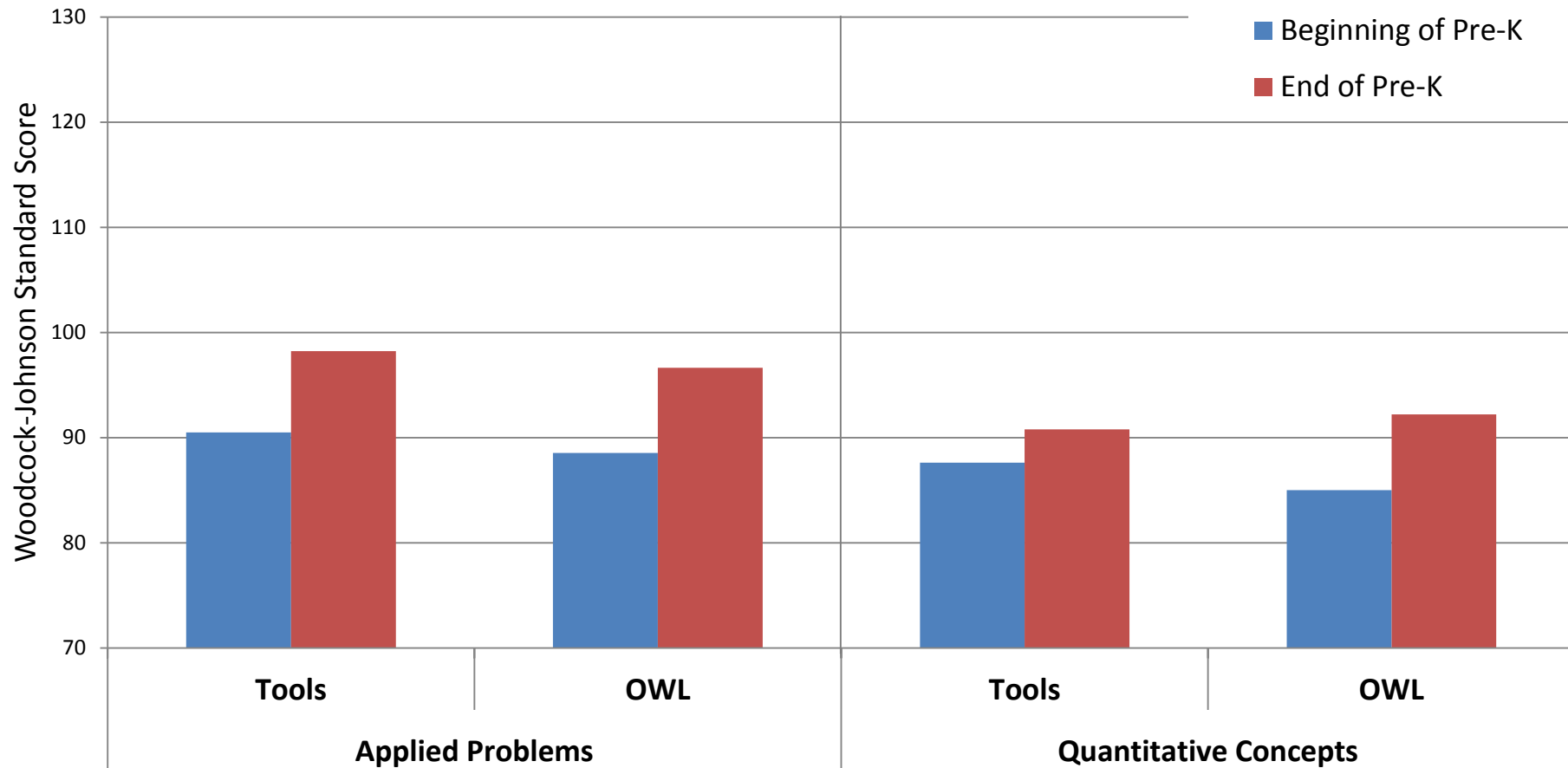
Performance from Beginning to End of Pre-K on Tests of LITERACY



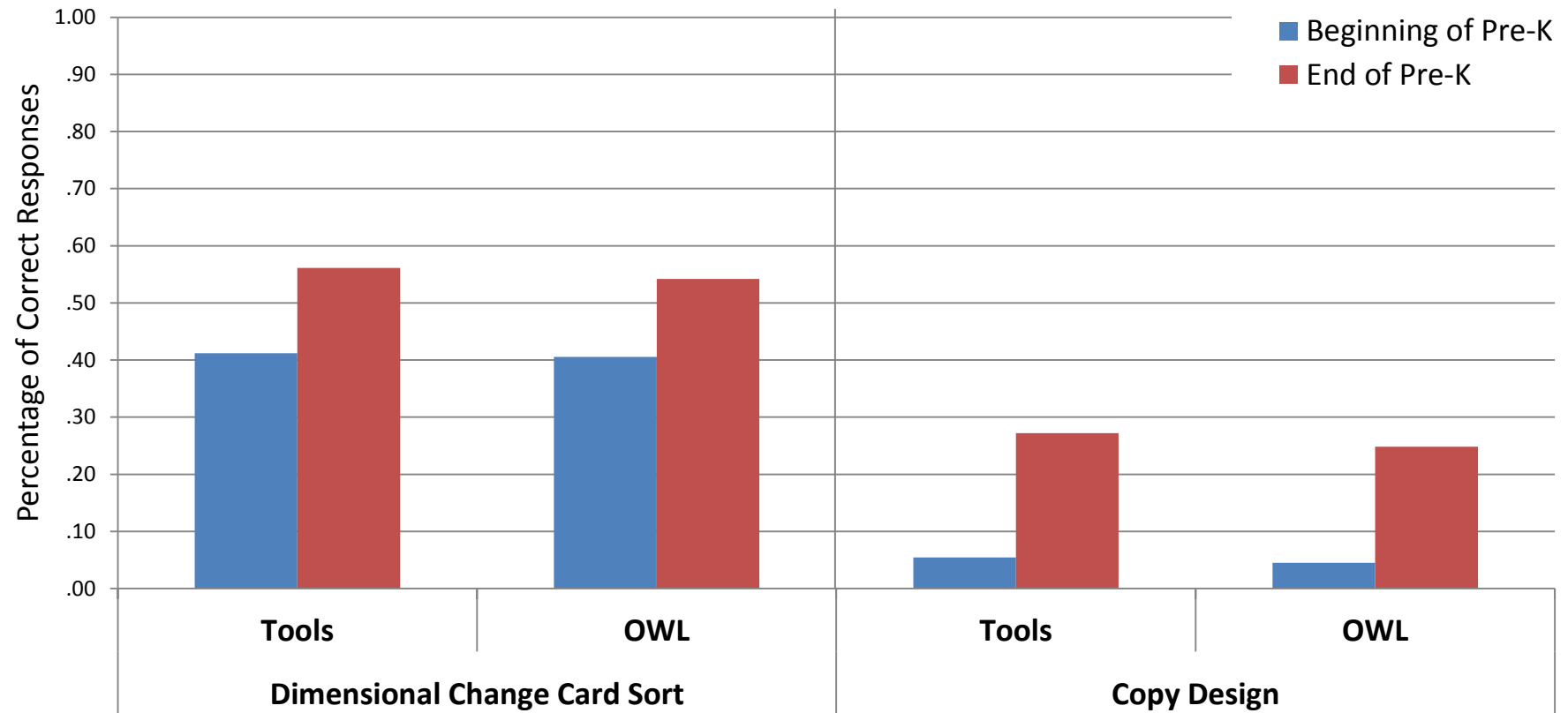
Performance from Beginning to End of Pre-K on Tests of LANGUAGE



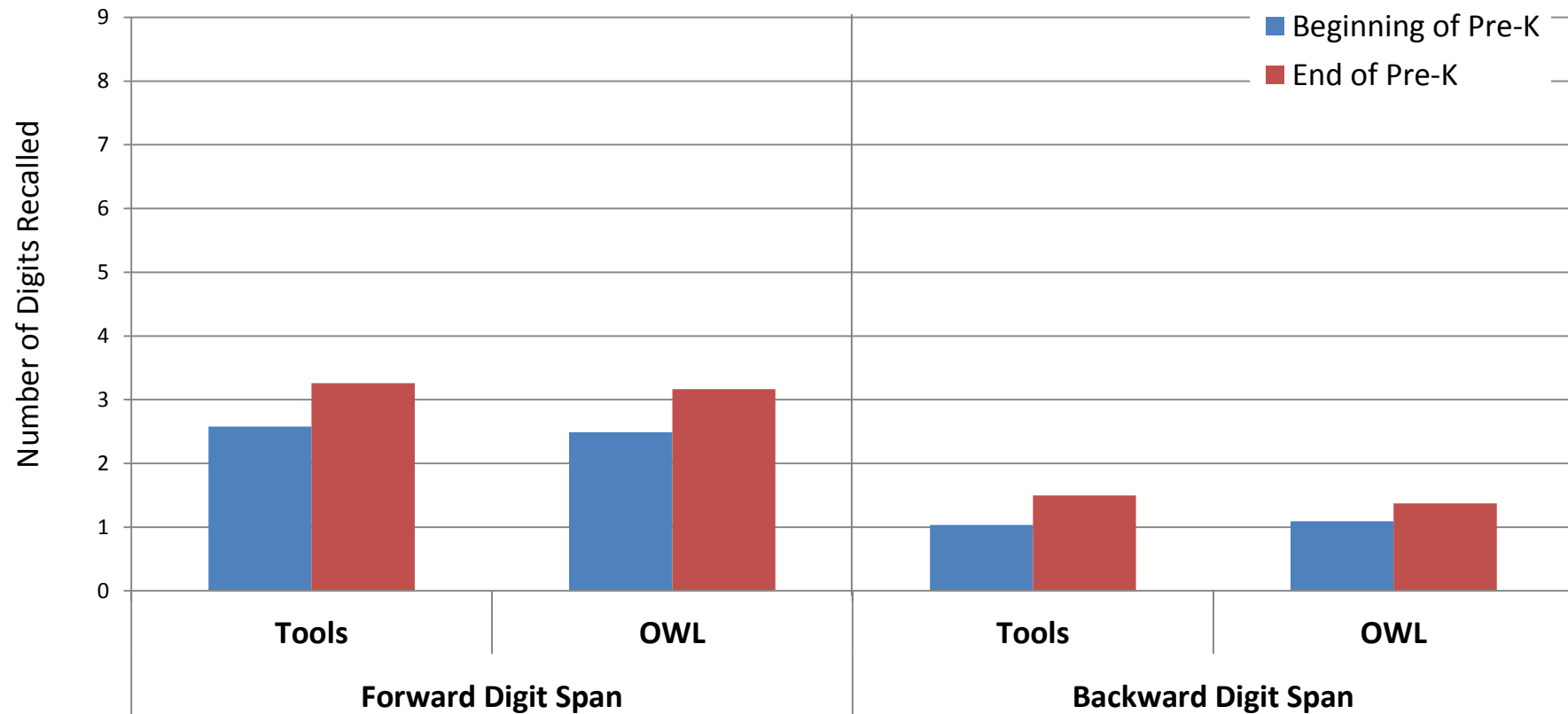
Performance from Beginning to End of Pre-K on Tests of MATHEMATICS



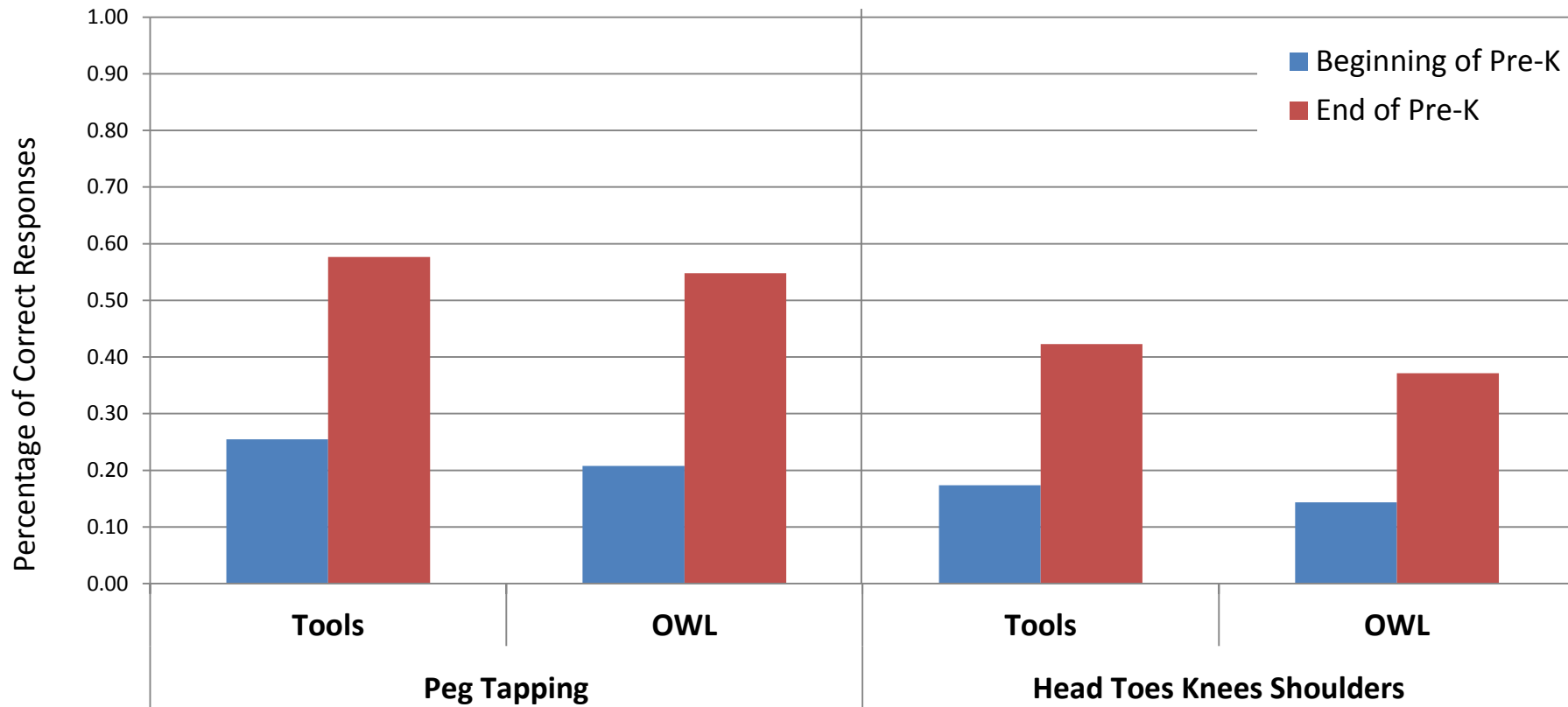
Performance from Beginning to End of Pre-K on ATTENTION



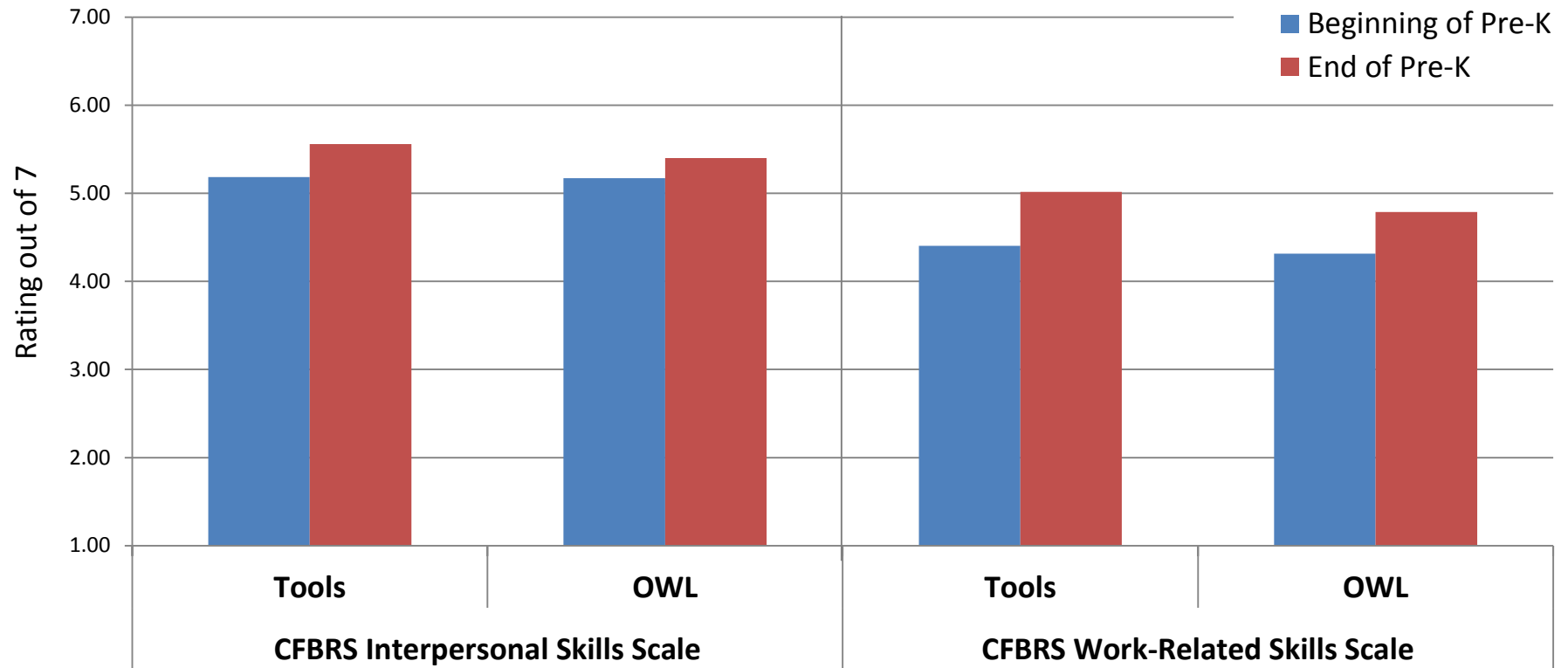
Performance from Beginning to End of Pre-K on WORKING MEMORY



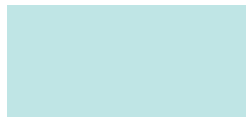
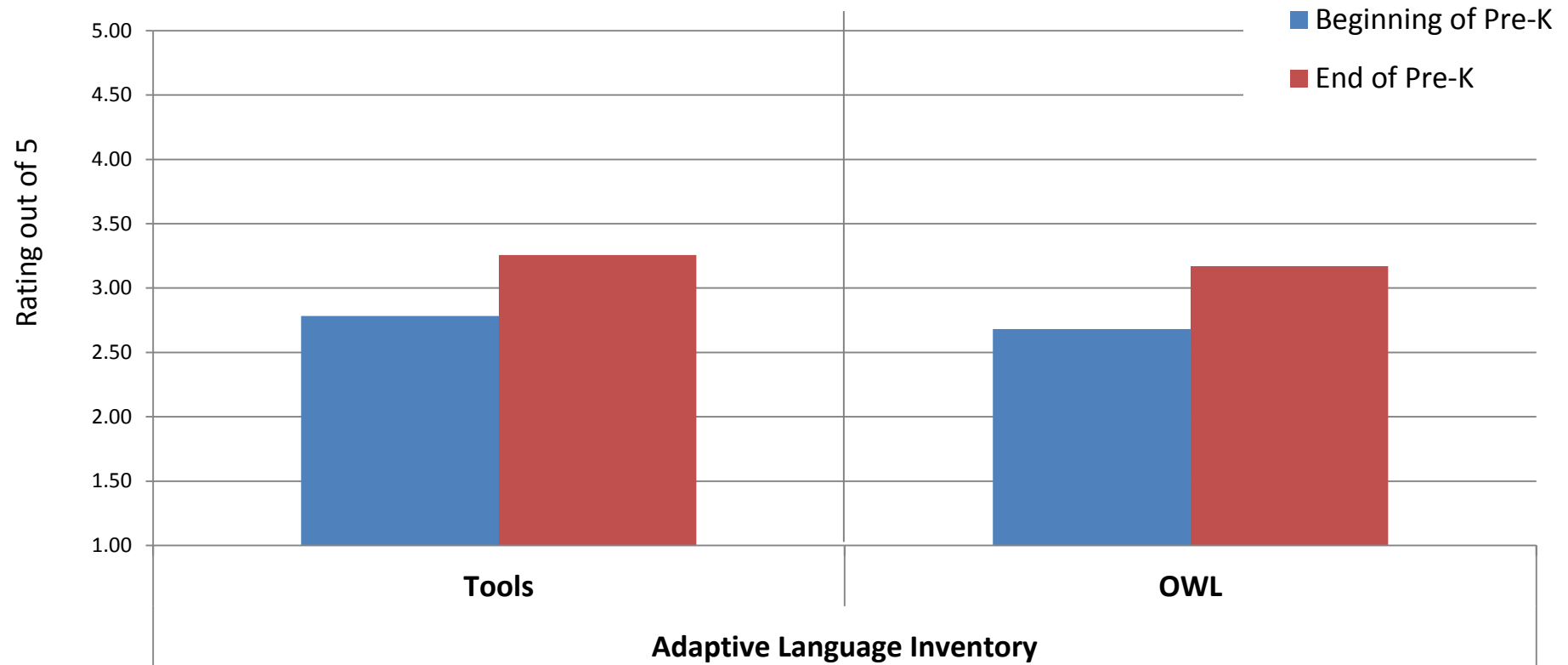
Performance from Beginning to End of Pre-K on INHIBITION



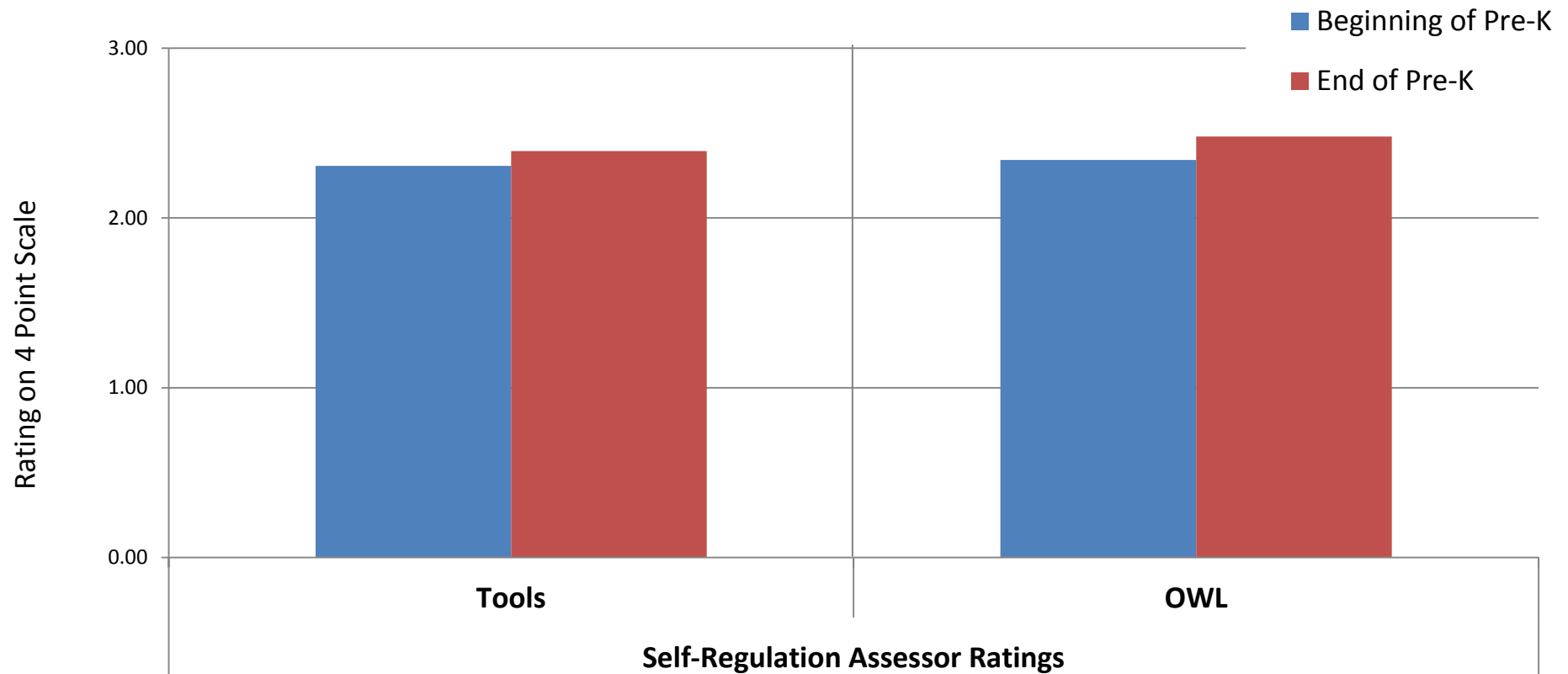
Performance from Beginning to End of Pre-K on SOCIAL AND BEHAVIORAL SKILLS



Performance from Beginning to End of Pre-K on ADAPTIVE LANGUAGE



Performance from Beginning to End of Pre-K on SELF REGULATION Assessor Ratings

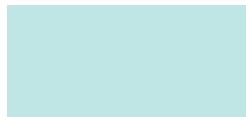


Cohort 2 Results

- There were no statistically significant effects in favor of either Tools or OWL on any of the outcome variables at the end of PreK.
 - Both groups exhibited gains in achievement, self-regulation, teacher and assessor ratings over the school year.
 - These gains were similar for both curriculum groups.



Alamance Burlington School System
Narrative Record and Fidelity
Descriptive Statistics for Overall Implementation



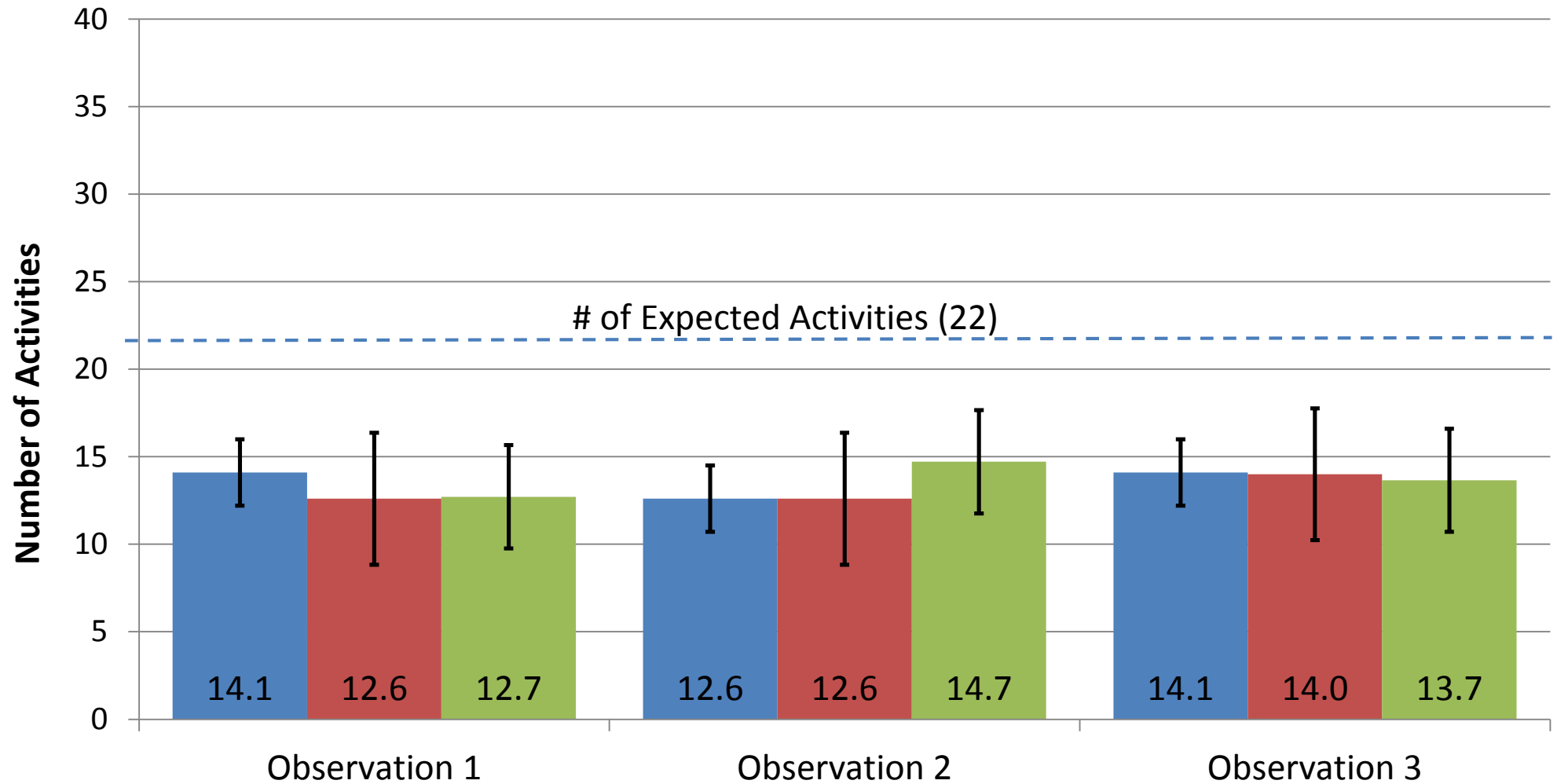
Proportion of Day Spent Implementing Tools Curriculum

	Observation 1		Observation 2		Observation 3	
	Mean	SD	Mean	SD	Mean	SD
Alamance	30%	9%	31%	6%	28%	6%
Guilford	23%	9%	23%	9%	24%	9%
Tennessee	25%	9%	31%	8%	30%	8%

Note. Non-Tools classroom time includes free choice centers, non-Tools instruction, non-Tools transition, and time spent in meals, naps, and activities outside of the classroom.

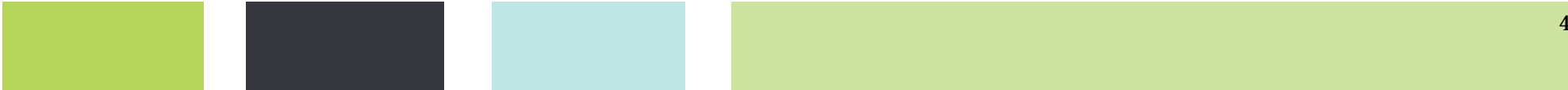
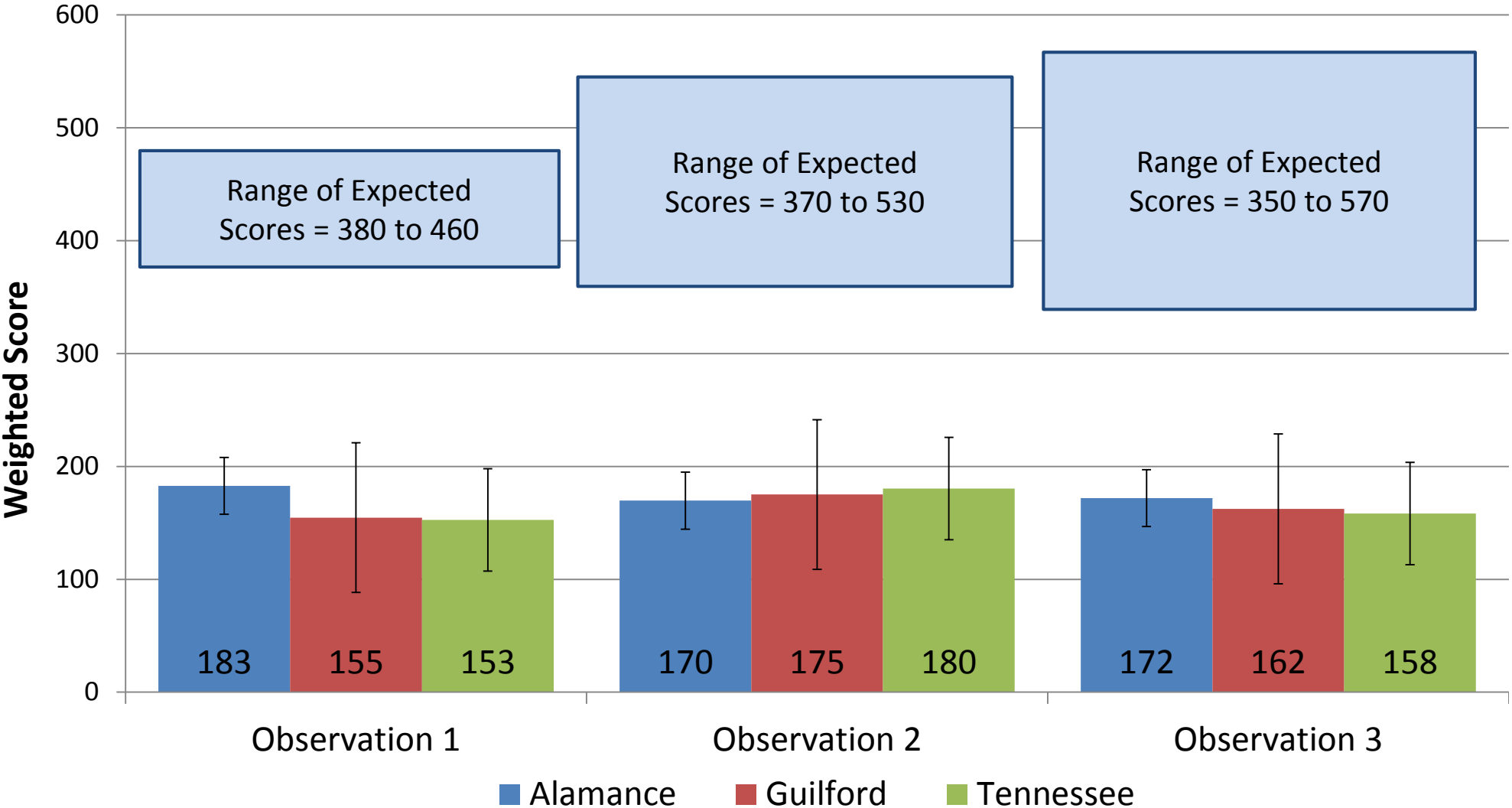


Number of Time-Appropriate Activities Completed By Observations

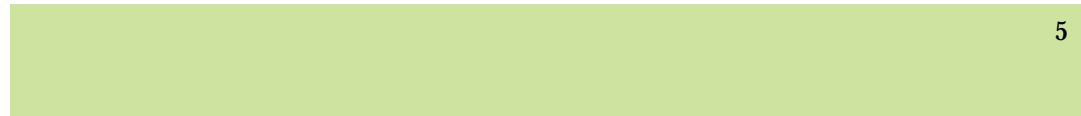
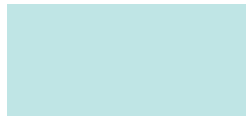


Alamance Guilford Tennessee

TOOLS Implementation Score By Observations



Alamance Burlington School System
Narrative Record and Fidelity
Descriptive Statistics For Make-Believe Play



Duration for Make Believe Time Block Activities

		Observation 1		Observation 2		Observation 3	
		Mean	SD	Mean	SD	Mean	SD
Make Believe Play Planning	Alamance	0:08	0:04	0:13	0:02	0:13	0:02
	Guilford	0:08	0:05	0:11	0:07	0:09	0:05
	Tennessee	0:09	0:06	0:11	0:05	0:14	0:05
Make Believe Play Practice	Alamance	0:02	0:04	0:04	0:13	0:01	0:02
	Guilford	0:06	0:13	0:03	0:04	0:02	0:04
	Tennessee	0:03	0:06	0:05	0:08	0:01	0:03
Make Believe Play	Alamance	0:35	0:21	0:30	0:24	0:32	0:17
	Guilford	0:16	0:12	0:16	0:16	0:22	0:14
	Tennessee	0:13	0:11	0:20	0:12	0:17	0:10

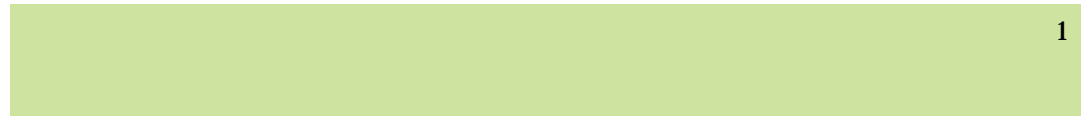
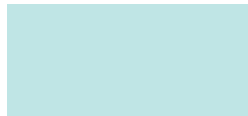
Make Believe Time Block: Proportion Participating and Steps Enacted

		Observation 1		Observation 2		Observation 3	
		Proportion Completing Activity	Appropriate Steps	Proportion Completing Activity	Appropriate Steps	Proportion Completing Activity	Appropriate Steps
Make Believe Play Planning	Alamance	100%	7.2	100%	7.4	100%	7.6
	Guilford	80%	6.3	87%	7.8	93%	7.8
	Tennessee	82%	6.3	88%	7.8	94%	8.1
Make Believe Play Practice	Alamance	40%	1.3	10%	2.0	30%	2.0
	Guilford	53%	2.8	40%	2.7	40%	3.2
	Tennessee	53%	1.7	35%	2.0	29%	3.2
Make Believe Play	Alamance	90%	3.2	100%	4.7	100%	4.7
	Guilford	73%	3.0	73%	4.4	87%	5.4
	Tennessee	82%	2.7	88%	3.5	88%	3.9

Cohort 1

Fidelity of Implementation By Time Block

Predicting Student Outcomes



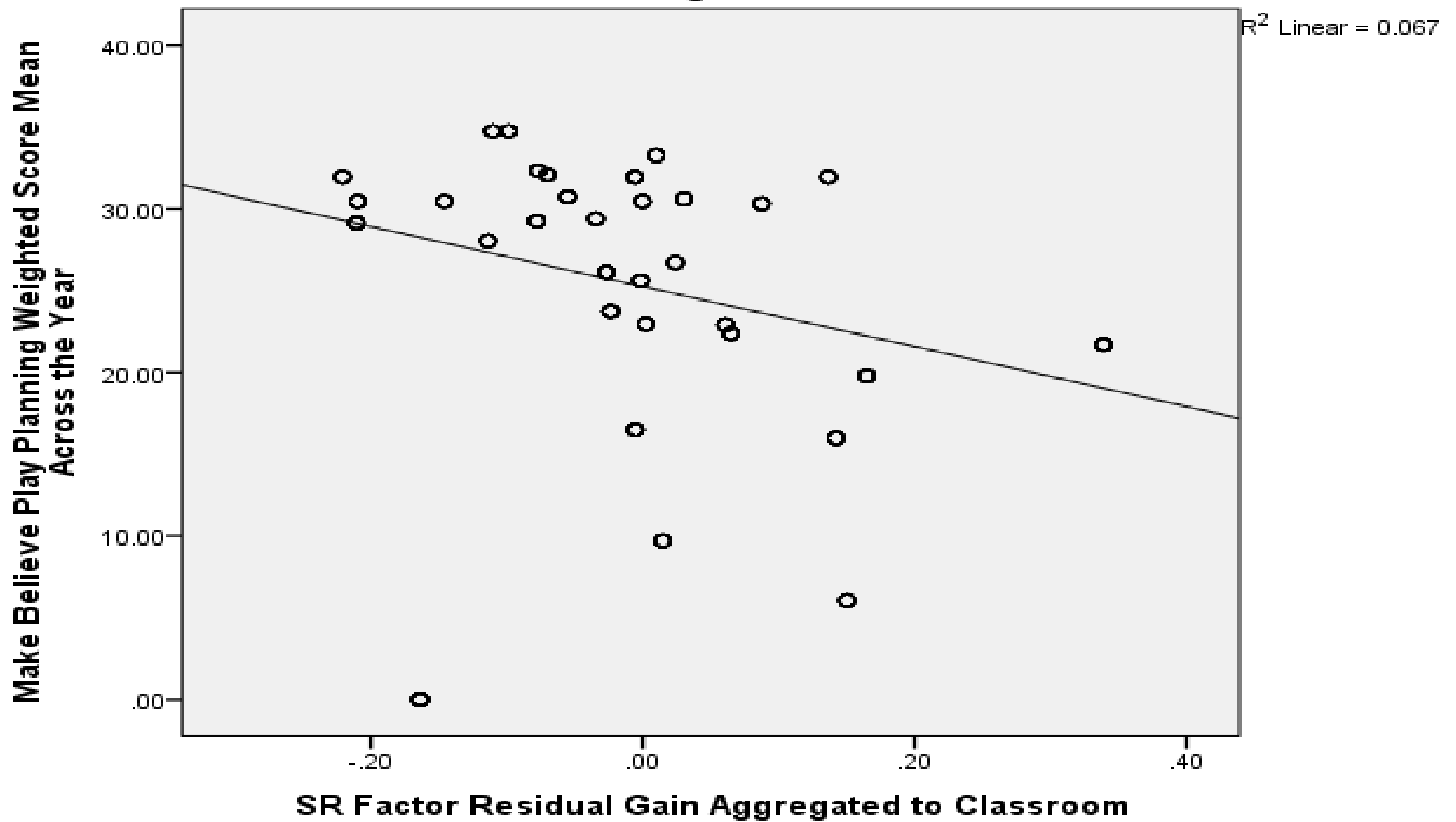
Effects of MB Planning and Play Implementation on Self-Regulation and Achievement Gains¹

Variable		Standardized Estimate	<i>p</i>
MBP Planning Fidelity ²	WJ Achievement	0	0.99
	Self Regulation	-0.11	0.09
MBP Fidelity ²	WJ Achievement	-0.07	0.09
	Self Regulation	-0.08	0.11

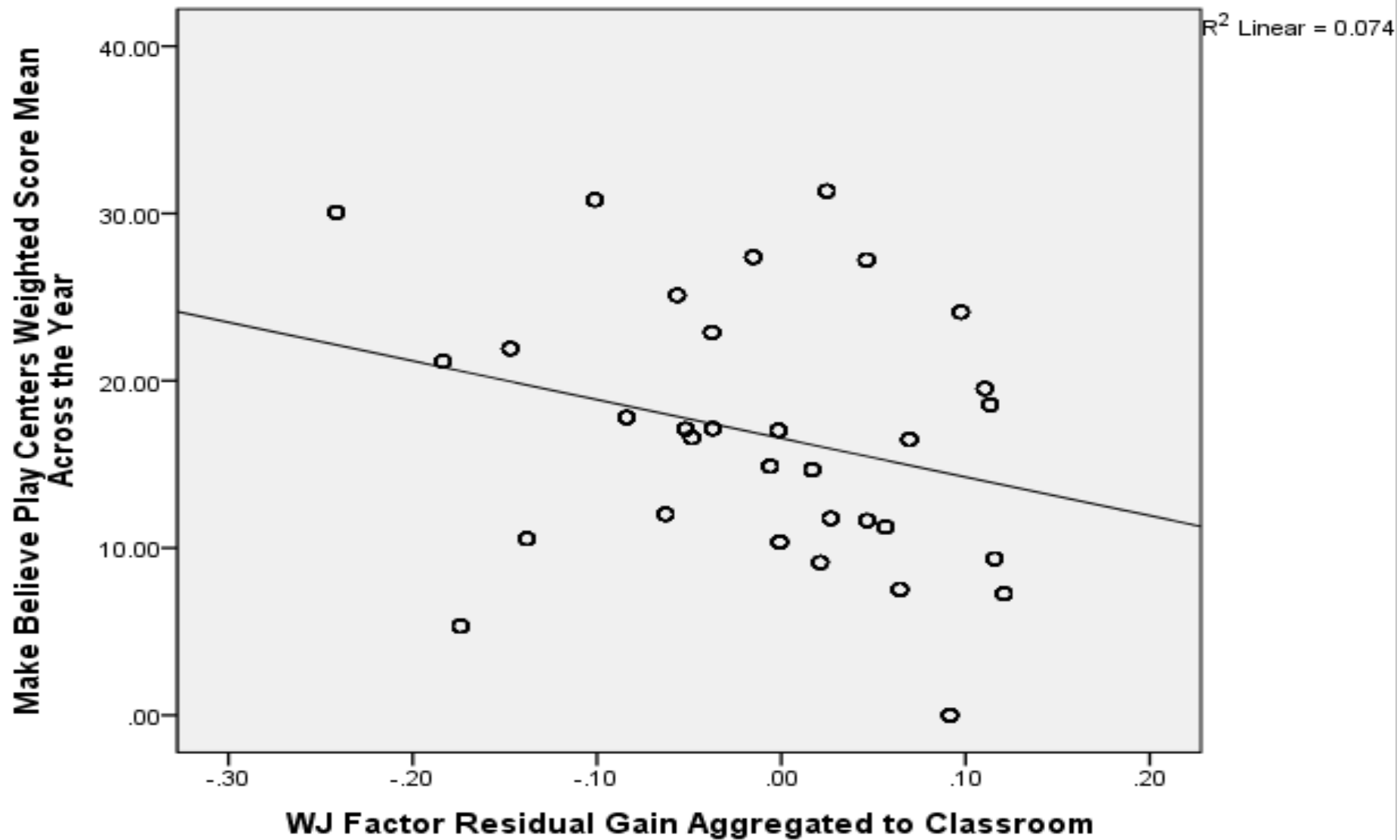
¹ Tested via multi-level models with students nested within classrooms, schools, and school systems.

² Time Block score aggregated across the 3 classroom observations.

Relationship Between Weighted Fidelity Score for Make-Believe Play Planning and Self-Regulation Gains



Relationship Between Weighted Fidelity Score for Make-Believe Play and Achievement Gains



Effects of Literacy Time Block Implementation on Direct Assessments of Self-Regulation¹

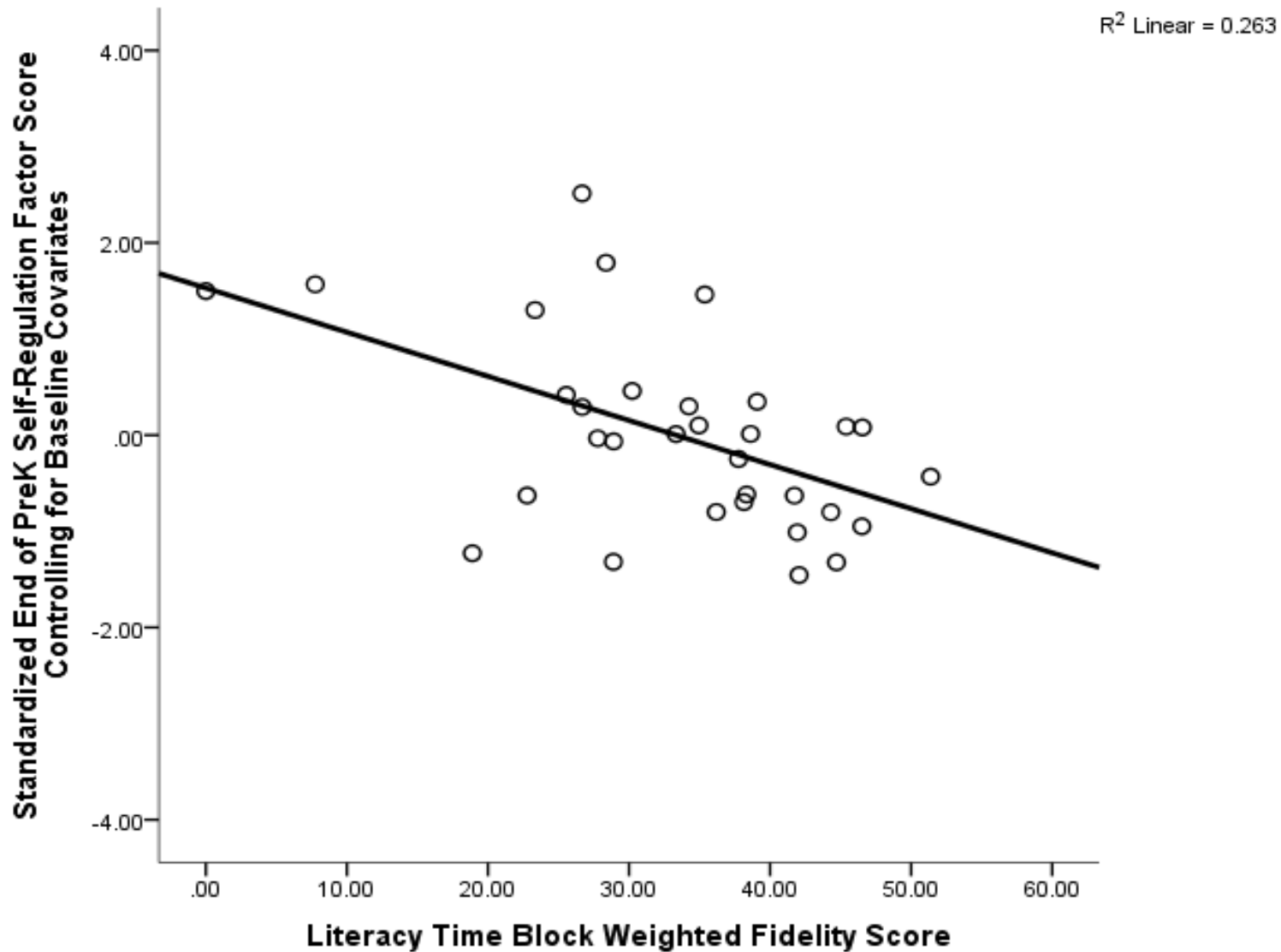
	SR Factor Score		Peg Tapping		Head Toes Knees Shoulders	
	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>
Weighted Fidelity Score ²	7.33	.015	12.64	.000	10.44	.002
Gender=male	4.88	.028	2.07	.151	7.29	.007
Language status=ELL	0.03	.865	0.62	.430	0.31	.576
IEP status=IEP	3.27	.071	10.93	.001	1.80	.180
Ethnicity=Black	0.56	.453	0.07	.789	0.01	.972
Ethnicity=White	1.04	.310	1.13	.288	2.56	.110
Ethnicity=Hispanic	0.04	.841	0.67	.412	0.30	.584
Pretest	351.85	.000	155.88	.000	169.93	.000
Age at pretest	1.14	.286	4.36	.037	7.41	.007
Pre-post interval	0.26	.613	0.00	.999	5.58	.022

¹ Tested via multi-level models with students nested within classrooms, schools, and school systems.

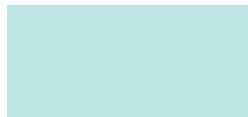
² Literacy Time Block score aggregated across the 3 classroom observations.



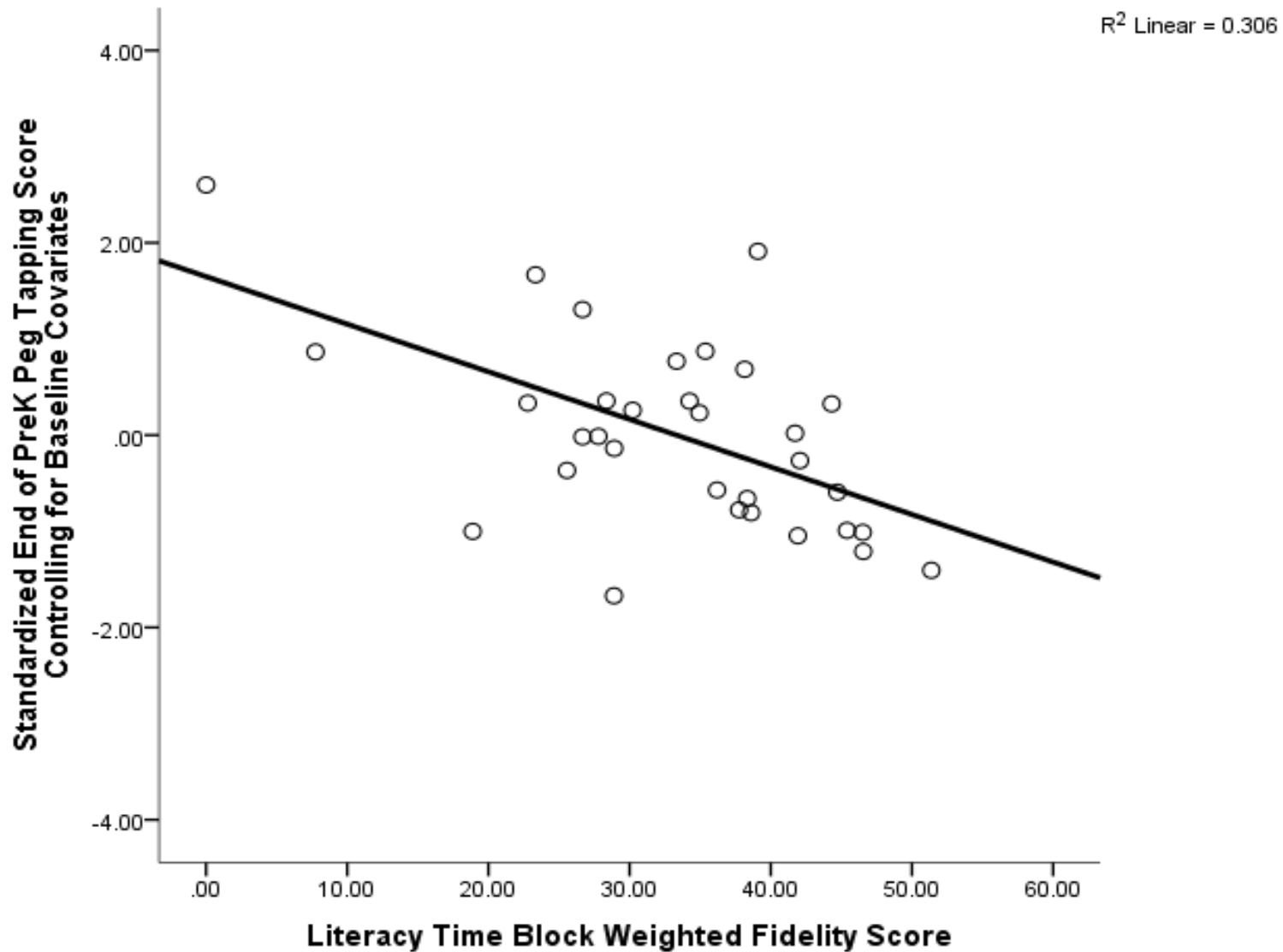
Effects of Literacy Time Block Implementation on Self-Regulation Factor Score at End of PreK



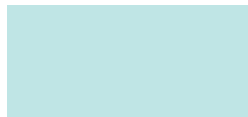
¹ For illustrative purposes data points are aggregated to the classroom level (N = 32).



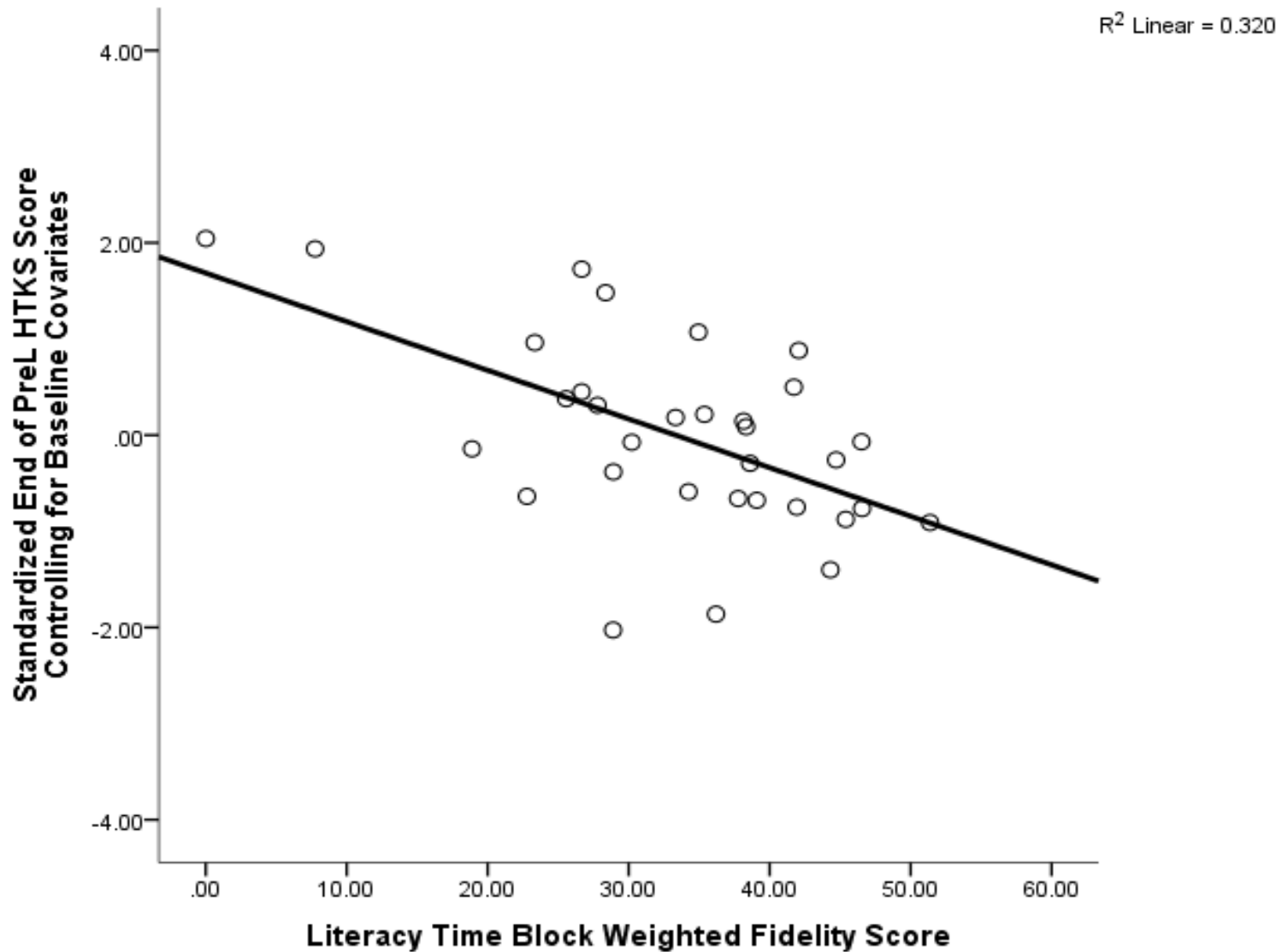
Effects of Literacy Time Block Implementation on Peg Tapping Score at the End of PreK



¹ For illustrative purposes data points are aggregated to the classroom level (N = 32).



Effects of Literacy Time Block Implementation on Head Toes Knees Shoulders Score at the End of PreK



¹ For illustrative purposes data points are aggregated to the classroom level (N = 32).

