VANDERBILT PEABODY COLLEGE

PEABODY research institute

Early Learning Program Characteristics and Child Outcomes: Lessons from Tennessee

Dale C. Farran, PhD
Mark W. Lipsey, PhD
Kelley Durkin, PhD
Vanderbilt University

August 9, 2019

Tennessee Voluntary Pre-K Study Team

- Principal Investigator
  Kelley Durkin (IES proposal)
- Investigators
  Dale Farran (formerly PI)
  Mark Lipsey (formerly PI)
  Kris Preacher
- Research Associates
  Sarah Wiesen
  Monica Hernandez (TERA)
- Research Specialist
  Stone Dawson
- Program Coordinator
  Janie Hughart
- Research Analysts
  Rick Feldser
  Ilknur Sekmen
- Consultants
  Alvin Pearman & Tyler Watts
- Postdoctoral Fellow
  Mark Lachowicz
- Child assessors across TN

Conducted in collaboration with the Tennessee Department of Education, the Tennessee Education Research Alliance, and Metro Nashville Public Schools

Funded by the U.S. Department of Education IES (R305E090009) and the U.S. Department of Health and Human Services NICHD (R01HD079461-01)
(With no endorsement or responsibility by any grantor or collaborator for the contents of this presentation.)

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

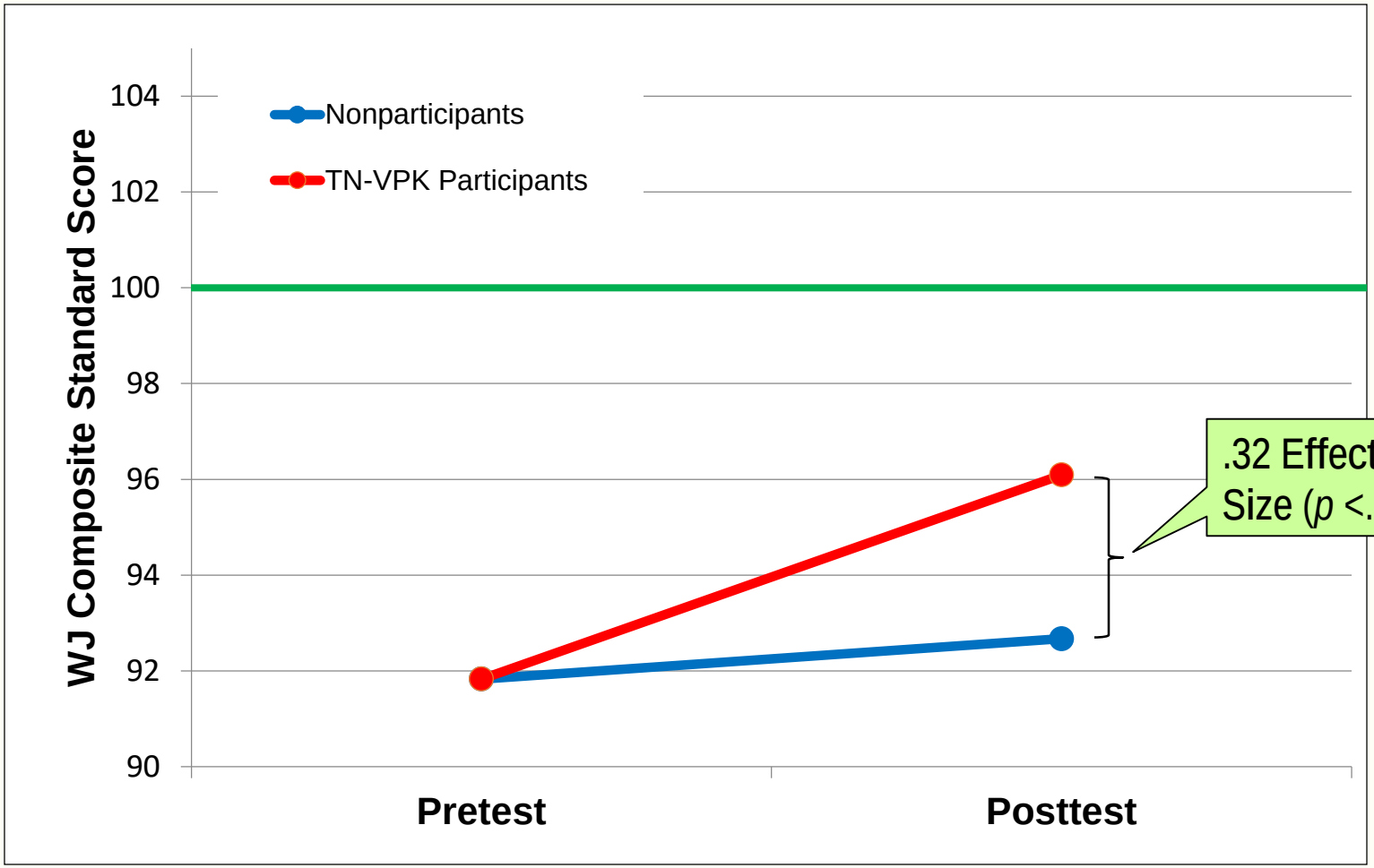
- Starting in 1998 with small pilot program, legislation created the TN Voluntary Pre-K program in 2005.
- Current program:
  - 935 pre-k classrooms in 135 of the 136 Tennessee school systems across all 95 Tennessee counties
  - Serving more than 18,000 children.
  - Targeted: FRPL eligibility
  - Met 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

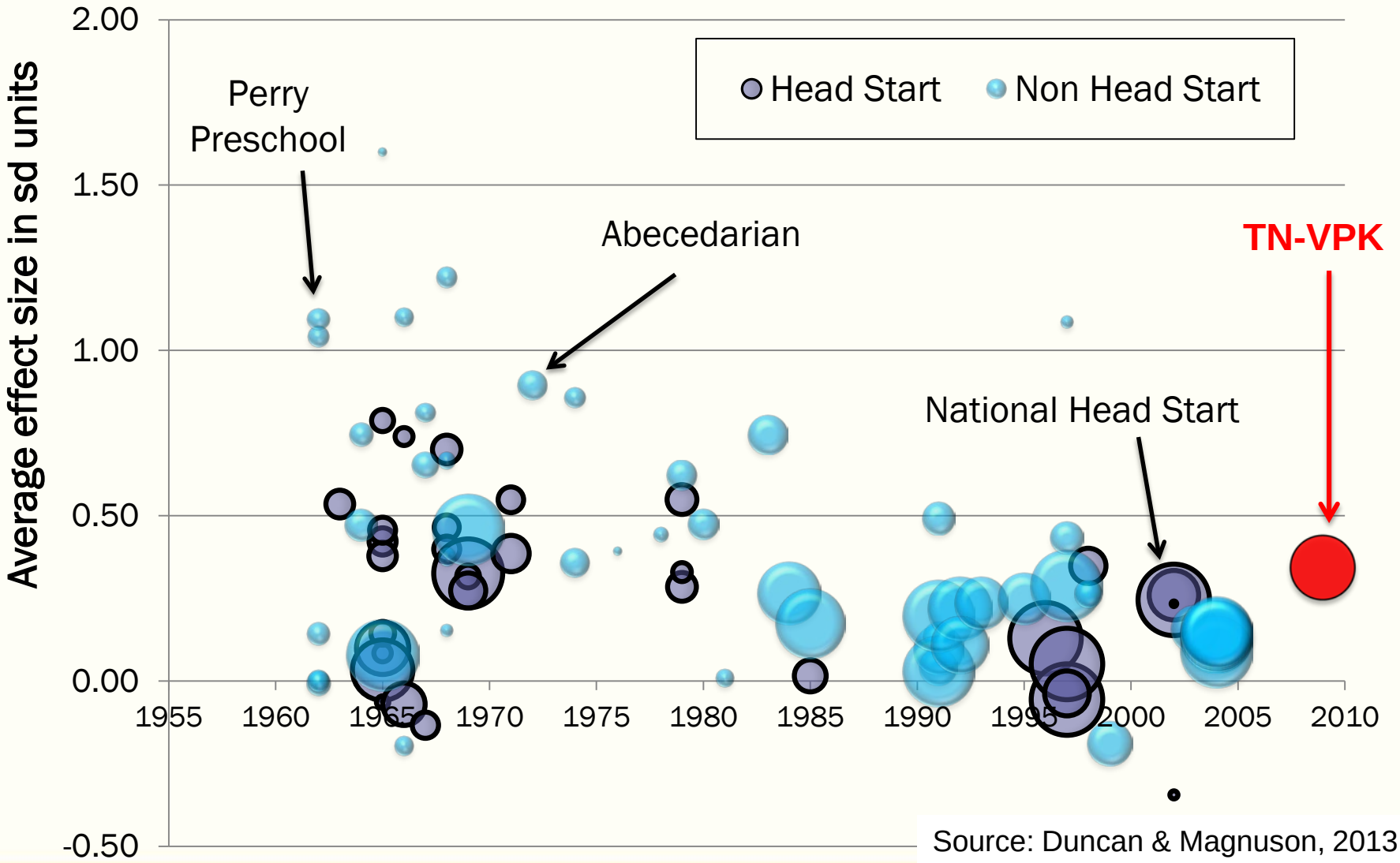
Three main components:

- 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, 766 students with their families and teachers.

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

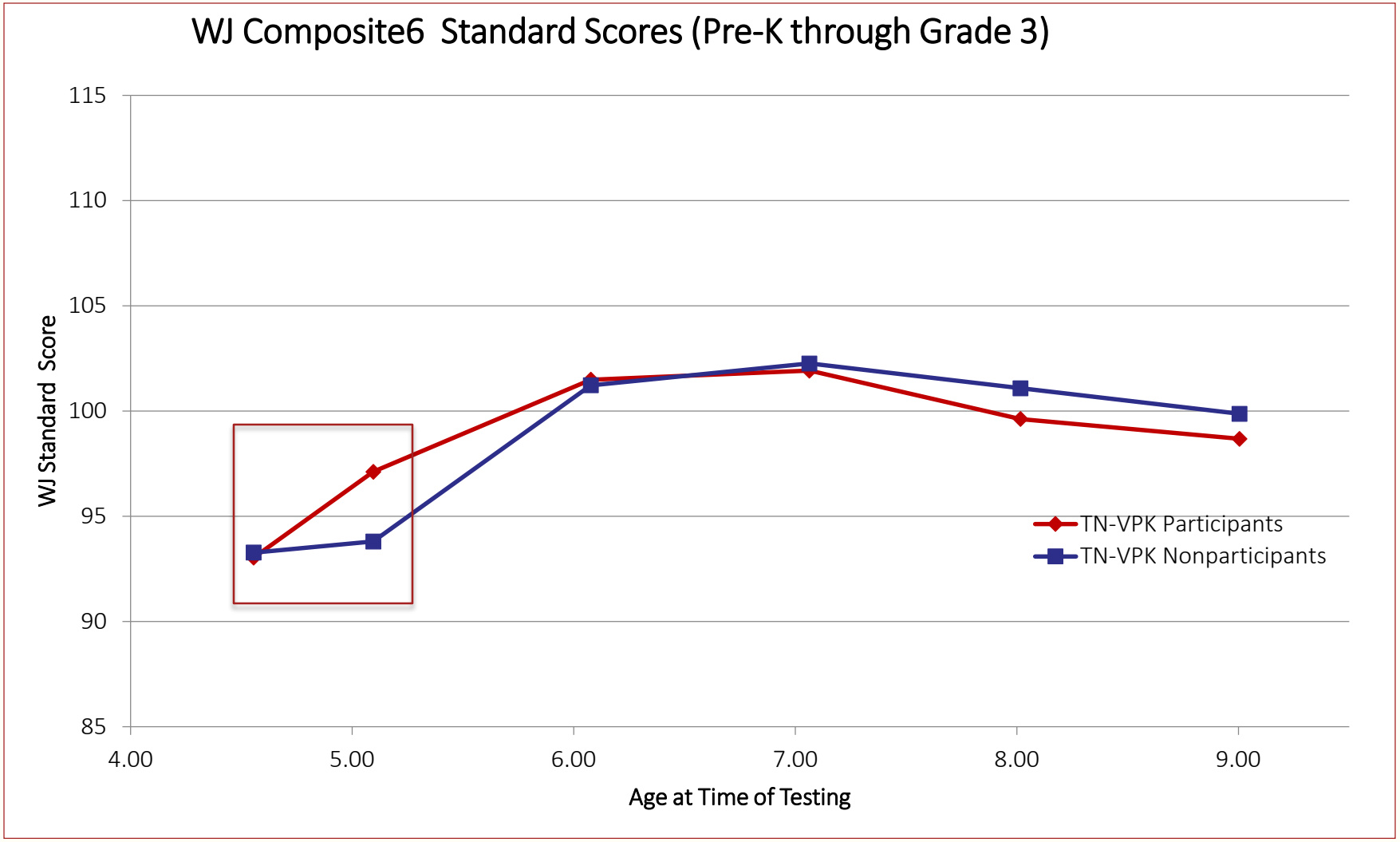


Review of End of Pre-K Average Cognitive Effects



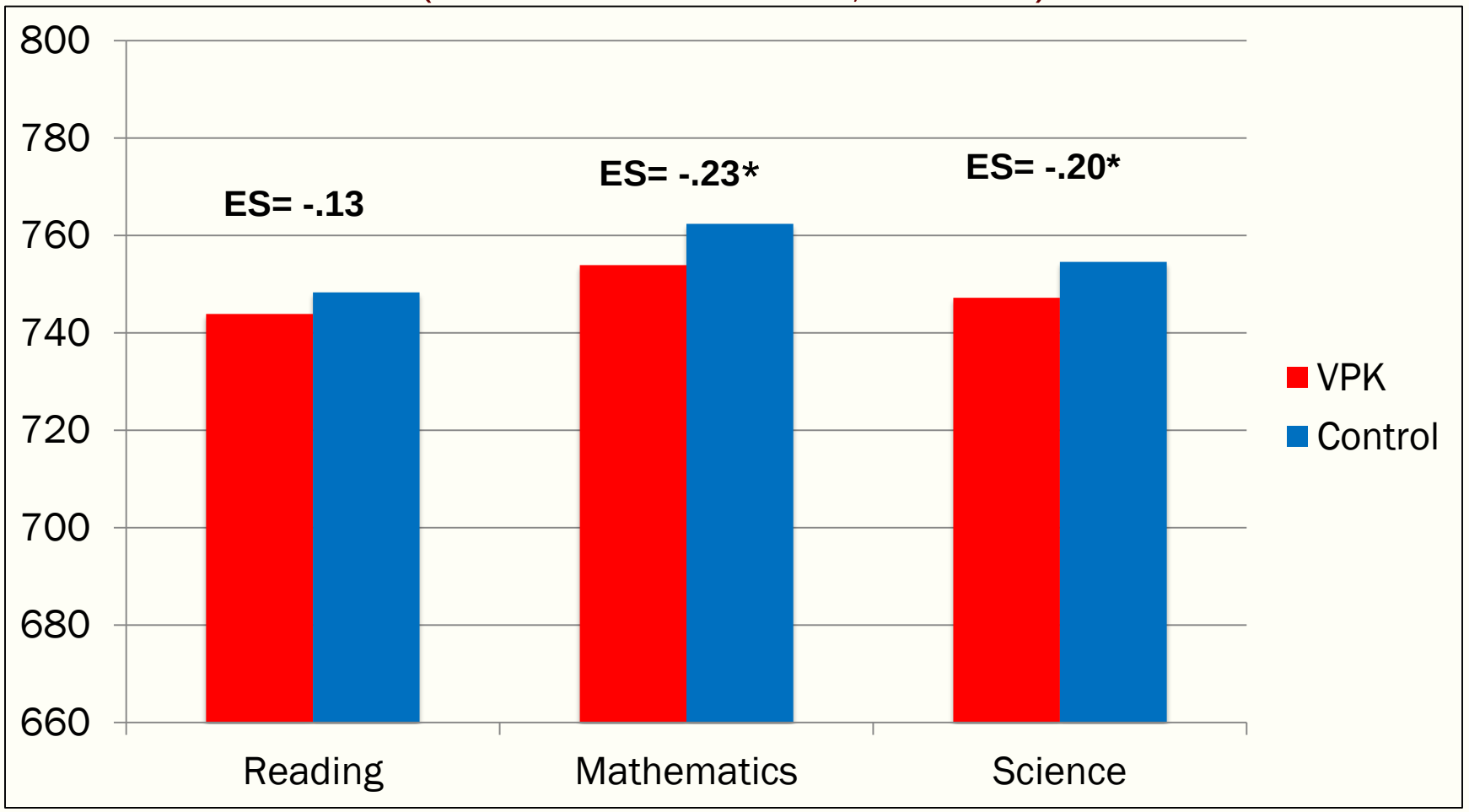
Source: Duncan & Magnuson, 2013

Overall VPK Achievement Advantage Fades



3rd Grade State TCAP Scores: Full Sample

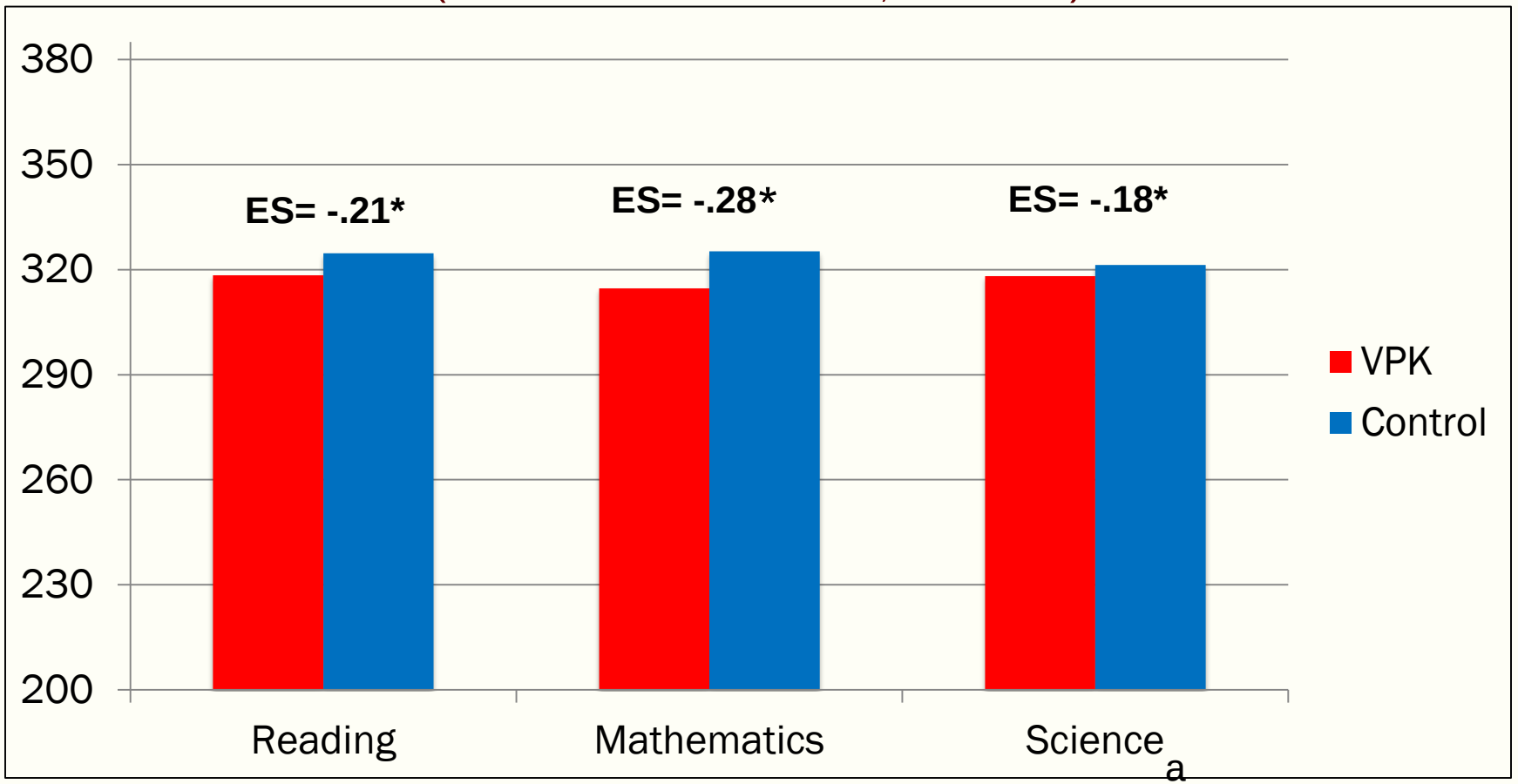
(Treatment on Treated; N=2990)



*$p < .05$

6th Grade State TNReady Scores: Full Sample

(Treatment on Treated; N=2990)



*$p < .05$

[a] TCAP test; scores proportioned to TNReady scale.

Please see Table 1 handout for analysis details.

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.

Source: Pearman et al., 2019

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.

Source: Pearman et al., 2019

Other Outcomes

Outcome	3rd Grade		6th Grade		Analysis Details
	VPK	Control	VPK	Control	
Retention in grade	.133	.128	.149[a]	.128[a]	Table 2
Attendance	.960	.964	.971	.975	Table 3
Disciplinary Actions	.085	.097	.286	.256	Tables 4 & 5
Minor (school rules)	.072	.064	.248	.194	
Major	.034	.043	.142	.120	

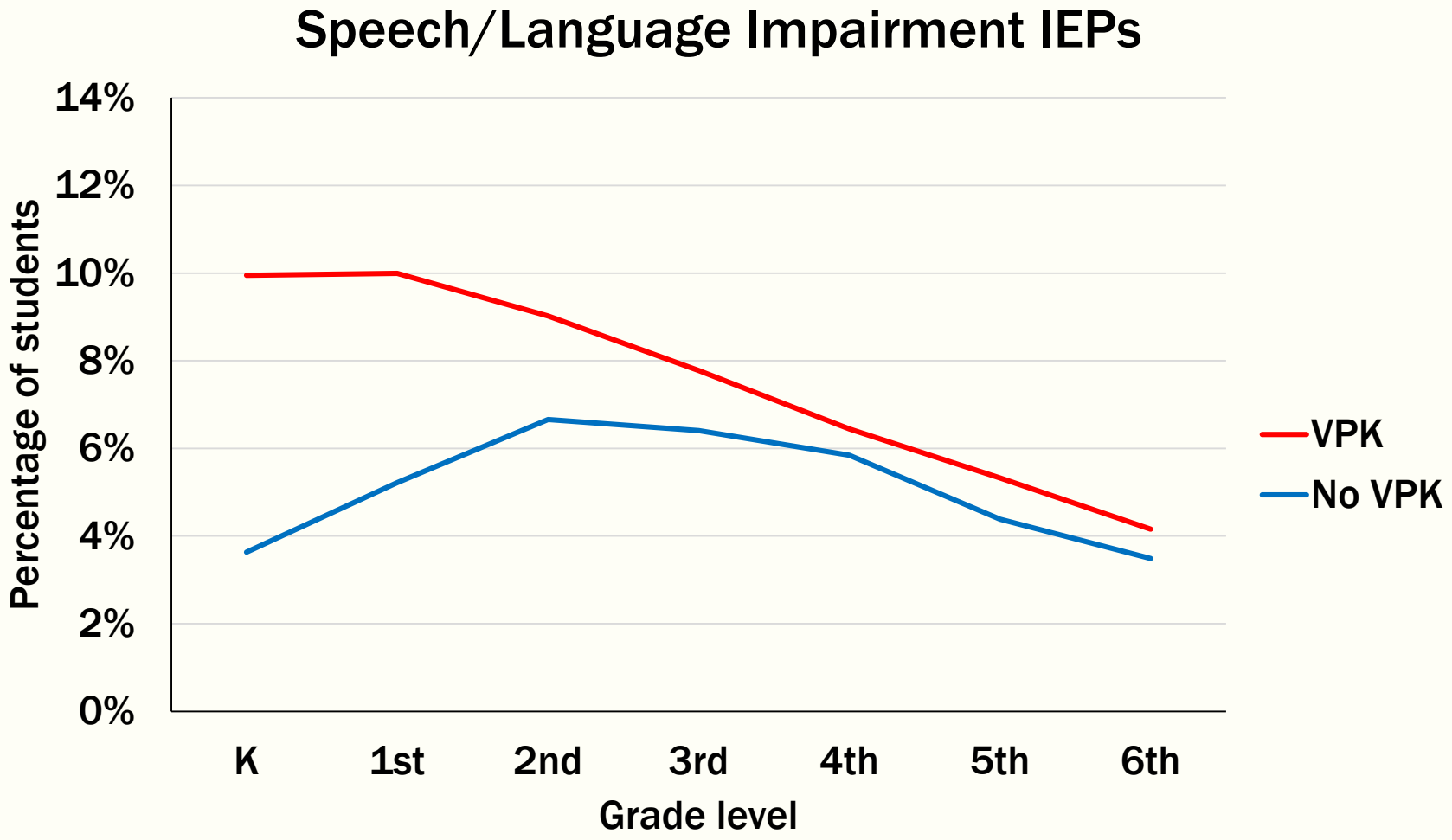
[a] Retention rates only go through 5th grade; 6th grade rates are not yet available.
Treatment on treatment estimates with multiple imputation; N=2990.

Special Education (IEP) Differences

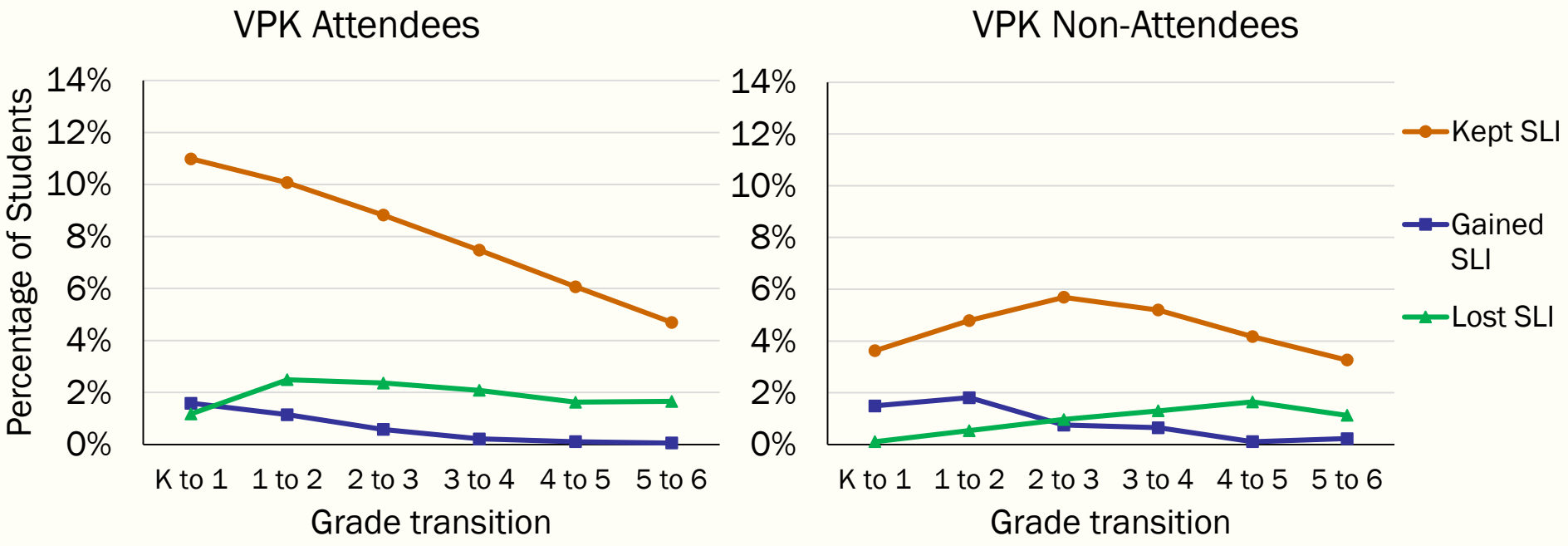
Outcome	3rd Grade		6th Grade		Analysis Details
	VPK	Control	VPK	Control	
Special Education (IEP)	.146	.096*	.129	.066*	Table 6

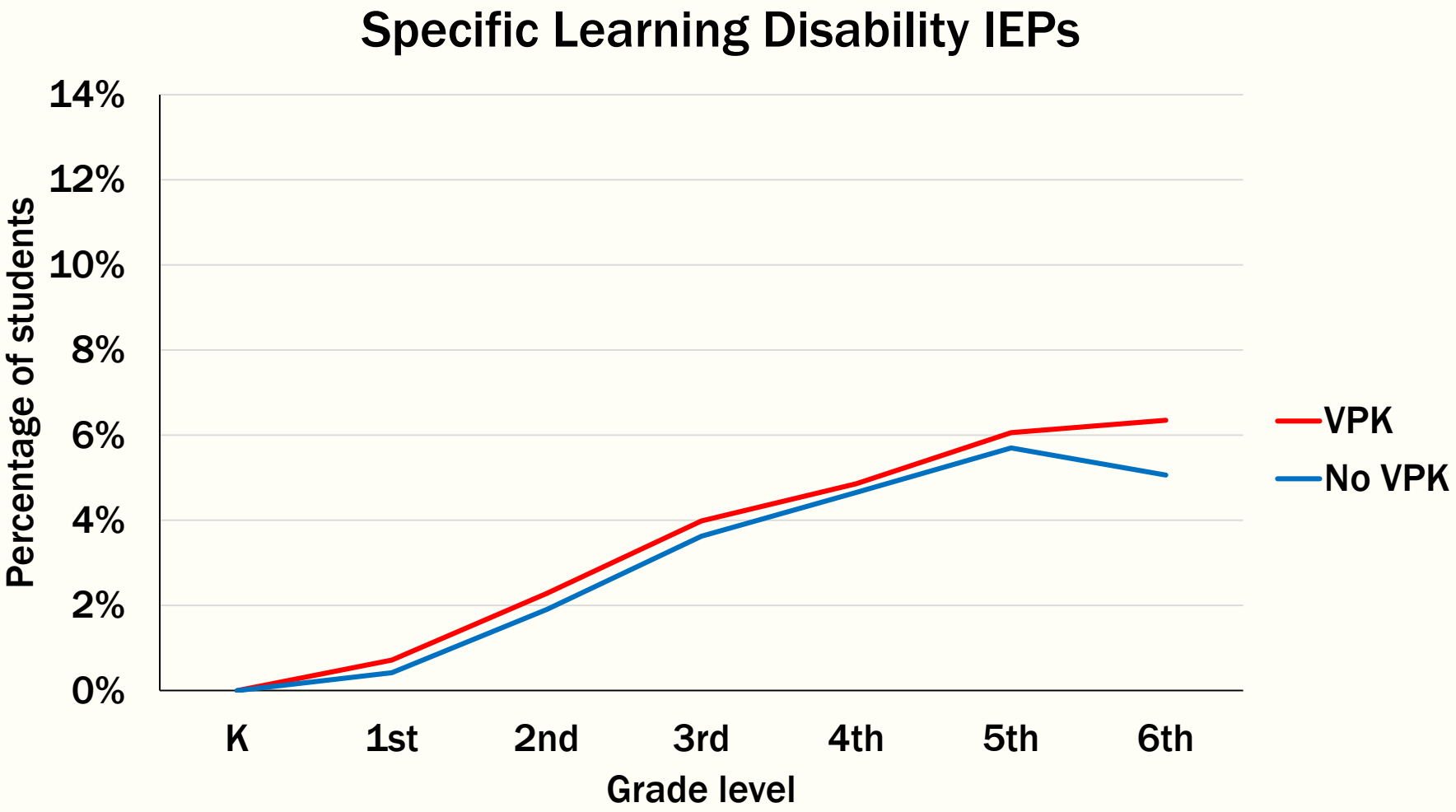
* $p<.05$

- Why do more VPK students have IEPs?
  - Have an extra year in PK to be identified.
  - Getting earlier intervention that could benefit them if IEP is appropriate.
  - Could be getting inappropriate IEPs if they are getting identified at 4-years-old for developmentally appropriate language issues.
  - Need to look at types of IEPs and how they change over time.

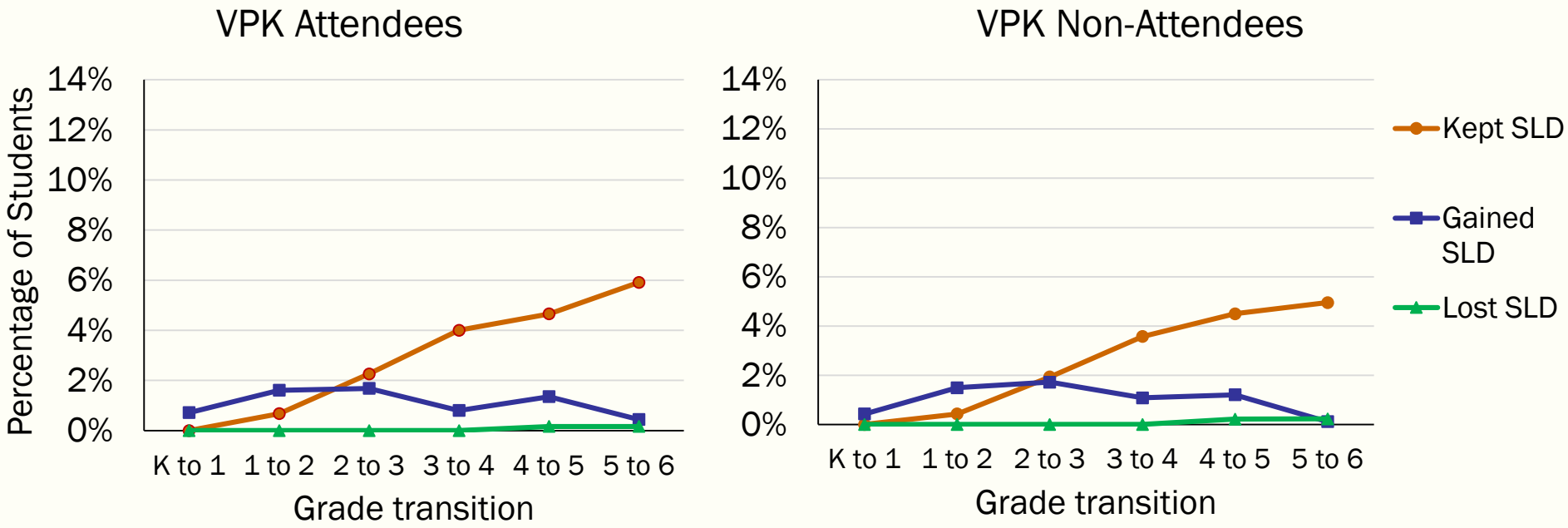

Speech/Language Impairment IEPs
14%
12%
10%
8%
6%
4%
2%
0%
Percentage of students
K
1st
2nd
3rd
4th
5th
6th
Grade level
VPK
No VPK

Speech/Language Impairment IEP Transitions




Specific Learning Disability IEPs
14%
12%
10%
8%
6%
4%
2%
0%
Percentage of students
K
1st
2nd
3rd
4th
5th
6th
Grade level
VPK
No VPK

Specific Learning Disability IEP Transitions



Follow-Up Intensive Substudy

- 766 Cohort II students through middle school
- Each year, interviewed students and their parents and teachers
  - 700 students participated this past year
  - 670 parents participated this past year
  - 681 teachers participated this past year

FISS Measures for Today

- SDQ scales on Difficulties and Prosocial Behavior
- Problem Behavior Scale
- Big 5 Conscientiousness
- Educational Attitudes

7th Grade FISS Outcomes

Outcome	Student		Parent		Teacher		Analysis Details
	VPK	Control	VPK	Control	VPK	Control	
SDQ Total Difficulties (range 0 to 40)	12.01	11.54	7.09	6.24[t]	7.23	6.98	Tables 7-9
SDQ Prosocial (range 0 to 10)	8.44	8.52	9.00	9.13	7.32	7.51	
Conscientiousness (range 9 to 45)	32.35	32.82	38.64	39.21	31.42	31.35	
Child Delinquency (range 0 to 12)	0.62	0.59	0.06	0.04	0.24	0.24	Tables 10-12
Friend Delinquency (range 0 to 16)	2.04	2.00	0.26	0.21	--	--	
Educational Attitudes (range 6 to 24)	23.59	23.89	22.09	22.31	--	--	

[t]$p < .06$

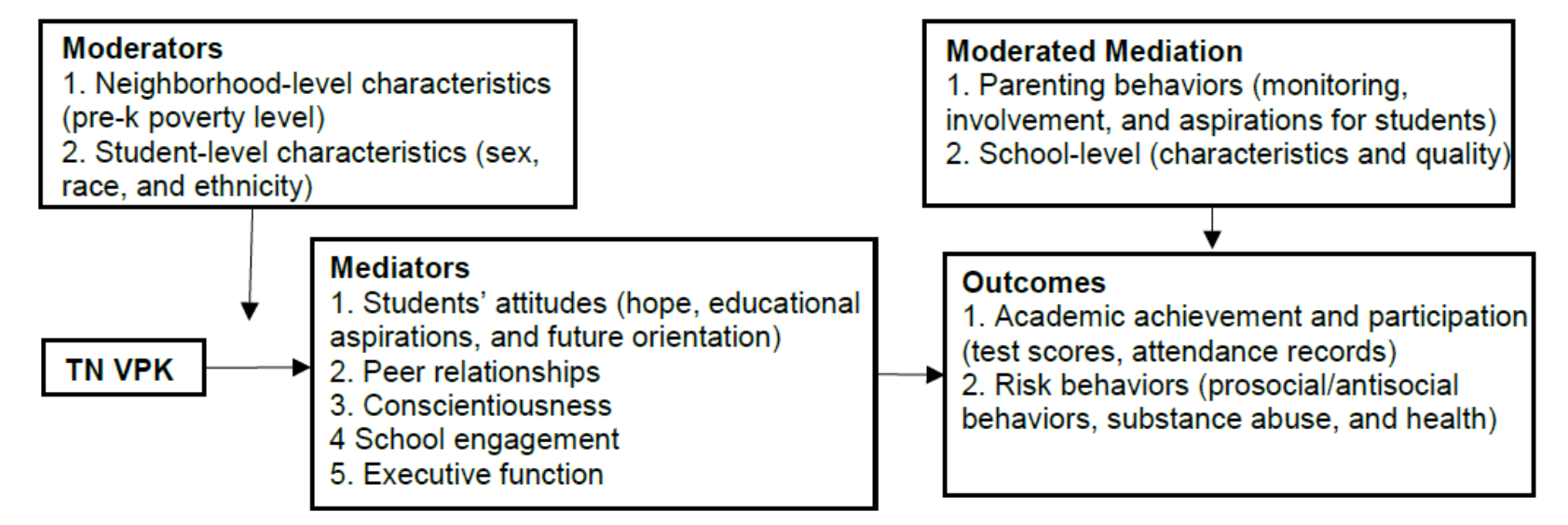
Intent to treat estimates with complete cases (Student N = 700, Parent N = 670, Teacher N = 681)

Other FISS Measures

- Students' School Commitment, School Involvement, and Rating of School Climate
- Students' Self Concept, Peer Belonging, and Friendship Intimacy
- Students' Working Memory, Inhibitory Control, and Processing Speed
- Level of Neighborhood Cohesion, Control, and Crime
- Family Embeddedness
- Parents' Educational Attitudes
- Parental Involvement
- Household Rules
- Teachers' ratings of the Student's Social Health Profile and Classroom Climate

Proposal Plans

- Continue following the full sample and FISS through high school



- What other questions should we investigate?