

Creator Leonardo da Vinci (c. 1488). *Proportion Study*

Dyslexia, Literacy and the Role of the Medical Community

Margery Katz, MA, JD

Key topics

- Defining dyslexia, prevalence and signs
- When to refer for a neuropsychological exam and how dyslexia is diagnosed
- Evidence-based reading instruction
 - Multisensory Structured Language Programs
- Accommodations
- Lack of effective services in our schools
- Consequences of nonintervention
- Wish list

Definition of Dyslexia

- Dyslexia is a specific learning disability that is **neurobiological** in origin.
- It's characterized by **difficulties with accurate and/or word recognition** and by **poor spelling and decoding abilities**.
- These difficulties typically result from a **deficit in phonological component of language** that is **unexpected** in relation to other cognitive abilities and the provision of effective classroom instruction.

Definition continued

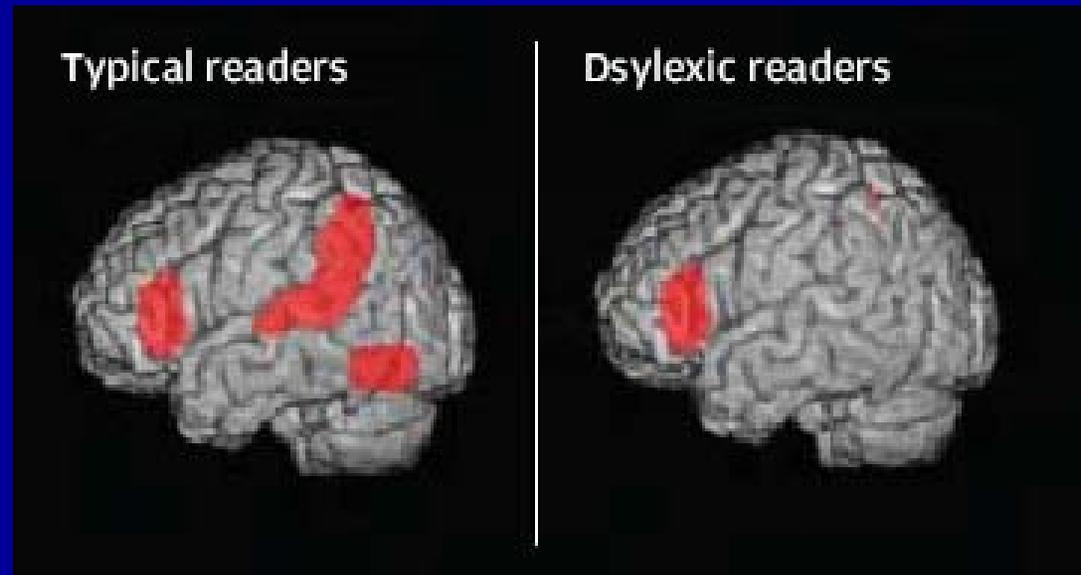
Secondary consequences may include problems of **reading comprehension** and **reduced reading experience** that can **impede growth of vocabulary** and **background knowledge**.

(Lyon & Shaywitz, 2003)

Prevalence of Dyslexia

- Estimated to range from **5 to 17 percent** of school aged children
- Dyslexia affects **80%** of all individuals identified as **learning disabled**

(Shaywitz, S & Shaywitz, B, 2001)



Brain images obtained while subjects are reading reveal different regions of activation (red) in people with and without dyslexia.

Image courtesy of Guinevere Eden, D.Phil.

(Adler, 2004)

Comments from a neuroscientist...

- The **brains** of people with dyslexia **are different**.
- We can **design educational environments** to prevent or diminish reading disabilities with dyslexia and to elicit their strengths.
- There may be a **connection** between **dyslexia** and certain **abilities**.

-- Gordon Sherman, Ph.D.
An Expert's Vision of Dyslexia

Identification & Intervention

“For many children the developmental consequences of RD [reading disability] can be attenuated with early identification and intervention. **The early and long-term relationship primary care physicians have with their patients place them in a unique position to facilitate the identification and treatment of this developmental disability.**”

-- Kenneth Grizzle, Ph.D.

Medical College of Wisconsin

Early Signs of Dyslexia

- A family history of reading problems
- Delayed speech
- Lack of appreciation and enjoyment of rhymes
- Not being able to recite rhymes by age 3
- Continuation of baby talk
- Trouble pronouncing words
- Trouble learning the alphabet: letter names & sound

(Shaywitz, 2005)

Measures for a core battery when assessing 4-5 year olds

- Letter recognition (including letter names and sounds)
- Receptive and expressive vocabulary
- Conventions of print
- Verbal comprehension (e.g. listening to and retelling a short story)
- Phonological processing

Measures for children beyond kindergarten

- Same as for 4-5 year olds, and
- Actual reading skills including: word reading, pseudoword reading, comprehension and fluency

(Shaywitz, 2004)

Sea of Strengths

Curiosity

A great imagination

The ability to figure things out

Eager embrace of new ideas

Getting the gist of things

A good understanding of new concepts

Surprising maturity

A large vocabulary for the age group

Enjoyment in solving puzzles

Talent at building models

Excellent comprehension of stories

read or told to him or her

-- Sally Shaywitz, MD

<http://www.readingrockets.org/articles/70>

What does dyslexia look like?



Dyslexia is lifelong.

“Reading problems are not outgrown, they are **persistent**....Without identification and proven interventions, virtually all children who have reading difficulties early on will struggle with reading when they are adults.”

-- Sally Shaywitz, MD

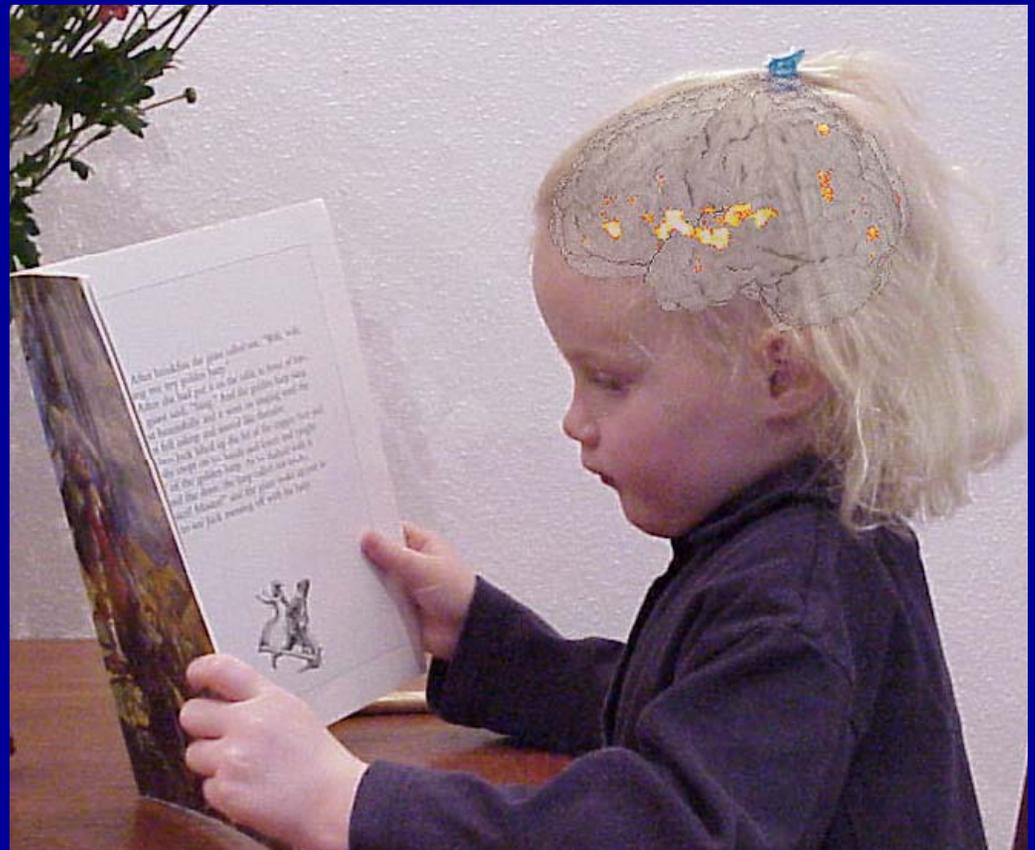
(Overcoming Dyslexia, 2003)

Evidence-based reading interventions can change brain organization.

“...these data demonstrate that an **intensive evidence-based** (phonologic) **reading intervention** brings about **significant and durable changes in brain organization**, so that **brain activation patterns resemble those of typical readers**, with the appearance of the left occipitotemporal area and improved reading fluency.”

(Shaywitz B & Shaywitz, S...et al. 2004)

From the Classroom to Research



From Research to the Classroom

Slide courtesy of Guinevere Eden, D.Phil.

Multisensory Structured Language (MSL) Programs

- The Miracle Worker
- Orton-Gillingham
 - Dr. Samuel Orton (1879-1948) Neuropsychiatrist
 - Anna Gillingham (1878-1964) Educator
- Other programs based on O-G methods

MSL Programs

- Multisensory
 - Visual, Auditory, Kinesthetic, Tactile
- Sequential
- Explicit
- Cumulative
- Learn to mastery

“Teaching reading *is* rocket science.”



-- Louisa Moats, Ed.D.

<http://www.thereadingprogram.com/newsweek.htm>.

...and so is teaching spelling.

- phyber optics
- fiber optix
- Quickly, **5 ways** to spell the sound /sh/....

5 ways to spell /sh/

- sh, ch, sch, ci, ti
- Physi**ci**an
- Pati**ti**ent

Accommodations

“Accommodations are essential for a dyslexic reader. Brain imaging studies demonstrate that the fast pathways for fluent reading do not develop in dyslexic readers. As a result, such a reader must rely on slower pathways that allow him or her to read accurately, but not rapidly.”

-- Sally Shaywitz, MD



Overcame dyslexia.

HARD WORK

Pass It On.

THE FOUNDATION FOR A BETTER LIFE
www.facteff.org

Lack of effective services in the MMSD: a personal view

- No routine screenings for dyslexia
- Teachers lack evidence-based training
- Some dyslexic kids get isolated in Special Ed. and separated from other kids with whom they might normally socialize
- Talents of dyslexic kids are neglected
- Ineffective instruction, fostered dependency and lowered expectations set kids up to fail

What worked

- Evidence-based, multisensory reading instruction by trained tutors
- Accommodations
- Reading with my son
- My son's hard work

Talking with Kids

- Why am I different?
- What is dyslexia?
- Was Einstein dyslexic?
- Was Einstein happy? Dyslexia does not make me happy.
- What does it mean to have an IQ of 76?

Left untreated, dyslexia may lead to:

- Lack of self-esteem
- Behavioral problems
- Delinquency
- Aggression
- Withdrawal or alienation from friends, parents and teachers

Lost potential

“There is a **27% drop out rate** of students with **learning disabilities**; that is more than twice the rate of the general population... **lost potential**. There are problems with **substance abuse** and **juvenile justice problems**. And certainly looking at the general population to students that drop out, one can go to **prisons** and see that is very apparent the majority of inmates lack reading skill.”

-- James Wendorf, Exec. Director
National Center for Learning Disabilities

Suicidal behavior

“In our study, **poor readers were three times more likely than typical readers to consider or attempt suicide** and six times more likely to drop out of school. ...Educators and parents **should be aware** of the risk of suicidal thoughts and behavior among adolescents with reading problems.”

-- Stephanie Sergent Daniel, Ph.D.

Dyslexia and Health Literacy

- Most individuals with limited general literacy also have limited health literacy
- “...literacy skills are a stronger predictor of an individual’s health status than age, income, employment status, education level, and racial and ethnic group.”

-- Barry Weiss, MD

The text below shows how a person with low literacy skills might read a handout on colonoscopy.

Your naicisyhp has dednemmoer that you have a ypocsonoloc. Ypocsonoloc is a test for noloc reclinac. It sevlovni gnitresni a elbixelf gniweiv epocs into your mutcer. You must drink laiceps diuqil the thgin erofeb the noitanimaxe to naelc out your noloc.

(Weiss, 2003)

Wish List for the UW Medical Community

- Include dyslexia in the curriculum
- Develop routine screenings
- Consider prescribing evidence-based, multisensory reading programs and accommodations
- Disseminate information to patients, parents and educators—including information on at-risk behavior of juveniles with dyslexia
- Consider dyslexia as a barrier to health literacy and, therefore, diminished health outcomes
- Continue research

Mississippi Initiative

- Governor of Mississippi includes \$3 million in his budget bill to expand efforts to identify and educate children with dyslexia; initiatives include:
 - Screening in K-3 grades
 - Professional development for teachers
 - New methods for teaching reading

<http://www.governorbarbour.com/news/2006/nov/BudgetFY08summary.htm>

Bibliography

Adler, T. Brain Scans Shed Light on Adult Dyslexia. National Institute of Health Web site. Available at: <http://www.ncrr.nih.gov/newspub/Fall04rpt/stories2.asp>. Accessed February 27, 2007.

Barbour, H. Haley Barbour Mississippi's Governor Web site. 2006. Available at: <http://www.governorbarbour.com/news/2006/nov/BudgetFY08summary.htm>. Accessed February 27, 2007.

Craggs J, Sanchez J, Kibby M, Gilger J, Hynd G. Brain morphology and neuropsychological profiles in a family displaying dyslexia and superior nonverbal intelligence. *Cortex; A Journal Devoted To The Study Of The Nervous System And Behavior* [serial online]. 2006;42(8):1107-1118. Accessed February 20, 2007.

da Vinci, L. (c. 1488). *Proportion Study*. In Repository Windsor Castle. Photographic reproduction available at: http://en.wikipedia.org/wiki/Image:Proportions_of_the_Head.jpg. Accessed May 30, 2007.

Daniel S, Walsh A, Goldston D, Arnold E, Reboussin B, Wood F. Suicidality, school dropout, and reading problems among adolescents. *Journal of Learning Disabilities* [serial online]. 2006;39(6):507-514. Accessed February 27, 2007.

The Foundation for a Better Life website. Available at:
http://www.forbetterlife.org/be_inspired/billboards.asp?id=14. Accessed February 27, 2007.

Grizzle, K. Early Language Development and Language Learning Disabilities: A Review for Primary Pediatric Care Providers. Medical College of Wisconsin Web site. 2005. Available at:
<http://www.mcw.edu/display/router.asp?docid=10896>. Accessed February 27, 2007.

Howard, J, Howard D, Japikse K, Eden G. Dyslexics are impaired on implicit higher-order sequence learning, but not on implicit spatial context learning. *Neuropsychologia* [serial online]. 2006;44(7):1131-1144. Accessed February 20, 2007.

Kantrowitz, B, Underwood, A. Newsweek Cover Story: Dyslexia and the New Science of Reading. The Reading Program Web site.1999. Available at:
<http://www.thereadingprogram.com/newsweek.htm>. Accessed February 27, 2007.

Lyon, G & Shaywitz, S. Part 1 Defining Dyslexia, Comorbidity, Teacher's Knowledge of Language and Reading: A Definition of Dyslexia. *Annals of Dyslexia*. 2003;53, 1-14.

Mayo Clinic Staff. Dyslexia. Mayo Clinic Web site. 2005. Available at:
<http://www.mayoclinic.com/health/dyslexia/DS00224/DSECTION=6>. Accessed February 27, 2007.

Perspectives, Fall 2006, International Dyslexia Association

Reading Disabilities Put Students At Risk For Suicidal Thoughts And Behavior And Dropping Out Of School. Science Daily Web site. 2006. Available at: <http://www.sciencedaily.com/releases/2006/11/061101151341.htm>. Accessed February 27, 2007.

Reading Rockets. Online Chat with Dr. Sally Shaywitz. Reading Rockets Website. 2005. Available at: <http://www.readingrockets.org/article/4670>. Accessed February 27, 2007.

Shaywitz, B, Shaywitz, S, Blachman, B, et al. Development of left occipitotemporal systems for skilled reading in children after a phonologically-based intervention. *Biological Psychiatry*. 2004;55:926-933.

Shaywitz, S. Clues to Dyslexia is Early Childhood. Reading Rockets Web site. 2004. Available at: <http://www.readingrockets.org/article/70>. Accessed February 27, 2007.

Shaywitz, S and Shaywitz B. The Neurobiology of Reading and Dyslexia. 2001. National Center for the Study of Adult Learning and Literacy (NCSALL) Web site. Available at: <http://www.ncsall.net/?id=278>. Accessed February 27, 2007.

Shaywitz, S. *Overcoming Dyslexia: A New and Complete Science-Based Program for Reading Problems at Any Level*. New York: Alfred A. Knopf; 2003.

Sherman, G. An Expert's Vision of Dyslexia. Schwab Learning Web site. 2002. Available at: <http://www.schwablearning.org/articles.aspx?r-457>. Accessed February 27, 2007.

von Károlyi, C, Winner, E, Gray, W, Sherman, G. Dyslexia linked to talent: global visual-spatial ability. *Brain And Language* [serial online]. 2003;85(3):427-431. Accessed February 20, 2007.

Wendorf, J. Learning Disabilities, Dyslexia and Difficulties Learning to Read. Children of the Code Web site. 2003. Available at: <http://www.childrenofthecode.org/interviews/wendorf.htm>. Accessed February 27, 2007.

Weiss, B. Health Literacy: A Manual for Clinicians. American Medical Association Foundation and the American Medical Association Web site. 2003. Available at: <http://www.ama-assn.org/ama1/pub/upload/mm/367/healthlitclinicians.pdf>. Accessed February 27, 2007.

West, T. *In the Mind's Eye: Visual Thinkers, Gifted People with Dyslexia and Other Learning Difficulties, Computer Images and the Ironies of Creativity*. Amherst: Prometheus Books; 1997.

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June 21, 2007