



Early Learning Program Characteristics and Child Outcomes: Lessons from Tennessee

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Tennessee Voluntary Pre-K Study Team

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State Pre-K: Context and Cautions

1. Implemented at scale as routine organizational practice
 - Multiple, varying subunits (districts, schools) with some degree of autonomy; challenges for implementing a shared vision and consistent standards of practice.

(Contrasts with widely-cited small, intensive demonstration projects implemented by researchers.)
2. Pre-k as an education program
 - Most often administered by state departments of education.
 - Classrooms generally located in public schools.
 - Instructors typically licensed teachers.
 - Programs primarily academic, but highly variable across states.

(Contrasts with Head Start and private center-based daycare.)



State Pre-K: Context and Cautions

3. High expectations

- School readiness, i.e., children enter K with some early literacy and math skills and appropriate school behavior.
- Boosted long-term achievement, e.g., state achievement tests, graduation rates.
- Reducing racial/ethnic and poverty-related achievement gaps.
- Cost savings via fewer special education placements and retentions in grade.
- Social/behavioral effects, e.g., better behavior in school; longer term effects on employment, criminal behavior, etc.
- Child care that frees parents for employment, income enhancement.

(Much is expected from a school year of pre-k.)



State Pre-K: Context and Cautions

4. Mixed and largely inconclusive supporting evidence
 - Most promising indications from small boutique studies conducted 50 or more years ago.
 - Clear evidence of immediate school readiness effects.
 - Inconclusive evidence about longer-term academic effects, behavioral effects, and cost savings.
 - Very limited evidence on life outcomes past graduation.
 - Limited evidence of effects on parents' employment, income (may not be well-tailored for working families).
 - Some evidence that effects are somewhat more positive for economically disadvantaged children.

(Widespread advocacy claims that solid research evidence supports the expectation of multiple positive long-term effects from participation in a state pre-k program are exaggerated.)



TN-VPK: Typical Statewide Program

- Starting in 1998 with small pilot program, legislation created the TN Voluntary Pre-K program in 2005.
- Current program:
 - 935 pre-k classrooms in 135 of the 136 Tennessee school systems across all 95 Tennessee counties
 - Serving more than 18,000 children.
 - Targeted: FRPL eligibility
 - Met 9 of 10 NIEER Benchmarks for quality programs
 - 93% of classrooms are in public schools
 - Program not expanded since 2009

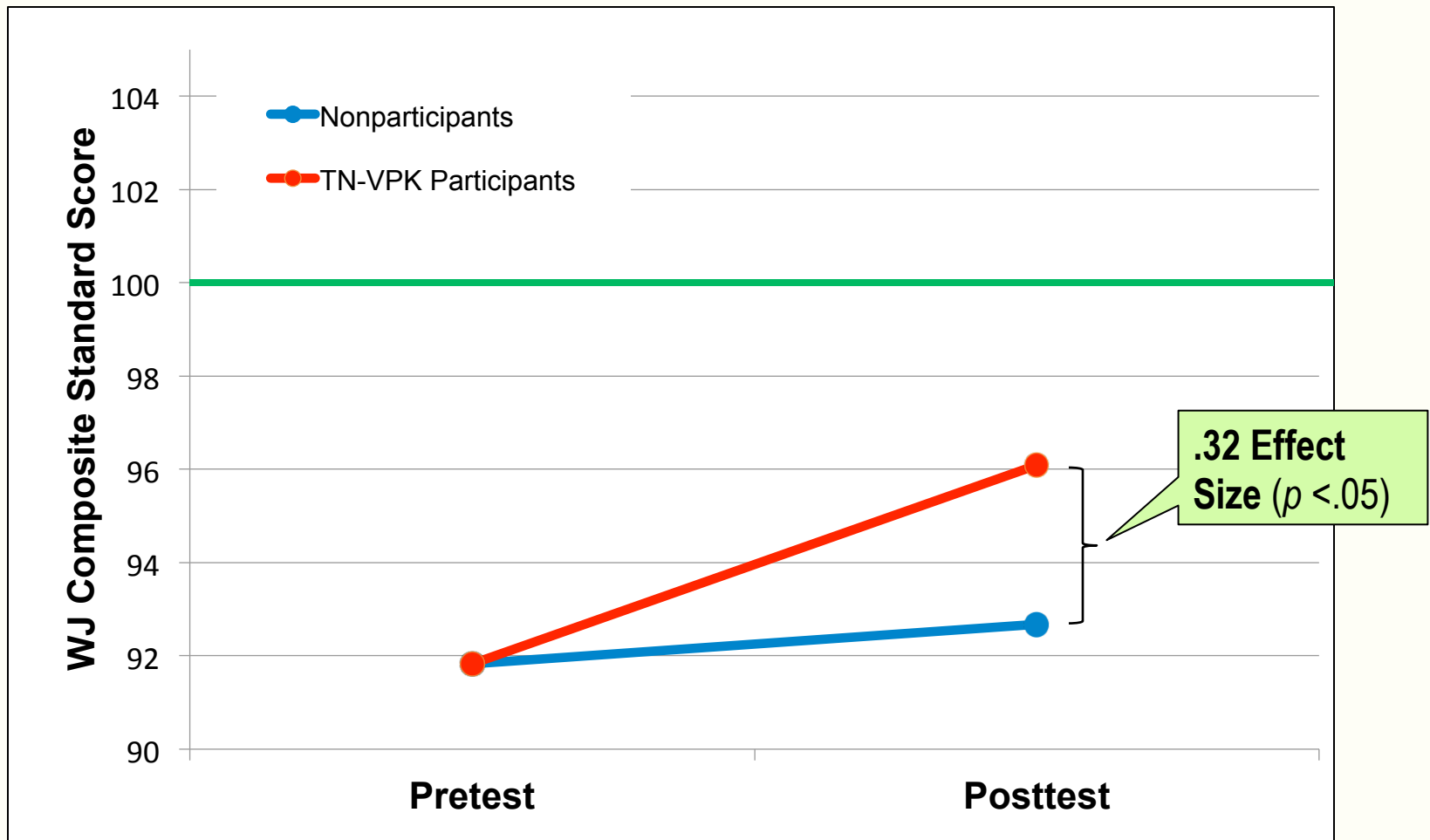
The Vanderbilt Pre-K Study

Three main components:

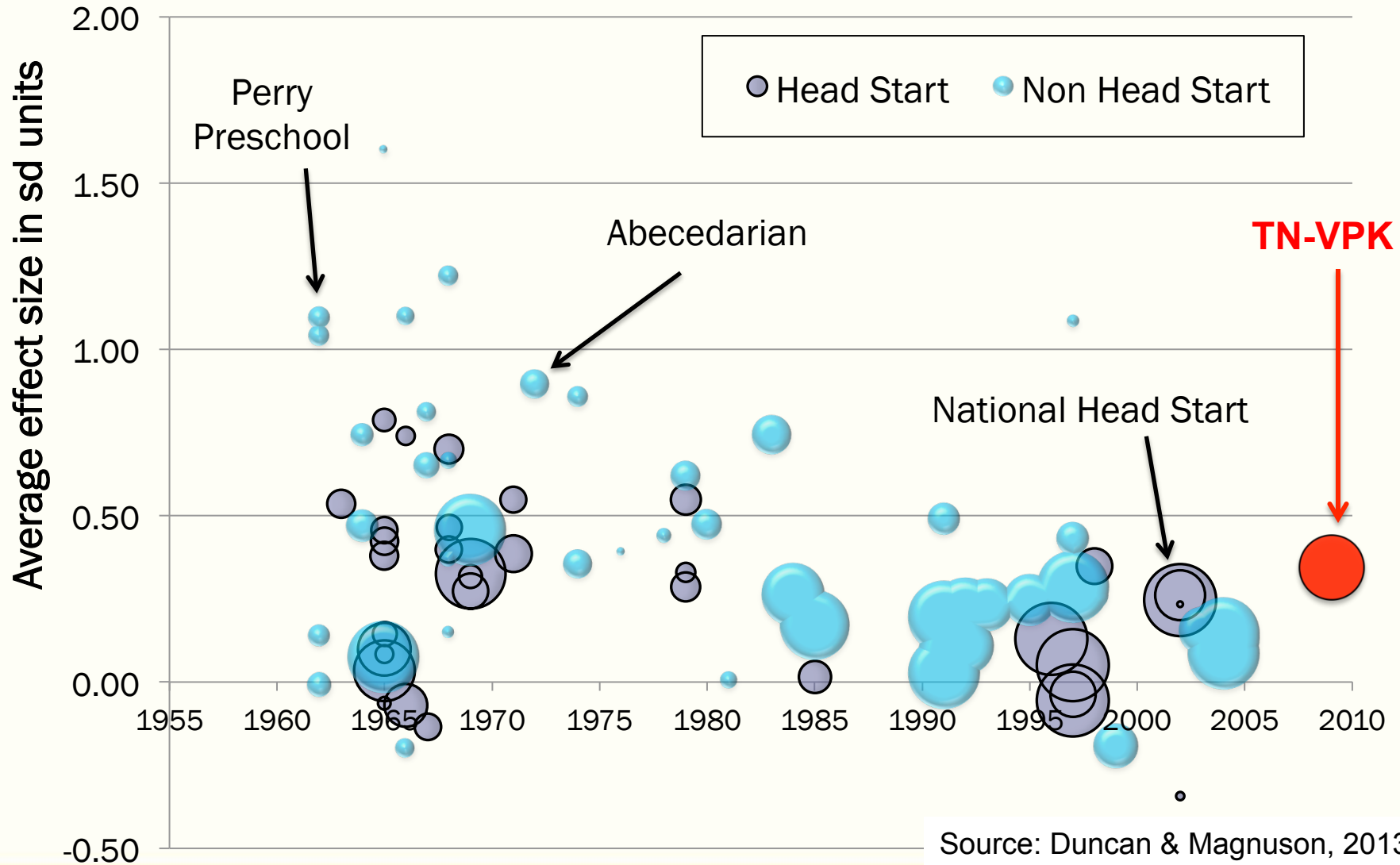
- Randomized control trial in oversubscribed schools-- 2 cohorts, 2990 students, 80 schools, 29 districts; tracking through the state data system to 3rd grade and beyond (now 6th grade).
- Intensive substudy of consented children in the full sample-- assessed each year by the research team through 3rd grade; 1076 students, 58 schools, 21 districts.
- Follow up Intensive substudy of Cohort II students through middle school; one-third new consents, 725 students with their families and teachers.



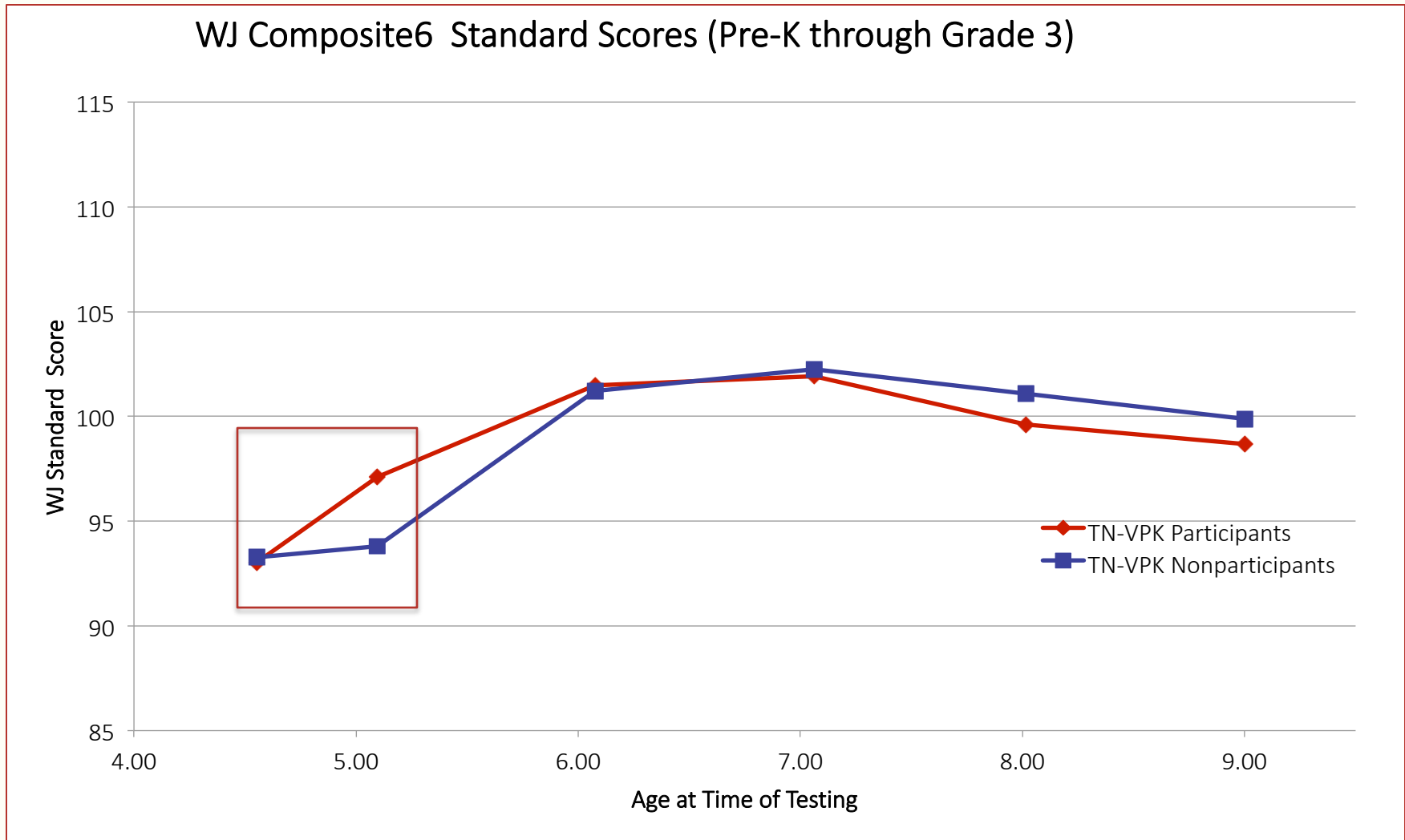
TN-VPK Effects at End of Pre-K on the Overall WJ Achievement Composite Score



Review of End of Pre-K Average Cognitive Effects



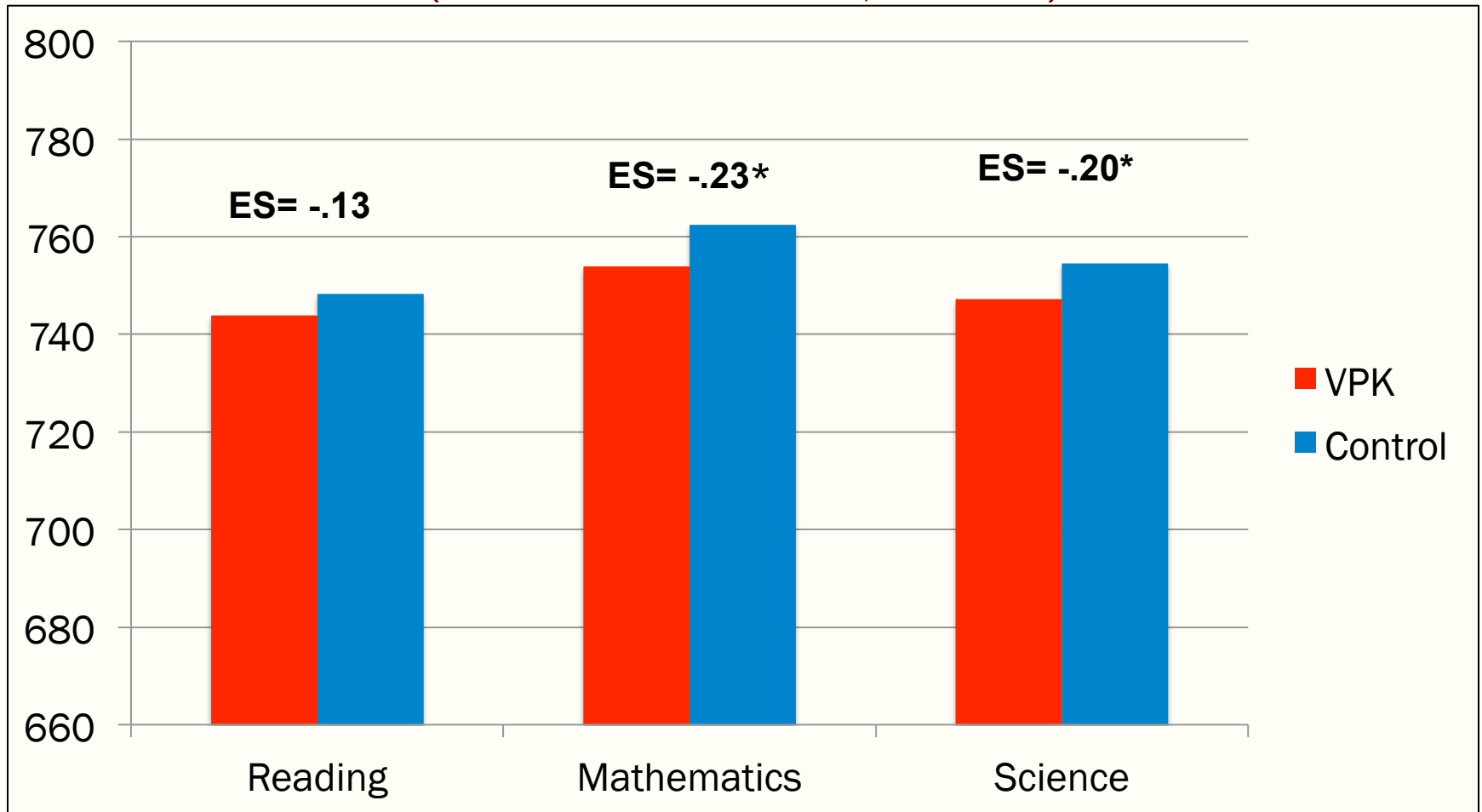
Overall VPK Achievement Advantage Fades





3rd Grade State TCAP Scores: Full Sample

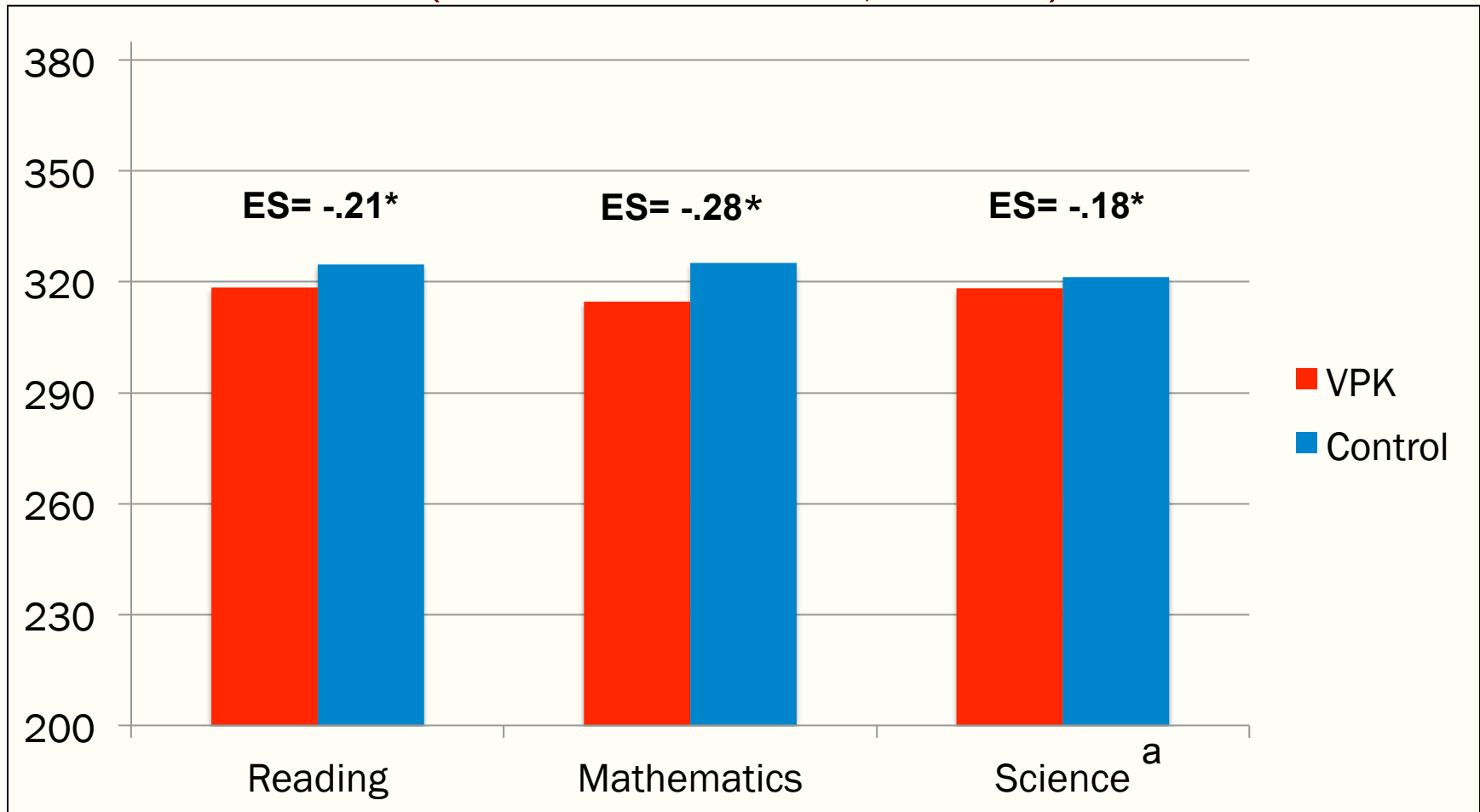
(Treatment on Treated; N=2990)



* $p < .05$

6th Grade State TNReady Scores: Full Sample

(Treatment on Treated; N=2990)



* $p < .05$

^a TCAP test; scores proportioned to TNReady scale.



Possible Explanations

1. Kindergarten teachers work with those children with low school entry skills enabling them to catch up.
2. Kindergarten grades (and beyond) are not building on the skills the VPK children come to school with; momentum is not sustained.
3. Pre-K has become a junior kindergarten experience; by the end of 1st grade, children are burned out.
 - Increasing numbers of pre-k programs operated by public schools
 - 93% of TN-VPK classrooms are housed in elementary schools
 - Very hard to protect those classrooms from elementary like pressures



K-3rd Grade School Environments

- 14% of the students in a subsample with adequate data attended K-3rd in high quality schools^a as measured by average value-added scores across those years.
- 46% of the students had a teacher rated highly effective on the TN evaluation system during 2 or more of the K-3rd grade years (cf. 81% of TN elementary students).
- **However**, only 9% of the students attended high quality schools AND had at least 2 highly effective teachers during the K-3rd grade years.

^a One SD or more above the mean.

Influence of the K-3rd School Environments

For the 9% of VPK participants and nonparticipants who attended high quality schools AND had at least 2 highly effective teachers:

- VPK participants scored significantly higher on the 3rd grade reading and math achievement tests (no “fadeout”)
- Highly effective teachers in the early grades were more influential for reading; in the later grades for math.

For the much larger number of students in lower quality schools, VPK participants and nonparticipants had similar scores when both had few highly effective teachers BUT nonparticipants actually performed better than participants when both had 2 or more highly effective teachers.

Other Outcomes

Outcome	6 th Grade			
	VPK	Control	VPK	Control
Retention in grade	.133	.128	.149 ^a	.128 ^a
Special Education (IEP)	.146	.096*	.129	.066*
Disciplinary Actions	.085	.097	.286	.256
Minor (school rules)	.072	.064	.248	.194
Major	.034	.043	.142	.120

^a Retention rates only go through 5th grade; 6th grade rates are not yet available.

Treatment on treatment estimates with multiple imputation; N=2990.

* $p < .05$



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TENNESSEE LESSONS PHASE II



“High Quality” Prekindergarten Programs

- The terms “High Quality” are routinely used in all legislation funding prekindergarten programs.
- Advocates talk about only supporting “high quality” programs.
- The definition of high quality, however, is vague.
- Most use structural features, which are easy to regulate
 - Group size
 - Teacher child ratio
 - Licensed teacher
 - Use of a curriculum
- None of these features individually or collectively are associated with children’s achievement gains.



Measuring Quality in ECE Classrooms

- Current classic measures (CLASS, ECERS)
 - Based on ratings
 - Concepts derived conceptually
- Reliability difficult (within 1 point typical)
- Training is expensive and must be repeated
- Despite widespread implementation and much research, one conclusion is clear: Neither of these measures predicts short or long term development in children.



Actual Behavioral Counts: Alternatives

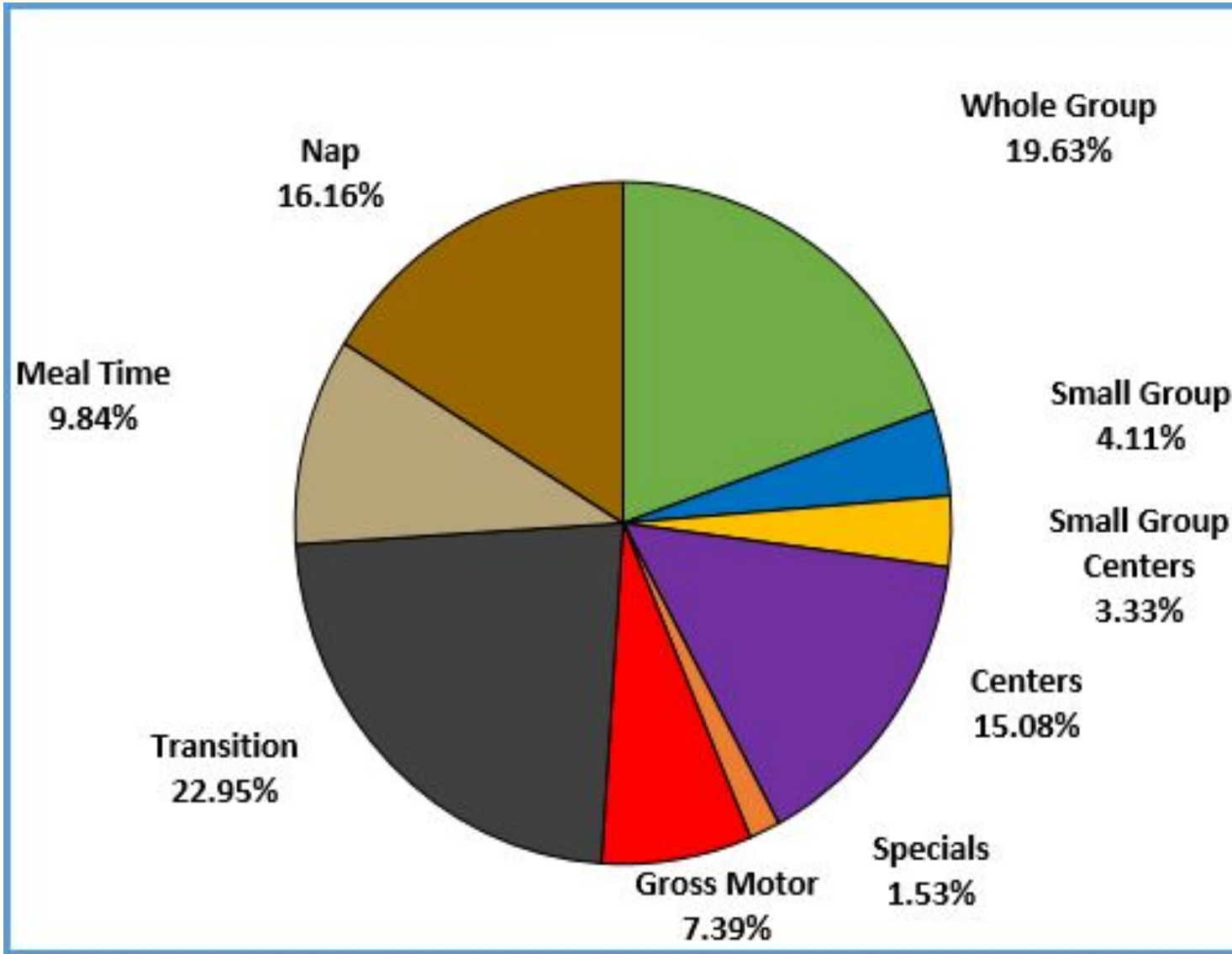
- Time Use
 - Appealing to policy makers
 - Easier to regulate
- Interaction counts
 - More difficult to collect
 - May be more predictive of child gains
 - More amenable to coaching
- Measures of both time use and interactions collected in several large scale studies
 - All data collection digital (iPads or surface tablets)
 - Applied to iterative continuous improvement project



How Time Was Spent in the Classrooms

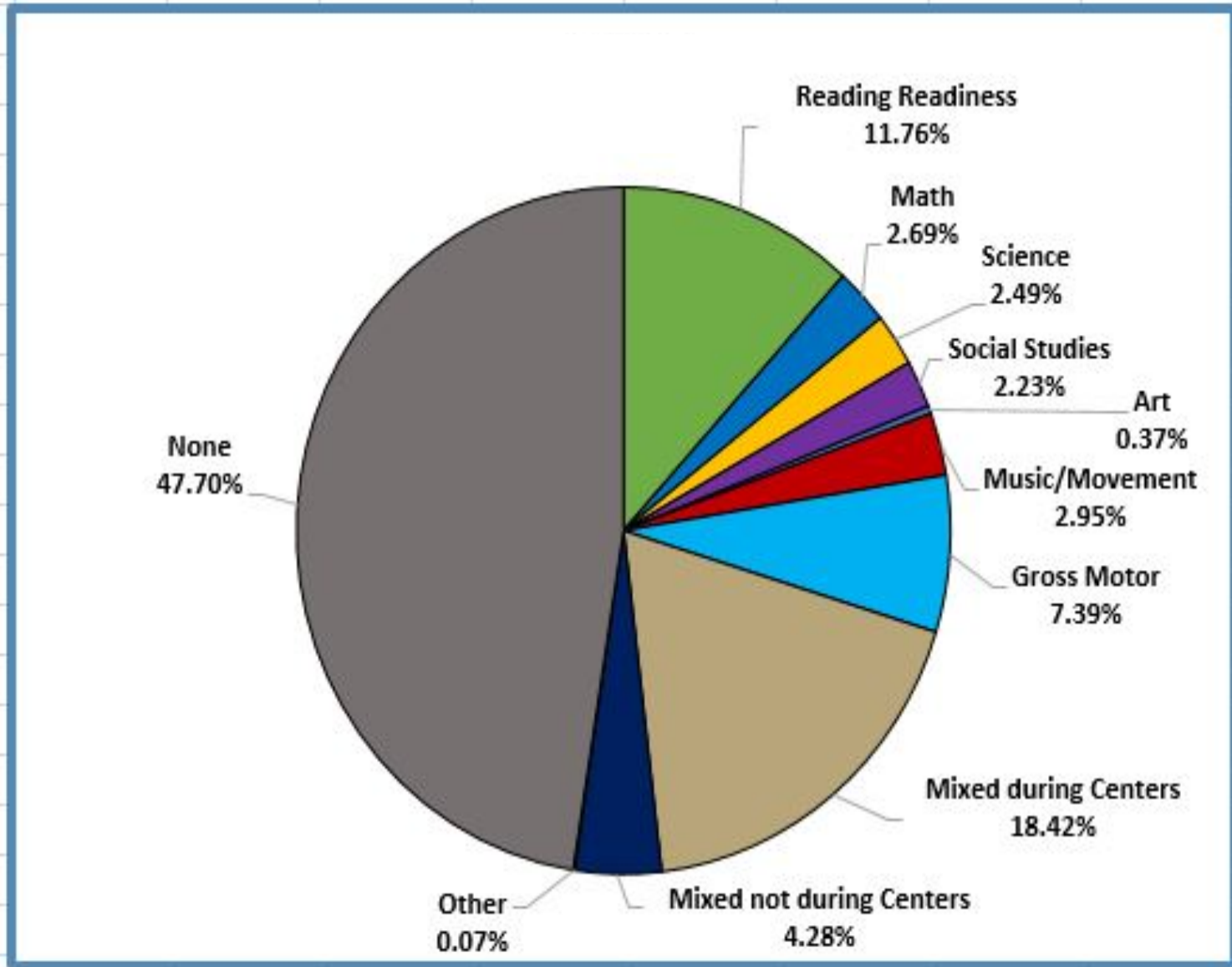


Time Use
In 85
Pre-K
Classrooms





Content Focus In 85 Pre-K Classrooms

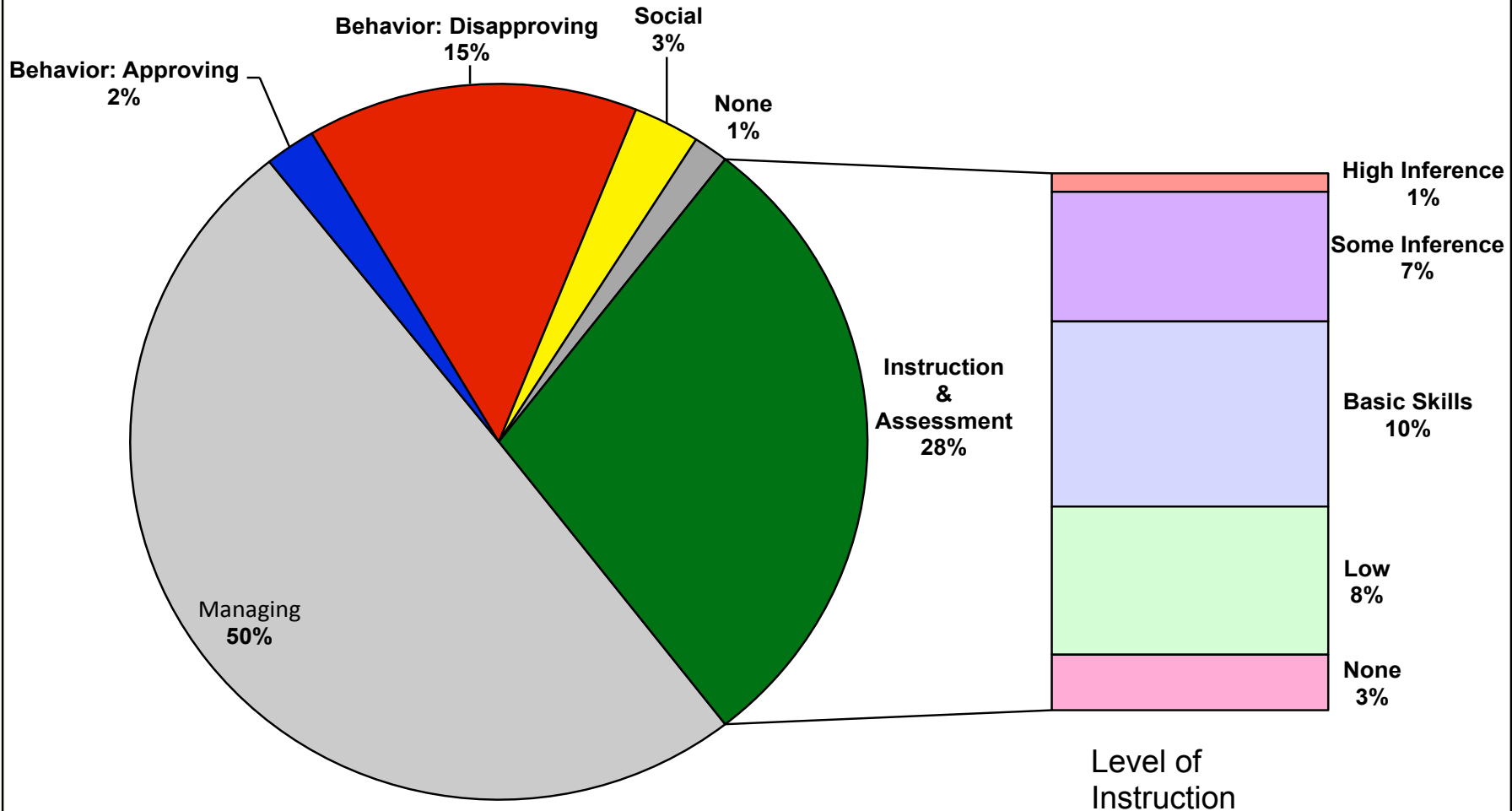




Behavioral Observations of Teacher and Child Interactions

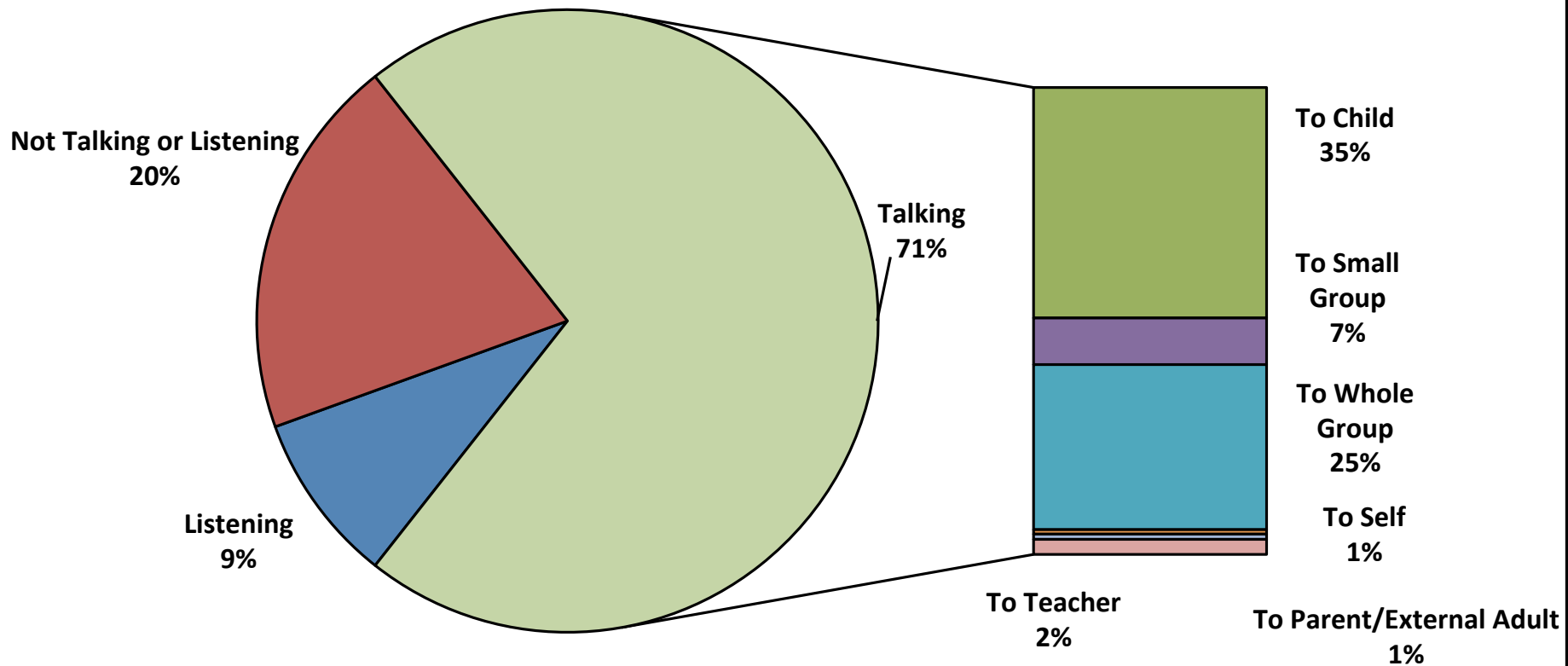


Teachers' Types of Tasks Across the Morning






Teacher Talking and To Whom





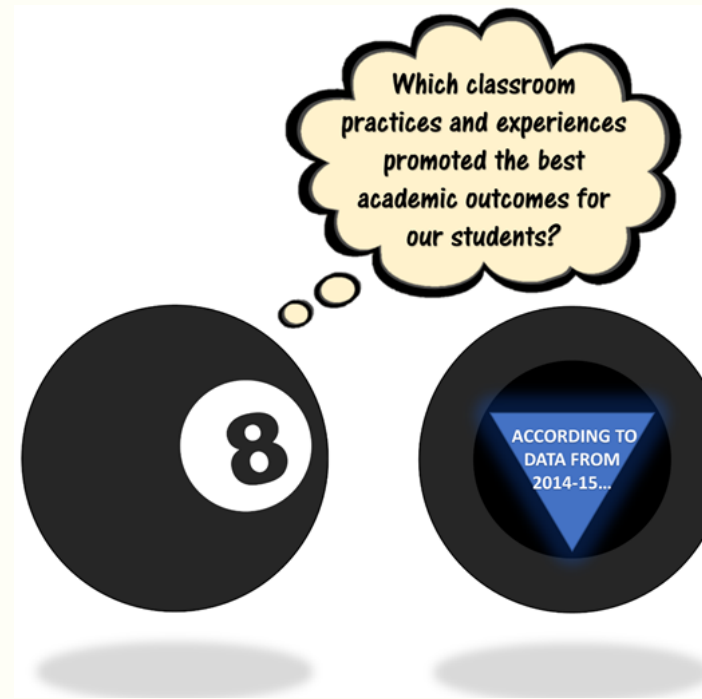
Classroom Practices Related to Child Gains in Many Content Areas

1. Less time in Transitions 
2. Higher Quality of Instruction
3. More Positive Emotional Climate
4. Teachers More Often Listening to Children
5. Greater Time in Sequential Activities during Centers
6. More Time in Associative/Cooperative Interactions
7. Higher Levels of Involvement by Children
8. More Math Opportunities



The “Magic Eight”

1. Reduce transitions
2. Increase quality of instruction
3. More positive environment
4. Increase teacher listening to children
5. Increase opportunities for sequential activities
6. Foster associative and cooperative interactions
7. Foster higher levels of involvement
8. Create more math opportunities





What is Needed Next for Quality Improvement

- Evaluation
 - Replacement measure for ECERS and CLASS to be used in Head Start and QRIS procedures in all states
 - Measure based on evidence about classroom practices that are proven to connect to children's short and longer term development
 - Measure that yields sound suggestions for improvement
- Practical tool for coaches and principals
 - Based on “Magic 8” and other proven practices
 - Web based mobile portal, iPad compatible
 - Linked for coaches to recommendations for practice



Policy Changes

- Connect pre-K efforts with child care support for families of children from birth to school entry.
- Develop enforceable standards for housing programs for young children in public elementary schools
 - Reduce transitions
 - Meals in room
 - Bathroom adjacent to room
 - Require gross motor activity outdoors unless very inclement weather for 45 to 60 minutes
 - Appropriate playground adapted for young children
 - Appropriate play material for indoor gym
- Create pre-K to 3rd grade coherence



Thank you!

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