



Effective Early Reading Interventions: What Are the Essential Ingredients?

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Objectives

- Describe a program of research in reading intervention for primary-grade children at-risk for reading difficulties and disabilities.
- Identify what appear to be essential ingredients in effective Tier 2 reading interventions.
- Identify elements of interventions that appear to be more flexible.
- Identify questions related to reading intervention that have yet to be adequately addressed by researchers.

Prevention of Reading Difficulties

A child who is a poor reader at the end of first grade has at least a 75% chance of being a poor reader as long as they are in school (Francis et al., 1995).

...unless we provide quality intervention
(preferably in the early grades)

What are the essential ingredients of quality early intervention?

- Proportion of time devoted to phonics instruction?
- Integration of phonics and text reading instruction?
- Amount of time spent engaged in reading connected text vs. decontextualized word reading practice?
- More or less prescriptive? Scripted?
- Type of text-decodable or not?
- What word reading strategies should children be taught?
- How intensive should Tier 2 and Tier 3 intervention be?

A Program of Research in Early Reading Intervention: 2000-2014



Early Development of Reading Skills: A Cognitive Neuroscience Approach

2000-2002

Mathes, Denton, Fletcher, Anthony, Francis, & Schatschneider (2005). *Reading Research Quarterly*. (Received the Albert J. Harris Award from the International Reading Association, awarded annually for a journal article that makes a significant contribution to the understanding of reading difficulties or disabilities)

Grant # NSF 9979968: National Institute of Child Health and Human Development, National Science Foundation, and US Department of Education, under the Interagency Educational Research Initiative.

Study of Two First Grade Reading Interventions with Different Theoretical Orientations

- 6 schools
- 40 minutes, 5 days per week, Oct.-April
- Groups of 3 - 4
- Taught by certified teachers who were selected, trained, coached, and supervised by the researchers
- Provided in addition to quality classroom instruction in a “pull-out” format

Proactive Intervention

- Direct Instruction model
- Explicit instruction in phonemic awareness and synthetic phonics (blending sounds to read words), with instruction in fluency and comprehension strategies.
- Carefully constructed scope and sequence designed to prevent possible confusions
- Scripted program
- Much practice of skills in isolation
- Fully decodable text



Responsive Intervention

- Integrated instruction in phonemic awareness, phonics, fluency, and comprehension
- Explicit, systematic phonics instruction and practice 10 min/day; much “hands-on” practice with manipulatives
- Most of the lesson spent reading and writing connected text with teacher scaffolding, prompting, and feedback
- Frequent assessment with targeted instruction based on assessment data; teachers select from a “menu” of activities to plan lessons based on student needs
- Leveled text, not decodable

Three-Step Strategy for Reading Words



1. Look for parts you know.
2. Sound it out.
3. Check it! Make sure the word you read makes sense.

Student Selection and Assignment

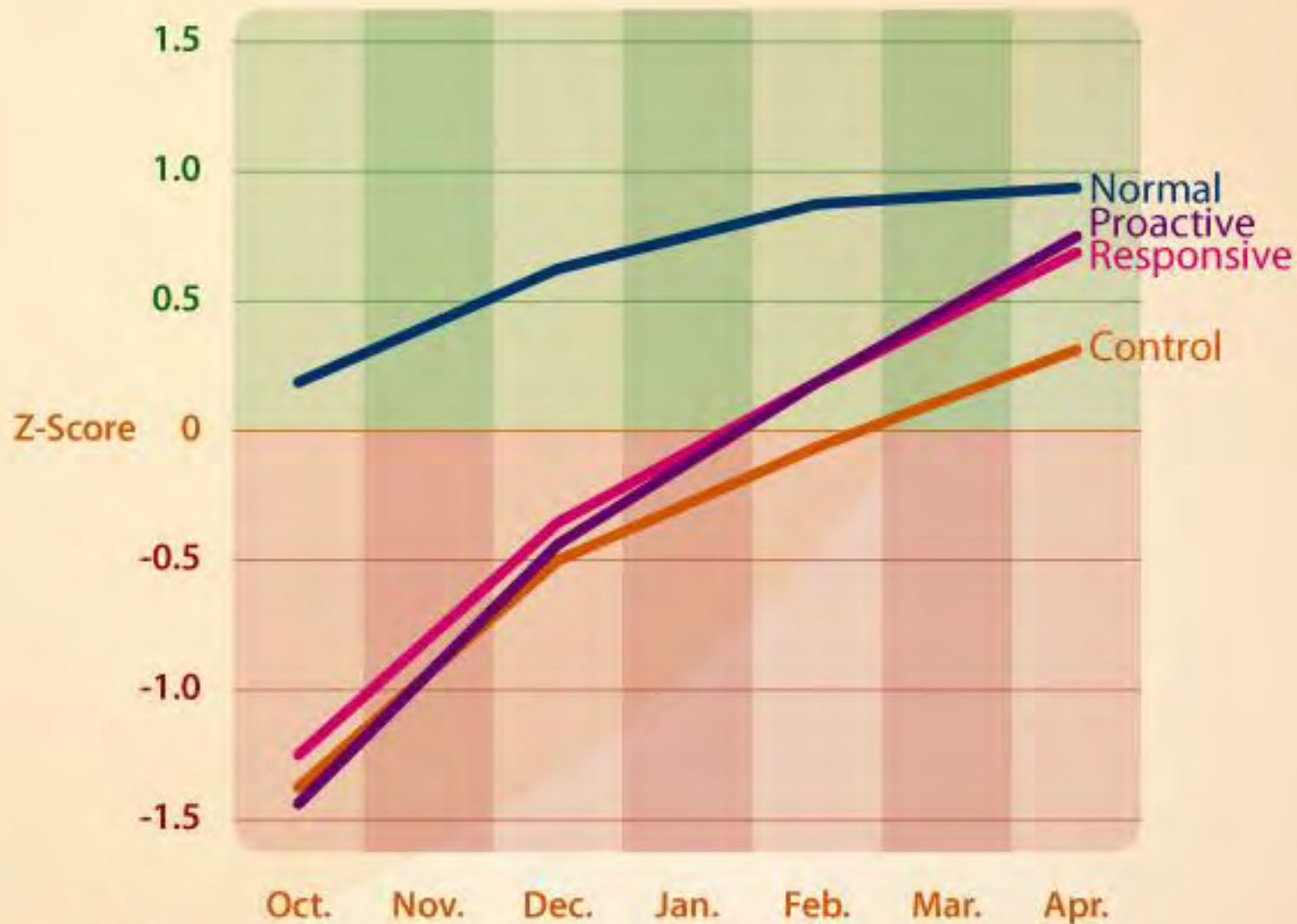
- Screened all students at the end of K, and new students at the beginning of 1st grade
- **All at-risk students randomly assigned (within each school) to:**
 - Quality Classroom Instruction + **Proactive Reading** (n*=80)
 - Quality Classroom Instruction + **Responsive Reading** (n*=83)
 - Quality Classroom Instruction/**Typical School Practice** (no researcher-provided intervention) (n*=92)
- Sample of normally developing students randomly selected from the same classrooms (n*=98)

* After attrition

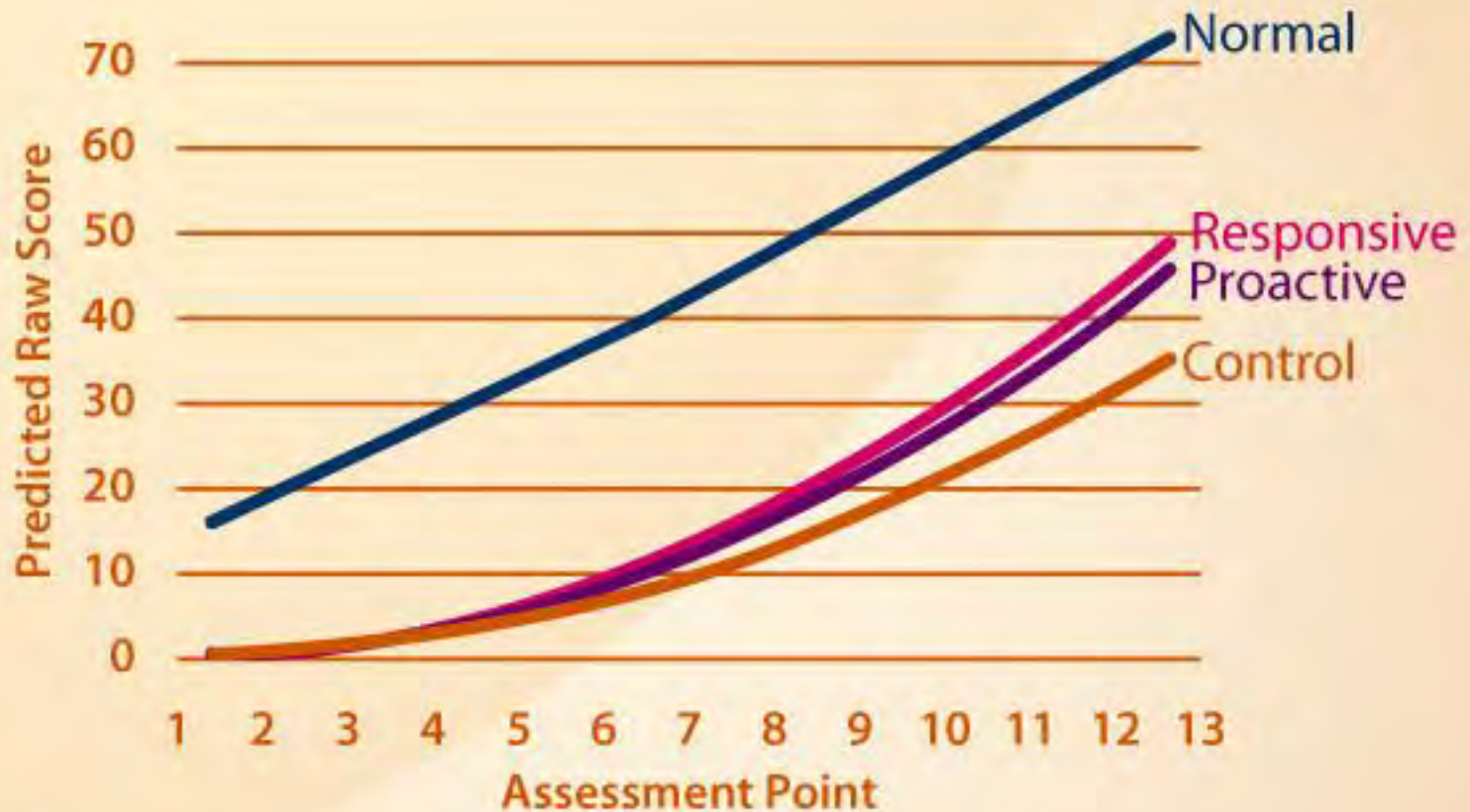
Results

- Students in **both intervention groups** performed significantly better than comparison students in **phonological awareness, word reading (timed and untimed), spelling, and oral reading fluency (Cohort 2)**
- **Proactive** (scripted program/practice skills in isolation/decodable text) did significantly better than Responsive (not scripted/more time in reading and writing/non-decodable text) in **phonological decoding**
- **Responsive** did better than comparison students in ***comprehension*** (but $p = .06$)

Growth in Word Reading by Intervention Group



Growth in Oral Reading Fluency by Intervention Group – Cohort 2



Intervention Response Rate (Woodcock Basic Reading $\geq 30^{\text{th}}$ percentile)

- **Quality Classroom Instruction (Typical Practice):**
84%
- **Classroom + Supplemental Research Intervention:**
 - Proactive: 99%
 - Responsive: 93%

Implications

- Two interventions originating from different theoretical viewpoints had positive effects for at-risk first grade readers
 - **Both provided explicit, carefully sequenced instruction in phonemic awareness and phonics**
 - Both provided intervention with **high intensity**
 - Both had **well-trained teachers**
 - Provided **in addition** to quality classroom instruction
- Program differences, including the use of a **scripted program**, **decodable text**, and the **proportion of decontextualized phonics practice**, were associated with few measurably different outcomes.

That's fine when the intervention is delivered by a specially-chosen, highly trained teacher.

What happens out in the "real world"?

Maybe less skilled teachers need a more prescriptive program...

Study of Scaling Up Early Reading Interventions

Denton, C.A., Nimon, K., Mathes, P.G., Swanson, E.A., Kethley, C., Kurz, T., & Shih, M. (2010). The effectiveness of a supplemental early reading intervention scaled up in multiple schools. *Exceptional Children, 76*, 394-416.

Funded by the Institute of Education Sciences (Department of Education), Grant R305W030257.

IERI SCALE UP PROGRAM

RESPONSIVE INTERVENTION Participating School Districts

- Bartlett ISD
- Burnet ISD
- Carrollton-Farmers Branch ISD
- Eanes ISD
- Lexington ISD
- Luling ISD
- Richardson ISD
- Rockdale ISD
- Salado ISD
- Thorndale ISD
- Troy ISD
- UT Elementary School
- Wimberley ISD

PROACTIVE INTERVENTION Participating School Districts

- Dallas ISD
- Fort Worth ISD
- Garland ISD
- Rogers ISD
- Thrall ISD

Scale-Up Study: Responsive Intervention Portion

- 31 schools, 40 teachers, all regular school employees
- Random assignment within schools to Responsive Intervention ($n = 182$) or typical school practice (TSP; $n = 240$).
- About 43% of TSP students received an alternate school-provided intervention.
- Researchers provided materials and professional development, but *fidelity and intensity of implementation controlled by the schools* (varied widely).

Results: Responsive Intervention vs. Typical Practice

- Significant differences favored Responsive in:
 - Phonemic awareness (one of two measures)
 - Word reading and decoding fluency
 - Word reading
 - Phonemic decoding
 - Spelling
 - Oral Reading Fluency
 - Comprehension
- Effect sizes for many measures were *higher* than in the original study



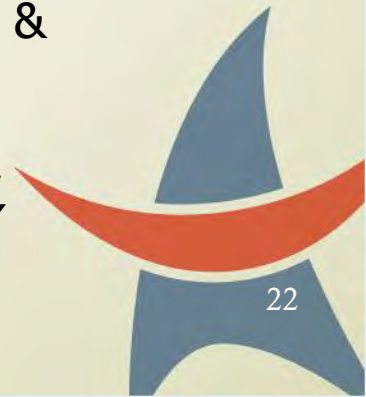
Responsive Reading as a Tier 3 Intervention

Carolyn A. Denton

Pat Taylor, Jack Fletcher, Sharon Vaughn, Amy Barth & David Francis

The Texas Center for Learning Disabilities
Jack M. Fletcher, PI

Denton, C.A., Tolar, T. D., Fletcher, J.M., Barth, A.E., Vaughn, S., & Francis, D.J. (2013). Effects of Tier 3 intervention for students with persistent reading difficulties and characteristics of inadequate responders. *Journal of Educational Psychology, 105*, 633-648.



Grade 2 Study Tier 3

- End of Grade 1, identified a group with **low response to Tier 1 + Tier 2 based on word reading and/or fluency benchmarks**
- Randomized to experimental Tier 3 intervention vs. typical practice
- Tier 3: adaptations of *Responsive Reading Instruction* (Denton & Hocker, 2006) and *Read Naturally* (Ihnot et al., 2001) fluency program
- 45 minutes daily for about 25 weeks, groups of 2-3 students





Results

- Tier 3 Treatment did significantly better than Typical Practice on word reading, phonemic decoding, word reading fluency, and one measure of comprehension
- Response to intervention was stronger for word-level skills; on average, students remained impaired in fluency and comprehension



IMPORTANT CAUTION:

- This does not mean that scripted programs are “bad” or that they don’t work. Many of them do work very well, even for students with serious reading difficulties and disabilities.
- Regardless of the program, it matters what you *do* with it.
- Providing teachers/schools with “choices” may increase fidelity and the regularity of implementation



- So what *does* matter?
- Is it the explicit and systematic phonics instruction that makes a difference for students with reading difficulties?





An Experimental Evaluation of Guided Reading as an Intervention for Primary-Grade At-Risk Readers

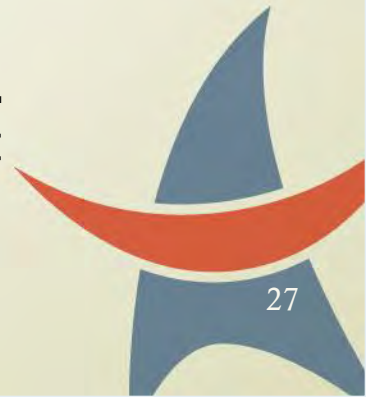
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The Texas Center for Learning Disabilities

Jack M. Fletcher, PI

Denton, C.A., Fletcher, J.M., Taylor, W.P., Barth, A.E., & Vaughn, S. (2014). An experimental evaluation of guided reading and explicit intervention for primary-grade students at-risk for reading difficulties. *Journal of Research on Educational Effectiveness*, 7, 268-293.



Guided Reading

- A popular approach to reading instruction; little experimental research
- Implementation varies widely in different classrooms
- In this study, it was implemented according to directions in:
 - *Guided Reading* by Fountas & Pinnel (1996)
 - Videotapes made by Fountas & Pinnel to train teachers to implement Guided Reading: *Essential Elements* and *The Skillful Teacher*
- We examined effects for second grade children with reading difficulties.





Participants

- 11 schools in two school districts in Texas
- Screened all students in the schools at the **end of Grade 1**
- Children qualified for the study if they had **standard scores below 93 on at least *one*** of the following:
 - Woodcock-Johnson III Letter-Word Identification
OR
 - TOWRE Sight Word Efficiency





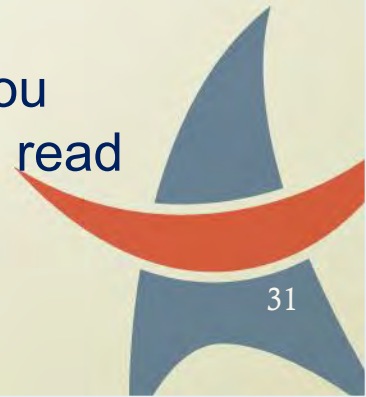
Research Design

- All qualifying students who were present in their schools the following fall were randomly assigned within schools to
 - **Guided Reading intervention** (n=74)
 - **Explicit Instruction intervention** (n=73)
 - **Typical school instruction** (all instruction and intervention they would normally receive in their schools; n=71)
 - Most in Grade 2, some first grade retainees



Essential Characteristics of Guided Reading (Fountas & Pinnell, 1996)

- Small homogeneous groups
- Reading for meaning is primary, word-level instruction is secondary
- Primary role of teacher: Support students during reading to promote the use of multiple reading strategies
- Students are taught to use pictures and context as well as letter-sound correspondences to identify unknown words
- Does not include *systematic* phonics instruction
- Leveled text, not decodable text
- Word identification through analogy to known words (If you know “cow” you can read “plow”) *and* blending sounds to read words





Guided Reading Condition Lesson Components

- **Teacher Introduces the Text** (a new book each day)
- **Supporting Effective Reading**
 - Students read aloud while teacher provides prompting and scaffolding
 - **Brief letter and word instruction in context** of reading
- **Teaching Processing Strategies After Reading:** Return to the text and **reinforce 1-2 successful or effective** reading behaviors you observed during reading and **provide 1-2 teaching points.**
- **Discussing and Revisiting the Text**
- **Assessment:** Running Record, Clay Observation Survey, or Developmental Reading Assessment





Guided Reading Condition Lesson Components (Optional)

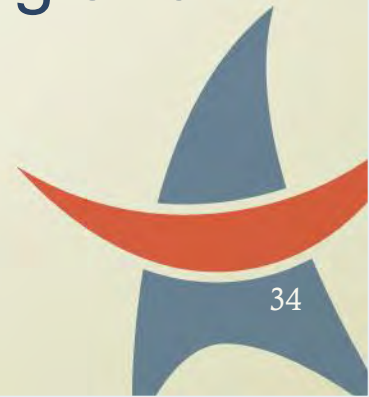
- **Extending the Meaning (0-20 min):**
Comprehension focus through discussion and writing, drawing, or use of a graphic organizer
- **Working with Words (0-5 min):** Brief, game-like activities
- **Focused Work With One Student (0-10 min):**
Extra instruction directed at one student in the group while the others read familiar text in pairs or individually or completed an activity from *Extending the Meaning* segment
- **Reread Text for Fluency (0-20 min)**





Explicit Instruction Intervention

- Direct instruction with teacher modeling, guided practice, and independent practice.
- Some components had scripted lessons
- Systematic, explicit instruction in phonics/word reading
- Systematic, explicit instruction in listening and reading comprehension
- Text reading practice for fluency





Explicit Instruction Condition Lesson Components

- ***Sound Partners*** (Vadasy et al., 2005) or ***Sound Partners Plus*** (Vadasy & Sanders, 2007) decoding, word reading, & spelling instruction (scripted)
- **Text reading** (mostly decodable, some non-decodable with teacher support)
- ***Quick Reads* fluency** program (Hiebert, 2003)
- **Explicit, systematic instruction in listening and reading comprehension** (Denton & Millner, unpublished curriculum)





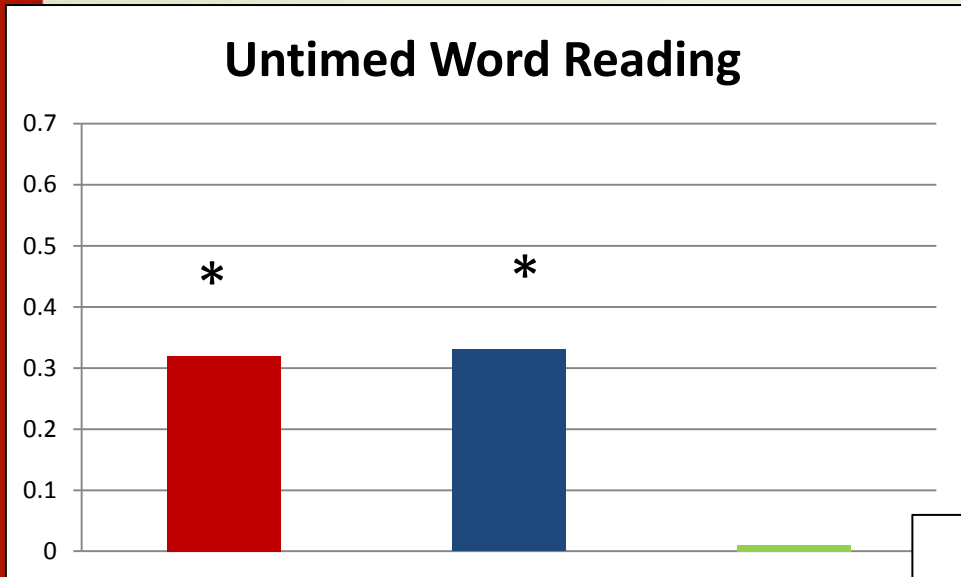
Implementation: Both Groups

- 4 days per week, 45 min. lessons, October-April
- Groups of 2-3 students, pull-out
- Teachers hired, trained, and coached by the research team

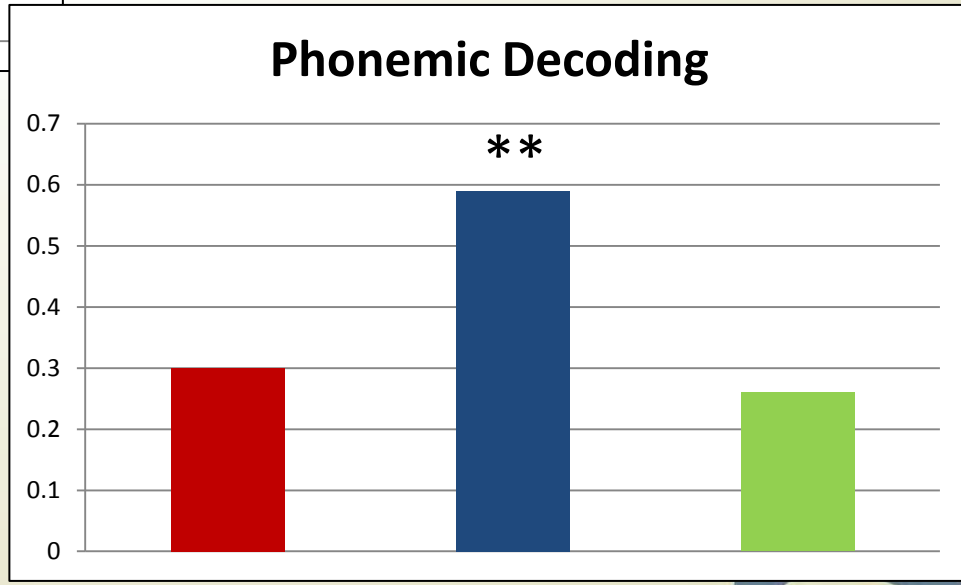




Effect Sizes: Word Reading & Decoding (Woodcock-Johnson III Letter-Word ID and Word Attack)



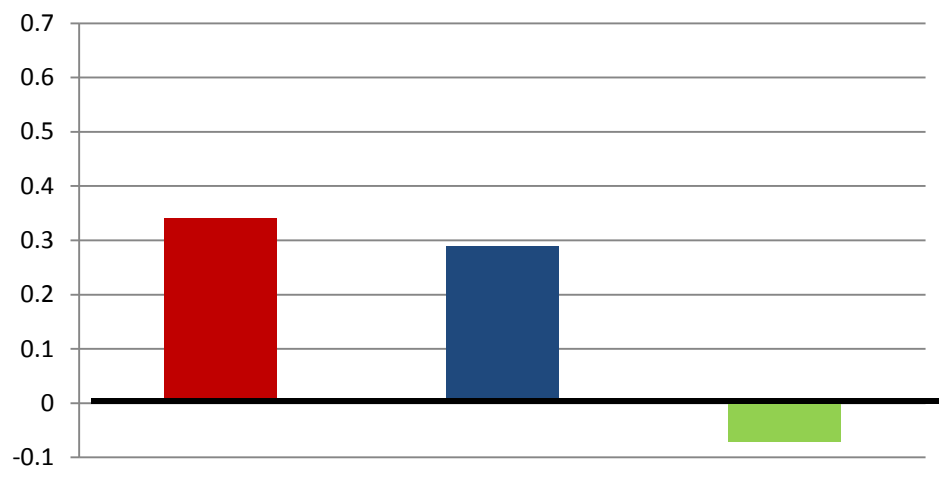
- GR > Typical
- EXP > Typical
- EXP > GR



* $p < .05$; ** $p < .001$

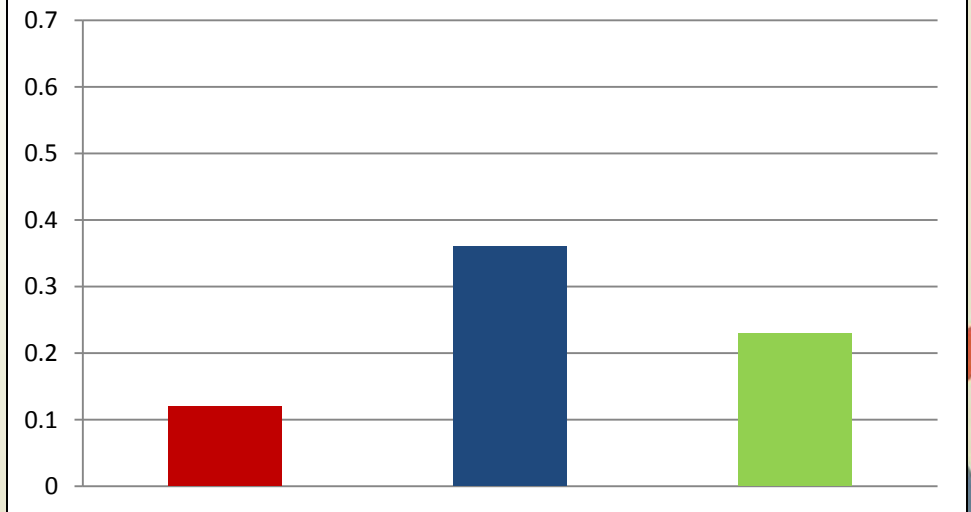
Effect Sizes: Fluency (TOWRE, CMERS)

Word Reading and Decoding Fluency

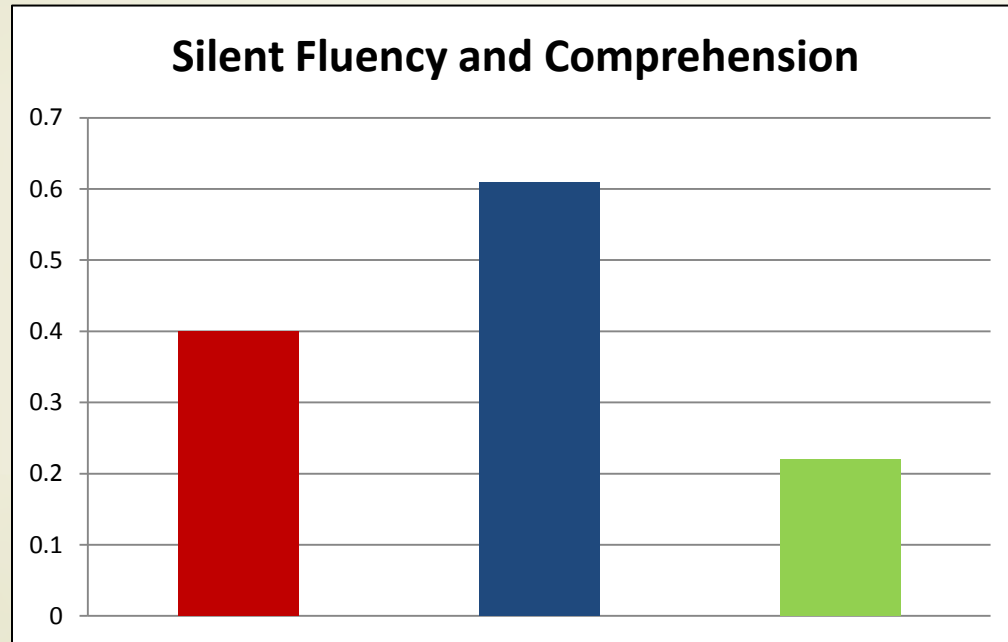


- GR > Typical
- EXP > Typical
- EXP > GR

Oral Passage Reading Fluency



Effect Sizes: Silent Reading Fluency and Comprehension (TOSREC)

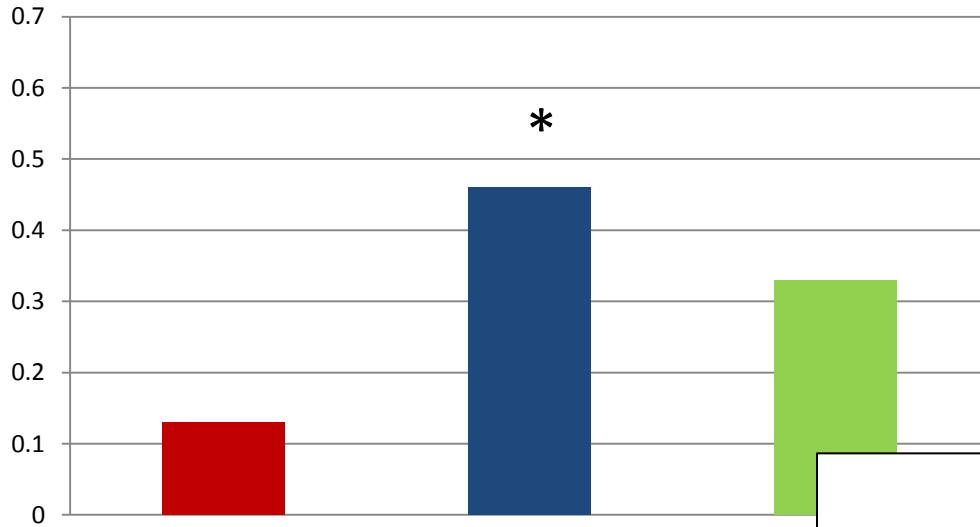


- GR > Typical
- EXP > Typical
- EXP > GR



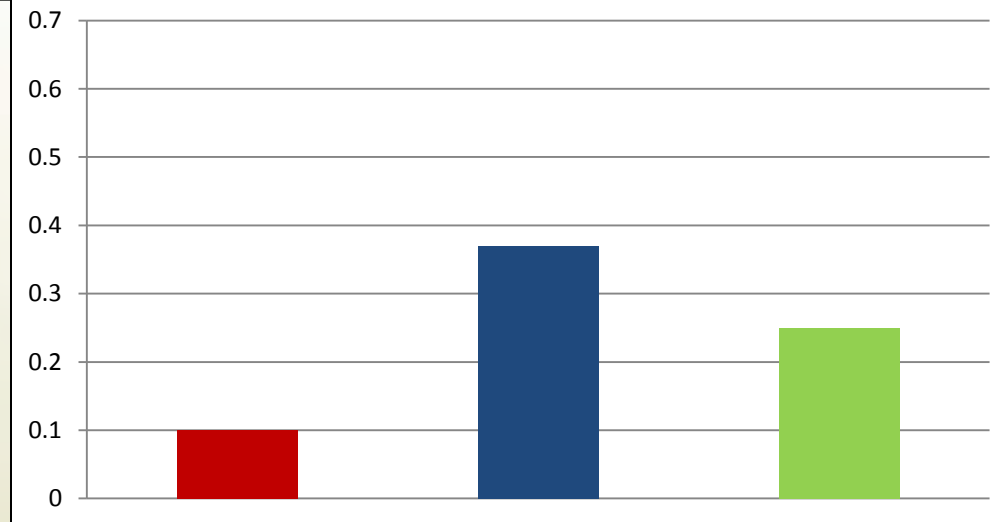
Effect Sizes: Reading Comprehension

Woodcock-Johnson III



- GR > Typical
- EXP > Typical
- EXP > GR

Gates-MacGinitie



* $p < .05$

What appear to be the essential ingredients for interventions with at-risk readers?

- *Early* intervention
- Sufficient **intensity** (schedule, duration, group size, **opportunities to respond, active involvement**)
- **Explicitly teach what students need to learn** (Data-based instructional planning)
- **Systematic, sequential approach** with easier objectives taught before more difficult ones, confusions separated, etc.

What appear to be the essential ingredients for interventions with at-risk readers?

- Copious **practice** with **feedback and scaffolding** (What is practiced becomes a *habit*.)
- Guided application in **meaningful text**
- **Feasible program** with adequate professional development
- **Teachers must feel competent** in implementing the program and **recognize its positive effects**

“...Children are more likely to learn what they are taught than what they are not.”

Allington, R.L. (1994) *Reading Teacher*, 48 (1), p. 14.

Children who are easily confused do better with clear modeling, explanations, and feedback. They do better when instruction is broken down into accessible steps and necessary pre-skills are taught.

What Appears to Be More Negotiable?

- Decodable vs. non-decodable text
- 1:1 vs small-group intervention
- Scripted vs non-scripted lessons
- Proportion of decontextualized practice in phonics and phonemic awareness

What do we need to know more about?

- Effects of teaching different **strategies for word identification**
- Effects of **other “active ingredients”** of a multi-component intervention (using manipulatives for practice vs. reading lists of words and sound-spellings)
- Effective **comprehension instruction**
- How to intervene effectively with **older students**
- Effects of interventions or combinations of interventions on **subgroups of students** like those with ADHD
- Who should **implement Tiers 2 & 3**; In the classroom or outside the classroom?
- How to **measure response** to intervention
- **Fidelity vs. flexibility**

Current Research: Reading RULES



- Development grant from Institute of Education Sciences (IES)
- Developed and piloted a first grade Tier 2 reading intervention with **systematic instruction in both word reading and comprehension**
- Currently developing a Kindergarten version.

Denton, C.A., Solari, E.J., Petscher, Y., & Haring, C. (in review). *The effects of supplemental first grade intervention in word reading and comprehension when implemented by classroom teachers.*

Current Research: The ICARD Study



- Interventions for Children with Attention and Reading Disorders (ICARD)
- Participants: Children in grades 2-5 who have *both* ADHD and serious reading difficulties
- Randomization to receive:
 - ADHD intervention alone
 - Intensive reading intervention alone
 - Both ADHD and reading intervention

Tamm, L., Epstein, J.N., Denton, C.A., Vaughn, A., Peugh, J., & Willcutt, E. (2014). Reaction time variability associated with reading skills in poor readers with ADHD. *Journal of the International Neuropsychological Society*, 20, 292-301.

Current Research: The PACT Project



- Text processing and reading strategy use by adequate and poor comprehenders in grades 7-12
 - Think-aloud study in which we coded 647 oral protocols (!)
 - Developed a new comprehension strategy survey and used it with 1,134 students in grades 7-12
- Conducted intervention design experiments based on these studies with poor comprehenders in grades 9-10.

Denton, C.A., Enos, M., York, M.J., Barnes, M.A., Kulesz, P.A., Francis, D.J., Fletcher, J.M., & Carter, S. (in review). *Text processing differences in adolescent adequate and poor comprehenders reading accessible and challenging narrative and informational text.*

Denton, C.A., Wolters, C.A., York, M., Swanson, E., Kulesz, P., & Francis, D.J. (in review). *A survey of adolescents' use of reading strategies in specific school contexts: Differences related to reading proficiency, grade level, and gender.*



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<http://www.texasldcenter.org/>