Yale University

Yale Center for Dyslexia & Creativity
Department of Pediatrics
LMP 3089
School of Medicine
PO Box 208064
New Haven CT 06520-8064

Campus address:
3089 Laboratory of Medicine
and Pediatrics
333 Cedar Street
Telephone: 203 785-4641
www.dyslexia.yale.edu

Sally E. Shaywitz, MD
Co-Director
Audrey G. Ratner Professor
in Learning Development

Bennett A. Shaywitz, MD
Co-Director
Charles and Helen Schwab Professor
in Dyslexia and Learning Development

Testimony of Professor Sally Shaywitz and Professor Bennett Shaywitz before the Committee on Education

In Support of Raised Bill No. 5562: An Act Concerning Special Education
March 14, 2014

Senator Stillman, Representative Fleischmann, and members of the committee, thank you for this opportunity to testify in support of Raised Bill No. 5562: AN ACT CONCERNING SPECIAL EDUCATION.

We strongly support this Bill which requires the Department of Education to include dyslexia on the individualized education program form used by planning and placement teams for the provision of special education and related services to children requiring special education and related services.

This Bill, for the first time, provides a mechanism for public schools to recognize children with dyslexia. Once identified, children then can be provided with evidence based interventions and appropriate accommodations. Furthermore, the Bill will make teachers aware of dyslexia, encourage to teachers to identify their dyslexic students and over time learn more and more about dyslexia.

This is the ideal time for Connecticut schools to recognize dyslexia, now known to be the most common learning disability, affecting 80-90% of all children diagnosed as SLD. Defined is an unexpected difficulty in reading in an individual who has the intelligence to be a much better reader, dyslexia reflects a difficulty in getting to the individual sounds of spoken language which typically impacts speaking (word retrieval), reading (accuracy and fluency), spelling, and often, learning a second language. Dyslexia is highly prevalent, affecting one out of five, and is persistent. Great progress has been made in understanding dyslexia at a scientific level, including its epidemiology, cognitive and neurobiological bases. Though neurobiologically-based, dyslexia has a major educational impact. Dyslexia is a paradox, so that often the same individual who has a weakness in decoding or reading fluency also has strengths in higher level cognitive functions such as reasoning, critical thinking, concept formation and problem solving. Diagnosis of dyslexia is critical, leading to focused, evidence-based interventions, necessary accommodations, self-awareness, self-empowerment, and school and life success. As a result, it is possible for the strengths rather than the weakness to predominate and represent that individual's life.

Much of the current knowledge about dyslexia has been the result of studies done here in Connecticut and initially funded by the Connecticut Department of Education. We will detail these below, but first we briefly introduce ourselves to the committee. Sally E. Shaywitz, M.D. is the Audrey G. Ratner Professor in Learning Development at the Yale University School of Medicine and Co-Director of the Yale Center for Dyslexia & Creativity. Dr. Shaywitz' studies provide the basic framework and details for the 21st century scientific understanding of dyslexia. The author of over 250 scientific articles and chapters, her epidemiological studies provide current knowledge of the prevalence, gender composition, universality and persistence of dyslexia. Her book, the award-winning, "Overcoming Dyslexia" (Alfred Knopf, 2003) details fundamental scientific findings on dyslexia and how to translate this scientific knowledge into clinical practice. Overcoming Dyslexia has received critical acclaim and has been the top selling book on dyslexia since its publication. An elected member of the National Academy of Medicine of the National Academy of Sciences, Dr. Shaywitz is annually selected as one of the *Best Doctors in America* and *America's Top Doctors*. Her awards include an honorary Doctor of Science degree from Williams College; the Townsend Harris Medal of the City College of New York; the Annie Glenn Award for Leadership from the Ohio State University; and the Distinguished Alumnus Award of the Albert Einstein College of Medicine. Dr. Shaywitz has served on the Congressionally-mandated National Reading Panel and the Committee to Prevent Reading Difficulties in Young Children of the National Research Council and, by Presidential appointment (President Bush, President Obama) on the National Board of the Institute for Education Sciences of the US Department of Education. She also co-chaired the National Research Council Committee on Gender Differences in the Careers of Science, Engineering and Mathematics Faculty. Dr. Shaywitz currently serves on the WISC V advisory panel, as a Trustee of the Park Century School and the Board of the Westmark School and the Laurel School for Girls. She has also served on the Advisory Council of the National Institute of Neurological Diseases and Stroke (NINDS), the National Research Council Committee on Women in Science and Engineering and the Scientific Advisory Board of the March of Dimes.

Bennett A. Shaywitz, M.D. is the Charles and Helen Schwab Professor in Dyslexia and Learning Development, Chief of Pediatric Neurology and Co-Director of the Yale Center for Dyslexia & Creativity at the Yale University School of Medicine. Both a child neurologist and neuroscientist, Dr. Shaywitz is a leader in applying functional magnetic resonance imaging (fMRI) to understand the neurobiology of reading and dyslexia in children and adults. These studies identify a neural signature for dyslexia, making a previously hidden learning disability visible, and for the first time demonstrate the brain basis for the lack of fluency in dyslexia. The author of over 300 scientific papers, Dr. Shaywitz' honors include election to membership in the National Academy of Medicine of the National Academy of Sciences and recipient of the Distinguished Alumnus Award from Washington University. Dr. Shaywitz currently serves on the Boards of the Park Century School and the Westmark School. He previously served on the Institute of Medicine Immunization Safety Review Committee, on the National Vaccine Program Safety Subcommittee and on the Scientific Advisory Board of the March of Dimes. Dr.

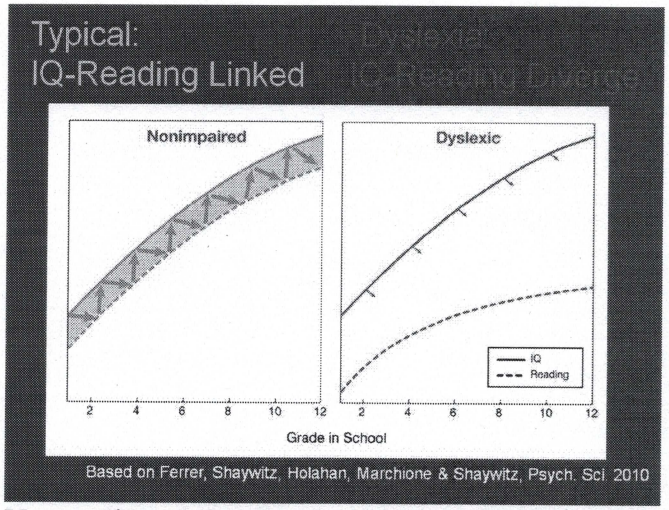
Shaywitz has been selected annually for *Best Doctors in America* and *America's Top Doctors*.

The study that has provided so much of the state-of-the-art knowledge of dyslexia is the Connecticut Longitudinal Study (CLS), initially funded by the Connecticut State Department of Education, and funded subsequently by U.S. Department of Education, National Institutes of Health and private foundations. The CLS incorporates both an epidemiological sample survey and a longitudinal design, and has prospectively and continuously monitored a probabilistic sample of 445 Connecticut public school children from the time of school entry at kindergarten to the present, when the CLS sample is into their mid 30's. All children, and now all adults, are followed including those who dropped out of school or move out of state; attrition has been remarkably minimal; approximately 75% of the original sample has been maintained over the 31 year period. The availability of a virtually intact epidemiologic sample, one whose cognitive, academic, and behavioral development has been continually and carefully monitored from school entry now provides an important new dimension -- long-term outcome from kindergarten through the fourth decade -- previously not available to modern era studies of dyslexia.

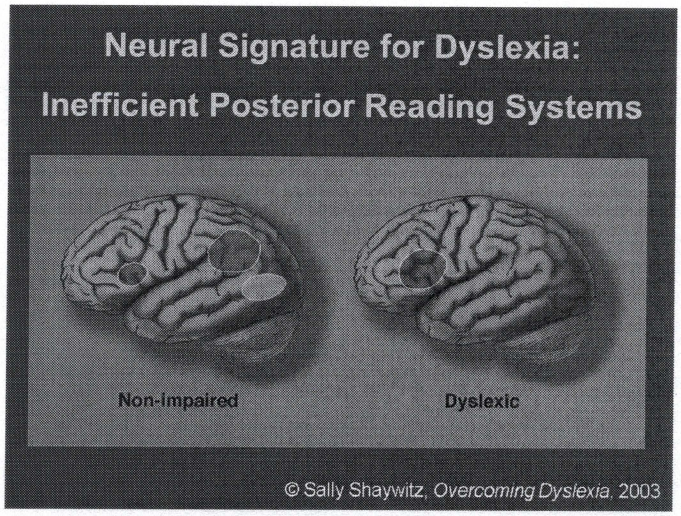
This series of reports based on data from the CLS have helped to clarify some of the most pressing issues in dyslexia including: definition/classification, epidemiology and developmental course. For example, using data derived from the CLS, we found that dyslexia, like hypertension, occurs along a continuum of severity. Another important finding from this Connecticut population is that dyslexia represents an enduring deficit, it does not disappear over time and is not a developmental lag. Furthermore, we found that the primary problem in dyslexia, problems getting to the individual sounds of spoken language, continue into adolescence and even adult life. And we found that dyslexia is quite common, affecting about 20% of the school-age population. These results have been used by schools and policy makers throughout the nation, and even worldwide. Most recently, data from the CLS has, for the first time, demonstrated the unexpected nature of dyslexia. On the next page is a figure from a recent paper demonstrating the unexpected nature of dyslexia.

Brain imaging studies by us, now replicated by scientists worldwide, provide evidence of a neural signature for dyslexia and for the first time made a previously hidden disability visible. Studies currently underway by ourselves and other scientists are showing disruptions in the connections in the brain in dyslexic compared to typical readers. On the next page is a figure showing the neural signature of dyslexia.

In summary, we strongly support Raised Bill No. 5562: AN ACT CONCERNING SPECIAL EDUCATION. As noted above, there is strong scientific evidence – much of it based on studies of students here in Connecticut - supporting the validity of dyslexia as an important factor impacting childrens' reading and, indeed, success in school and in future life. This Bill represents an important step forward, reflecting the latest scientific knowledge, aligning education with science.



Uncoupling of Reading and IQ Over Time: Empirical Evidence for a Definition of Dyslexia. Left panel shows that in typical readers, reading and IQ development are dynamically linked over time. In contrast, right panel, dyslexic readers, shows that reading and IQ development are dissociated and one does not influence the other. (Data adapted from Ferrer E et al. Uncoupling of reading and IQ over time: empirical evidence for a definition of dyslexia. Psychological Science, 21(1) 93–101, 2010.



Sincerely,

Sally E. Shaywitz, M.D.
Audrey G. Ratner Professor
in Learning Development
Development

Bennett A. Shaywitz, M.D.
Charles and Helen Schwab Professor
in Dyslexia and Learning

Co-Directors, Yale Center for Dyslexia & Creativity