

What is dyslexia?  
How do we help students with  
dyslexia?



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Cabrie's older brother

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**Mr. Kearns**  
teacher, literacy coach, and reading remediation specialist



Lourdes, Sergio, Rosa, Francisco  
Adolfo, Jaime, Maggie, Blake

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Today's Agenda

- What is dyslexia?
  - What is reading?
  - What causes reading difficulty?
- How do we help students with dyslexia?
  - What are the basic components of an effective word recognition program?
  - What are the other characteristics of an effective program?

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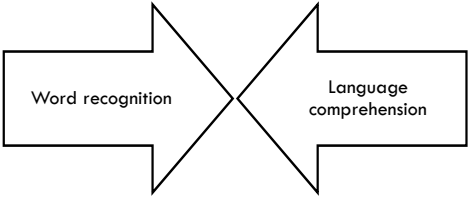
What is dyslexia?

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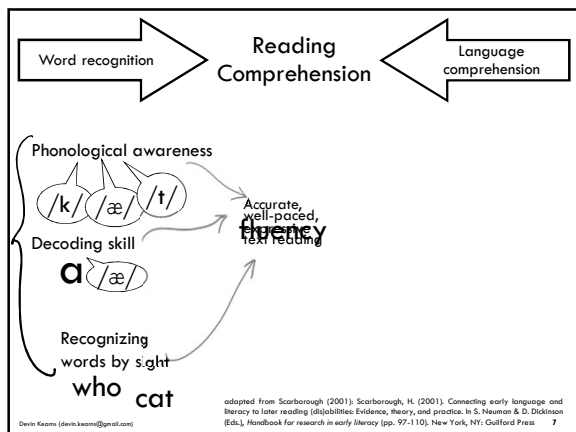
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The Simple View of Reading

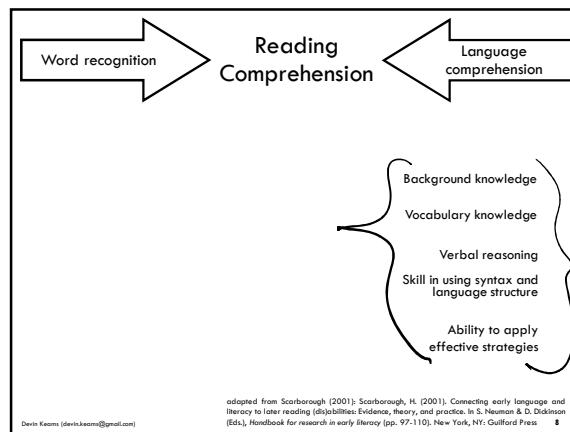


Devin Kearns (devin.kearns@gmail.com) Hoover & Gough, 1990

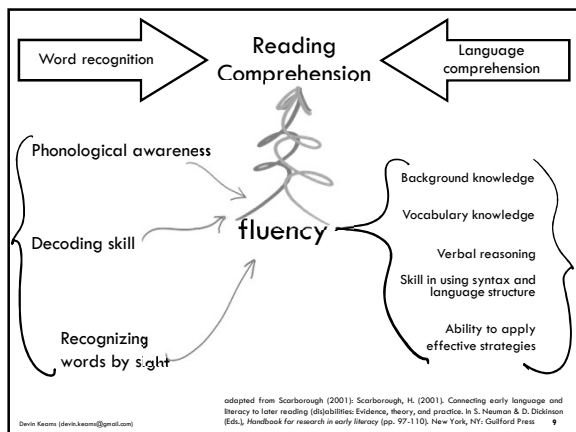
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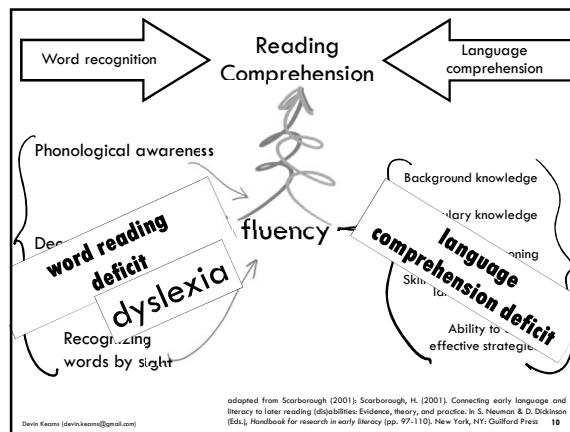
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Six possible causes of reading difficulty

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*Dyslexia and others*

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Activity 1 (Part 1)

Take Notes

Take notes on the six causes

- Prepare to retell these at the end of the section
- Include explanations how data show dyslexia is not a visual processing problem

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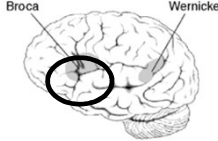
**Cause 1:  
Phonological Deficit**

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Findings from brain research

**A localized phonological deficit**



<b>Localized</b> other processes unimpaired	<b>Phonological</b> it is clear <i>where</i> the deficit is
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It is *not* a visual processing problem

Hebrew speakers		Non-Hebrew speakers	
Good readers	Poor readers	Good readers	Poor readers
better memory for Hebrew letters	worse memory for Hebrew letters	equal memory for Hebrew letters	

**purely visual processing**

Devik Keam (devik.keam@gmail.com) Vallutino, Steger, DeSetto, & Phillips (1975) 15

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It is *not* a visual processing problem

Good readers	<b>reversals</b>	Poor readers
few errors		many errors

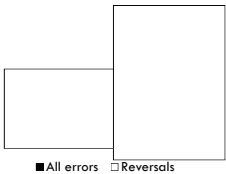
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Devik Keam (devik.keam@gmail.com) Fischer, Liberman, & Shankweiler (1978) 16

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But...it's a similar **percentage** of errors

Errors Made

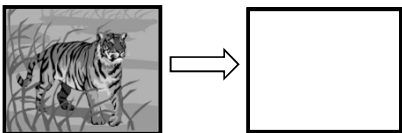


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Phonological processing

**phonological awareness:** the ability to detect and manipulate sound units of various sizes



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Cause 2:  
Phonological Deficit Plus Others

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Results from behavioral studies

**phonological processing**

**speeded lexical  
retrieval**

**verbal short term  
memory**

Ramus & Szenkovits (2007)  
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Speeded lexical retrieval

**rapid naming**

Form A

4	7	8	5	2	3	7	4	3
8	2	5	3	5	7	2	8	4
7	5	3	4	8	2	7	3	8
5	2	4	8	3	5	4	7	2




Form B

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Verbal short term memory

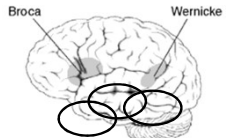
**word recall**

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Other possible challenges



**Visual cortex**

**Basal ganglia**

**Caudate nucleus**

**Reading difficulty may involve  
visual, motor, and speech deficits.**

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Cause 3:  
General Cognitive Deficit

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“low achievers”  
 “garden-variety poor readers”

not LD  not ID

**everything is a little difficult (including reading)**

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**Cause 4:  
 Attentional, Emotional, Behavioral**

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Don't have any of the previous deficits

**Attention**  
**Emotion**  
**Behavior**

→ reading problems

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**Cause 5:  
 Insufficient Exposure**

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For readers who haven't had good language and reading practice ...

chrane /ch/  train

**Knowledge of the language's phonological structure is lower, even though the child's brain is fine**

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**t** = /t/ {

- step /t/
- bat /t̄/
- batter /ɾ/
- button /ʔ/
- take /tʰ/
- train /t̲/

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So...

**Children who understand how sounds work will naturally adjust pronunciations**

$/\text{æ}/ + /m/ \rightarrow /\text{æ}m/$

**Children who do not have a finely tuned phonological system will not → Exposure tunes the system**

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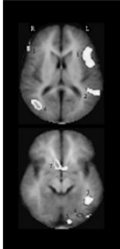
**Cause 6:  
Ineffective (even if well-intentioned) Instruction**

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Good instruction makes a difference

- **It can even change brain patterns**
- **We can fix problems that result from instruction that is not focused on students' exact needs**



Devik Keam (devik.keam@gmail.com) Shaywitz et al. (2014)

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**Activity 1 (Part 2)  
Cued Retell**

**Work in pairs following these directions**

- Retell as many causes as you can
- Have your partner give you hints if you can't remember one
- Explain why dyslexia isn't visual processing
- Switch and repeat

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**Summary: Multiple Causes**

- Have phonological deficit** This is the cause of "classically defined" dyslexia
- Have phonological and other concerns** Additional deficits in processing speed or verbal memory
- Have difficulty with everything** These are our "low achievers, children who don't meet LD or ID criteria"
- Have attention, emotional, or behavioral challenges** Have difficulty profiting from instruction
- Have had insufficient language and reading experience**
- Have received inadequate instruction** Have not been given instruction to help tune them in to the "exceptional regularities of English"

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Summary of **LIKELY** needs

Phonological deficit	Phonological deficit + other deficit	Low achievement	Attention, emotion, behavior	Exposure	Instruction
<b>Phonological awareness instruction</b>					
<b>Systematic, Explicit Phonics Instruction</b>					

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### In summary

- Dyslexia is usually characterized by the inability to read words quickly and accurately
- Dyslexia is usually defined as involving a deficit in phonological processing
- There are other causes of poor word reading

The *other* causes make it confusing

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### Why is dyslexia confusing?

- Confusion 1: Is it a "special" kind of reading problem?
- Confusion 2: Can it be distinguished from other types of reading disability?
- Confusion 3: Can students with reading comprehension problems have dyslexia?
- Confusion 4: Why is there controversy about using the word "dyslexia"?

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### Confusion 1: Is it a "special" kind of reading problem?

Confusion 1: It is hard to distinguish from other disabilities

the normal distribution of reading

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### Confusion 1: Is it a "special" kind of reading problem?

the unexpected hump

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### Confusion 1: Is it a "special" kind of reading problem?

- The hump is important because it means there is a special group of kids with word reading difficulty
- But the hump does not exist, meaning that some students tend to be better and others worse
  - dyslexia just involves very poor word reading
  - it is on a continuum defined by the severity of the word reading problem

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### Confusion 2: Can it be distinguished from other types of reading disability?

- Which students would do poorly on a phonological awareness test?

Phonological deficit	Phonological deficit + other deficit	Low achievement	Attention, emotion, behavior	Exposure	Instruction
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all of them—they all have reading difficulty and reading requires sound processing

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### Confusion 2:

Can it be distinguished from other types of reading disability?

- It may not be possible to separate
  - children whose deficits indicate a genetic and neurological disorder  
*from*
  - students who have not used their brains to read very much
- Dyslexia is a learning disability in reading that involves serious word-reading difficulty
  - It is already in IDEA as a specific learning disability (LD)
  - It is no different from LD related to word reading

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### The history of terms for reading disability

Early in reading research	Later in reading research
<ul style="list-style-type: none"> <li>• Word blindness                             <ul style="list-style-type: none"> <li>• Hinshelwood &amp; Morgan</li> </ul> </li> <li>• Strophosymbolia                             <ul style="list-style-type: none"> <li>• Orton</li> </ul> </li> <li>• Learning disability in reading                             <ul style="list-style-type: none"> <li>• Kirk and others</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Reading disability <i>covers language comprehension and word recognition</i> <ul style="list-style-type: none"> <li>• Specific learning disability in reading</li> <li>• Learning disability in reading</li> <li>• Print-based learning disability</li> <li>• Term for language comprehension and word recognition deficits</li> </ul> </li> <li>• Dyslexia <i>covers word recognition specifically</i></li> </ul>

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### Dyslexia (defined just in terms of word reading ability) has a genetic and neurobiological basis

Hancock, Pugh, & Hoeft (2017)

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### Confusion 3:

Can students with reading comprehension problems have dyslexia?

- Yes—if we define dyslexia only in terms of word reading
- No—if we specify that the deficit has to be “modular” and not affect language comprehension
- Children with word-reading problems in early elementary school have comprehension problems in late elementary

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### Matthew Effects in Reading

**“For to every one who has will more be given, and he will have abundance; but from him who has not, the things he has taken away.”**  
— Matthew 25:29

Students can end up with reading comprehension problems even if they do not have them early in reading development

Biemiller, 1977-1978; Cunningham & Stanovich, 1997; Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996; Juul, 1988; LaBerge & Samuels, 1974; Perfetti & Hogaboam, 1975; Share & Silva, 1987; Stanovich, 1980; Stanovich, 1986; Stanovich, Nathan, & Vala-Rossi, 1986 47

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### Confusion 4: Why is there controversy about using the word “dyslexia”?

- The definition of dyslexia implies that
  - word reading intervention would help many students with dyslexia
- **Advocates for saying and addressing dyslexia** often think
  - word reading intervention should be used with students
- **People who tend not to think this way** may believe that
  - there is over-emphasis word reading
  - there is under-emphasis on the importance of reading complex, high-interest, rich, authentic text and making meaning from it and the value of being motivated to read, whatever the level of difficulty

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**Activity 2**  
**Pause: What are confusions about dyslexia?**

Write the reasons that dyslexia is confusing and controversial

When most people are finished, we will discuss

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**Summary**

- Dyslexia is characterized by what kind of difficulty?  
phonological
- How do we know it is not a visual processing problem?  
visual confusions and reversals are due to sound problems!
- Why can dyslexia get mixed up with other causes of reading difficulty?  
it is difficult to test for dyslexia specifically—  
we may never know if a problem is truly "dyslexia" alone

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**How do we help students  
with dyslexia?**

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**Components necessary for a  
word-reading program**

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"Structured literacy" instruction for students with word-reading difficulties including dyslexia

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**Structured literacy instruction**

- I recommend purchasing a program
- There is not a single magic program

Are you doing  
*Amazing*  
program with  
Jessica?

It is really for kids  
with dyslexia. Not  
of the other  
programs out there  
is not for these  
kids.

- You need a program focused on basic reading skills that includes the elements we are about to discuss
- It must introduce skills in a systematic way and use explicit instruction to teach them

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**Programs must have these components to allow  
students with dyslexia to succeed**

- Phonological awareness
- Synthetic and/or analytic phonics
- Strategies for reading polysyllabic words
- Morphological instruction

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## Features of a good program

### How do you choose a program?

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## Summary: Features of a good program

- Phonological awareness
- Phonics
  - Sound-spellings
  - Synthetic phonics (blending)
  - Analytic phonics (key word method)
- Syllable-level instruction
  - Chunking
  - Syllable types
- Morphological instruction
  - Affix identification and peeling off
  - Reading morphological word families

I do recommend a *program* rather than strategies: It reduces the planning burden and maintains consistency

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## What makes some programs better?

- Program pacing
  - How quickly does the program introduce new concepts?
  - Can instruction be accelerated easily?
  - Quick, simple, immediate error correction procedure
- Focus on the letters themselves
  - Some form of sounding out is used
  - Minimal focus on context (used to confirm accuracy of sounding out)
  - No focus on pictures or skipping words
- Focus on real words
  - Nonsense word reading is OK and is most helpful for students who guess
  - Use of words children will know

NOT good: Students spend a long time on each sound-spelling

Maybe OK: Extensive teacher learning about English phonology and phonics

NOT good:  
• Focus on context as a word-reading strategy  
• Use of pictures as a word-reading strategy  
• Attempting pronunciation based on the first few letters

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## What makes some programs better?

- Simplicity of the strategies taught
  - Will a reader be able to apply the strategy and get the word in 2-5 seconds?
  - Is the strategy practical in real reading?
  - Is the strategy something that good adult readers and spellers do?
- Inclusion of a complete, systematic, explicit scope and sequence of synthetic units, analytic units, syllabic units, and morphological units
- Amount of practice
  - How many words do students read in a given lesson?
  - Is there practice reading sentences or longer texts?

Maybe OK: Syllable division

Maybe OK: Learning new terms for letters and sounds

NOT good: No pre-set order of lessons (teacher always chooses what is next)

NOT good: Order of skill introduction based on book being read

NOT good: Games that are fun but limit practice

NOT good: Complex activities

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## What makes some programs better?

- Ease of teacher use
  - Are the materials intuitive and relatively limited in number?
  - Are full lessons provided so preparation can be limited?
- Amount of professional development required
  - Can professional development be completed in 6-12 hours?
  - Are teachers able to put the lessons into practice quickly

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## Choose what makes sense for your context

- Just make sure it is a structured literacy program
- Use this information to reassure stakeholders that the student does not necessarily need a *specific program* they already know about

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