Assessing Dyslexia and Other Reading Problems

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David A. Kilpatrick, PhD
State University of New York,
College at Cortland
kilpatrickd@cortland.edu

Important Note About Dyslexia

- Multiple definitions – organizations and popular
- Researcher Definition:
  Word-level reading difficulty despite adequate opportunity, effort
  (all else is popular lore that’s been with us for over 100 years)
- October 2017 – boost from the chair of the UK Reading Panel
- Common qualifiers in research studies:
  Not due to blindness, deafness, emotional disturbance, or low IQ

**SO, dyslexia does not require an MD or neuropsychologist to diagnose!**

A problem translating research to practice:
Where do we draw the line?

Diagnosing a Reading Disability

With Help from the Simple View of Reading
A Empirically Well Validated Framework for Assessment and Intervention
The Simple View

Reading Comprehension is the Product of:
Decoding
and
Linguistic Comprehension

RC = D x LC

The Simple View

Reading Comprehension is the Product of:
Word-Level Reading
and
Language Comprehension

RC = WLR x LC

Illustration of Simple View 1

The Importance of Decoding

Please read the following English words or sentences:

ףְּסִיפּ

: רָנִי, נּוּד

مساعدة או לָטֶּה
Illustration of Simple View 2
The Importance of Language Comprehension

- Our Grammatical/Syntactical module
  The snables tramped the mengs to the dwap. The dwap fripped. The mengs clambed a sib boogle. The snables gicked and gicked.
- Any questions?

Case Studies

- Steve - Grade 6 (LD)
  - Decoding is at the late first grade level
  - Language Comprehension average (IQ = 106)
- Kevin - Grade 7 (TBI?)
  - Decoding is at the beginning first grade level
  - Listening Comprehension is age appropriate
  
  \[ D = 0; \ LC = 1; \ \text{Therefore} \ 0 \times 1 = 0 \]

More Case Studies

- Andrea - Grade 6 (SLI)
  - Decoding is at the 6th grade level
  - Language Comprehension is 1st grade level
- Erin - Grade 5 (ID; Down’s syndrome)
  - Decoding is on grade level
  - Listening comprehension is kindergarten level
  
  \[ D = 1; \ LC = 0; \ \text{Therefore} \ 1 \times 0 = 0 \]
Are Steve and Kevin readers?
Are Andrea and Erin readers?
Can Dave read Spanish?

Background Information
- Originated in late 70s to early 80s
  - Formally named & written about in a famous 1986 article in the journal Remedial and Special Education
- Largely a challenge to Whole Language
- Fits a lot of research data
- Has withstood some direct studies
  - Over 100 direct studies
  - Several hundred indirect
- Is widely adopted by reading researchers

The Simple View Challenge
- Find a skilled decoder with good language comprehension who struggles with reading comprehension
- Find a student with very weak decoding or weak language comprehension (or both) who is doing well in reading.
- What then, is Reading Comprehension?
Should We Teach Reading Comprehension Strategies?

- Yes, because
  - Research has shown the effectiveness of teaching reading comprehension strategies
  - Language development involves oral and printed language - reading comprehension strategies apply to listening comprehension and vice versa
- But,
  - While reading comprehension strategies help all students, they have less impact on students with decoding problems
  - With these students, it won’t close the “gap”

Reading Comprehension = D x LC

Decoding (Word-Level Reading) is based on:

1. Cipher Knowledge
   - Code vs. Cipher
   - 007
   - Kbnft Cpoe
2. Word Specific Knowledge
   - Regular and irregular words
   - Based to a large degree on cipher knowledge

Reading Comprehension = D x LC

Linguistic Comprehension is based on:

1. Verbal IQ/Receptive Language
2. Background Knowledge
3. Executive Functioning Skills
4. Inferencing
5. Visual-Spatial/Imagery skills
6. Working Memory
Language Comprehension (LC)

- Less commonly the source of reading comprehension difficulties than decoding
- Research on LC related to reading comprehension is far behind research on decoding
  - The nature and relationship of the LC components are less clear than with decoding

“Exceptions” to the Rule

- I’ve tested students with this pattern:
  - Good LC and “fluent” word reading
  - Yet poor reading comprehension!
- Does this contradict the Simple View?
  - Yes - but no . . .
    - These students had 1) good phonics, 2) poor phonemic awareness, and 3) poor working memory
- “Fluent” reading was very effortful for them
  - Little working memory capacity left for comprehension
- These students are “compensators”

Empirically Established Subtypes of Reading Difficulties
Consistent with the Simple View

<table>
<thead>
<tr>
<th>Typical Reader</th>
<th>Dyslexic (and Compensator)</th>
<th>Hyperlexic</th>
<th>Mixed Reading Disability (GVPR)</th>
</tr>
</thead>
</table>

Note that each of these subtypes (except compensator) has extensive research support
These factors account for over 90% of the (practical) statistical variation among good and poor readers. This suggests there are no mysterious factors affecting reading growth, including LD. These components provide direct and systematic guidance for our prevention and systematic guidance for our prevention and intervention efforts.

Implications of this information

The Simple View of Reading (SVR) and the Psychoeducational Assessment of Reading
First Step

Reading Comprehension is the product of:
LANGUAGE COMPREHENSION and
WORD–LEVEL READING

• The first diagnostic question of any student struggling
  in reading comprehension is:
  • What if you read it to him or her?

The Two Levels of Skilled Word Reading

Two Levels of Word–level Reading

1) The ability to sound out unfamiliar words
   • Researchers call this phonological recoding, decoding, or
     applying grapho–phonemic correspondences (GPCs)
   • Based primarily on letter–sound skills & phonemic blending
     • Also aided by knowledge of phonically regular patterns

2) The ability to remember words
   • Instant, effortless recognition
   • Unrelated to visual memory
   • Words are remembered via orthographic learning
   • Based on phonemic analysis skills and letter–sound skills
Word Identification vs. Word Recognition
- Unfamiliar words vs. familiar words
- Effort vs. effortless (irrepressible, pre-cognitive)
- Poor fluency vs. good fluency
- Phonic decoding vs. instant sight word recognition/orthographic memory
  - *Word identification tests typically confound these*
  - Classic phonic and whole language approaches focus on unfamiliar words & do not address recognition
    - Classic whole word focuses on recognition, but did not accurately represent how recognition occurs (visual memory hypothesis)

What about “orthographic skills”?
- Current discussion of “orthographic processing” in school psychology is 10–15 years behind the research
  - Classic case of “correlation does not determine causation”
- Orthographic “skills” result from orthographic mapping
- Orthographic knowledge appears to be a byproduct of learning to read, not a causal skill like PA & LS skills
- Current ideas floating around about orthographic processing implicitly posit word learning based upon visual memory
- Intervention recommendations coming from such a notion have been shown to be ineffective

Are There Subtypes of Dyslexia?
- Acquired vs. Developmental Dyslexia
- Some acquired dyslexics showed one of three patterns
  - Most showed mixture or alexia
- Helped prompt the *dual-route theory* of reading
The Dual Route Theory of Reading

- We read using one of two routes:
  - Direct route: Instant recognition of familiar words
  - Phonological route: sounding out unfamiliar words
- Ultimately, the direct route proposes that some words we know and some words we do not know
  - It is a description of skilled reading
  - It does not tell us how the direct route skill develops nor how the phonological route develops
  - Thus, it is not useful for instruction
  - Useful for looking at the “finished product” from a neurological point of view

Does Dyslexia Have Phonological and Surface/Orthographic Subtypes?

- In the school psychology and neuropsychology fields subtypes are presented as if they are well-established by research
- A 40 year search to establish such subtypes in the reading research literature has not yielded support
- This is primarily in the neuropsychology literature which does not seem current with the vast dyslexia literature outside neuropsychology, nor the intervention literature nor orthographic learning literature
- Instructional implications are inconsistent with actual instructional/intervention research
- Consider the article in Journal of Neuroscience (2015)
- The phenomena being described as “subtypes” can be better accounted for by more recent theoretical developments
- The phonological-core deficit hypothesis of dyslexia covers all the “symptoms” of dyslexia, when developmental considerations are accounted for
- Bottom line: No need to pursue diagnosing subtypes of dyslexia

Are There Other Subtypes of Dyslexia?

- There are 3–4 subtypes of reading difficulties/disabilities but not of dyslexia
  - Dyslexia, hyperlexia, combined, compensators
- A potential dyslexia subtyping scenario involves some combinations of
  - Phonological awareness
  - Rapid automatized naming
  - Phonological working memory
  - Attention-Deficit/Hyperactivity Disorder
  - Math difficulties/disabilities
- The verdict is still out in terms of how useful these are
Why We Should Assess for Rapid Automated Naming & Working Memory

Neither is well understood in terms of its role in reading development, however . . .

- Both moderately correlate with reading
- Poor RAN and/or WM typically 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
- Both appear to help explain reading difficulties
  - Especially if PA is okay
- Affects the interpretation of broader reading profile
  - Provides evidence for SLD in reading
- Both are symptoms of the phonological-core deficit of dyslexia
- Has implications for small group instruction

The Special Case of Compensators

- Commonly overlooked
  - I “discovered” them either via a writing evaluation or a behavioral issue or a parent complaint about homework
  - Sometimes perceived as whiny parents
- Common pattern (from a study I did; n = 22)
  - 113.0 - Verbal skills
  - 98.4 - Reading comprehension
  - 92.3, 92.2 - Word identification (timed and untimed)
  - 91.6 - Spelling
  - 93.7 - Nonsense word reading (untimed)
  - 84.4 - Nonsense word reading (timed)
  - 93.1 - Phonemic awareness (untimed)
  - 81.4 - Phonemic awareness (timed)

The Special Case of Compensators

- It appears that they are being dragged down by limited
  - Letter-sound proficiency
  - Phonemic proficiency
- Detectable via the TOWRE-2 and the PAST
- Very correctable
- Best prevented via early detection and intervention
Objective 6: Understand the difference between phonemic tasks and phonemic skills

phonemic Tasks vs. phonemic Skills

- We need to move from a task mentality to a skill mentality
- Two types of phoneme tasks: synthesis and analysis
  - Synthesis goes from part to whole (e.g., blending)
  - Analysis goes from whole to part (e.g., segmenting)
- There are many phoneme tasks but only two skills are needed for reading
- Synthesis and analysis play different roles in reading:
  - Phoneme blending is needed for phonic decoding
  - Phoneme analysis is needed for remembering words

National Reading Panel (2000) on the role of phonemic Skills in Word Reading

(From Session 2 page 32)

Blending:
"The skill of blending is needed to decode unfamiliar words."

Segmenting:
"Phonemic segmentation helps children remember how to read and spell words..." (emphasis added)
Phonemic TASKS vs. Phoneme SKILLS

• The most common synthesis task is blending
• For blending, TASK = SKILL
• The blending skill needed for phonic decoding is directly captured by an oral blending task
• For analysis, there is no simple correspondence between task and skill
• Tasks include:
  - Rhyming
  - Alliteration
  - Segmentation
  - Isolation
  - Manipulation
  - Categorization/Identification

• Note: There are two to six variants on each of these tasks

Phonemic TASKS vs. Phoneme SKILLS

• Phoneme analysis – all tasks are getting at an underlying phoneme analysis skill – not telling us separate things
• Instant, effortless, and unconscious analysis/access to phonemes in oral pronunciations drives orthographic learning
• This is phoneme proficiency
  - Why not “phoneme segmentation proficiency”?
  - Why also called “advanced phoneme awareness”?
• Ehri and the NRP quote simply refer to “segmentation,” but they are describing a SKILL, not a task
Phonemic TASKS vs. Phoneme SKILLS

- Two phoneme SKILLS needed for reading: 1) blending & 2) phoneme (analysis) proficiency
- Segmentation tasks cannot reliably assess the highly proficient segmentation/analysis skill needed for orthographic learning
  - It is a conscious task
  - Instant responses to manipulation tasks can assess proficiency
- Segmentation tasks correlate with reading .3 to .5
- Manipulation tasks correlate with reading .5 to .8

The Phonological Awareness Screening Test
(PAST)

- Not to be confused with another online test with the same acronym
  - “Phonological awareness Skills Test”
- Materials available
  - Data on reliability and validity
  - Tends to correlate with reading better than anything on the market (at worst, equal to what is on the market) yet it is free
  - Five alternate versions for progress monitoring
  - Detailed instructions on administration and scoring
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 Elision is “first cousin once removed”
- Outstanding correlation with reading
  - .6 to .8 elementary students; .5 adults

The PAST Assessment

- Based on phonological manipulation
  - Uses segmentation, isolation, & blending
- Also looks at automaticity of PA
- Provides feedback for every item
- Takes 6-10 minutes to give
- Keyed into remediation program
- Five versions for progress assessment
- Great supplement for CTOPP
- Requires some training
  - Currently free to use
- Not normed – criterion based

Administering the PAST

- Two scoring systems: timed, untimed
  - 0, 1, X
  - Timing
- Routing - to speed administration
- Correction for each incorrect item
- Discontinuation rule
- Pacing
- Tabulation
The Simple View of Reading provides a useful framework for assessing reading difficulties. Fluency and reading comprehension are the goals. If only the latter, a student could be a compensator and dislike reading—such students need help. Reading comprehension is based on word-level reading and language comprehension. Word reading is based upon several testable skills. Reading comprehension is also based on several testable skills. Most skills that support reading are "fixable," and those that are not can typically be successfully worked around.