Using Case Studies to Understand Dyslexia

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Feedback from a school principal to a graduate student in SED 530, an elementary teacher who was trying to decide on a topic for her research paper (dyslexia was one of the options):

"For your research project you should probably choose a different topic than dyslexia, because in our school we only have <u>one</u> child with dyslexia."
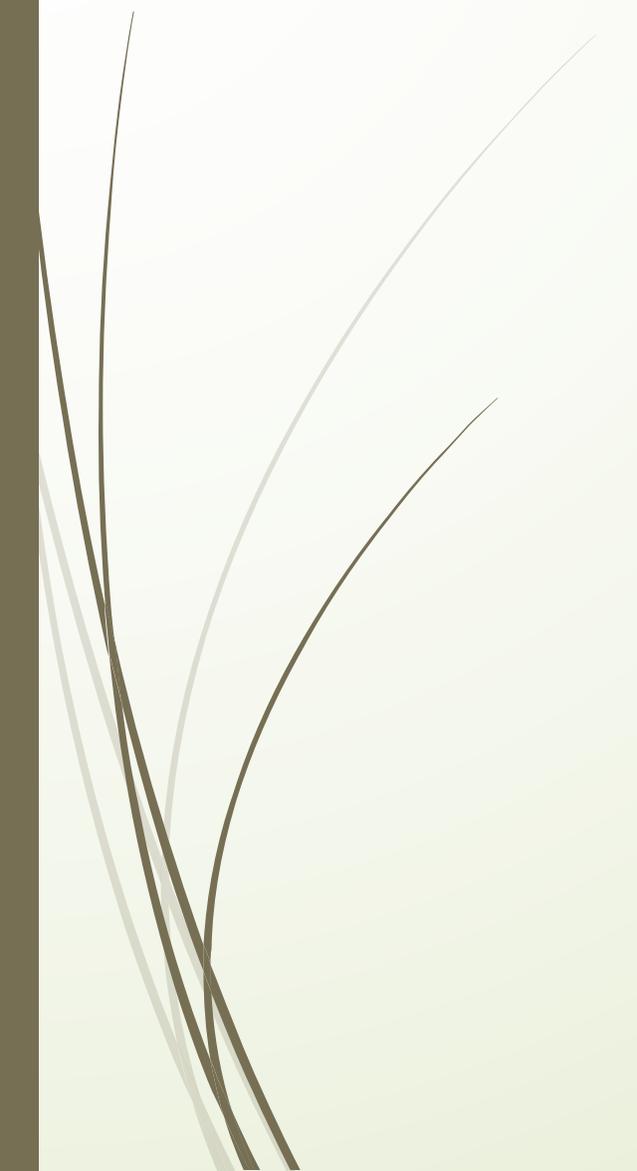
- Estimated incidence of dyslexia = 5% – 10% of the population (International Dyslexia Association)

- In a school of 300 students, translates into at least 15 – 30 children who likely have dyslexia

Key features of dyslexia (Fletcher et al., 2007, 2018; Siegel, 1999; Stanovich, 2000):

- Central problem is learning to decode and spell printed words
- Usually this problem is based in phonological processing (processing of phonemes/sounds)
- Broad language comprehension is typically average or better
- Students' broad intelligence also typically average or better

Key features of dyslexia (continued)

- Core difficulties in decoding can have <u>secondary</u> effects on many areas, e.g., reading comprehension, motivation

- However, if students can decode a text accurately and fluently, they can usually comprehend it well

- Similarly, comprehension is usually good when listening

- Dyslexia often co-occurs with certain other disabilities, especially ADHD

Key features of dyslexia (cont.)

- Difficulties in dyslexia can range from mild to severe

- Most research suggests that children with dyslexia do not require a qualitatively different approach to intervention than do other poor decoders

- However, they may need significantly more intensity of instruction (e.g., Torgesen, 2004) – e.g. more instructional time, smaller group size

Other profiles of reading disabilities that differ from dyslexia (e.g., Catts, Adlof, & Weismer, 2006; Leach et al., 2003; Spear-Swerling, 2011, 2015)

- Specific comprehension disabilities – students have good decoding skills but still struggle with comprehension

- Broad language disabilities – students have the kinds of decoding problems seen in dyslexia, but they have broader language problems as well (e.g., weaknesses in vocabulary, syntax, and/or pragmatic language)

What kinds of tests are useful for educational assessment and instructional planning in students with dyslexia?

A good assessment, for _all_ struggling readers, requires the use of measures of component reading and language abilities (as opposed to broad reading comprehension _only_)

Examples of important component areas to assess:

---Out-of-context word reading/decoding
---Phonemic awareness (for beginning readers or if decoding is weak)
---Text reading accuracy (need oral reading)
---Text reading rate and prosody
---<u>Oral</u> vocabulary
---<u>Listening</u> comprehension (with more in-depth assessment of LC if significant weaknesses in this area are suspected)

A range of measures can be used as long as:

- They are technically adequate (i.e., reliable/valid)

- They have benchmarks or norms to determine how a child is performing relative to grade/age peers

- See handout #1

A range of measures (continued):

- Standardized tests (e.g., WJ-IV, WIAT-III) typically required to determine eligibility for special education

- Other types of measures (e.g., criterion-referenced tests of phonics skills, informal reading inventories) can be very useful for planning instruction

- CBMS (e.g., DIBELS Next, Aimsweb) very useful for screening and monitoring progress in intervention

Some important details about educational assessment of at-risk and struggling readers, including those with dyslexia

To evaluate word reading, use both real words and nonsense words:

- Nonsense words (e.g., *streck, glain*) provide a "pure" measure of decoding

- Information about real words is important too

- Example 1: if real word reading is average and nonsense word reading is low, child may be relying on memorization of specific words

- Example 2: if nonsense word reading is average and real word reading is low, child may not be transferring decoding skills sufficiently to reading of real words

- Consider automaticity as well as accuracy

Assessment of reading comprehension (RC):

- Common formats for testing comprehension include cloze (fill-in-the-blank) and question-answering (Q/A) formats

- Individual children's performance can sometimes vary substantially depending on the comprehension measure

- With tests that involve answering questions, it is important to consider whether many questions are passage independent (Keenan & Betjemann, 2006; Keenan, Betjemann, & Olson, 2008)

Assessment of RC (continued):

- Passage independent questions don't depend heavily on actual reading of the passage

- Examples: "What does the word *glimmer* in the story mean?" "How do you think John felt when he lost the prize?"

- Children with dyslexia often can do well on passage independent questions and may perform relatively better on Q/A measures than on cloze measures of reading comprehension (Nation & Snowling, 1997; Spear-Swerling, 2004)

Assessment of RC (continued):

- The use of passage independent Qs on Q/A measures of RC may cause some children with dyslexia to appear to have better RC than they actually do

- Another consideration: very few standardized tests approximate the complex demands of RC at the secondary level, e.g., reading two books and writing a paper that compares their themes

- A verbally bright student with dyslexia can sometimes score in average range in RC but still struggle with everyday RC tasks (because of poor decoding accuracy or fluency)

Assessment of listening comprehension (LC):

- Often a strength for students with dyslexia

- However, children can sometimes do poorly because they have attentional or executive function problems (e.g., ADHD)

- Listening measures can be especially demanding of attention

Assessment of listening comprehension (LC):

- To try to determine whether there is an actual language weakness, consider, e.g.: Does the child have a history of language delay? Low performance in comprehensive speech/language testing? Ongoing weakness in expressive language?

- Important consideration because intervention for attentional/EF issues differs from that for language weaknesses

Case examples

Danielle (end of Grade 2)

- No history of early language delay

- Family history of learning disabilities

- Experienced reading difficulties beginning in kindergarten

- Early difficulties centered on learning letter sounds, phoneme blending/segmentation, decoding

Danielle (end of Grade 2)

- Has always done well in teacher read-alouds, class discussions

- Intensive, explicit phonics intervention since early Grade 1

- Reading comprehension is good if she can decode the text

- Math is grade-appropriate

- Has good ideas and vocabulary knowledge for writing, but poor spelling drains motivation to write

Danielle's test scores (end Gr 2):

(WJ-IV average range = 90 to 110)

- WJ Word Identification = 78
- WJ Word Attack = 88
- WJ Passage Comprehension = 80
- WJ Spelling = 82
- WJ Sentence Reading Fluency = not administered; child unable to complete sample items due to poor word reading
- WJ Oral Comprehension = 120
- WJ Picture Vocabulary = 114
- IRI Word Lists (ins level) = Primer
- IRI Reading Passages (ins level) = Pre-primer

How do Danielle's difficulties exemplify dyslexia?

- Her literacy difficulties revolve around decoding and spelling

- She has problems with RC and written expression, but those are due to her decoding/spelling problems, not actual comprehension weaknesses

- Positive family history for dyslexia is very common though not universal

- Ability to learn verbally is strong

- No co-occurring ADHD in this case

What are Danielle's intervention needs in reading?

- Continuation of highly explicit, systematic phonics intervention

- Consider increase in intensity (depending on current programming)

- Real word reading (WJ WI) is especially weak; gains in phonological decoding skills (WJ WA)do not seem to be transferring to real word reading

What are Danielle's intervention needs (cont.)?

- Consider evaluation of advanced PA and training in this area if weak (Kilpatrick, 2015)

- Application of decoding skills in reading text, including oral text reading with a knowledgeable teacher who provides appropriate scaffolding and cues (e.g., Spear-Swerling, 2011; Vadasy et al., 2005)

- Use of motivating decodable text

- Greater attention to reading/spelling phonetically irregular words (weak area in testing)

Zachariah (March of Grade 1)

- Referred to assessment clinic due to parental concerns about reading

- No family history of ADHD, SLD, or dyslexia; no early language delay

- Child enjoys being read to and is read to extensively at home

- Teacher indicates that child does very well with verbal learning and teacher read-alouds

- No math concerns

- No MTSS or school services to this point

Zachariah's test scores (Mar of Gr 1):
(WJ-IV average range = 90 to 110)

- WJ Picture Vocabulary = 113
- WJ Oral Comprehension = 116
- WJ Segmentation = 92
- WJ Word Identification = 101
- WJ Word Attack = 94
- WJ Passage Comprehension = 98
- WJ Spelling = 100
- BRI Graded Word Lists (ins level) = Pre-primer
- BRI Reading Passages (ins level) = could not be completed due to inability to read 1st psg
- DIBELS Next Nonsense Word Fluency = well below benchmark

Score Zachariah's performance on the Core Phonics Survey (see pdf)

On the Core Phonics Survey, has Zachariah demonstrated the decoding skills expected for a child who is past the midpoint of Grade 1?

Questions about Zachariah:

- Do you think Zachariah has a reading problem? If not, say why not. If so, explain why.

- What is odd about Zachariah's standardized test performance?

- What kind of reading instruction/intervention would benefit Zachariah?

- Do you think Zachariah could have dyslexia? Why/why not?

- Postscript: Zachariah in Grade 2

Teresa, March of Grade 5:

- Referred to assessment clinic due to parental concerns about reading comprehension

- Math is a strength, child enjoys subject; dislikes reading

- History of early language delay, resolved prior to K entrance

- Recent S/L testing showed Teresa's language abilities to be within average range in all areas

- Parents state that there is no known family history of disabilities

Teresa, March of Grade 5 (cont.):

- Teresa was diagnosed with ADHD in Grade 3

- Receives special education in OHI category

- Teresa had some difficulties learning to read early on; but decoding not currently seen as an issue, although spelling is poor

- Increased homework and academic demands have been especially difficult for Teresa this year

Teresa's test scores (Mar of Gr 5):

- WJ Picture Vocabulary = 99
- WJ Oral Comprehension = 85
- WJ Word Identification = 90
- WJ Word Attack = 86
- WJ Sentence Reading Fluency = 84
- WJ Passage Comprehension = 82
- WJ Spelling = 82
- BRI Graded Word Lists (ins level) = Grade 5
- BRI Reading Passages (ins level) = Grade 3
- DIBELS Next ORF = below benchmark for both accuracy and rate
- DIBELS Next Maze = well below benchmark

Some error patterns for Teresa:

- Maintaining her attention on WJ Oral Comprehension was difficult, may have affected her score

- On WJ Word Attack she had trouble with nonsense words of > 1 syllable

- On timed, silent reading assessments such as WJ Sentence Reading Fluency and DIBELS Maze, she worked quickly but made many errors

- On WJ Spelling, she spelled many common 1-syllable words correctly but often omitted phonemes in longer words, e.g., *vaction* for *vacation* and *eletic* for *electric*

Some error patterns for Teresa (cont):

- Although on the BRI Graded Word lists her <u>instructional</u> level was Grade 5, her <u>independent</u> level was significantly lower, Grade 2

- On both the BRI passages and WJ Passage Comprehension, <u>some</u> of her errors in comprehension were clearly due to inaccurate reading of words; other errors were <u>not</u> attributable to decoding

Questions about Teresa:

- Is it true that decoding is "not an issue" for Teresa? Explain your answer.

- How could ADHD be contributing to Teresa's reading problems?

- Do you think that Teresa has ongoing oral language weaknesses? Why/why not?

- What kinds of intervention would benefit Teresa?

- Do you think Teresa has dyslexia? Why/why not?

Destiny (February of Grade 6)

- Referred for testing due to parental concerns about lack of progress in reading fluency

- Identified with dyslexia at end of Grade 2 and receiving special education since then

- Meeting general education literacy demands is an increasing problem

- Effort, organization, and attention are all seen by teachers as strengths for Destiny

- Has been receiving intervention with an explicit, highly structured phonics program, for 3-4 years

- Intervention has been 1-1 for past year

Destiny's test scores (Feb of Gr 6):

(**WIAT-III average range = 85 to 115)**

- WIAT Receptive Vocabulary = 112
- WIAT Oral Discourse Comp = 105
- WIAT Word Reading = 86 (<u>NOTE ave range above</u>)
- WIAT Pseudoword Decoding = 97
- WIAT Reading Comprehension = 99
- WIAT ORF accuracy score = 74, rate = 76
- BRI Graded Word Lists (ins level) = Grade 6
- BRI Reading Passages (ins level) = Grade 5
- DIBELS Next ORF = well below benchmark for both rate and accuracy

Look at Destiny's performance on the Grade 6 BRI passage, for both oral reading accuracy and comprehension (see pdf)

Does Destiny appear to consistently monitor comprehension (i.e., think about meaning as she reads)?

Does she consistently try to apply decoding skills and look carefully at printed words?

Some error patterns for Destiny (Gr 6):

- Attention and focus were excellent throughout assessment

- She worked especially diligently on WIAT-III RC to find answers in the text, took a long time (test is not timed)

- On the BRI Graded Word Lists, although highest <u>instructional</u> level was Grade 6, highest <u>independent</u> level was only Grade 2

- Similarly on the BRI Graded Passages, highest <u>independent</u> level was low, only Grade 1, mostly due to poor word accuracy

Questions about Destiny:

- What is concerning about Destiny's WIAT Word Reading score, even though it is in average range?

- Also consider Destiny's performance on the BRI Graded Word Lists and Graded Passages. What is concerning here?

- What types of intervention does Destiny need? In particular, how should her difficulties with reading fluency be addressed?

Matthew (March of Grade 11)

- Identified with SLD in Grade 2 based on problems in decoding and spelling

- Receiving special education since then

- Many years of structured literacy intervention

- Tested as part of triennial evaluation

- Hardworking student with good attentional and organizational skills

- Long history of consistently above average oral language abilities <u>except</u> for phonological awareness and naming speed

Matthew (Grade 11, cont.)

- PA now in average range but naming speed still low (~PR of 5)

- General education teachers say he grasps content very quickly, more so than most students

- Math and science particular strengths

- Has taken several AP math/science classes in high school

- High school grades are mostly As, except for Spanish (C/D grades)

Matthew (Grade 11, cont.)

- Does very well in most classes, but sheer volume of literacy demands is difficult for Matthew

- Spends many hours on homework

- Relies on some assistive technology for reading and especially writing

- Planning to attend college with a biology major

Matthew's test scores (Mar of Gr 11): (**WIAT-III average range = 85 to 115)**

- WIAT Receptive Vocabulary = 124
- WIAT Oral Discourse Comp = 130
- WIAT Word Reading = 95
- WIAT Pseudoword Decoding = 98
- WIAT Reading Comprehension = 109
- WIAT ORF accuracy score = 94, rate = 74
- IRI Graded Word Lists (ins level) = Grade 12
- IRI Reading Passages (ins level) = Grade 11

Matthew's test scores (Mar of Gr 11, cont.):
(WIAT-III average range = 85 to 115)

- WIAT Math Fluency = 86

- WIAT Numerical Operations = 116

- WIAT Math Problem Solving = 128

Some error patterns for Matthew:

- Spelling errors reflected orthographic or morphemic errors not phonological limitations (e.g., *confied* for *confide*, *sympithetic* for *sympathetic*)

- On WIAT ORF and the IRI passages, he read with a high degree of accuracy (> = 98%), but slowly

- Used counting strategies for math facts but was highly accurate

- Extremely focused and diligent test taker, not easily frustrated

Questions about Matthew:

- How do Matthew's difficulties with naming speed appear to manifest in both reading and math?

- Although Matthew's state does not require IQ testing to diagnose SLD or dyslexia, there are many indications in his background and test data that suggest he could be a "twice exceptional" student, both intellectually gifted and dyslexic. Provide some examples of these indications, and explain your answer.

Questions about Matthew:

- The PPT is considering the most appropriate diagnosis for Matthew as he prepares to go to college. Two diagnoses are under consideration, "SLD/dyslexia" and "processing disorder" (because of his speed-of-processing difficulties). Which term do you think is most appropriate and educationally useful in Matthew's case?

- What are the primary challenges Matthew will face in college? What are some ways these challenges can be addressed?

Marcus (April of Grade 2)

- History of serious illness (childhood leukemia); missed many days of school in K and Grade 1

- Medical problems have been successfully addressed and school attendance much better in Grade 2

- Child comes from very low-income urban district

- Reading program is heavily "whole language" and there are few positive behavior supports

- No explicit teaching of PA and little explicit teaching of phonics

Marcus (April of Grade 2, cont.)

- Classroom environment sometimes chaotic

- Marcus has had problems both with reading and with behavior

- Often refuses to attempt reading tasks, gets in occasional fights with other children, has occasional tantrums

- Began receiving structured literacy (explicit synthetic phonics) intervention in the past 2 months

- Referred for evaluation by parents

Marcus's test scores (April, Grade 2):

(WJ-IV average range = 90 to 110)

- WJ Picture Vocabulary = 84
- WJ Oral Comprehension = 96
- WJ Word Identification = 85
- WJ Word Attack = 79
- WJ Passage Comprehension = 72
- WJ Spelling = 80
- IRI Graded Word Lists (ins level) = end of Grade 1
- IRI Reading Passages (ins level) = Primer
- DIBELS Next Nonsense Word Fluency (fall of Gr 2, given off level) = well below benchmark

Some error patterns for Marcus:

- DIBELS Next ORF could not be administered; Marcus struggled to read the first few lines of text and became very frustrated, so this assessment was discontinued

- Comprehension errors on the IRI reflected mainly 1) limitations in decoding, and 2) limitations in vocabulary/background knowledge

- On WJ Spelling, he consistently spelled initial and final sounds correctly but often struggled to spell sounds in the middle of a word

Questions about Marcus:

- How has Tier I programming likely contributed to Marcus's difficulties?

- What types of intervention does Marcus need? Consider behavioral and social-emotional as well as literacy needs.

- Marcus's parents are worried that he may have dyslexia, partly because Marcus's father had serious difficulties in learning to read. What do you think?

Thank you!

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