



Reading Disabilities? Reading Difficulties? Dyslexia? ...Making Sense of it All

Carolyn A. Denton,

The Children's Learning Institute

University of Texas Health Science
Center Houston

The Texas Center for Learning
Disabilities



Part of the Strand of Presentations: Identifying and Teaching Students with Reading Disabilities in an "RTI World"

The Latest Findings from the NICHD Learning Disability Research Centers

Council for Exceptional Children

Nashville, TN, 2010



Learning for SUCCESS

texasldcenter.org

The Texas Center for Learning Disabilities (TCLD) investigates the classification, prevention, and remediation of learning disabilities.



Jack M. Fletcher and David J. Francis,
University of Houston

Sharon Vaughn and Greg Roberts,
University of Texas at Austin

Carolyn A. Denton and Andrew
Papanicolaou, University of Texas Health
Science Center Houston





Children Do NOT Outgrow Reading Difficulties

A child who is a poor reader at the end of first grade has an almost 90% chance of remaining a poor reader at the end of Grade 4 (Juel, 1988) and at least a 75% chance of being a poor reader as long as they are in school (Francis et al., 1996)

....unless we provide quality intervention!



Children are Not Born with the Brain Networks Necessary for Reading

- Unlike speech, which humans develop naturally, children must be **taught** to read
- “Learning to read literally **rewrites the organization of the brain.**” (Fletcher, 2009 , p. 504)



The Need for Instruction

- Some people need **little instruction** to learn to read
- Some need **quite a lot of instruction**
- Some **do not ever learn** to read at average levels despite adequate instruction



Reading Difficulty and Disability Is...

- *Variation on normal development*
- Like high blood pressure (Everyone has blood pressure—it varies from person to person; at some point it is called “high.”)
- Not like a broken leg (You either have it or you don’t.)
- Caused and influenced by several different factors



Causes of Reading Difficulties and Disabilities: Genetic

- If a child has a parent with dyslexia, they are more likely to have dyslexia
- A genetic ***predisposition***
- 50-80% of the variability is explained by genetic factors, increasing with age
- Multiple genes have been associated with reading development
- Individual gene effects are small



Causes of Reading Difficulties and Disabilities

- **Brain:** The brains of persons with dyslexia **function differently** than those of typical readers when they attempt to read words



Causes of Reading Difficulties and Disabilities

- **Environmental:** Oral language usage in the home and community, time spent reading to the child, conditions related to **economic disadvantage** (health care, preschool education opportunities, etc.)
- **Environmental:** *Not receiving appropriate reading instruction*

Magnetic Source Imaging

- Safe, painless, non-invasive, very accurate
- Detects small bio-magnetic brain signals
- Provides real-time information about **which** brain areas are active and **when** during task performance



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The Brain's Response to Intervention

Does the pattern of brain activation change in response to intervention?

- 8 students with severe dyslexia
- 8 week intense phonologically-based intervention (2 hours a day = up to 80 hours of instruction)
- 1:1 in a reading clinic (during the summer)
- 2 hours a day = up to 80 hours of instruction

Simos et al., *Neurology*, 2002



Demographic Information

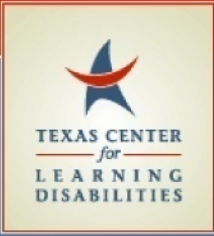
| Child | Gender | Age (years/mo) | WJ-III pre (%ile) | WJ-III post (%ile) | IQ | Medication |
|-------|--------|-------------------|-------------------------|--------------------------|-----|------------|
| 1 | M | 15 | 13 | 55 | 103 | Adderal |
| 2 | M | 10 | 2 | 59 | 95 | Ritalin |
| 3 | M | 10 | 2 | 38 | 110 | Ritalin |
| 4 | F | 8 | 3 | 55 | 105 | Ritalin |
| 5 | F | 7 | 2 | 50 | 110 | Ritalin |
| 6 | M | 7 | 18 | 60 | 101 | — |
| 7 | M | 11 | 1 | 38 | 98 | Ritalin |
| 8 | M | 17 | 1 | 45 | 102 | — |



The Power of *INSTRUCTION* to Overcome...

- Poverty
- Family status
- Language levels
- Genetic predisposition
- Brain processing differences





Ultimately, **reading success or failure** is caused by the **interaction** between features of **instruction** and **student characteristics** (stemming from *genetic* predisposition, *brain* processing, and *environment*).





Who has Learning Disabilities?

- Usually understood as *unexpected underachievement*
 - Extreme difficulty learning in specific academic areas
 - Not primarily due to other disabilities (such as intellectual disabilities or sensory impairment)
 - When given adequate *opportunity to learn*
- Since 1977, usually identified through a **discrepancy (difference) between IQ** (considered an indication of the expected performance level) **and achievement test scores** (*actual* performance level)



Problems With the IQ-Achievement Discrepancy Identification Model

- **It does not reliably identify different groups** of students who have different cognitive skills, learning trajectories, or who respond differently to the same instruction
- It is a **“wait to fail” model**; discrepancies typically emerge around 3rd to 4th grade when students have fallen far behind their peers
- **Depends on exclusionary factors**: it is difficult to determine whether problems are the result of LD or of environmental or cultural factors or economic disadvantage (especially since environment contributes to the development of LD!)



Why wait for a child to fail?

- **Early reading intervention** has been demonstrated to be effective in multiple studies.
- Other studies have shown that remediating reading problems in older students is **much more difficult.**
- **Even severe reading difficulties can be prevented** through early intervention, and for children with serious reading disabilities, **the impact can be greatly reduced.**



Early Intervention is Effective

Prevention studies commonly show that 75- 98% of at risk children (bottom 20%) in K- 2 can learn to read in average range





Identification of Learning Disabilities: IDEA 2004

- A local education agency (i.e., school district) “**may use a process that determines if the child responds to scientific, research-based intervention**” as a part of the required evaluation procedures to identify students with LD



“Response to Intervention is a **framework** that promotes a **well-integrated system** connecting general, compensatory, gifted, and special education in providing **high quality, standards-based instruction & intervention** that is **matched to students’ academic, social–emotional, and behavioral needs...** RtI provides a **seamless system of interventions and resources...**”

Colorado Department of Education (2008)



“It is critical that educators view RtI as a school-wide, multi-tiered prevention/intervention approach that is **aimed at meeting the learning needs of ALL students**, not just as part of the identification process for students with learning disabilities as referenced in IDEA 2004.”

Colorado Dpt. of Education Exceptional
Student Services Unit, 2006



Guidance from the Institute of Education Sciences, US Department of Education

“Screen all students for potential reading problems at the beginning of the year and again in the middle of the year. **Regularly monitor the progress of students who are at elevated risk** for developing reading disabilities.”

Gersten et al., 2009



Guidance from the Institute of Education Sciences, US Department of Education: Tier 1

- Quality classroom reading instruction
- “Provide **differentiated reading instruction** for all students **based on assessments** of students’ current reading levels.”

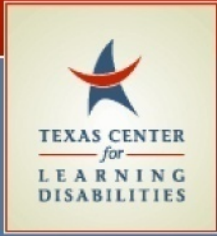
Gersten et al., 2009 (What Works Clearinghouse)



Guidance from the Institute of Education Sciences, US Department of Education: Tier 2

“Provide **intensive, systematic instruction** on up to three foundational reading skills **in small groups** to students who score below the benchmark score on universal screening. Typically, these groups meet **between three and five times a week for 20 to 40 minutes**” (usually in longer sessions for older students).

Gersten et al., 2009



What is the Purpose of Tier 2?

- Identification of LDs?
- Accelerating students' reading development?
- Closing the gap with average readers?



Guidance from the Institute of Education Sciences, US Department of Education: Progress Monitoring

“Monitor the progress of tier 2 students at least once a month. Use these data to determine whether students still require intervention. For those students still making insufficient progress, schoolwide teams should design a tier 3 intervention plan.”

Gersten et al., 2009

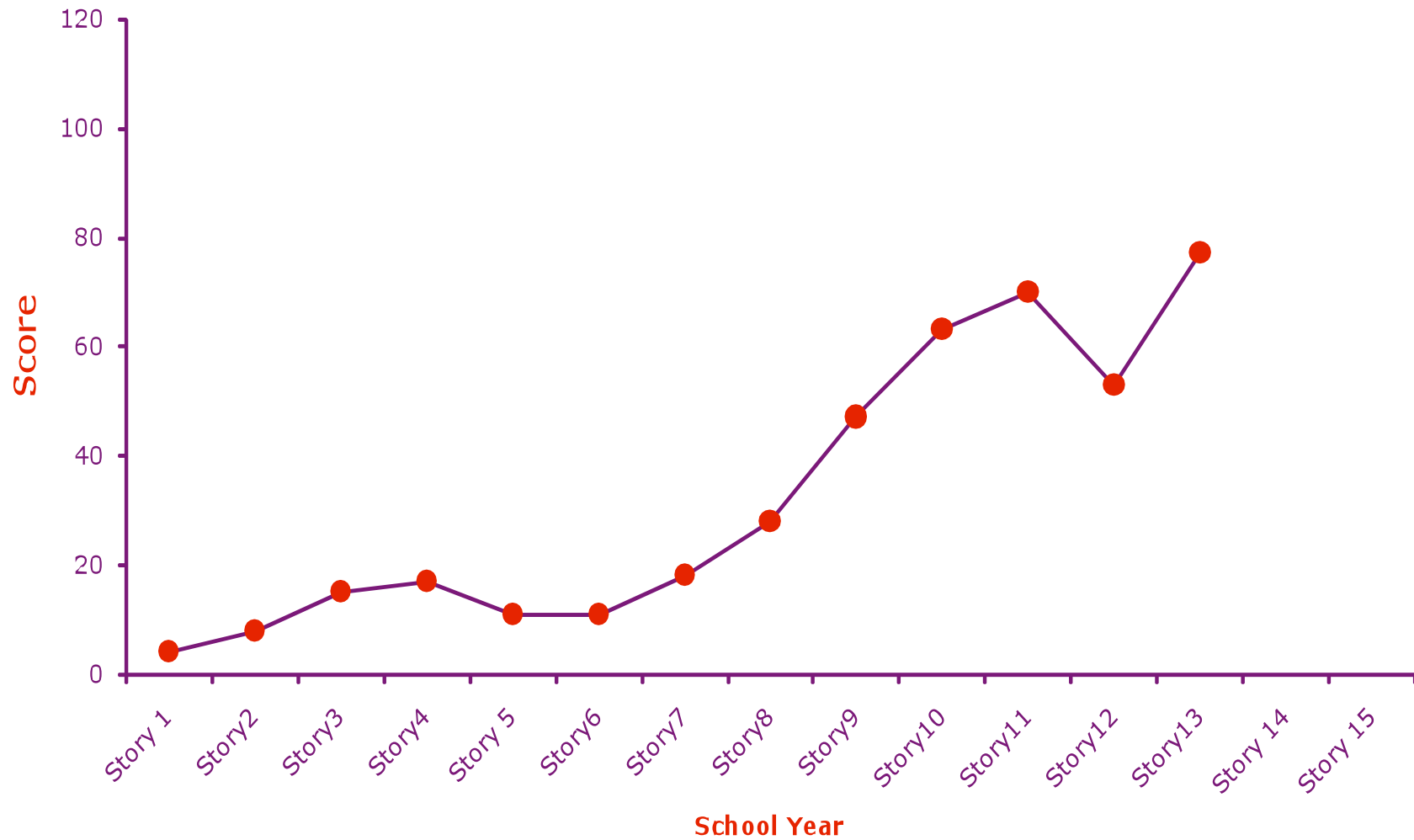


Response to Intervention (RTI)

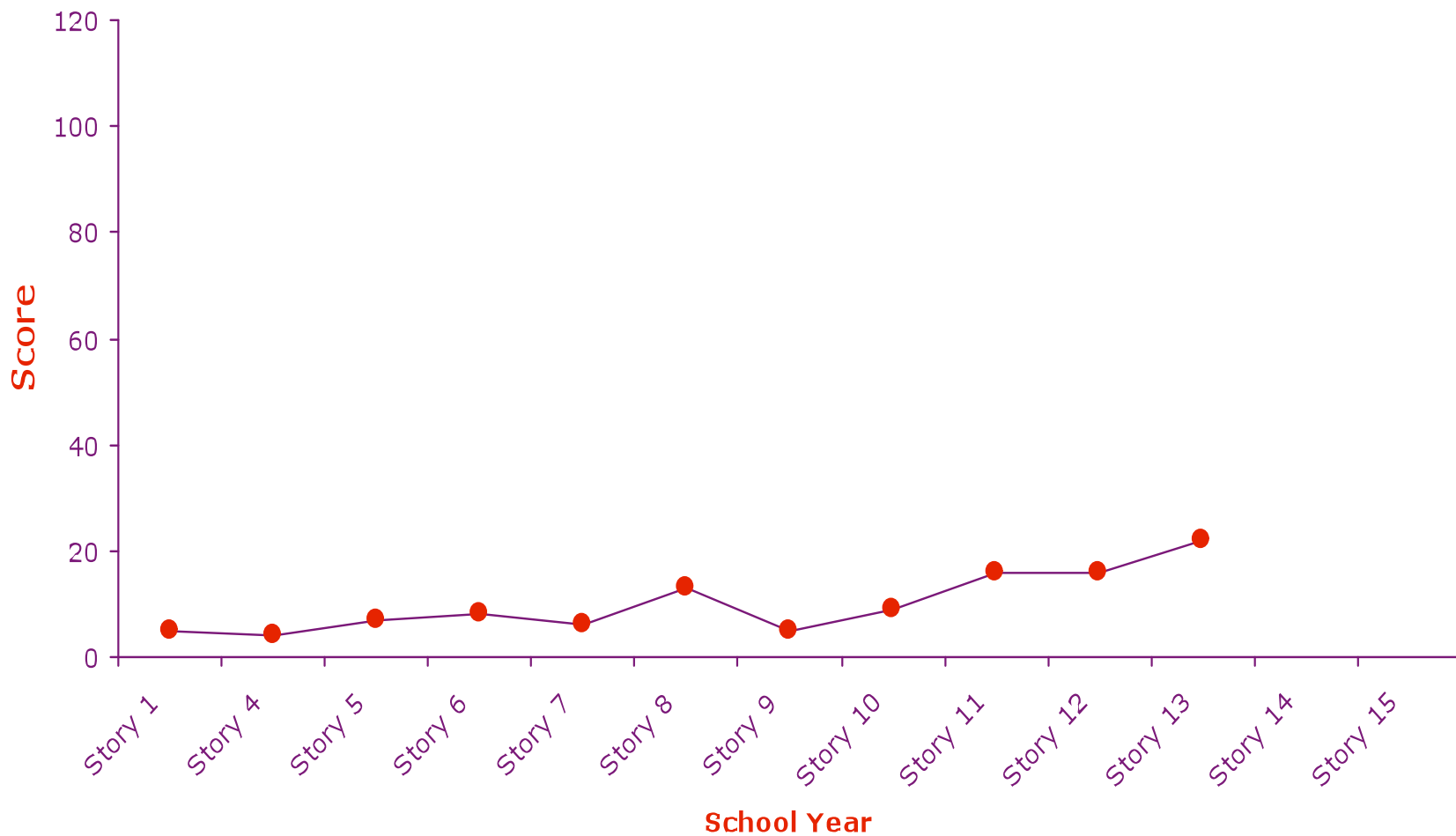
- Even when Tier 1 instruction and Tier 2 intervention are of high quality, some students do not have adequate response
- In research projects in grades K-1, between 1% and about 25% of Tier 2 students have inadequate response to Tier 2 intervention
- This depends on the quality of Tier 1 and the quality, intensity, and characteristics of Tier 2...and on the benchmark used to determine adequate response



Growth in Oral Reading Fluency for James



Growth in Oral Reading Fluency for Tamra





Tier 3

- **“Provide intensive instruction on a daily basis that promotes the development of the various components of reading proficiency to students who show minimal progress after reasonable time in tier 2 small group instruction.”**

Gersten et al., 2009



Response to Intervention

Students with **intractable reading difficulties** even when provided with effective and reasonably intensive intervention may have reading disabilities



Reading Disability

- By far the most common type of reading disability is **dyslexia** (disability in word reading)
- Less common: disabilities in **comprehension** and **speed of processing text** (fluency)



What is Dyslexia?

“Dyslexia is a **specific learning disability** that is **neurological in origin**. It is characterized by **difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities**. These 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.**”

International Dyslexia Association, 2002



Who has Dyslexia?

- About **6-17%** of the school-aged population
- **Primary characteristic:** Poor ability to read words, especially when presented in lists
- **Primary underlying cause:** Poor phonemic awareness (ability to hear and manipulate sounds in words), NOT “seeing backwards”
- Also commonly have slower processing speed (RAN) and impaired verbal working memory
- Students with dyslexia often also have ADHD, but they are 2 separate conditions.



Some Characteristics of Students with Dyslexia

- **Problems reading words accurately and fluently**
- **Poor phonemic awareness (segmenting and blending)**
- Delayed oral language development
- Serious difficulty with learning letter names and sounds
- Inability to read with appropriate fluency; halting reading with many pauses and hesitations
- Poor spelling and handwriting

(Shaywitz, 2003, pp. 122-127)



Learning Disabilities in Comprehension

- Students who have difficulty understanding and remembering what they read typically have problems comprehending spoken language as well.



Some Questions

- What response rates can we expect from effective Tier 1 intervention in Kindergarten?
- How long is a “reasonable time” in Tier 2 intervention?
- How does all this work above Grade 3?
- How should adequate intervention response be measured?
- How are reading disabilities identified in an RTI context?



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