



COMPREHENSIVE DIAGNOSIS  
AND EVALUATION  
OF CHILD & ADULT ATTENTION,  
LEARNING, AND MEMORY DISORDERS  
(ON-SITE EVALUATIONS AVAILABLE)

Fall/Winter  
2006-2007

Generating dialogue and  
educating professionals who  
work with LD/ADHD  
students is an  
ongoing process.



35 Bedford Street, Suite 7  
Lexington, MA 02420  
781-860-7733

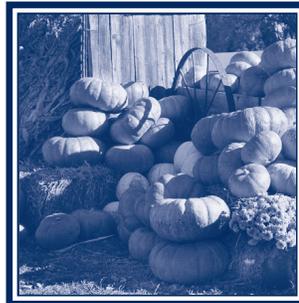
118 Maplewood Avenue  
Portsmouth, NH 03801  
603-433-8954

19 Johnson Street  
Newburyport, MA 01950  
978-465-2999

www.HowardLAS.com  
Neuropsycheval@aol.com

# Learning Disability & ADHD Update

## Neurobiology and Genetics of ADHD:



Despite continued controversy, powerful new evidence regarding the biological underpinnings of ADHD have recently emerged. Repeated studies have shown the fact that controlling for confounding variables, the coefficient of heritability for ADHD is .8,

or higher than that for Schizophrenia (.7), Intelligence (.5), or Breast Cancer (.3). This information is very compelling evidence for a biological explanation of ADHD, as it basically states that the chance of an identical twin having ADHD, if the other twin meets the diagnostic criteria, is 8 out of 10 times. These studies have been done in Australia, the United Kingdom and Sweden, as well as in various sites throughout the United States.

*(NEUROBIOLOGY AND... cont'd. on pg. 2)*

## Assisted Technologies for Phonological Dyslexia:

The development of computer related technologies to assist readers who have fluency or decoding problems is certainly a recent development. However, in the last several years, the technology and sophistication of some of the software programs designed to assist individuals with reading difficulties has been truly revolutionary.

The Kurzweil 3000 read-

ing program (Kurzweil-[ledu.com](http://ledu.com)) is a software package that enables readers to scan in text from any book they are reading, and then reads the text aloud in a modulated voice. In addition, the text is highlighted, and definitions and synonyms of any word in the text is offered. In addition, the program has functions that include syllabification, spelling

*(ASSISTED TECHNOLOGIES..... cont'd. on pg. 2)*

Dr. Scott Howard is pleased to announce that he has been reappointed as a Lecturer in the graduate Counseling and Psychology program at Lesley University in Cambridge, MA. for the fall of 2006 and spring of 2007. Dr. Howard has also been appointed as a neuropsychological consultant at the Lighthouse School in N. Chelmsford, MA. Dr. Howard continues to be available to provide supervision, in-service presentations, and consultation to schools, healthcare facilities and clinics in both Massachusetts and New Hampshire. He appreciates the opportunity to perform neuropsychological evaluations for the educational and medical community in the Greater Boston Area.



*(NEUROBIOLOGY AND... cont'd from 1)*



Dr. Joseph Biederman, one of the leading researchers in the world on ADHD

indicates in a recent paper (Attention-deficit hyperactivity disorder, *Lancet* 2005; 366: 237-248) that candidate genes for ADHD have also been located. Continued research supports the likelihood that ADHD is a genetic disorder with a combination of different genes being responsible for the expression of ADHD. This includes evidence of dysfunction with respect to the cortical networks involving dopamine D4 and D5 receptors, which have been proven to be instrumental in the pathogenesis of ADHD.

Structural abnormalities and imaging studies have also consistently supported the fact that frontal-striatal regions of the brain are very much central to the dysfunction associated with ADHD. This evidence includes neuropsychological deficits involving problems with set shifting, inhibition, working memory, planning, and sustained attention. Imaging studies have showed a volume reduction in many different areas of the brain, but particularly in the frontal and cingulate regions of the cerebrum, which are central to many of the functions and skills associated with attention and executive abilities.

In addition, the specificity and functional effects of the dopaminergic and noradrenergic agents used to treat

ADHD are well documented and robust. Recent developments have included longer acting versions of both stimulant and non-stimulant medications, and research is very clear that the therapeutic effects of these medications are strong and unequivocal.

It should be mentioned that Dr. Biederman, in the same article mentioned previously, reports that objections are often raised as to the abuse potential of various stimulant medications. However, research has shown that medicating with stimulants has a protective or prophylactic effect on the development of substance abuse. This is contrary to anecdotal evidence that focuses exclusively on the few individuals who may abuse these substances, rather than scientifically analyzing the relevant data.

*(ASSISTED TECHNOLOGIES... cont'd from 1)*



of various words, as well as reading text at different rates of speed. Study skills include virtual sticky

notes, different colored markers that allow students to highlight salient information, and the ability to extract this data in a separate document. The Kurzweil program also has some powerful writing enhancement strategies including a word predictor function and editing tools that sharpen and develop writing skills. Lastly, the Kurzweil program allows for the downloading of thousands of audio books and the aural reading of text contained in many websites.

The Lexia Reading Program is another software package that is specialized to work in a compatible manner with many phonologically based tutoring programs designed to assist readers increase the accuracy of their decoding, and the fluency of their reading skills. Lexia is a graduated program that works with readers to increase phonemic awareness through syllabification, tasks utilizing elision, reading of non-sense words or phonologs, as well as rhyming and other pronunciation tasks.

Recording for the Blind and Dyslexic, which is a website where recorded books on CD can be borrowed, is a very valuable resource as well, as it provides a large lending library for

those students who might benefit from listening to books. This resource should never replace the development of reading skills, but can be an invaluable tool in increasing reading comprehension and improving academic performance. More information on this website can be obtained at [rfgd.org](http://rfgd.org).

Dr. Howard is also available to assess other neuropsychological disorders, such as Alzheimer's disease, Head Trauma, and Stroke. He also does testing to evaluate emotional and behavioral disorders.