Effective Reading Instruction and Intervention for Struggling Readers

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Introductory Notes

- Ask questions at any time
- Presentation will be at a very rapid pace

FINDINGS FROM READING RESEARCH
WORD-LEVEL READING SKILL DEVELOPMENT AND WORD-LEVEL READING DIFFICULTIES
The Basis for Intervention

“Any well-founded educational intervention must be based on a sound theory of the causes of a particular form of learning difficulty, which in turn must be based on an understanding of how a given skill is learned by typically developing children.”

Snowling & Hulme (2011)


The Largely “Untapped” Intervention Research

The little known origins of RTI

- **TIER 1**: Prevention research in 1980s–1990s
  - 50%-75% reduction in reading problems (reviewed by the National Reading Panel, 2000)

- **TIER 2**: Vellutino, et al. (1996) Journal of Educational Psychology
  - Reduced RD kids down to 3%-10% & 1.5% under 16th percentile
  - Results maintained 3 years later

  - Severely RD 3rd to 5th graders (mean standard score on Word ID = 67)
  - Mean improvement was 14.56 points at post test, 18 points 2 years later
  - 40% discontinued from special educational reading support
  - Replicated with older students and adults
  - A common faulty assumption is that there is a "statute of limitations" on reading improvement

Vellutino et al. (1996) 2nd Grade Results

Mean Verbal IQ Scores:
- Average IQ Typical Reader Group = 121 ± 5
- Average IQ Struggling Reader Group = 103

Mean Standard Scores in Winter of 1st Grade
- 105 (21st percentile)
- 100 (27th percentile)
- 90 (44th percentile)

Mean Standard Scores in May of 2nd Grade
- 110 & 112 (+1 & +2)
- 103 (+17)
- 87 (+10)
- 74 (+7)
- 64 (+4)
- 52 (+6)

Mean Gain +10

Mean of all struggling groups = 86 (10th percentile)

(All students had one of the 2 subtests ≤ 15th percentile)
The little known origins of RTI

• Doesn’t this all sound too good to be true?
• RTI was designed to “capture” these amazing results
• Yet focus seems to have shifted to the “framework” and “process” of RTI
• The actual instructional approaches were lost in translation
  • Everyone has to find these elusive “research-based” approaches on their own
  • Those highly successful intervention approaches will be covered next

What We Are Doing Now in Teaching Reading

Theories and Assumptions About Word-Level Reading
A Common Misconception About Reading: “Children Learn to Read in Different Ways”

- This confuses teaching and learning
  - We teach things they don’t learn, they learn things we don’t teach!
- We TEACH reading in different ways; they LEARN to read proficiently in only one way
  - Teaching is what we do—learning is what their brains do
- It’s amazing there’s even one way our brains read so efficiently
  - Perceive words in 1/20th of a second
  - Read 150-250 words a minute
  - Have 30,000 to 70,000 words in our instant, orthographic lexicon
  - Add new words to that lexicon after 1 to 4 exposures
- There are not 2, 3 or 4 ways our brain is set up to do that!
  - All skilled readers have the same basic skills
    - All skilled readers can read nonsense words, even if not taught phonics
    - All skilled readers have large and continuously expanding sight vocabularies

What is YOUR Theory About How We Remember the Words We Read?

- We all have a theory, but you may not know yours
  - If you can’t think of yours, just work backward from any interventions you use or recommend
- Our instruction focuses on on READING words, not on LEARNING words
- Our theory of word learning must be able to explain a few very important realities, described later

Two Levels of Word-Level Reading Skill Deficits

- What distinguishes skilled word readers from poor word readers?
  1) The ability to identifying unfamiliar words by sounding them out
  2) The ability to remember the words they read

*The first level of skill is required for the second*
Assumptions Behind the Four Classic Reading Approaches

1. **Phonics approach**
   - Assumes that if they become proficient with code knowledge, memory for words and fluency will follow

2. **Linguistic/word family approach**
   - Assumes using rime units is a good start then phonics and its assumptions take over

3. **Whole word approach**
   - Assumes whole word memorization is the basis for skilled word-level reading

4. **Balanced literacy/whole language**
   - Assumes skilled guessing is an important part of reading acquisition and skilled reading

Intervention Suggestions from the Four Classic Reading Approaches

1. **Phonics approach**
   - Teach the code explicitly, systematically, and often in depth
   - Provide plenty of skill practice and often decodable readers

2. **Linguistic/word family approach**
   - Use word families before transitioning to a phonic approach

3. **Whole word approach**
   - Use lots of repetition of words in text, high frequency words, flash cards, and repeated reading

4. **Balanced literacy/whole language**
   - Teach children to become better at anticipating meaning and using multiple cues to determine words
Comments on Intervention for Four Classic Reading Approaches

- They form the basis of today’s instruction and intervention
- All have equally enthusiastic advocates
- All have too high of a “failure rate”
  - Phonics has the lowest failure rate, but still too high
  - Remediation is more intense version of the same
- None can accurately describe why students struggle
- None addresses “memory” for words
  - The visual memory approach tries but fails
- Why these issues?
  - Because all were developed long before the last 40 years of scientific findings about reading

How Words are Learned for Instant, Effortless Retrieval

- Orthographic mapping requires:
  - Letter-sound proficiency
  - Phonemic proficiency
    - This goes well beyond what is tested on our universal screeners
    - The ability to establish a relationship between sounds and letters unconsciously while reading

The Skills Needed for Word-Level Reading

- Phonemic Decoding (correctly sounding out words)
  - Letter-sound knowledge
  - Oral-phonemic blending
- Orthographic Mapping (remembering words)
  - Letter-sound proficiency
  - Phonemic proficiency
Common Misunderstandings About the Role of Phoneme Skills in Reading

- It is thought to only relate to early learning of CVC words
- It is assumed it is not involved in sight-word acquisition
- It is thought to not be worth training after first grade
- Some think it cannot be trained after about 2nd grade!
- Some still think it has no causal relationship with reading – it is merely a byproduct of learning to read
  - This is a half-truth
  - For typically developing readers, it is both a byproduct and a cause
  - For weak readers it does not develop proficiently enough as a byproduct and will not develop unless explicitly taught
- These all reflect ignorance and they prevent students from getting what they need to move forward

The “Path” to Fluent Word Reading

- **Word reading fluency** is primarily based on the . . .
- Size of the **orthographic lexicon**, which is based on . . .
- How skilled a student is in remembering words (*orthographic mapping skills*) combined with reading experience; orthographic mapping is based on . . .
  - **Letter-sound proficiency**/automaticity (unconscious access to the sounds letters represent) AND
  - **Phonemic proficiency**/automaticity (unconscious access to phonemes in spoken words)
- This latter skill is a universally missing element
- (Develops in typical readers, but not in struggling readers)
The Prevention of Reading Difficulties and The origins of Tier 1 of RTI

1) Studies of K–1 whole class or small group training of
   - Phonological awareness
   - Explicit and systematic letter-sound instruction
2) Forman, Francis, Fletcher, Schatschneider, & Mehta
   (Journal of Educational Psychology, 1998)

(The Journal of Educational Psychology is rumored to no longer accept studies of this phenomenon because the finding is so well established!)

Tier 1 Results
K–1 phonological Awareness Instruction

- Overall improvement in reading scores
- Average of 8 standard score point equivalent
  - (Standard score point equivalent based upon effect sizes comparing groups, not national norms)
- Results did not always last after 1–2 year follow ups
H O W E V E R . . .
- At-risk students averaged a gain of the equivalent of 13 standard scores!
- Gains increased to an average of 20 point equivalent at 6 month to 2 year follow ups!

I. Prevention of Word-Level Reading Difficulties

- Tier 1 instruction - What is effective K–1?
  - KEY COMPONENTS
    - Phonological Awareness
    - Letter-Sound Knowledge
    - Connecting phonological awareness to word-level reading
    - Good teaching techniques based on general learning principles
  - Seems to be the focus of RTI efforts
- Early, rigorous development of PA and LS skills in K–1 dramatically reduces the number of struggling readers
- Quick Survey:
  - How many of you work in schools that have a formalized, systematic, whole class, Tier 1 PA training in K–1?
Examples of Successful Prevention Programs

- Programs used in studies with highly successful outcomes
  - Experimenter designed – not commercially available
  - Florida Center for Reading Research (pieces of these experimenter designed approaches) – all free! [www.fcrr.org](http://www.fcrr.org)
  - Road to the Code (Benita Blachman et al.)
  - Phonemic Awareness in Young Children (Adams et al.)
  - Ladders to Literacy (O'Connor et al.)
  - Interactive Strategies Approach (Scanlon, et al.)
  - Other programs:
    - Rosner program – long track record of success in schools
    - Equipped for Reading Success (basically third generation Rosner)
- Most of these programs are effective for K–1 prevention & early intervention, but not for Gr. 2–12 remediation
  - Other programs are more well suited for intervention (see below)

Caveat Emptor: Determining Intervention Effectiveness

- Raw score improvements
- Statistical significance
  - Normally, “statistically significant gain” = “closing the gap”
  - Many abstracts are misleading
    - “Significant” often means 3 standard score point gains
- Effect sizes
  - The most unsuspectingly misleading index of improvement
    - E.g., 0 SS improvement on national norms = 22 SS improvement?
    - A <1 SS gain (.96) is nearly twice as effective as 22 SS gain (.53)
- Standard score gains
  - Some high profile intervention researchers recommended this
  - The only one to indicate if a student is closing the gap

Research-Based Principles vs. Research-Based Programs

- The problem with the term “research based”
- No Consumer Reports–style opportunity exists
  - What Works Clearinghouse, bestevidence.org, etc. have major problems
  - Use of effect size to determine efficacy
  - Very limited number of studies for any given program
- The National Reading Panel (NRP) avoided this by focusing on principles and approaches, not programs
- IES Practice Guides focus on principles and approaches
- There is no substitute for well-informed educational professionals
  - Analogy of carpenter and tools
The Significance of the “Big W”

- Numerous reviews of intervention research and meta-analyses have been conducted since 1999
- They routinely look at the obvious factors:
  - Socioeconomic Status (SES)
  - Age of students (e.g., 2nd graders vs. 5th graders vs. 9th graders)
  - Length of intervention (e.g., 35 hours? 65 hours? 110 hours?)
  - Group size (e.g., 1:1? 1:3? 1:5? 1:8? whole class?)
  - Severity of problem (2nd percentile? 10th? 20th? 30th?)
- Contrary to the expectations, the first two show small effects and the other three show no consistent effects
  - SES showed greater impact with reading comprehension, however

The Significance of the “Big W”

- Unlike all the other reviews, the “Big W” involved looking at intervention outcomes in standard score points and working backward from there to the techniques that brought about those outcomes
- This is all good news!
- We can’t change kids’ SES or age or initial severity, and we typically don’t have enough personnel for 1:1 group sizes
  - This means that what we control (instruction) can make the most difference!

A Breakthrough in Intervention Research
Finding the Big W

- About 85%-90% of intervention studies show 0 to 9 SS point improvements while about 10%-15% of intervention studies show 10 to 25 SS point improvements
  - Results maintained at 1, 2, 3 & 4 year follow ups (depending on the study)
  - Results from the 0-9 studies often lost in follow up studies
- Summer 2014: The 0-9 category can be subdivided in two
  - 0 to 5 SS points and 6 to 9 SS points
- Thus a “tripartite” division within the intervention research
  - Minimal results group: 0 to 5 standard score improvements
    - Mostly 2-4 points
  - Moderate results group: 6 to 9 standard score improvements
    - Mostly 6-7 points
  - Highly successful group: 10 to 25 standard score point improvements
    - Mostly 14-17 points
The Phonological Proficiency Intervention Continuum

Three categories based on outcomes align with three different intervention approaches relative to orthographic mapping:

- **Superb alignment of theory with empirical outcomes**
- **This provides confirmation of the orthographic mapping hypothesis**

### Minimal Group (0 – 5 SS improvements)
- None formally trained phonological awareness/analysis
- Most did explicit, systematic phonics
- All provided reading practice with connected text

### Moderate Group (6–9 SS improvements)
- All did explicit, systematic phonics
- Nearly all trained phonological segmentation and/or blending
- "This is "basic phonological awareness" (mastered by most at end of 1st grade)

### Highly Successful Group (10–25 improvements)
- Aggressively addressed and "fixed" PA issues using advanced PA training
- All did explicit, systematic phonics
- All provided reading practice with connected text

Conclusions consistent with orthographic mapping

- Unless their problem with advanced phonemic awareness is fixed, poor word-level readers don’t catch up
- Advanced phonemic awareness is necessary for sight word development and if they don’t have it, they cannot efficiently add to their sight vocabulary
Interventions We are Using Now
(Why RTI is having limited results)

- The following interventions have been studied in the empirical reading literature and have been shown to yield 2 to 4 standard score point improvements:
  - Repeated Readings, READ 180, Reading Recovery, Leveled Literacy Intervention (LLI), Fast ForWord, Read Naturally, Failure Free Reading, Seeing Stars, and Great Leaps
  - Schools purchase and implement these not knowing they have already been studied and shown to have limited results
  - Students almost never “catch up” with these approaches
  - Most of these have studies with “statistically significant” results!
    - So they can all claim themselves “research based”!

- “Gold Standard” phonic programs
  (i.e., Wilson, DISTAR/Reading Mastery, Barton)
  - These can yield huge improvements in Word Attack (10-20 SS points), but modest improvements in general word identification (e.g., 3-5 SS points)
  - They do not develop phonological proficiency, which is needed for orthographic mapping/sight word development
  - Phonological-core deficit students only develop PA skills to the level that we teach them

- Also, reading comprehension interventions in the presence of significant word reading difficulties are minimally helpful
Examples of Successful Programs

- Programs used in studies with highly successful outcomes
  - Experimenter designed – not commercially available
  - Lindamood (ADD now LiPS)
    - Be cautious about the one they are promoting now, which has limited results
  - Interactive Skills Program (now in book form)
  - Phonographix
  - Read, Write, Type (only one study so far)
  - Discover Reading (Reading Foundation, Alberta, Canada)
  - Other programs using rigorous PA manipulation training not in these studies:
    - Rosner program - long track record of success in schools
    - Equipped for Reading Success-only program to incorporate findings from Orthographic learning research
  - Haggerty Phonemic Awareness program

- Nearly all studies with highly successful outcomes (10–25 groups) did rigorous phoneme manipulation!

Summary

- Word-level reading is primarily phonological
- This is based upon the alphabetic nature of our writing system
- Visual skills not a source of reading problems
- Skilled readers are all good at phonic decoding and orthographic mapping – neither is optional
  - Weaker readers are weak in both
  - Phonics skills are essential, but not enough
  - Skilled readers have large sight vocabularies, weak readers do not
- Efficiently remembering words via orthographic mapping requires letter–sound proficiency and phoneme proficiency

Summary

- Fluency is primarily a function of sight vocabulary size
  - And a few other smaller contributors
- For poor orthographic mappers, practice does not improve reading
- For skilled orthographic mappers, reading does not improve without practice
- Reading problems are very preventable
  - Teach letter–sound skills, phonological blending, and phonological/phonemic analysis
  - The most highly effective word–reading intervention outcomes trained advanced phonemic awareness, letter–sound skills, and did reading practice
  - With the right tools, teachers can change lives!