

# **Longitudinal results from a tiered-reading intervention with struggling adolescent readers**

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# Background

- The instructional challenge with older *struggling* readers is remediating deficits and accelerating learning
- Small-scale, highly-structured studies provide the evidence base for intervening with older struggling students...
  - Kamil, Borman, Dole, Kral, Salinger, and Torgesen (2008)
  - Roberts, Torgesen, Boardman, and Scammacca (2008)
- Scaling effective practices has been less successful

# Background

- Little can be said about the intensity *necessary* to accelerate the achievement of older struggling readers (Torgesen, 2000)
  - The nine-month treatment frame (Kim, Samson, Fitzgerald, & Hartry, 2010)
  - Overall attrition
  - Differential attrition and the integrity of randomized groups across multiple years

# Overview

- Three-year trends associated with response-based
- NICHD-funded Texas Center for Learning Disabilities (TCLD)
- Develop, implement, and evaluate interventions for middle grade students with significant reading difficulties (Vaughn & Fletcher, 2010)
- Intensify instruction at each level of intervention by manipulating...
  - group size (Vaughn, et al., 2009)
  - individualized instruction (Vaughn, et al., 2011)
  - additional time (Vaughn, et al., in press)

# Overview

- This study integrates previous findings by...
  - extending the treatment frame from one to three years
  - configuring intervention as increasingly intense levels of a sustained, three-year treatment
  - all students randomized into treatment received intervention, but dosage levels varied based on need

# Overview

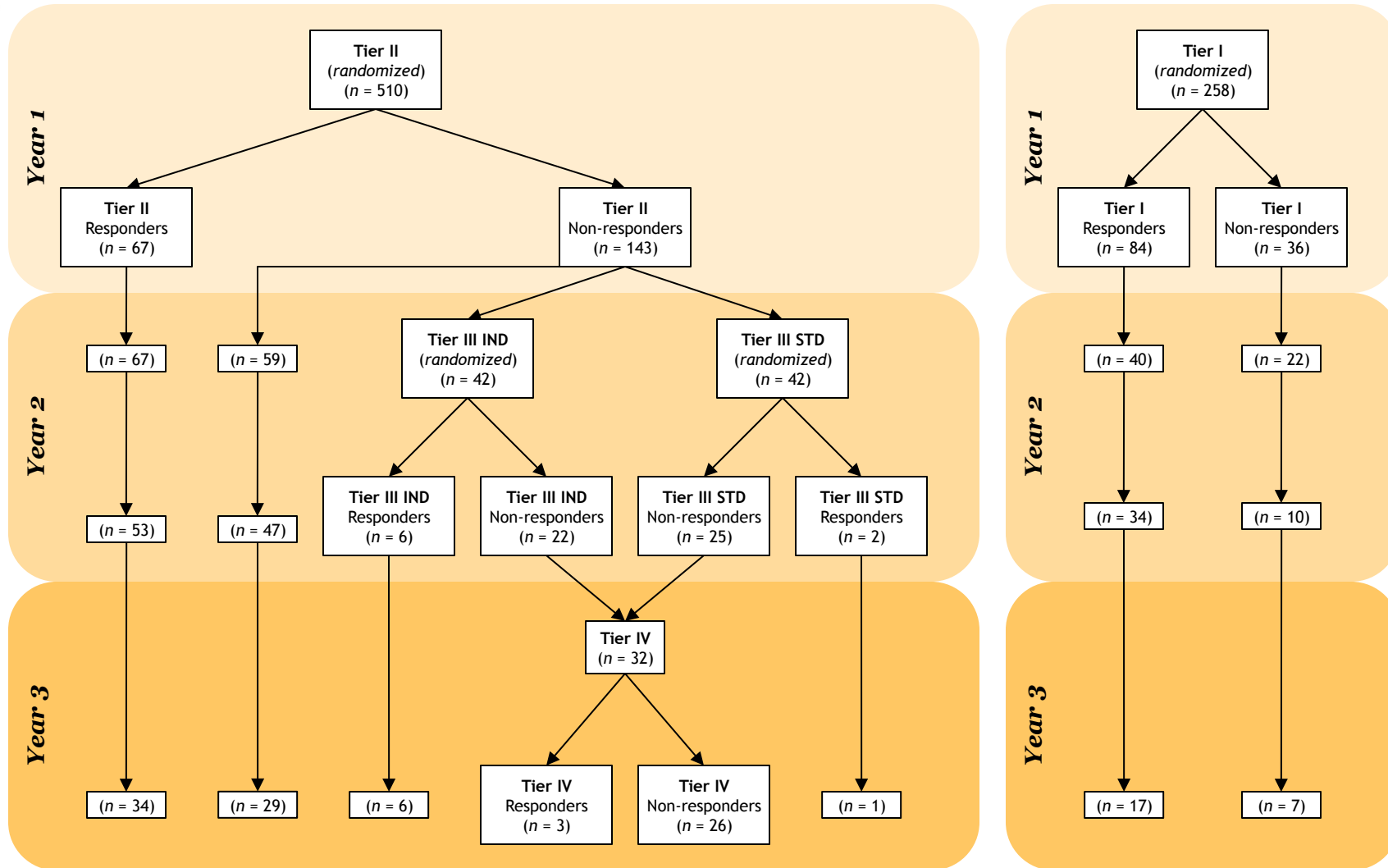


Figure 1. Participant flow chart summarizing sampling and assignment for each year of the study. IND = Individualized; STD = Standardized.

# Overview

## Tier 2

- Classes of 10-12 students during their elective period
- Daily for 50 minutes over approximately 160 sessions
- Three-phase standardized treatment protocol
  - *Phase I* (initial 6-7 weeks) focused initially on word study and fluency and increasingly on vocabulary, sentence and paragraph meaning and overall comprehension
  - *Phase II* (17-18 weeks) focused on vocabulary and comprehension, with additional instruction and practice on the word study and fluency skills and strategies
  - *Phase III* (8-10 weeks) focused on the application of word-level and comprehension skills and strategies to expository, content-area texts students encounter in school

# Overview

## Tier 3

- Treatment groups reduced to approximately 5 students
- Received either a standardized intervention based on the tier 2 three-phase plan or an individualized program designed to meet their individual instructional needs as indicated by screening and other assessment data



# Overview

## Tier 4

- Class size for the group of low responders was reduced to 2-3 students per group
- Individualized instructional programs were developed for each student, according to the individualized protocol in tier 3

# Research questions

- What is the effect of multi-year, multi-tier reading program for struggling students across grades 6 through 8 on overall reading, on word-level skills, and on reading comprehension?
- To what extent does a sustained reading program for struggling students close the achievement gap across multiple years?
- Does primary language status in 6<sup>th</sup> grade influence the intervention's impact on overall reading achievement trajectories?
- Does special education status in 6<sup>th</sup> grade influence the intervention's impact on overall reading achievement trajectories?

# Participant demographics

Table 1

*Student demographics in Fall of 6<sup>th</sup> Grade*

Characteristic	Treatment		Comparison	
	<i>n</i>	%	<i>n</i>	%
Gender				
Male	247	52.9	134	55.4
Female	220	47.1	108	44.6
Race				
African American	269	57.7	138	57.0
American Indian	0	0	1	0.4
Asian/Pacific Islander	5	1.1	4	1.7
Caucasian	42	9.0	22	9.1
Hispanic	150	32.2	77	31.8
LEP	79	18.0	39	16.7
FRL	360	82.0	195	84.8

*Note.* LEP = Limited English Proficiency; FRL = Free or Reduced Lunch.

# Measures

- Texas Assessment of Knowledge and Skills
  - Primary screener
- The Woodcock-Johnson III Test of Achievement
  - Letter Word Identification
  - Word Attack
  - Passage Comprehension
- Administration in fall of 6<sup>th</sup>, spring of 6<sup>th</sup>, spring of 7<sup>th</sup>, spring of 8<sup>th</sup>

# Plan for analysis

## Two general model groups were fit

- Overall reading ability and the effect of treatment, a multiple indicator, multi-level growth model was fit
- To estimate trends in the discrete reading skill areas and to address questions related to the acceleration of achievement, growth models were fit for the three-year frame and effects were estimated using latent variable analysis

# Plan for analysis

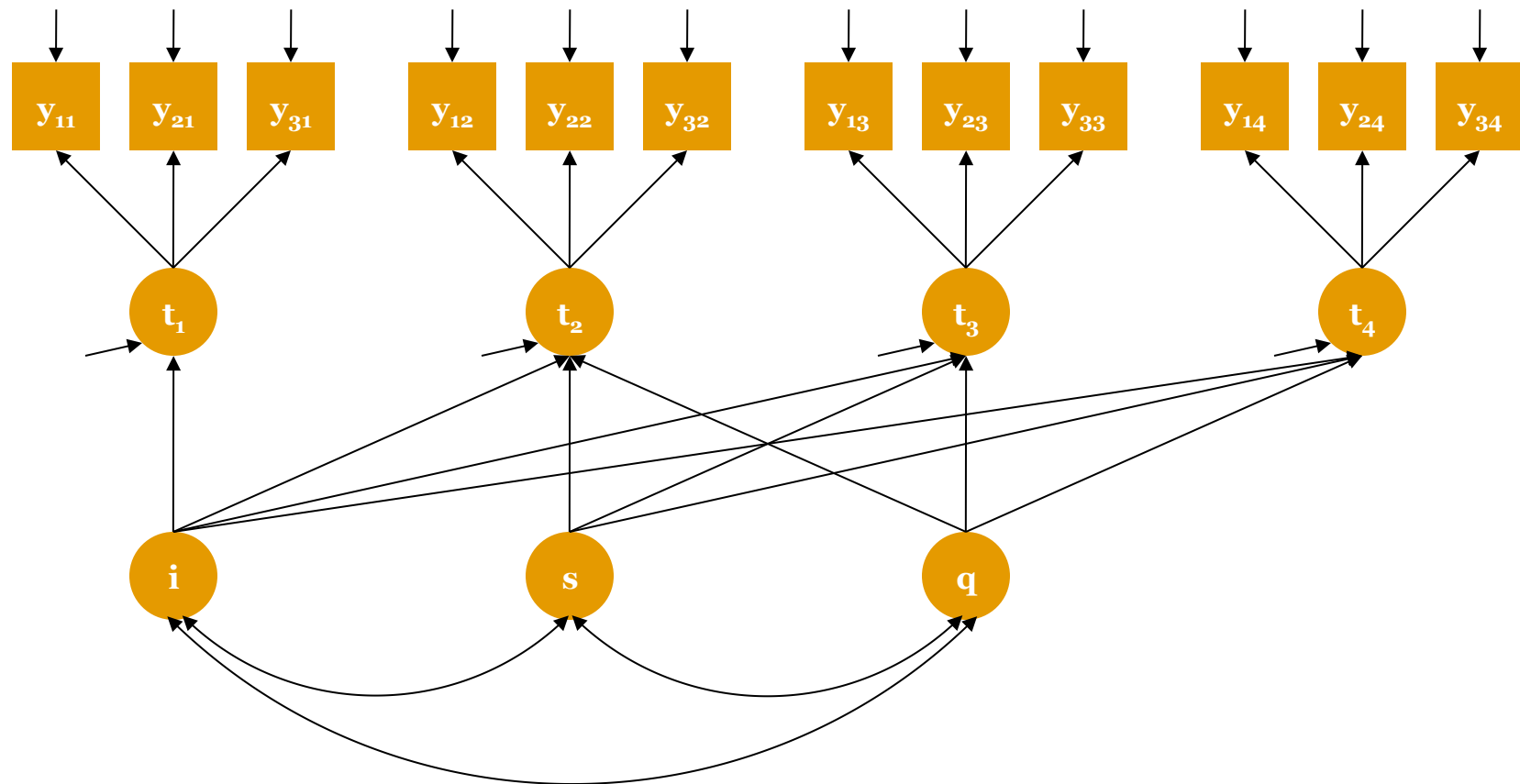


Figure 2. A multiple indicator, multilevel growth model.

# Plan for analysis

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# Findings

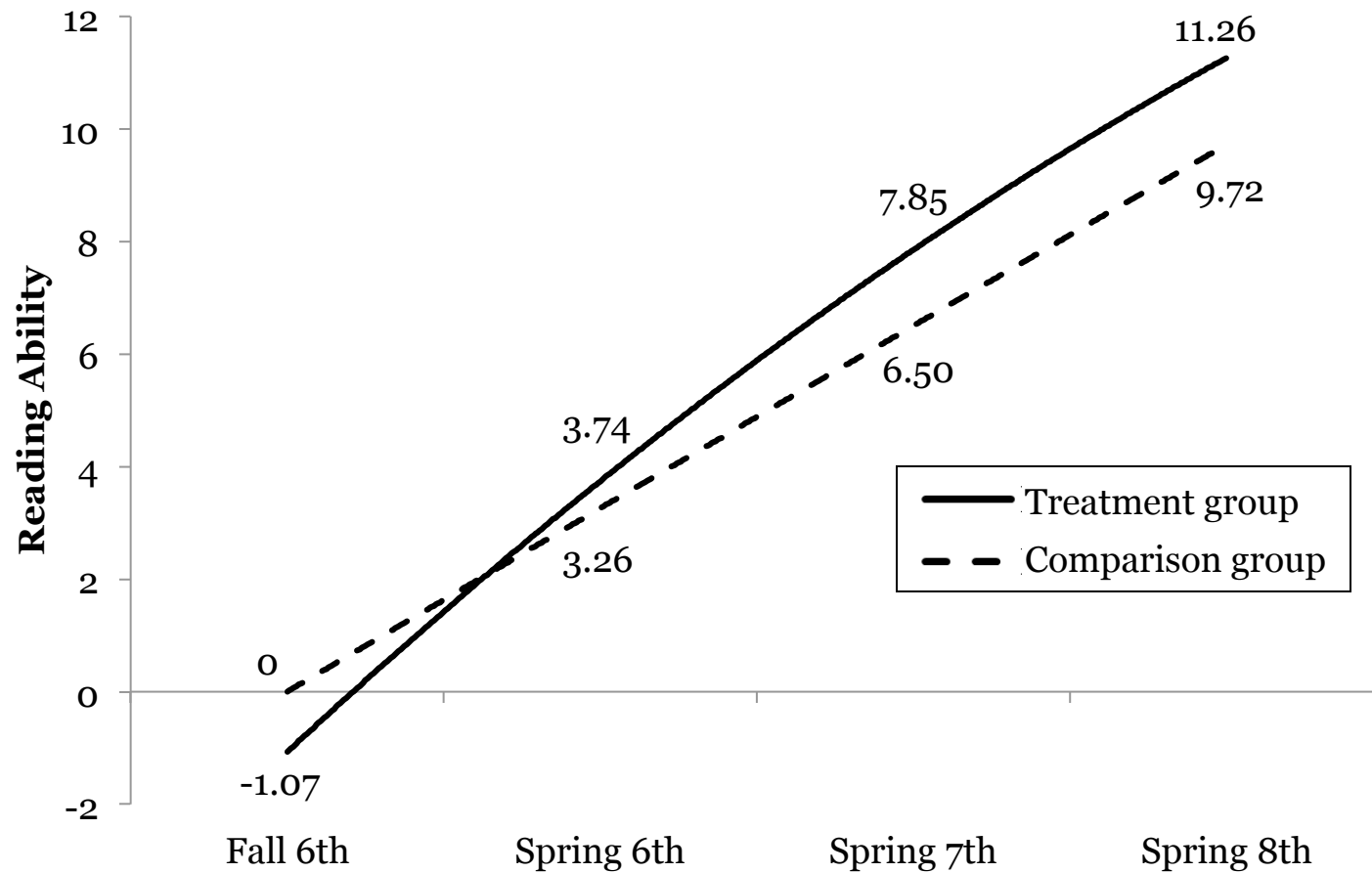


Figure 3. Reading Ability factor scores at four time-points.



# Findings

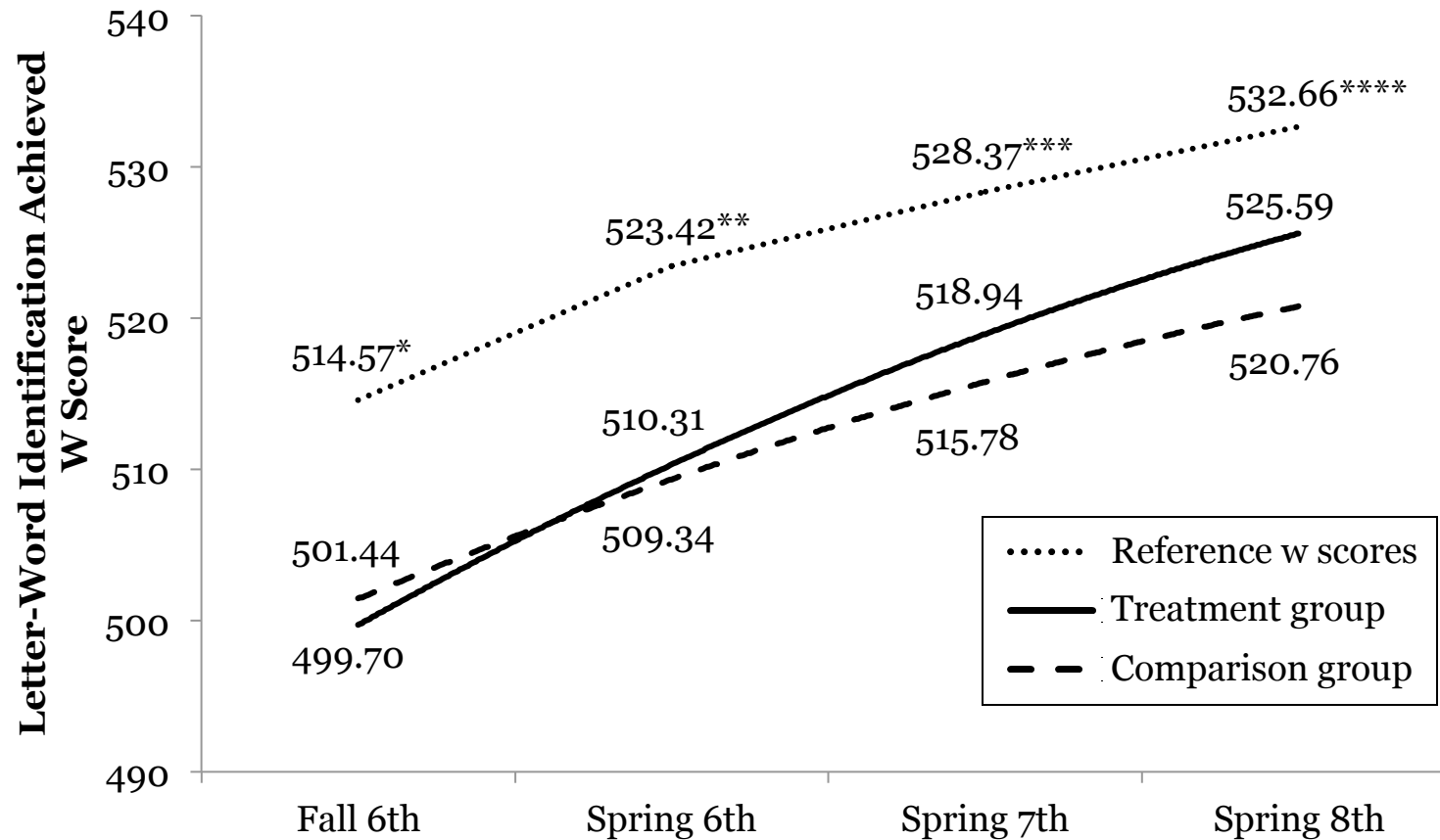


Figure 4. Letter-Word Identification factor scores and *reference w* scores at four time-points.

# Findings

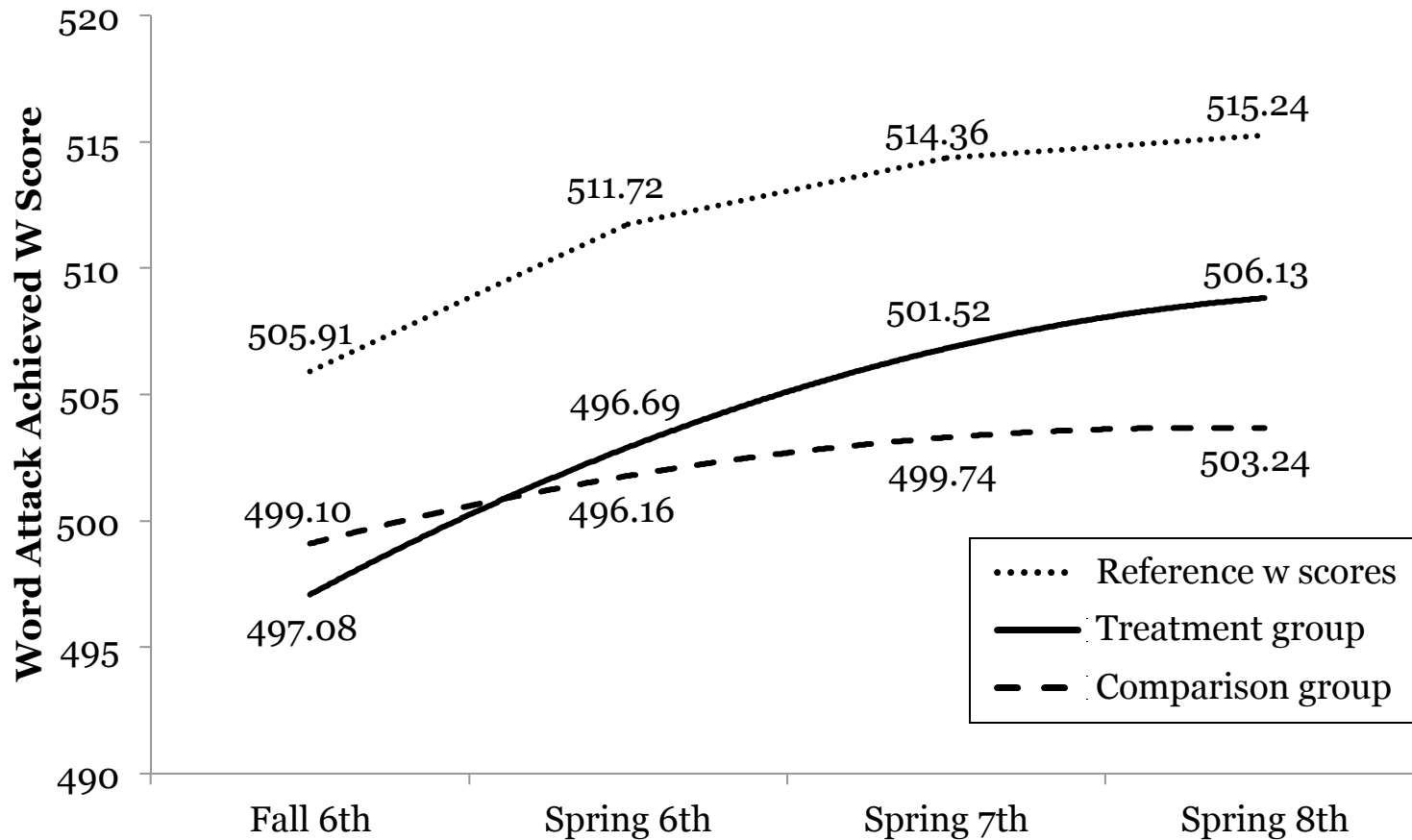


Figure 5. Word Attack factor scores and *reference w scores* at four time-points.

# Findings

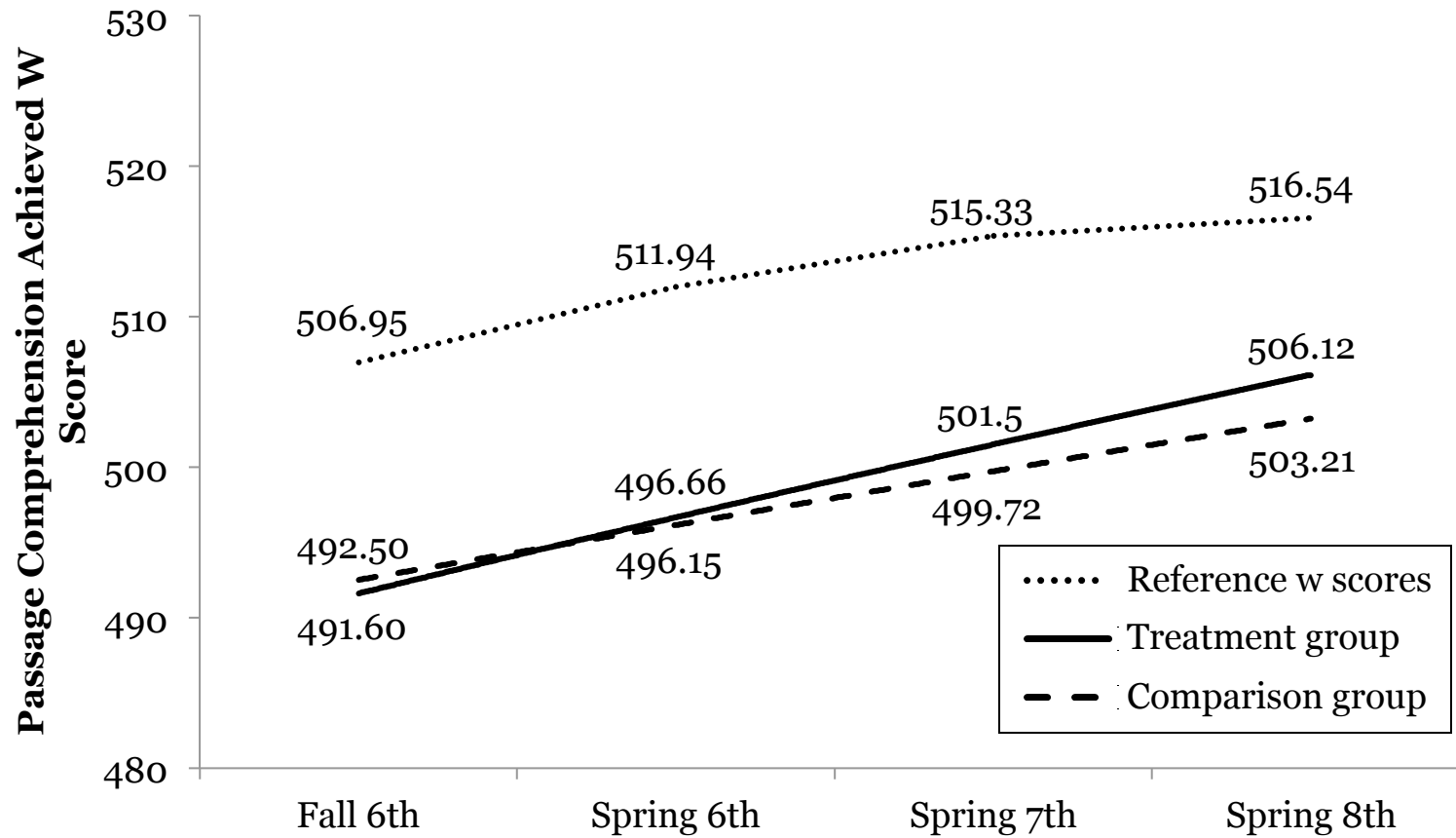


Figure 6. Passage Comprehension factor scores and *reference w* scores at four time-points.

# Interpretation of findings

- Relatively robust effects suggest that struggling middle school students may require more than 9 months of intervention to realize significant gains.
- Trends at the extremes of the distribution (the low extreme in this case, given the sample demographic) were constrained in the treatment condition.
- Findings are difficult to reconcile with the notion of a closing of the gap, at least when considered within the three-year period that represents middle school.

# Limitations

- Difference in the percentage of African American completers in the comparison and treatment groups
- Overall and differential attrition may be less related to baseline comparability and to posttest effect size than previously suspected (Valentine & McHugh, 2007)

# For more information

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