

This article originally appeared in the May/June 2000 issue of Attention!® magazine, copyright CHADD (Children and Adults with Attention-Deficit/Hyperactivity Disorder). For information, please visit www.chadd.org.

Two Common Reading Problems Experienced By Many AD/HD Adults, 2013 Edition

Kevin T. Blake, Ph.D. P.L.C.

Only in the past few decades has adult AD/HD been recognized. The same is true of adult learning disorders. The most common of the learning disorders, Reading Disorder, has been researched in children for over 100 years (Shaywitz 1994, 2003), but only relatively recently in adults. Even more recently still, scientists have begun to study individuals who have both AD/HD and Reading Disorder. The following will discuss the diagnosis and treatments of two types of Reading Disorders that can afflict adults with AD/HD.

Reading Disorder-Dyslexia

The first of these is Reading Disorder-Dyslexia (RDD). Since the 1960s, the National Institute of Child Health and Development (NICHD) has been conducting the Research Program in Reading Development, Reading Disorders and Reading Instruction. This research has included tens of thousands of adults and children with RDD, and has been conducted at 42 sites in the United States and Europe. Similar research projects have been conducted in Russia, China, England, Sweden and Turkey (Lyon, 1999). For a good synopsis of this research check Fletcher, Lyon, Fucks and Barnes (2007).

Although the percentages fluctuate from study to study, about 25 to 30 percent of AD/HD adults have RDD. The NICHD research, as well as other studies, has demonstrated AD/HD and RDD are separate and distinct disorders. However, when they both exist at the same time, these disorders can have a negative effect on each other. Additionally, many adults with RDD and/or AD/HD have a history of language disorders in childhood.

The NICHD found RDD to be an inherited disorder that causes significant anatomical differences in the brain resulting in reading difficulties (Sherman, 1999). Additionally, it was discovered RDD is a lifelong disability that afflicts one in five Americans (Lyon, 1999). Equal numbers of men and women have RDD and it is not connected to intelligence (Young, 1999). In other words, you can have low or high I.Q., be male or female and still have RDD.

Perhaps the most important discoveries the NICHD has made about RDD is what Nancy Mather (Mather, 2000) calls the “triple deficit hypothesis.” This includes weaknesses in phonological awareness, rapid automatized naming and orthographic processing. Of these three deficits, the research indicates phonological awareness is the

Kevin T. Blake, Ph.D., P.L.C.

2013

All Rights Reserved

www.drkevintblake.com

key. Phonological awareness allows a person to manipulate or study the individual sounds in words. People with RDD have great difficulty connecting sounds to symbols in words and pronouncing words phonetically. The second deficit, weak rapid automatized naming, means those with RDD are impaired in their ability to rapidly name objects they see. This “dysnomia” appears to be connected to slowness in overall sensory processing speed that makes reading even slower for those with RDD and makes remembering names of objects and people difficult. Reading is not an “automatic” process for those with RDD; it tends to be quite labored. The third deficit, weak orthographic processing, is remembering how words look when correctly spelled and how the letters relate to the phonics of the word. Thus, the adult with RDD will have difficulty spelling due to his/her poor ability to connect sounds to letters (phonological awareness) and poor memory of how the word looks when spelled correctly. For a good summary of the genetics and neurology of the above see Nicolson and Fawcett (2008).

The NICHD and International Dyslexia Association in light of the above defines RDD as:

“Dyslexia is a specific learning disability that is neurological in origin. It is characterized by difficulties with accurate and/or fluent word recognition as well as 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 lack of provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge” (International Dyslexia Association, April 20, 2005, p. 1 of 2).

The most common manifestation of RDD in adults is slow and labored reading and very poor spelling. RDD adults can also have disorders of depression and anxiety, as well as suffer from low self-esteem.

How is RDD diagnosed? The Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision provided a “bare bones” diagnostic criteria. Essentially, administering a standardized I.Q. test and test of reading achievement to determine if the person’s I.Q. is substantially higher than their reading achievement is adequate to “diagnose” RDD. However, the NICHD research indicates such a technique does not differentiate those with RDD from those with a poor educational background, low intellect or other reasons for reading difficulties. A standardized I.Q. test and test of reading achievement can be helpful to determine if an adult suspected of RDD has sufficient intellect for particular work or educational settings, and may point out academic skill weaknesses. However, the NICHD research indicates tests of phonological awareness (i.e., phonemically regular nonsense word reading – “noil”, etc.), rapid automatized naming (i.e., Boston Naming Test, etc.), and orthographic processing (i.e., a standardized spelling test) are necessary to diagnose RDD. Such an evaluation should include an in-depth historical interview to determine if other disorders accompany RDD,

Kevin T. Blake, Ph.D., P.L.C.

2013

All Rights Reserved

www.drkevintblake.com

like AD/HD and emotional disorders, are present. As a result of the NICHD research and other similar research the new Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (2013) has dropped the requirement of administering an I.Q. test as part of the diagnostic process for RDD. The Individuals with Disabilities Education Act of 2004 (IDEA) (US Department of Education, 2004) also dropped the requirement nationally for public schools across the country. Psychologists, in conjunction with educational therapist/clinical learning specialists, can conduct such evaluations. An excellent guide for such diagnostic evaluations was written by Mapou (2009).

Treatment Options and Accommodations

How is RDD treated in an AD/HD adult? First it is recommended the adult make sure their AD/HD is properly treated. This includes management of their AD/HD with medication and learning how to compensate for their AD/HD by working with an AD/HD coach. If needed, a mental health professional can address emotional concerns such as depression, anxiety or family problems. Will this cure their RDD? No, but chances are they will be better able to respond to the following training by being able to control their AD/HD symptoms of impulsivity, hyperactivity and inattentiveness. Once the RDD symptomatology has been addressed, the RDD issues can be overcome. Although the NICHD research indicates that there is no cure for RDD, many RDD adults can improve their reading skills by being taught to read with a systematic synthetic-multisensory-phonics technique. For example, the adult with RDD is asked to look at a printed phoneme (one of the 44 sounds of the English language in written form), make the sound of the phoneme (i.e., **B** – “**bu**”, etc.) and then with their fingers trace the letter as they look at it and say the sound. This “see it - say it – trace it” technique has been quite successful in teaching those with RDD to read. Perhaps the best known of these teaching methods is Orton-Gillingham. However, there are 12 other systematic–synthetic-multisensory-phonics techniques are equally helpful as determined by the International Dyslexia Association (Henry, No Date).

More advanced readers are given multisensory training in prefixes, root words and suffixes. For example, the adult has a card with a prefix printed on it presented to them; they look at it, say it and trace it. These techniques require substantial drill. In the end, many adults with RDD and AD/HD combined will find substantial improvement in their reading using such techniques. Such training can often be obtained from educational therapists/clinical learning specialists, some adult literacy volunteers and some speech language pathologists.

Recent Brain Imaging research has shown that such training can lead to significant neuroconnectivity and neuroanatomical differences that somewhat normalizes the reading process in those with dyslexia. In 2011 Krafnick and colleagues reported the results of a study where 11 children with RDD were given 8 weeks of training in the Lindamood-Bell technique (one of the 13 multi-sensory methods recommended by the International Dyslexia Association). Prior to the training the children’s brains were pre-imaged with MRI grey matter volume voxel-

based morphology. Their reading skills were also assessed using reading subtests of the Woodcock-Johnson III. The training was followed by 8 weeks of no training. Following the no training period the children were reassessed neurologically and academically. They were found to have made significant improvement in their reading skills and significant neurological changes were found in their brains. The children's brain grey matter volumes increased significantly in the left anterior fusiform gyrus/hippocampus, left precuneus, right hippocampus and right anterior cerebellum, all are areas of the brain which have been shown to be the areas non-dyslexics use for reading. Non-habilitated RDD children have been found to use other areas of their brains for reading (Dehaene, 2009, p. 235-262).

In addition to training in multisensory-synthetic-multisensory-phonics, there are several work and educational accommodations that can be helpful to eligible adults with RDD. Some of these include LearningAlly, Learning Through Listening (formerly known as: Recordings for the Blind and Dyslexic), Kurzweil reading machines, KNFB Reading (Kurzweil reading phones), Intel Readers, voice activated computers, hand held spelling checkers, Quicktionary Reading Pen, Livescribe pen, speech to text computer programs such as Dragon NaturallySpeaking and readers for exams and others.

Many AD/HD adults with RDD are offered protection under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, Amendment Act of 2008 against discrimination in employment and/or educational settings and many receive accommodations for their disabilities if they qualify. Professionals who diagnose reading/learning disorders need to familiarize themselves with the Association for Higher Education and Disability (AHEAD) (2012) Supporting Accommodation Requests: Guidance on Documentation Practices. It is important that professionals who write reports to document the RDD/learning disorders of their clients follow these guidelines. By doing so, they can help insure their clients who qualify can receive the work and educational accommodations they need.

Reading Disorder of Recall/Comprehension

Gregg (2009) gave an excellent description of reading comprehension as follows, "To sum up the research findings across theoretical perspectives, it is clear that many different cognitive and linguistic factors may influence an individual's reading comprehension performance. These include (but are not limited to) word recognition and sublexical processes influencing decoding (phonemic, orthographic, and morphemic awareness); fluency; long-term memory; working memory; oral language comprehension; executive strategies; prior knowledge and motivation..." (p. 154).

Unfortunately, the second Reading Disorder that many adults with AD/HD tend to experience has not been researched as much. Currently, it is not known what percentage of AD/HD adults suffer from it or the ratio of women to men. However, many clinicians describe AD/HD adults who state they can read fluidly both silently and orally, pronounce all the words, read at an adequate rate and are good spellers, but they cannot

remember what they read. This reading problem has not had a consistent name associated with it in the scientific literature. Some have called it “Word Calling” or nonspecific reading disability” (Aaron and Baker, 1991, p. 46-47). The term word calling can be confusing because it can be associated with what is called Hyperlexia. This disorder is found in many people with autism spectrum disorders such as Asperger’s Disorder. This is not the same type of reading disorder. For this article, the type of reading disorder previously described in which AD/HD adults do not remember what they read will be called Reading Disorder of Recall Comprehension (RDR/C).

Most AD/HD adults with RDR/C have adequate phonological awareness, orthographic processing and rapid automatized naming. In fact, they have no symptoms of RDD at all. They just do not remember what they read. Some complain of this after reading a sentence and others after reading a few pages. Scientists are not absolutely certain what causes this disorder, but there is accumulating evidence that it could be due to a weakness in working memory. This type of memory allows us to keep an idea in mind long enough to manipulate it for a few seconds. The two types of working memory involved appear to be verbal and non-verbal in nature. Russell Barkley, Ph.D. (1998, 2006) describes verbal working memory as “internal speech.” He states weaknesses in this area are one of the keys of his theory of AD/HD. Non-verbal working memory aids us in planning, remembering the spatial location of objects and gives us a sense of time. Deficits in these two working memory systems often come together in AD/HD adults to create difficulties in remembering what they read, thus resulting in a reading comprehension problem. Often adults with RDR/C will have other subtle language comprehension problems. As Barkley (2006) wrote:

“...Because ADHD interferes with working memory (both verbal and nonverbal), those with the disorder should have greater difficulty holding in mind the content of what is read, and therefore should be less proficient in understanding what is read. As many clinical patients with ADHD will describe, when reading they often forget what was read at the top portion of the page by the time they have reached the middle or lower portion of the page, and therefore must return to the top and read it once again...Given that this is a working memory problem, it should affect not just reading, but listening to story narratives and even viewing televised content...” (p. 322)

People with RDD may also have difficulty with reading comprehension, but this is due to weaknesses in phonological awareness and orthographic processing, as well as rapid automatized naming. AD/HD adults with RDR/C tend to not have these difficulties; their weaknesses stem from the above mentioned memory deficits. Additionally, AD/HD adults with RDR/C can also have RDD.

Diagnosis and Treatment

How does one diagnose RDR/C? Again, the Diagnostic and Statistical Manual (DSM-IV) offers a “bare bones” assessment suggestion. An evaluation that includes I.Q. testing and a thorough examination of all reading skills, especially reading comprehension, is suggested. This should include sentence and paragraph comprehension. It is also suggested additional evaluation of working memory, listening comprehension and a thorough historical interview be conducted. Often a psychologist and/or educational therapist/clinical learning specialist can do the reading evaluation. A psychologist should conduct the intellectual testing. Sometimes AD/HD adults with RDR/C will also have problems with listening comprehension and other language processing problems. In such cases, a thorough evaluation by a speech language pathologist is urged. Like those with AD/HD and RDD, AD/HD-RDR/C adults can have co-morbid conditions such as depression and anxiety. These should be evaluated by a mental health professional. It is recommended that written reports of the evaluation for such a disability follow the AHEAD Guidelines. Again, Mapou’s (2009) book on assessment is an excellent guide for conducting such assessments.

Treatment for RDR/C is multifaceted. Often those with RDR/C find significant reduction in their recall and comprehension problems when they are placed on stimulant medication. Those who do not respond sufficiently to this may need to work with an educational therapist/clinical learning specialist to learn methods of actively monitoring what they are reading. This would involve learning ways to survey material prior to reading it—taking note of the bold print, italicized words, pictures, headings, footnotes, etc. in the text in order to construct questions to answer while reading. Once they have written down questions, they actively read the text with the idea of answering them. When they come to an answer to a question, they write it down. These questions and answers can be used for review. The above technique is often called SQ4R, but there are many similar techniques that are just as appropriate. Most educational therapists/special education teachers and clinical learning specialists are familiar with such techniques and can teach them.

Nanci Bell (1991) believes people with RDR/C do not adequately use visual or mental imaging as they read. She has developed a program to teach adults with RDR/C how to image while they read. She believes learning how to image what is read will allow them to generalize and grasp the global concepts of the material. The program is also said to help those with difficulty in oral expression, oral language comprehension and some written language skills. It is said to help those with RDR/C create entire images that include color and movement. Initial results of the use of this technique have been promising. Often speech language pathologists are trained in the use of this program.

Recently a new technology has been developed that may aid in habilitating RDR/C: COGMED-RM. This is a computer program developed to teach visual-spatial working memory to those who are weak in this ability. Klingberg (2008) a Swedish neurologist and neuropsychologist and his colleagues discovered in the early part of the 21st Century that children, adolescents and adults

with combined type AD/HD have seriously debilitating weaknesses in visual-spatial memory. His program has been shown to be helpful in teaching some with Combined Type AD/HD to read and simultaneously visualize what they read. Dahlin (2011) reported the COGMED-RM program significantly improved reading comprehension in 57 Swedish elementary students with special needs. However, two recent literature reviews of COGMED-RM and similar computer programs indicated they only teach students to become more efficient in using such programs and do not generalize to academic skills and other life areas (Melby-Lervag, and Hulme, May 12, 2012; Shipstead, Redick, and Randall, 2012).. Hence, COGMED may not be ready to be considered a first line treatment for RDR/C, but it may be worth a try if other options are not successful.

For the most severe cases of RDR/C, it is suggested that treatment be sought from a speech language pathologist.

Accommodations

“Read-alouds or extended time alone do not always effectively the learning needs of individuals with LD who are struggling with the meaning of oral or written language. For adolescents and adults with ADHD whose executive processing deficits limits their strategic thinking, organization, and revision, such accommodations may be limited in their effectiveness” (Gregg, 2009, p. 157).

Gregg (2009) suggested using text-to-speech (TTS) software, like Dragon Naturally Speaking, to give students with RDR/C multisensory input (visual and auditory) of what they are reading. In this vein it makes sense to use the aforementioned Kurzweil technologies, Intel Readers, electronic pens and reading/listening services for this population, too.

Many RDR/C adults qualify for protection under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, Amendment Act of 2008. Several of the above mentioned workplace and educational accommodations are useful for those with RDD are also helpful with RDR/C. However, the specific accommodations must be assigned according to the specific disability profile of the individual. It is recommended that reports of evaluations of such reading problems follow the AHEAD (2012) guidelines.

AD/HD adults can have both RDD and RDR/C and these two reading problems can cause great frustration. Therefore, it is important that adults receive thorough evaluations of their reading problems, as well as appropriate treatment and accommodations. By doing so they can be more successful in school and work, and possibly have a better quality of life.

Postscript: Thirteen years ago when I wrote the first version of this article I could not envision the advances we have made in our understanding of RDD, AD/HD and RDR/C. The knowledge continues to advance at a breakneck pace. Today I read a brain imagery research article that found the neuroanatomy of girls with RDD differs significantly from that of boys with RDD

(Evans, Flowers, Napoliello and Eden, April, 2013). The authors concluded if their findings are replicated we may eventually have gender specific methods of habilitating RDD.

Thirteen years ago I thanked Freda Harper, Psy.D. for her help in editing this article. Now Dr. Harper is Dr. Blake my wife and again I thank her for her help in re-editing this article.

*****This article by Dr. Blake appeared in the May/June, 2000 edition of Attention!, 6 (5), pp. 30-33.

References

Aaron, P.G., and Baker, C. (1991). Reading Disabilities in College and High School: Diagnosis and Management. Parkton, MD: York.

Association for Higher Education and Disability (AHEAD) (2012) Supporting Accommodation Requests: Guidance on Documentation Practices. From website: http://www.ahead.org/uploads/docs/resources/Final_AHEAD_Supporting%20Accommodation%20Requests%20with%20Q&A%2009_12.pdf.

American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Washington, DC: American Psychiatric Association.

American Psychiatric Association (1994). Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. Washington, DC: American Psychiatric Association.

Barkley, R.A. (2006). Attention Deficit Hyperactivity Disorder, Third Edition. New York, NY: Guilford.

Bell, N. (1991). Visualizing and Verbalizing for Language Comprehension and Thinking. San Luis Obispo, CA: Grand Educational Publishing.

Dehaene, S. (2009). Reading In The Brain: The Science Of How We Read. New York, NY: Penguin.

Dahlin, K.I. (2011). Effects of Working Memory Training On Reading in Children with Special Needs. Reading and Writing, 24(4), 479-491. From website: <http://link.springer.com/article/10.1007%2Fs11145-010-9238-y>.

Evans, T.M., Flowers, D.L., Napoliello, E.M. and Eden, G.F. (April, 2013). Sex-specific gray matter volume differences in females with developmental dyslexia. Brain Structure and Function, DOI 10.1007/s00429-013-0552-4. From website: <http://link.springer.com/article/10.1007%2Fs00429-013-0552-4#>.

Henry, M. (No Date). Framework for Informed Reading and Language Instruction: Matrix of Multisensory Structured Language Programs. Baltimore, MD: International Dyslexia Association.

International Dyslexia Association (April 20, 2005). IDA/NIH Adopts A New Definition of Dyslexia. From website: www.interdys.org/serlet/compose?section_id=8&page_id=69, Page 1 of 2.

Klingberg, T. (2008). The Overflow Brain: Information Overload and The limits of Working Memory. New York, NY: Oxford.

Lyon, G.R. (November 4, 1999) . In Celebration of Science in the Study of Reading Development, Reading Disorders and Reading Instruction. Paper presented at the International Dyslexia Association, 50th Anniversary Conference.

Mather, N. (February 16, 2000). So What's Up with Dyslexia? Paper presented at the 37th Annual Conference of the Learning Disability Association, Reno, NV.

Mapou, R.L. (2009). Adult Learning Disabilities and ADHD: Research-Informed Assessment. New York, NY: Oxford University Press.

Melby-Lervag, M., and Hulme, C. (May 12, 2012). Is Working Memory Training Effective? A Meta-Analytic Review. Developmental Psychology. From website: <http://www.ncbi.nlm.nih.gov/pubmed/22612437> .

Nicolson, R.I. and Fawcett, A.J. (2008). Dyslexia, Learning, and The Brain. London, England: MIT Press.

Shaywitz, S.E. (November, 1996). Dyslexia. Scientific America, 275 (5), 98-104.

Shaywitz, S. (2003). Overcoming Dyslexia: A New and Complete Science-Based program for Reading Problems at Any Level. New York, NY: Alfred Knopf.

Sherman, G. (November 4, 1999). Anatomical and Cognitive Variability in Developmental Dyslexia. Paper presented at the International Dyslexia Association, 50th Anniversary Conference, Chicago, IL.

US Department of Education (No Date). On the legacy IDEA 2004. <http://idea.ed.gov/Building>.

Young, G. (October 25, 1999). Ten Years of Progress. Paper Presented at the Learning Disabilities Association of Arizona, 29th Annual Conference, Phoenix, AZ.

Professional Books Related to Adult Reading Problems

Kevin T. Blake, Ph.D., P.L.C.

2013

All Rights Reserved

www.drkevintblake.com

- Aaron, P.C., and Baker, C. (1991). **Reading Disabilities in College and High School: Diagnosis and Treatment**. Parkton, MD: York.
- Bell, N., (1991). Visualizing and Verbalizing for Language Comprehension and Thinking. San Luis Obispo, CA: Grand Educational Publishing.
- Clark, D.B. (1988). Dyslexia: Theory and Practice of Remedial Instruction. Parkton, MD: York.
- Cramer, S.C., and Ellis, W. (1996). Learning Disabilities: Lifelong Issues. Baltimore, MD: Paul H. Brooks.
- Duane, D.D. (1999). Reading and Attention Disorders: Neurobiological Correlates. Parkton, MD: York.
- Dehaene, S. (2009). Reading In The Brain: The Science Of How We Read. New York, NY: Penguin.
- Fletcher, J.M., Lyon, G.R., Fuchs, L.S. and Barnes, M.A. (2007). Learning Disabilities: From Identification to Intervention. New York, NY: Guilford.
- Goldstein, S. (1997). Managing Attention and Learning Disorders in Late Adolescence and Adulthood: A Guide for Practitioners. New York, NY: John Wiley and Sons.
- Gregg, N. (2009). Adolescents and Adults With Learning Disabilities and ADHD: Assessment and Accommodation. New York, NY: Guilford.
- Klingberg, T. (2008). The Overflow Brain: Information Overload and The limits of Working Memory. New York, NY: Oxford.
- Nicolson, R.I. and Fawcett, A.J. (2008). Dyslexia, Learning, and The Brain. London, England: MIT Press.
- Pennington, B.F. (2009). Diagnosing Learning Disorders: A Neuropsychological Framework, Second Edition. New York, NY: Guilford.
- Shaywitz, S.E. (November, 1996). Dyslexia. Scientific America, 275 (5), 98-104.
- Shaywitz, S. (2003). Overcoming Dyslexia: A New and Complete Science-Based program for Reading Problems at Any Level. New York, NY: Alfred Knopf.
- Shipstead, Z., Redick, T.S. and Randall, W.E. (2012). Is Working Memory Training Effective? Psychological Bulletin, DOI: 10.1037/a0027473.

Tridas, E.Q. (2007). From ABC TO ADHD: What Parents Should Know About Dyslexia and Attention Problems. Baltimore, MD: International Dyslexia Association.

US Department of Education (No Date). On the legacy IDEA 2004. <http://idea.ed.gov/Building>.

Helpful Websites

Children and Adults with Attention Deficit Disorders (CHADD): www.chadd.org

National Resource Center on ADHD: A Program of CHADD: www.help4adhd.org

Attention Deficit Disorder Association: www.add.org

International Dyslexia Association: www.interdys.org

Learning Disabilities Association of America: www.ldanatl.org

National Center for Learning Disabilities: www.ncld.org

LD On Line: www.ldonline.org

What Works Clearinghouse: www.whatworks.ed.gov