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Dyslexia: What SLPs Need to Know

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Moderated by:
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11/7/2018

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Dyslexia: What SLPs Need to Know



By Jeanne Tighe, MA, CCC-SLP, CDP

11/7/2018

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Disclosures

Financial: Owner of Beyond Communication, LLC

Non-Financial: Board Member, NJ Branch of the International Dyslexia Association

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Learning Objectives

1. Define dyslexia, and describe its relationship to other forms of reading disorders and its connections to language development.
2. Identify assessment instruments suitable for inclusion in a speech-language evaluation of a student at risk for dyslexia.
3. Describe a speech-language intervention framework for students with dyslexia..

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Meet Mike.

Achieved early milestones on time,
though articulation was delayed.

Pre-K and K- hesitant in the
classroom, but happy & social kid

1st grade- sent to I&RS for reading
and writing difficulties

CST Eval at end of 1st grade
showed 106 IQ, while oral reading
scores were in the 70s.
Phonological awareness SS= 82.



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Increasing frustration, struggle, and anger through
2nd & 3rd grades.

By spring of 4th grade:

- Oral Lang – 50th percentile
- Letter sound knowledge - 75th percentile
- Phonological awareness - 15th percentile
- Sight word identification - 1st percentile
- Decoding – 1st percentile
- Oral reading fluency - 1st percentile
- Reading comprehension – 5th percentile

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The Simple View of Reading



Result = Skilled Reader

(Gough & Tunmer, 1986)

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Word Recognition



What skills contribute to Word Recognition?

- ☐ PHONOLOGICAL & PHONEMIC AWARENESS
- ☐ Phonological memory
- ☐ Rapid automatic naming
- ☐ Letter identification
- ☐ Letter-sound knowledge
- ☐ Phonics knowledge
- ☐ Morphological understanding
- ☐ Self-sustaining acquisition of automatic word recognition

Language Comprehension

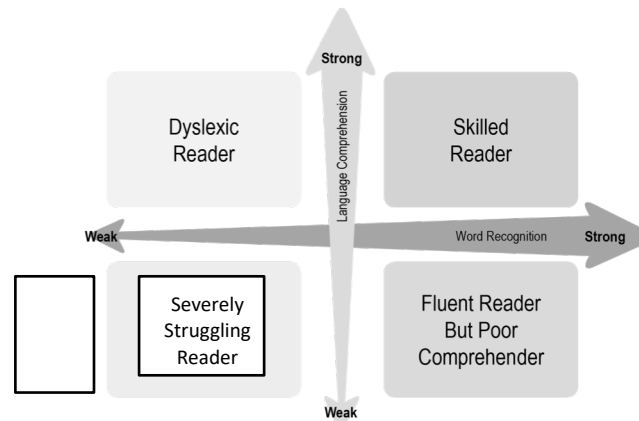


What skills contribute to Language Comprehension?

- ☐ Vocabulary knowledge
- ☐ Syntactic skills
- ☐ General world knowledge
- ☐ Understanding of narrative and other discourse structures
- ☐ Sustained attention
- ☐ Memory (working memory, phonological memory, and other variants)
- ☐ Self-monitoring (executive) skills
- ☐ Inferential thinking skills

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The Simple View of Reading



(Gough and Tunmer, 1986)

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Dyslexia Consensus Definition

- “Dyslexia” means a specific learning disability that is **neurological** in origin. It can be characterized by **difficulties with accurate and/or fluent word recognition** and by **poor spelling and decoding** abilities. Difficulties typically **result from a deficit in the phonological component of language** that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. **Secondary consequences may include problems in reading comprehension** and reduced reading experience that can impede growth of vocabulary and background knowledge.

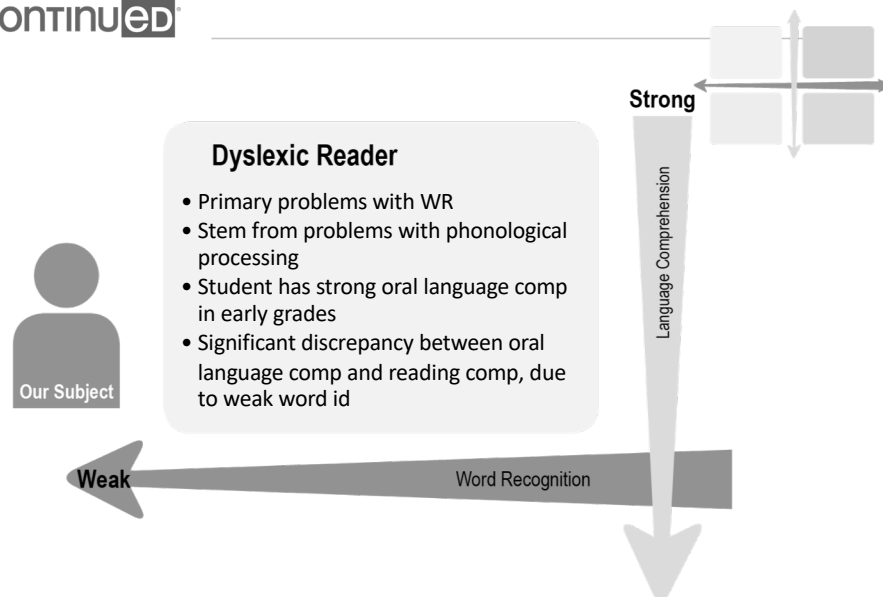
International Dyslexia Association
dyslexiaida.org/definition-of-dyslexia/

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Dyslexia Definition Deconstructed

- The problem is visible in brain scans as differences in physical development in certain brain regions.
- The primary symptoms are poor word recognition and spelling.
- The primary cause is typically a core deficit in phonological processing.
- Poor reading leads to other problems with language and academics over time.

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Clinical Markers of Dyslexia

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Clinical Markers of Dyslexia

1 – Phonological core deficit

- Can manifest as difficulties with word discrimination, phonological and phonemic awareness, short-term auditory memory (aka phonological memory), letter-sound awareness, articulation errors, auditory processing problems
- Considered by many researchers to be the “universal cause” of word-level reading difficulties (Kilpatrick, 2015)
- Phonological skills must be accurate, sophisticated, and automatic in order to support skilled reading (Kilpatrick, 2015)

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continued

“

Every point in a child's development of word-level reading difficulties is affected by phonological awareness skills.”

”



Kilpatrick, 2015

1
7

continued

Clinical Markers of Dyslexia

#2 - Rapid automatized naming weakness

- Defined: the skill of quickly accessing presumably rote information (numbers, letters, colors, objects)
- directly impacts reading fluency, independently of PA and WM (Wolf, 1984; Wolf & Bowers, 1999)
- cannot be directly remediated (though sometimes RAN improves when PA and reading overall are intensively treated) (Kilpatrick, 2015)

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continued

Clinical Markers of Dyslexia

#3 - Phonic decoding weakness

- Difficulties with decoding typically originate from underlying deficits in PA, RAN, or both. Weaknesses may be observed in all or some of the following foundational skills:
 - letter identification
 - orthographic rules and patterns
 - letter-sound awareness
 - phonological blending

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Clinical Markers of Dyslexia

#4 - Slow / inaccurate sight word identification

- Contrary to widespread belief, sight word identification is not rooted in visual memory and in fact is dependent on advanced phonemic awareness.
- Orthographic mapping: the mechanism for sight word learning; the cognitive process used to store words for immediate, effortless retrieval through application of phonemic awareness, letter-sound knowledge and the alphabetic principle (Ehri, 2014)

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continued

Clinical Markers of Dyslexia

#4 - Slow / inaccurate sight word identification

- Weakness in phonemic skills leads to difficulty using sounds as anchoring points for the spellings of exception words.
- Skilled reading requires new words to be stored as instantly recognizable wholes after just a few exposures; this does not occur with sufficient efficiency for dyslexic students.

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continued

Clinical Markers of Dyslexia

#5 - Deficit in reading fluency

- Weaknesses in decoding and sight word identification result in reduced accuracy and speed in oral and silent reading fluency.
- Reading comprehension is negatively impacted by reduced fluency in early and middle years.
- Over the long term, reading comprehension may also be negatively affected by reduced language growth resulting from limited reading experience.
- (Stahl, 2004)

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Clinical Markers of Dyslexia

#6 - Difficulty with spelling

- Phonological and orthographic weaknesses result in difficulty spelling phonetically regular words.
- Difficulty with orthographic mapping results in difficulty spelling irregular words.
- Difficulty with spelling often leads to restricted written output, even when the student typically has creative, elaborated ideas in spoken discourse.

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Clinical Markers of Dyslexia

#7 - Average intellectual and language comprehension foundations

- The dyslexic profile signifies that all of these traits exist in the presence of broadly average IQ and oral language skill.
- When the same traits are observed in the presence of reduced cognitive/linguistic ability, we can diagnose Reading Disability together with Developmental Language Disorder and/or Intellectual Disability.

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CONTINUED

“ Research has shown quite clearly that the factors that prevent poor readers with high IQ scores from developing skilled word recognition are the very same factors that are responsible for poor word-level reading among those with low IQ scores. ”

Kilpatrick, 2015

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CONTINUED

“ Low IQ... need not affect word-level reading skills because the skills required for word-level reading are not substantially correlated with IQ test scores. ”

Kilpatrick, 2015

2
6

CONTINUED

Severity Considerations

The presence of even “mild” weakness (SS of 80-89) in multiple clinical markers can have a cumulative effect and result in significant reading disability.

Double deficit dyslexia- characterized by deficits in both PA and RAN; most common subtype of dyslexia; most challenging to remediate. (Wolf & Bowers 1999)



In double deficit dyslexia

both PA and RAN are weak, so both accuracy and speed of word identification will be impacted.

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The SLP's Role in Comprehensive Assessment of a Struggling Reader

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Who's Doing What?

Typically covered in Psyco/Ed Testing

- Intellectual ability
- Letter-sound knowledge
- Decoding
- Word identification
- Reading fluency
- Reading Comprehension
- Spelling
- Written composition
- Writing fluency

What SLPs can contribute

- Phonological awareness
- Auditory/phonological memory
- Rapid automatized naming
- Word retrieval
- Exp & receptive language
- Discourse level language skills

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3 Big Skills

Phonological Awareness

Rapid Automatized Naming

Phonological / Working Memory

Critical components of any evaluation of a struggling reader

Assessment tools targeting these areas can be administered by psychologists, LDTCs, or SLPs. Who administers measures of these foundations is less important than ensuring they are included in an evaluation plan.

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Phonological Awareness

Diagnostic Assessment

- Tasks involving phoneme manipulation have highest sensitivity to reading problems. (Swank & Catts, 1994)
- Comprehensive Test of Phonological Processing-2
- Lindamood Auditory Conceptualization Test-3

Ecological Assessment

- Tasks should assess skills across the hierarchy of development in order to inform intervention plans.
- Phonological Awareness Test-2
- Criterion-referenced inventories

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Phonological Awareness

- Research has shown that children with PA at or below the **20th percentile** experience long term reading difficulties (without phonological intervention). (Torgesen, Wagner, & Rashotte, 1994)
- Beware “cheating” – use of visual spelling strategy for phonetically regular words in in phonological tasks. Solution-focus on the student’s management of phonetically irregular words.
- Speed- Most PA tests are untimed, but applied PA skills must be *fast* in order to support literacy. Slow, accurate responses will yield high scores but not reflect the level of PA development needed.

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Rapid Automatic Naming

- Suggested Instruments:
 - CTOPP-2
 - Rapid Automatic Naming and Rapid Alternating Stimulus Tests (RAN/RAS)
- Tasks using digits and letters are more valid than tasks using colors and objects, though the latter may be appropriate for use with young children who have not yet mastered letter/number identification.

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Rapid Automatic Naming

Interpretation of results:

- Students with RAN deficits are likely to have persistent, long term difficulties with reading speed and fluency. (Wolf, 1984 & Wolf & Bowers, 1999)
- Stronger PA reduces negative impact of RAN, so students with RAN deficits are particularly good candidates for PA intervention. (Kilpatrick, 2015)
- Students with RAN deficits are likely to have greater need for functional accommodations.

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Phonological / Working Memory

- Phonological short term memory (PTSM) is correlated with word-level reading.
- PTSM is subtly different from, but strongly related to, working memory (WM). Students with weak PTSM will likely have WM problems.
- WM influences fluent application of the phonetic process and, later, reading comprehension. (Cain, Oakhill & Bryant, 2004)
- There is no strong evidence for positive treatment effects on PTSM or WM. Awareness of difficulty in this area should inform how we intervene and accommodate to help the student compensate. (Gillam, Holbrook, Mecham, & Weller, 2018)

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What about language?

- Consider limitations of “oral language” assessment included in general cognitive & achievement batteries.
- Assessment of **discourse level** language comprehension and verbal expression often offer deeper insights than sentence-level tests.
- Knowledge of narrative structure influences reading comprehension and written expression.
- Single word vocabulary (naming/ID) skills do not always represent semantic reasoning or lexical use in connected production.



Oral language comprehension and expression skills are cornerstones in long-term literacy development.

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continued



General language
comprehension will
constrain reading
comprehension.



Cain & Oakhill, 2007

3
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continued

The SLP's Role in Comprehensive Intervention for Students with Dyslexia

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The Simple View Revisited



Considerations for therapy planning

How can language intervention support each of these processes?

For dyslexic students, support for WR is likely the highest priority.

Classroom interventions for WR skills often include only limited remediation of core phonological deficits.

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The Phonological Awareness Problem

- PA training is one of the most thoroughly researched and validated interventions we have in language & literacy.
- Efficacy studies of literacy interventions clearly show the largest effect sizes for programs that include PA training. (Kilpatrick, 2015)
- PA training is presumed to be a part of structured phonics programs, but is often absent or under-utilized.
- Many teachers do not understand the difference between PA training and phonetic instruction and so do not truly implement it.
- Many dyslexic students never have goals & objectives for PA in their IEPs.



Decades of research, including longitudinal studies, show that PA training yields statistically significant improvements and is a critical component of intervention for students with dyslexia.

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Enter the SLP

- SLPs have specific and unique training in the sound structure of spoken language.
- SLPs have specific and unique insights into the nature of speech sounds that are invaluable to individualizing and troubleshooting phonological and phonemic awareness training.
- SLPs can administer PA training to students individually, in small groups, or via collaboration with classroom and support teachers (Schuele, 2008)

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Clearing Up Terms

1. Phonological Awareness: the ability to analyze the sound structure of spoken language (broad term)
2. Phonemic Awareness: the ability to isolate and manipulate phonemes (narrow term)
3. Phonics: the system of representing the sounds of speech in a printed code

(Schuele, 2008)

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Set for Variability

- The ability to determine the correct pronunciation of approximations to spoken English words (Tunmer & Chapman, 2012)
- Students with better oral vocabularies are more successful at matching imperfect decoding attempts to target words.

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What kinds of PA do I teach?

- Teach phonological skills (like rhyming, alliteration, syllabification) only as much as you need to to get your student ready for phonemic awareness.
- Move as efficiently as possible through the hierarchy until phonemic blending and segmenting are possible. Then work intensively at this level. Do not move on before mastery with 5 phonemes.
- With students in 2nd grade and beyond- continue to train through substitution and manipulation levels, until these processes are accurate *and* efficient.

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Instructional Sequence

Phonological Phase

- Sentences into words
- Words into syllables
- Rhyme judgement, matching, and sorting
- Rhyme generation
- **See Supplemental Handout: Rhyme & Alliteration Activities Hierarchy

Schuele and Murphy, 2014

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Instructional Sequence

Phonemic Phase

- Initial sound matching and sorting, segmentation, and generation
- Final sound matching and sorting, segmentation, and generation
- Segmentation and blending of VC and CV words (first words that can be stretched, then words that can't)
- Segmentation and blending of CVC words
- Segmentation and blending of CCVC and CVCC words
- **See Supplemental Handout: Phonemic Awareness Base Activities

Schuele and Murphy, 2014

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Video demo

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PA Goal Development

Step of the hierarchy +
range of complexity +
conditions of skill performance +
accuracy level

- Jeanne will syllabicate words ranging from one to four syllables using blocks as placeholders, with 90% accuracy.
- Jeanne will phonemically segment 3-phoneme words without manipulatives with 90% accuracy.

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PA Training is a Means, Not an End

- The reason we do PA instruction is to support phonetic reading instruction.
- Make sure the teachers of literacy in your students' program are applying your great work to phonetic reading and spelling instruction.



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Language Intervention

- Dyslexic students may exhibit language needs in addition to word recognition difficulties. These often include:
 - Delayed mastery of morphology/ irregulars
 - Disorganization of discourse-level expressive language (e.g. narrative, explanatory)
 - Problems with word retrieval
- Over time, poor readers often fail to develop the higher-level language skills that come from robust text experience.

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Assistive Technology- A Simple View



Technology can be a valuable form of accommodation for individuals with dyslexia, though it is never a replacement for intervention.

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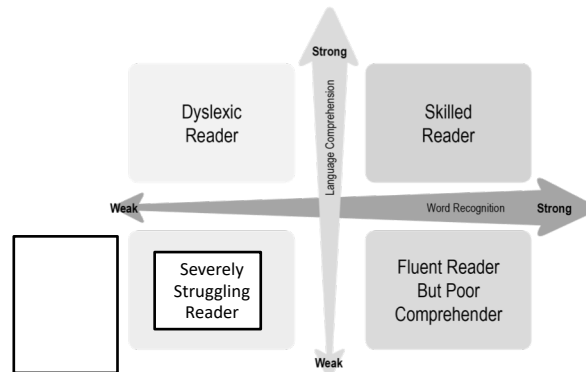
Functions of AT for Students with Dyslexia

- Providing access to text (e.g. text-to-speech softwares/features)
- Supporting movement of expressive language to print (e.g. speech-to-text software, word prediction software, typing vs. handwriting)
- Identifying and supporting correction of spelling and grammar errors (spelling and grammar checker softwares/features)
- Supporting creation of notes (e.g. recording devices, mind-mapping softwares, multimedia note collection apps)

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CONTINUED

AT decisions for struggling readers must be informed by the student's profile.



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CONTINUED

Listening Comprehension is Key!

Students who benefit most from text-to-speech have listening comprehension skills *at or above* grade level.

“If the text exceeds not only the student's silent reading ability but also the student's listening comprehension ability, text-to-speech will offer little support.” (Erickson, 2013)

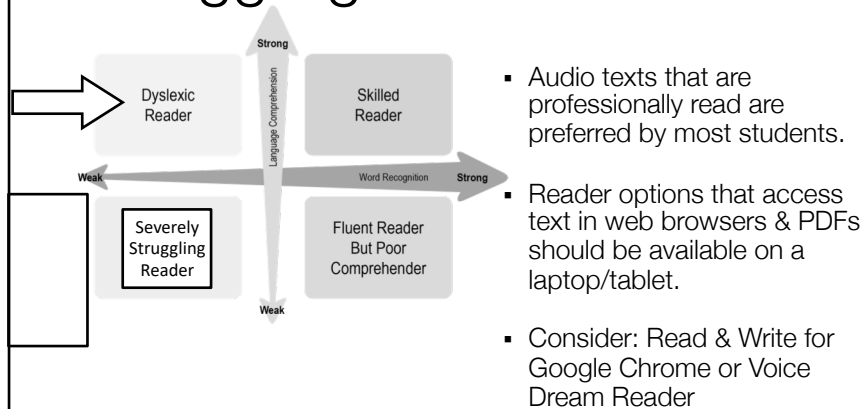


SLPs are experts in listening comprehension. Assessment data from a full language evaluation provides valuable input for AT decisions.

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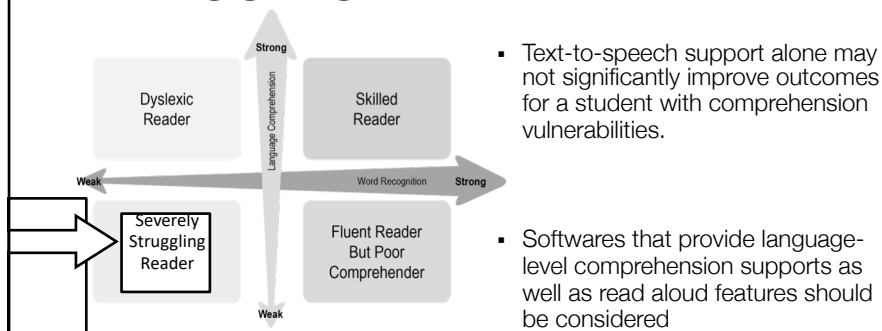
Strong comprehender / Struggling word identifier



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continued

Vulnerable comprehender & Struggling word identifier



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The Simple View for Writing, Too

- The same considerations of word-level vs discourse-level skills should be applied to considerations of AT for writing.
- For students with word-level difficulties:
 - Speech-to-text softwares/features
 - Spell check (specialized versions are available)
 - Word prediction
- For students with word *and* discourse-level difficulties, all of the above plus:
 - Mind-mapping softwares for topic development (e.g. Inspiration)
 - Grammar check (e.g. Ginger, Grammarly)

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How can SLPs help?

- Students need instruction and *practice* to learn to use the tool effectively.
- The goal of AT for student with Dyslexia is to access and produce language with greater ease.
- Have your students bring their AT to your sessions and integrate use of speech-to-text or text-to-speech (or other) software in your language therapy activities.

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Questions?

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References

- Kilpatrick, David A. (2015) Essentials of Assessing, Preventing, and Overcoming Reading Difficulties. Hoboken, New Jersey: John Wiley & Sons, Inc.
- Kilpatrick, David A. (2016) Equipped for Reading Success. Syracuse, NY: Casey & Kirsch Publishers.
- Mather, Nancy and Wendling, Barbara J. (2012) Essentials of Dyslexia Assessment and Intervention. Hoboken, New Jersey: John Wiley & Sons, Inc.
- Moats, Louisa. (2010) Speech to Print: Language Essentials for Teachers, 2nd Edition. Baltimore, MD: Brookes Publishing.
- Shaywitz, Sally. (2005) Overcoming Dyslexia: A New and Complete Science-Based Program for Reading Problems at Any Level. New York: Random House.

60

References

- Cain, K., Oakhill, J., & Bryant, P. (2004). Children's reading comprehension ability: Concurrent prediction by working memory, verbal ability, and component skills. *Journal of Educational Psychology* 96 (1), 31-42.
- Catts, H.W., Adlof, S.M., Hogan, T.P. & Weismer, S.E. (2005) Are SLI and Dyslexia Distinct Disorders? *Journal of Speech, Language & Hearing Research*, 48, 1378-1396.
- Catts, H.W., Fey, M.E., Zhang, X., & Tomblin, J.B. (2001) Estimating the Risk of Future Reading Difficulties in Kindergarten Children: A Research-Based Model and its Clinical Implementation. *Journal of Speech, Language & Hearing Services in Schools*, 32, 38-50.
- De Groot, B.J.A., Van den Bos, K.P., Van der Muelen, B.F., & Minnaert, A.E.M.G. (2015). Rapid naming and phonemic awareness in children with reading disabilities and/or specific language impairment: differentiating processes? *Journal of Speech, Language, and Hearing Research*, 58, 1538-1548.
- Ehri, L.C. (2014). *Orthographic mapping in the acquisition of sight word reading, spelling, memory, and vocabulary learning*, Scientific Studies of Reading, 18 (1), 5-21.
- Erickson, K. (2013). Reading and Assistive Technology: Why the Reader's Profile Matters. *Perspectives on Language and Literacy*, 39 (4), 11-14.
- Gillam, S., Holbrook, S., Mecham, J., Weller, D. (2018). Pull the Andon Rope on Working Memory Capacity Interventions Until We Know More. *Language, Speech, and Hearing Services in Schools*, 49, 434-448.
- Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *RASE: Remedial and Special Education*, 7, 6-10.

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References

- McCrory, E. J., Mechelli, A., Frith, U., & Price, C. J. (2005). More than words: A common neural basis for reading and naming deficits in developmental dyslexia? *Brain*, 128, 261-267.
- Schuele, M.C. *Phonological awareness intervention: beyond the basics*. (2008). Language, Speech, and Hearing Services in Schools, 39, 3-20.
- Stahl, S.A. (2004) What do we know about fluency? Findings of the National Reading Panel. In P. McCardle & V. Chhabra (Eds.), *The Voice of Evidence in Reading Research*. (pp 187-211). Baltimore, MD: Paul H. Brookes Publishing.
- Swank, L.K. & Catts, H. W. (1994). Phonological awareness and written word decoding. *Language, Speech, and Hearing Services in Schools*, 25, 9-14.
- Torgesen, J.K, Wagner, R.K., & Rashotte, C.A. (1994). Longitudinal Studies of Phonological Processing and Reading. *Journal of Learning Disabilities*, 27, 276-286.
- Wolf, M., & Bowers, P. G. (1999). The double-deficit hypothesis for the developmental dyslexias. *Journal of Educational Psychology*, 91, 415-438.
- Wolf, M. (1984). Naming, Reading, and the Dyslexias: A Longitudinal Overview. *Annals of Dyslexia*, 34, 87-115.

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Suggested Web-Based Resources

- International Dyslexia Association: dyslexiaida.org
- Florida Center for Reading Research: fcr.org
- What Works Clearinghouse:
<https://ies.ed.gov/ncee/wwc/>
- National Center for Learning Disabilities: ncld.org
- Center on Instruction: centeroninstruction.org
- New Jersey Dyslexia Handbook:
<https://www.state.nj.us/education/specialed/dyslexia/NJDyslexiaHandbook.pdf>