



Assessment and Intervention in Light of Understanding the Nature of Reading Difficulties

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Meet Our Presenter



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Today's Objectives

1. Determine key elements in evaluating word-level reading
2. Determine the best ways for prevention and intervention with poor word-level reading skill
 - ✓ Distinguishing research-based programs vs. research-based instructional principles
 - ✓ How to best determine effectiveness
 - ✓ Examining intervention research through the lens of the findings from the orthographic learning research
 - ✓ What studies have shown to be most effective for prevention and intervention

Summary of Previous Webinar

- There are two word-reading abilities all skilled readers have:
 - 1) ability to phonically decode unfamiliar words
 - 2) the ability to remember new words once identified
- Both of these word-reading abilities are based on letter-sound skills and phonological/phonemic skills
 - This is due to the alphabetic nature of our writing system
- In skilled reading, words are not remembered via visual memory
 - There is an immense amount of evidence against this intuitive belief
- Memory for words is based upon orthographic memory
 - Words are remembered based upon anchoring stored oral pronunciations to the letter order of written words
 - Orthographic memory is a memory for letter sequences
- Word memory is implicit, automatic and in the background
 - Thus, the letter-sound and phonemic skills must also be automatic
 - This separates skilled readers from weak readers



Applying Research Insights to the
**ASSESSMENT OF READING
DISABILITIES**

The Simple View of Reading:

*An Empirical Model for Understanding, Assessing,
and Instructing Reading*

Reading Comprehension is the product of:

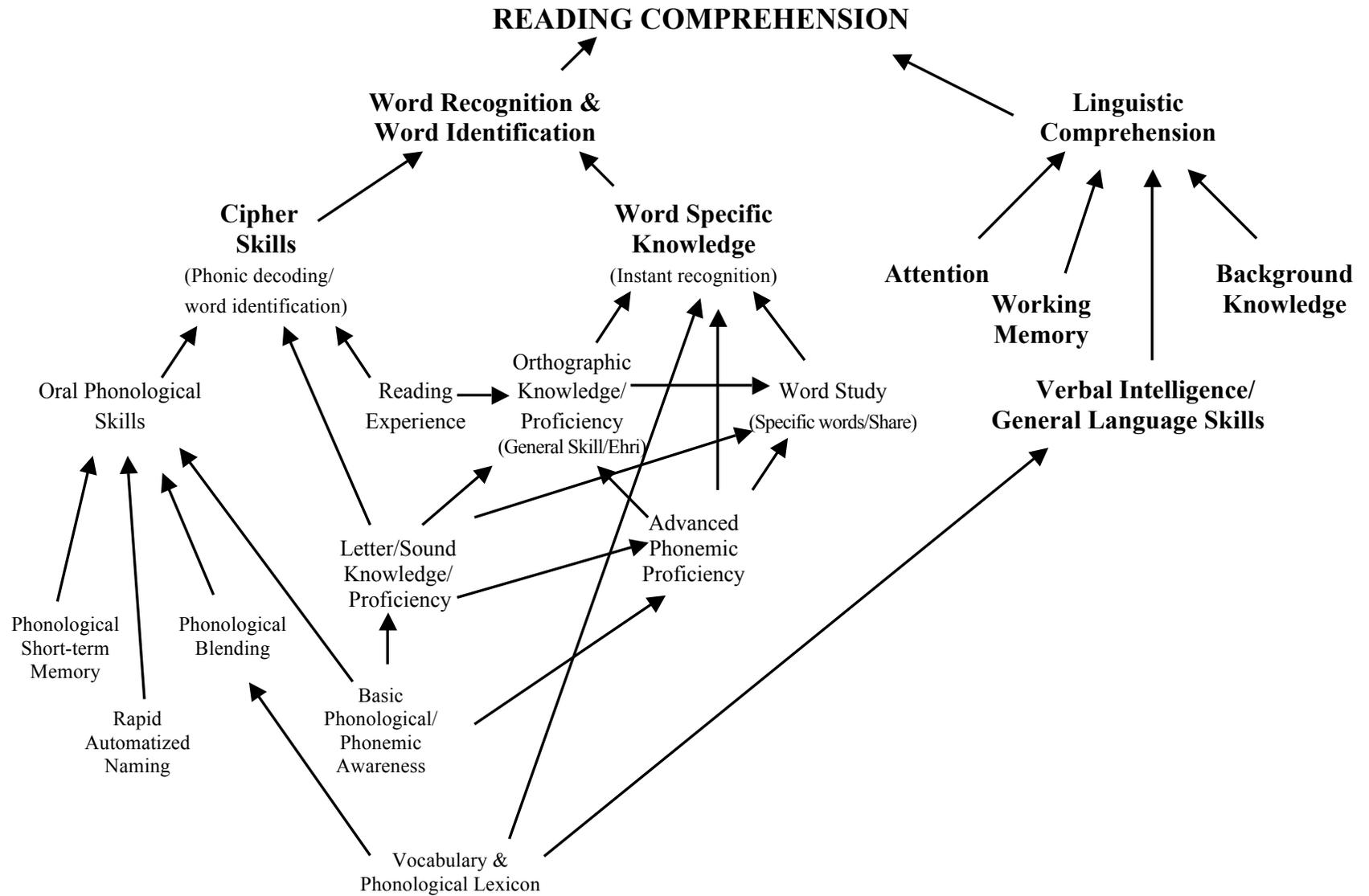
Word-Level Reading
and
Language Comprehension

The Simple View is Quite Complex

- The “simple view” gets its name for acknowledging the simple division of labor in reading comprehension between two broad categories: word reading and language comprehension
- Both of those broad skills are very complex
- Recently, those promoting the multi-cueing approach have been proposing the “complex view” of reading
 - It is simply a restating of the multi-cueing approach
 - It does not reflect the complexity of reading or any scientific findings
 - It is based upon decade’s old speculation and intuition

THE SIMPLE VIEW OF READING

(Originated by Philip Gough and colleagues and expanded by others. This expanded version by David Kilpatrick)



Word-Level Reading

“Decoding” in the Original Simple View Articles

1. “Cipher Knowledge”
(i.e., phonic decoding)
 - Letter-sound *knowledge*
 - Phonemic blending
2. “Word-Specific Knowledge”
(i.e., the ability to remember words)
 - Letter-sound *proficiency*
 - Phonemic analysis *proficiency*
- Associated issues commonly displayed by weak readers
 - 1) poor rapid automatized naming
 - 2) poor phonological working memory

What Then Should We Assess?

Word reading, of course!

Paragraph reading and fluency

- Many tests available
- However, this type of assessment confounds
 - 1) words already in the sight vocabulary
 - 2) phonic decoding of words “on the spot”
 - 3) set for variability
 - 4) use of contextual guessing(the last two are heavily influenced by language and background knowledge)

Untimed, context-free word reading

- Most test batteries have this (“word identification”)
 - 1) words already in the sight vocabulary
 - 2) phonic decoding of words “one the spot”
 - 3) set for variability

Timed, context-free word reading

- TOWRE-2; TOSWRF-2, KTEA-3, & WIAT-IV (2020)
- Best assessment of the size of the orthographic lexicon (sight vocabulary)

What Then Should We Assess?

Skills that form the basis of word reading or predict word reading

Letter-sound *knowledge*

- Untimed nonsense word subtests (most test batteries)

Phonemic blending

- CTOPP-2 Blending Words and similar tests

Letter-sound *proficiency*

- Timed nonsense word subtests from the TOWRE-2, KTEA-3, and WIAT-4 (2020)

Phonemic analysis *proficiency*

- PAST and WIAT-4 (2020)

Rapid automatized naming

- CTOPP-2 Rapid Naming subtests and similar tests

Phonological working memory

- CTOPP-2 Memory for Digits and similar tests

Why Should We Assess Rapid Automated Naming (RAN) & Working Memory (WM)?

While we know much about the relationship between RAN, WM and word reading, however the precise role in reading difficulties is still not well understood; *however . . .*

- Both moderately correlate with reading
 - Poor RAN and/or WM usually means poor word reading
 - But strong RAN & WM do not mean skilled word reading
- Both predict reading outcomes (good for screening)
- Both predict response to intervention
 - This has implications for assigning to Tier 2 or Tier 3
- RAN and WM performance affects the interpretation of broader reading profile
- Provides evidence for SLD in reading
 - Both are evidence for the phonological-core deficit of dyslexia
- Has implications for small group instruction

First Step

The first diagnostic question of any student struggling in reading comprehension is:

What if you read it to him or her?

Not, “How are his or her language skills?”



PREVENTION AND INTERVENTION

Research-Based Principles vs. Research-Based Programs

- The problem with the term “research based”
- What would constitute “research based”?
 - Fletcher, Lyon, Fuchs, & Barnes (2018)
 - FDA
- There is no Consumer Reports-style opportunity
 - *What Works Clearinghouse*, *bestevidence.org*, etc. have major problems
 - Very limited number of studies for any given program
 - Use of effect size to determine efficacy
- The National Reading Panel (NRP) avoided this by focusing on principles and approaches, not programs
- IES Practice Guides focus on principles and approaches, not programs
- There is no substitute for well-informed educational professionals

Determining Educational Effectiveness

- Raw score improvements
- Statistical significance
 - Too often “statistically significant gain” \neq “closing the gap”
 - “Significant” often means 3 standard score point gains
 - Many abstracts are misleading
- Effect sizes
 - Sometimes an unsuspectingly misleading index of improvement
 - Control groups are not a stable point of comparison across studies
 - 0 SS improvement on national norms = 22 SS improvement?
 - <1 SS gain (.96) with nearly twice the effect size as a 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
 - Has its drawbacks
 - Standard score and effect size should be used

Role of Socio-Economic Factors

- Socioeconomic Status (SES) is moderately correlated with reading outcomes
 - But correlation does not mean causation
- Effective instruction and intervention have been shown to be highly effective with low SES students
 - However, reading comprehension (RC) difficulties may continue
- Often blame is misplaced – inadequate instructional philosophies and practices get conflated with low SES

English Language Learners

Dozens of studies with consistent results

- Findings consistent with the Simple View of Reading
- Word reading develops similarly to native speakers
 - Assuming no phonological-core deficit
 - Different sounds across languages can create speedbumps but are not roadblocks
- Perhaps brief time lag, depending on age, previous reading acquisition, similarities across languages, etc.
- PA transfers across languages
- Comprehension lag (5-6 years) due to language development
- See Geva, E., & Ramirez, R. (2015). *Focus on Reading (Oxford Key Concepts for the Language Classroom)*. New York: Oxford University Press.

Tier 1 Results (Prevention)

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 diminished at 1-2 year follow ups

HOWEVER . . .

- 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!

Tier 1 Instruction/Prevention

What is Effective K-1?

- Phonological Awareness
- Letter-Sound Knowledge
- Connecting phonological awareness to word-level reading
- Good teaching techniques based on general learning principles
- Thus, early, rigorous development of PA and LS skills in K-1 dramatically reduces the number of struggling readers

Viewing Intervention Research In Light of the Orthographic Learning Research

- There have been over three dozen reviews and meta-analyses of word-reading intervention studies since 1999
- They routinely look at the obvious factors:
 - Socioeconomic Status (SES)
 - Age/grade of students (e.g., Grade 2 vs. 5 vs. 9)
 - Length of intervention (e.g., 35 vs. 65 vs. 110 hours)
 - Group size (e.g., 1:1 vs. 1:3 vs. 1:5 vs. 1:8 vs. whole class)
 - Severity of problem (2nd percentile vs. 10th vs. 20th vs. 30th)
- Contrary to the expectations, the first two show small effects and the other three show no consistent effects
- This is great news given these factors we can't change or are impractical
- What about instruction?

A Recent Finding about Intervention Research

- Using standard scores to determine effectiveness, three groups of intervention results emerge:
 - *Minimal results group*: 0 to 5.85 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 difference between these results aligned with different elements in the instruction
- The differences in these results based on instructional elements are “predictable” from the orthographic learning literature
- Use of effect size in previous reviews and meta-analyses appears to have obscured these results previously

Instructional Characteristics Related to Level of Effectiveness

- Minimal Group (0 – 5.85 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
 - All provided reading practice
 - 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 point improvements)
 - All did explicit, systematic phonics
 - All provided reading practice with connected text
 - All aggressively addressed the PA issues, most commonly using phoneme manipulation training
 - Recall the significance of this from the previous presentation

The Phonological Awareness Screening Test (PAST)



The Phonological Awareness Screening Test (PAST)

- Not to be confused with another online test with the same acronym
 - “Phonological Awareness Skills Test”
- Materials available www.thepasttest.com
 - Multiple versions for progress monitoring
 - Detailed instructions on administration and scoring
 - Data on reliability and validity (email me)
 - Tends to correlate with reading better than anything on the market (at worst, equal to what is on the market) yet it is free

The PAST Assessment

- Phonological Awareness Screening Test (PAST)
 - Acronym has double meaning
- Based on Rosner & Simon (1971)
 - Reworked and improved by McInnis
 - It is “third generation Rosner”
 - *CTOPP-2* Elision is a “first cousin once removed”
 - WIAT-IV (2020) will have similar normed subtest
- Outstanding correlation with reading
 - $r = .4$ to $.8$ elementary students; $r = .5$ adults

The PAST Assessment

- Based on phonological manipulation
 - Thus has segmentation, isolation, and blending built in
- Looks at automaticity of PA (phoneme proficiency)
- Takes 4-9 minutes to give
- Keyed into a PA instructional program (*Equipped for Reading Success*)
 - But can be a stand-alone assessment
- Great supplement for *CTOPP-2*
- Requires some training
- Not normed, but standardized and criterion based



SUMMARY AND CONCLUSIONS

Summary

- Assessment can flow directly from our understanding of how reading works, and our understanding of the skills required for proficient reading
- The Simple View of Reading provides a framework for assessment and instruction/intervention
- Scientific research on reading has established evidence for effective instructional *principles* and *approaches*, but not much regarding “research-based *programs*”
 - Programs built upon these effective principles and approaches should be adopted
 - Many popular programs are inconsistent with these findings
 - Yet they claim to be “research based” nonetheless!
- Intervention studies consistent with the orthographic learning literature produce the strongest intervention results

Summary

- English is an alphabetic writing system
- Alphabetic writing systems use phoneme-based characters
- Those with poor access to oral phonemes struggle in reading
- Instructional approaches that focus on the phonemic code of written English produce much better results than approaches relying on visual memorization, contextual guessing, or repetitious exposure
 - Studies show that when these latter approaches are used, weak readers remain weak readers
- Most reading difficulties can be prevented via Tier 1 instruction
- Struggling readers can read much better than they currently do if they are provided with effective intervention and develop letter sound proficiency and phonemic proficiency



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