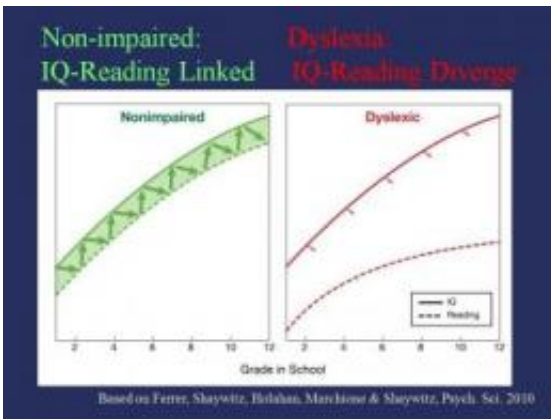


Dyslexia defined: New study 'uncouples' reading and IQ over time

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This graph shows the divergence between IQ and Reading ability in dyslexics. It also shows that IQ and reading ability track together in typical readers. Credit: Sally and Bennett Shaywitz, Yale University, Psychological Science

Contrary to popular belief, some very smart, accomplished people cannot read well. This unexpected difficulty in reading in relation to intelligence, education and professional status is called dyslexia, and researchers at Yale School of Medicine and University of California Davis, have presented new data that explain how otherwise bright and intelligent people struggle to read.

The study, which will be published in the January 1, 2010 issue of the journal [Psychological Science](#), provides a validated definition of dyslexia. "For the first time, we've found empirical evidence that shows

the relationship between IQ and reading over time differs for typical compared to dyslexic readers," said Sally E. Shaywitz, M.D., the Audrey G. Ratner Professor in Learning Development at Yale School of Medicine's Department of Pediatrics, and co-director of the newly formed Yale Center for Dyslexia and Creativity.

Using data from the Connecticut [Longitudinal Study](#), an ongoing 12-year study of cognitive and behavioral development in a representative sample of 445 Connecticut schoolchildren, Shaywitz and her team tested each child in reading every year and tested for IQ every other year. They were looking for evidence to show how the dissociation between cognitive ability and reading ability might develop in children.

The researchers found that in typical readers, IQ and reading not only track together, but also influence each other over time. But in children with dyslexia, IQ and reading are not linked over time and do not influence one another. This explains why a dyslexic can be both bright and not read well.

"I've seen so many children who are struggling to read but have a high IQ," said Shaywitz. "Our findings of an uncoupling between IQ and reading, and the influence of this uncoupling on the developmental trajectory of reading, provide evidence to support the concept that dyslexia is an unexpected difficulty with reading in children who otherwise have the intelligence to learn to read."

Typical readers learn how to associate letters with a specific sound. "All they have to do is look at the letters and it's automatic," Shaywitz explained. "It's like breathing; you don't have to tell your lungs to take in air. In dyslexia, this process remains manual." Each time a dyslexic sees a word, it's as if they've never seen it before. People with dyslexia have to read slowly, re-read, and sometimes use a marker so they don't lose their place.

"A key characteristic of dyslexia is that the unexpected difficulty refers to a disparity within the person rather than, for example, a relative weakness compared to the general population," said co-author Bennett A. Shaywitz, M.D., the Charles and Helen Schwab Professor in Dyslexia and Learning Development and co-director of the Yale Center for Dyslexia and Creativity.

Sally Shaywitz estimates that one in five people are dyslexic and points to many accomplished writers, physicians and attorneys with dyslexia who struggle with the condition in their daily lives, including Carol Greider, the 2009 Nobel laureate in medicine. She hopes to dispel many of the myths surrounding the condition.

"High-performing dyslexics are very intelligent, often out-of-the box thinkers and problem-solvers," she said. "The neural signature for dyslexia is seen in children and adults. You don't outgrow dyslexia. Once you're diagnosed, it is with you for life."

Shaywitz also stresses that the problem is with both basic spoken and written language. People with dyslexia take a long time to retrieve words, so they might not speak or read as fluidly as others. In students, the time pressure around standardized tests like the SATs and entrance exams for professional schools increases anxiety and can make [dyslexia](#) worse, so the need for accommodations is key in helping those with the disorder realize their potential, she says.

More information: *Psychological Science* (January 1, 2010)

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