HIBIDA RESOURCE

HOUSTON BRANCH OF THE INTERNATIONAL DYSLEXIA ASSOCIATION

FEATURES

- Dyslexia Basics
- Understanding the Special Education Process
- Early Indicators of Learning Disabilities in Preschool Children
- New Research ... Dyslexia Appears to Develop Before a Child Starts to Read.
- Working Memory Limitations in Mathematics Learning
- Two Poems Inspired by Dyslexia
- Dyslexia: Middle and High Schools Don't Have to be a Nightmare
- Speech Recognition & Reading Instruction
- The Play of Children: Lessening Stress & Increasing Self-Control
- Anxiety in Children with Social Cognitive Difficulties

2012

Neuhaus Education Center
is a non-profit education foundation dedicated to the prevention of reading failure. To meet this challenge, we provide research-based professional development to educators, supply information and resources to families, and offer direct services to adult learners.

The explicit, systematic approach to teaching basic language skills —reading, writing, and spelling—allows all students to thrive. Our esteemed staff is ready to share our expertise with you.

Neuhaus staff members include:

- Active members in HBIDA, IDA, and ALTA
- Licensed dyslexia therapists
- Authors of research papers in peer-reviewed journals, textbook chapters, and research-based reading curriculum
- Presenters at state, national and international conferences
- Consultants and contributors to U.S. Department of Education (Reading First), National Governors Association Early Childhood Task Force, Texas Teacher Reading Academies
- Service as State Master Trainers for Texas Teacher Reading Academies

Knowledge for Educators
- Online, in-house or on-site classes
- Ongoing support through interactive website
- KASTOR Mentoring for novice teachers
- In-depth preparation for dyslexia intervention
- M.Ed. in Reading and Writing in Houston
- Ongoing research

Contact Cathie Fisher, cfisher@neuhaus.org

Resources for Families
- Referrals to dyslexia interventionists
- What is dyslexia? information online
- Twice-monthly dyslexia information sessions

Contact Mary Yarus, myarus@neuhaus.org

Services to Adult Learners
- Reading and spelling classes for adults

Contact Mary North, mnorth@neuhaus.org

www.neuhaus.org | 713.664.7676 | www.readingteachersnetwork.org
4433 Bissonnet Street, Bellaire, Texas 77401

HBIDA PRESIDENT'S LETTER

I came across a quote by Ernest Hemingway the other day, *"All my life I've looked at words as though I were seeing them for the first time."*

With three of my four children being dyslexic and having worked one-on-one with dyslexic children for the last ten years, I feel any one of them could have said this, but for very different reasons. What is a word? A word is everything. Words can make us laugh or cry; they can bring us comfort, joy, inspire or frighten, anger and sadden. Words allow us to communicate our feelings, wants and knowledge to each other. Yet for some, learning these words is extremely difficult. As parents and professionals, we are constantly searching for that magic "something" that might make a child's educational life easier. What I wouldn't have given in those early years to make my oldest son's three hours of homework disappear so that he could play outside with his friends.

In 2002 a group of experts in our field developed a definition of dyslexia using scientific research in hopes of clarifying the term.

> *Dyslexia is a specific learning disability that is neurological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and 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 provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede the growth of vocabulary and background knowledge.*

This definition was approved by the International Dyslexia Association and the National Institute of Child Health and Human Development. It is surprising that the word dyslexia still remains regularly unused in many educational settings; the term "specific learning disability" often takes its place. If we group all children with a "specific learning disability" together, we do them no favors. There are many reasons for reading failure; many are rooted in poor phonological skills, some are developmental, others comprehension, memory and on and on. Without using the word dyslexia, how can we hope to have our children classified and appropriately identified to receive the help that they need?

The International Dyslexia Association is a "non-profit, scientific, and educational organization dedicated to the study and treatment of the learning disability, dyslexia as well as related language-based learning differences." At the national level, IDA focuses on four essential areas: advocacy, information and referral, parent support and outreach and standards and practices. On the local level, the Houston Branch offers a multitude of events, conferences, and resources such as an annual college panel in January, an annual spring conference, an annual fall symposium, regional group events, website, local telephone helpline for information and referral services, scholarships funds for teachers and parents to attend our conferences and symposium, scholarship fund for educational diagnostic testing, this free Resource Directory and so on. We are very lucky to have an active Board of Directors and Advisory Council who volunteer their time to provide these services for the Houston community. As the new President of the branch, I am grateful for their knowledge and expertise across a spectrum of disciplines to help grow the branch to meet the needs of the people we serve.

Within the pages of this Resource Directory you will have at your disposal what dyslexia is and how to look for the early signs in young children, articles from speakers from the spring conference, and local sources. Keep this in a place where you can reference it often. Take an extra copy for your school counselor or principal. Share one with your neighbor.

If you have not joined the International Dyslexia Association, I would encourage you to do so there has never been a better time. As an advocate or professional in the field of dyslexia, this is the organization you want to be a part of. The information that is distributed in the quarterly publication of "Perspectives on Language and Literacy" is worth your membership alone.

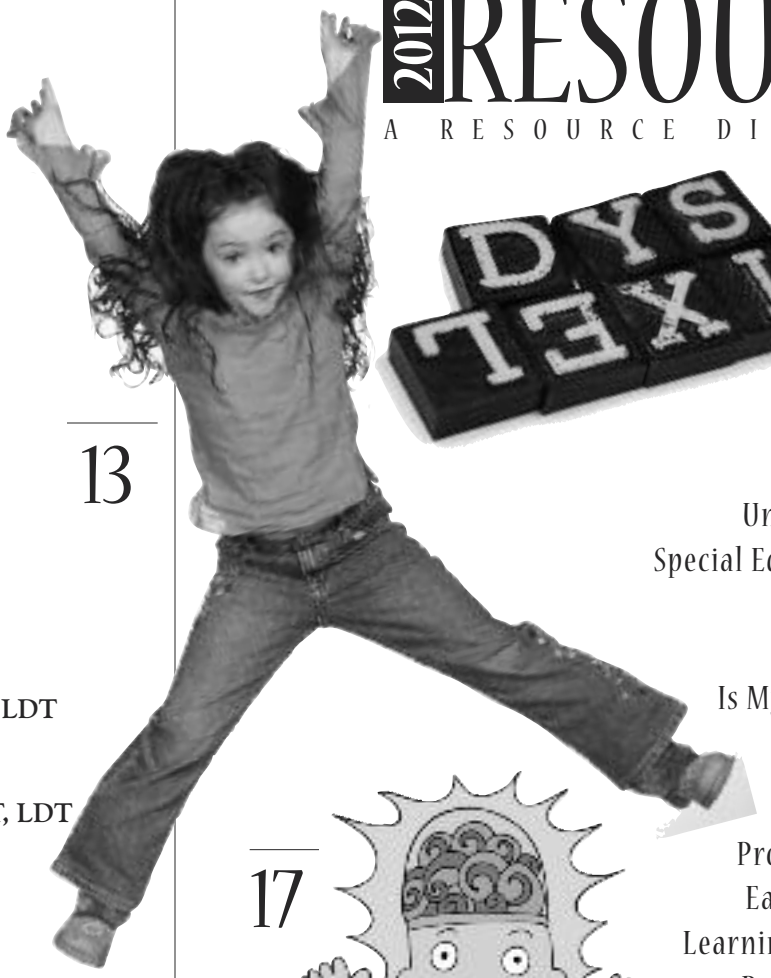
We are very fortunate to live in one of the few states that has a dyslexia law. However, there is still much to be done, so that what is mandated at the state level can be implemented at the local level.

May 2012 be a year of words – words to increase our knowledge, words to bring us comfort, and words to live by.

Karene Groesbeck
PRESIDENT, HBIDA

2012 RESOURCE

A RESOURCE DIRECTORY



4
Dyslexia Basics

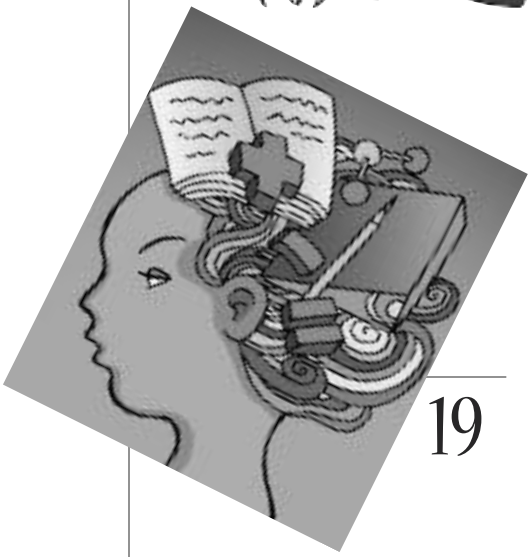
7
Understanding the Special Education Process

9
Is My Child Dyslexic?

13
Promoting Success: Early Indicators of Learning Disabilities in Preschool Children

17
New imaging research shows that the reduced brain activity associated with the onset of dyslexia appears to develop before, not after, a child starts to read.

19
Working Memory Limitations in Mathematics Learning: Their Development, Assessment and Remediation



26

27

Two Poems inspired by Dyslexia
by Dr. E. Baxter M.D

27
Dyslexia: Middle and
High Schools
Don't Have to be a Nightmare

29
Bringing Speech Recognition
to Reading Instruction

32
The Play of Children: Lessening
Stress and Increasing Self-Control

36
Anxiety in Children
with Social Cognitive
Difficulties

38
Just the Facts...
A Parent's Guide to
Effective Instruction

40
Just the Facts...
Spelling

29

32

36

Reading Literacy & Learning

2012 ANNUAL HBIDA CONFERENCE

46

from THE INTERNATIONAL DYSLEXIA ASSOCIATION.

What is dyslexia?

Dyslexia is a language-based learning disability. Dyslexia refers to a cluster of symptoms, which result in people having difficulties with specific language skills, particularly reading. Students with dyslexia usually experience difficulties with other language skills such as spelling, writing, and pronouncing words. Dyslexia affects individuals throughout their lives; however, its impact can change at different stages in a person's life. It is referred to as a learning disability because dyslexia can make it very difficult for a student to succeed academically in the typical instructional environment, and in its more severe forms, will qualify a student for special education, special accommodations, or extra support services.

What causes dyslexia?

The exact causes of dyslexia are still not completely clear, but anatomical and brain imagery studies show differences in the way the brain of a dyslexic person develops and functions. Moreover, most people with dyslexia have been found to have problems with identifying the separate speech sounds within a word and/or learning how letters represent those sounds, a key factor in their reading difficulties. Dyslexia is not due to either lack of intelligence or desire to learn; with appropriate teaching methods, dyslexics can learn successfully.

How widespread is dyslexia?

About 13–14% of the school population nationwide has a handicapping condition that qualifies them for special education. Current studies indicate that one-half of all the students who qualify for special education are classified as having a learning disability (LD) (6–7%). About 85% of those LD students have a primary learning disability in reading and language processing. Nevertheless, many more people— perhaps as many as 15–20% of the population as a whole— have some of the symptoms of dyslexia, including

slow or inaccurate reading, poor spelling, poor writing, or mixing up similar words. Not all of these will qualify for special education, but they are likely to struggle with many aspects of academic learning and are likely to benefit from systematic, explicit, instruction in reading, writing, and language.

Dyslexia occurs in people of all backgrounds and intellectual levels. People who are very bright can be dyslexic. They are often capable or even gifted in areas that do not require strong language skills, such as art, computer science, design, drama, electronics, math, mechanics, music, physics, sales, and sports.

In addition, dyslexia runs in families; dyslexic parents are very likely to have children who are dyslexic. Some people are identified as dyslexic early in their lives, but for others, their dyslexia goes unidentified until they get older.

What are the effects of dyslexia?

The impact that dyslexia has is different for each person and depends on the severity of the condition and the effectiveness of instruction or remediation. The core difficulty is with word recognition and reading fluency, spelling, and writing. Some dyslexics manage to learn early reading and spelling tasks, especially with excellent instruction, but later experience their most debilitating problems when more complex language skills are required, such as grammar, understanding textbook material, and writing essays.

People with dyslexia can also have problems with spoken language, even after they have been exposed to good language models in their homes and good language instruction in school. They may find it difficult to express themselves clearly, or to fully comprehend what others mean when they speak. Such language problems are often difficult to recognize, but they can lead to major problems in school, in the workplace, and in relating to other people. The effects of dyslexia reach well beyond the classroom.

Dyslexia can also affect a person's self-image. Students with dyslexia often end up feeling "dumb" and less capable than they actually are. After experiencing a great deal of stress due to academic problems, a student may become discouraged about continuing in school.

How is dyslexia diagnosed?

Schools may use a new process called Response to Intervention (RTI) to identify children with learning disabilities. Under an RTI model, schools provide those children not readily progressing with the acquisition of critical early literacy skills with intensive and individualized supplemental reading instruction. If a student's learning does not accelerate enough with supplemental instruction to reach the established grade-level benchmarks, and other kinds of developmental disorders are ruled out, he or she may be identified as learning disabled in reading. The majority of students thus identified are likely dyslexic and they will probably qualify for special education services. Schools are encouraged to begin screening children in kindergarten to identify any child who exhibits the early signs of potential reading difficulties. In Texas, schools are required by law to do this.

For children and adults who do not go through this RTI process, an evaluation to formally diagnose dyslexia is needed. Such an evaluation traditionally has included intellectual and academic achievement testing, as well as an assessment of

Early identification and treatment is the key to helping dyslexics achieve in school and in life.

the critical underlying language skills that are closely linked to dyslexia. These include receptive (listening) and expressive language skills, phonological skills including phonemic awareness, and also a student's ability to rapidly name letters and names. A student's ability to read lists of words in isolation, as well as words in context, should also be assessed. If a profile emerges that is characteristic of dyslexic readers, an individualized intervention plan should be developed, which should include appropriate accommodations, such as extended time. The testing can be conducted by trained school or outside specialists. (See the Testing for Dyslexia Fact Sheet for more information.)

What are the signs of dyslexia?

The problems displayed by individuals with dyslexia involve difficulties in acquiring and using written language. It is a myth that dyslexic individuals "read backwards," although spelling can look quite jumbled at times because students have trouble remembering letter symbols for sounds and forming memories for words. Other problems experienced by dyslexics include the following:

- Learning to speak
- Learning letters and their sounds
- Organizing written and spoken language
- Memorizing number facts
- Reading quickly enough to comprehend
- Persisting with and comprehending longer reading assignments
- Spelling
- Learning a foreign language
- Correctly doing math operations

Not all students who have difficulties with these skills are dyslexic. Formal testing of reading, language, and writing skills is the only way to confirm a diagnosis of suspected dyslexia.

How is dyslexia treated?

Dyslexia is a life-long condition. With proper help, many people with dyslexia can learn to read and write well. Early identification and treatment is the key to helping dyslexics achieve in school and in life. Most people with dyslexia need help from a teacher, tutor, or therapist specially trained in using a multisensory, structured language approach. It is important for these individuals to be taught by a systematic and explicit method that involves several senses (hearing, seeing, touching) at the same time. Many individuals with dyslexia need one-on-one help so that they can move forward at their own pace. In addition, students with dyslexia often need a great deal of structured practice and immediate, corrective feedback to develop automatic word recognition skills. When students with dyslexia receive academic therapy outside of school, the therapist should work closely with classroom teachers, special education providers, and other school personnel.

Schools can implement academic accommodations and modifications to help dyslexic students succeed. For example, a student with dyslexia can be given extra time to complete tasks, help with taking notes, and work assignments that are modified appropriately. Teachers can give taped tests or allow dyslexic students to use alternative means of assessment. Students can benefit from listening to books on tape and using the computer for text reading programs and for writing.

Students may also need help with emotional issues that sometimes arise as a consequence of difficulties in school. Mental health specialists can help students cope with their struggles.

What are the rights of a dyslexic person?

The Individuals with Disabilities Education Act 2004 (IDEA), Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act (ADA) define the rights of students with dyslexia and other specific learning disabilities. These individuals are legally entitled to special services to help them overcome and accommodate their learning problems. Such services include education programs designed to meet the needs of these students. The Acts also protect people with dyslexia against unfair and illegal discrimination.

from THE PACER CENTER (2007)

Understanding the Special Education Process

How the Process Works

1. Parents, school personnel, students or others may make a request for evaluation. If you request an evaluation to determine whether your child has a disability and needs special education, the school district must complete a full and individual evaluation. If it refuses to conduct the evaluation, it must give you appropriate notice, and let you know your rights.

   You must give permission in writing for an initial (first-time) evaluation, and for any tests that are completed as part of a re-evaluation.

2. A team of qualified professionals and you will review the results of the evaluation, and determine if your child is eligible for special education services.

   If your child is not eligible, you will be appropriately notified and the process stops. However, you have a right to disagree with the results of the evaluation or the eligibility decision.

3. If you disagree with the results of an evaluation, you have a right to an Independent Educational Evaluation (IEE). Someone who does not work for the school district completes the IEE. The school district must pay for the IEE or show at an impartial due process hearing (see definitions below) that its evaluation is appropriate.

4. If you and the school district agree that your child is eligible for services, you and the school staff will plan your child's Individualized Education Program (IEP), at an IEP team meeting. You are an equal member of this team. Some states may have a different name for the IEP team meeting.

5. The IEP lists any special services your child needs, including goals your child is expected to achieve in one year, and objectives or benchmarks to note progress. The team determines what services are in

the IEP as well as the location of those services and modifications. At times, the IEP and placement decisions will take place at one meeting. At other times, placement may be made at a separate meeting (usually called a placement meeting).

Placement for your child must be in the Least Restrictive Environment (LRE) appropriate to your child's needs. He or she will be placed in the regular classroom to receive services unless the IEP team determines that, even with special additional aids and services, the child cannot be successful there. You are part of any group that decides what services your child will receive and where they will be provided.

6. If you disagree with the IEP and/or the proposed placement, you should first try to work out an agreement with your child's IEP team. If you still disagree, you can use your due process rights.

7. If you agree with the IEP and placement, your child will receive the services that are written into the IEP. You will receive reports on your child's progress at least as often as parents are given reports on their children who do not have disabilities. You can request that the IEP team meet if reports show that changes need to be made in the IEP.

8. The IEP team meets at least once per year to discuss progress and write any new goals or services into the IEP. As a parent, you can agree or disagree with the proposed changes. If you disagree, you should do so in writing.

9. If you disagree with any changes in the IEP, your child will continue to receive the services listed in the previous IEP until you and school staff reach agreement. You should discuss your concerns with the other members of the IEP team. If you continue to disagree with the IEP, there are several things you can do, including asking for additional testing or an Independent Educational Evaluation (IEE), or resolving the disagreement using due process.

10. Your child will continue to receive special education services if the team agrees that the services are needed. A re-evaluation is completed at least once every three years to see if your child continues to be eligible for special education services, and what services he or she needs.

Key Terms

Due process protects the right of parents to have input into their child's educational program and to take steps to resolve disagreements. When parents and school districts disagree with one another, they may ask for an impartial hearing to resolve issues. Mediation must also be available.

Mediation is a meeting between parents and the school district with an impartial person, called a mediator, who helps both sides come to an agreement that each finds acceptable.

An **impartial due process** hearing is a meeting between parents and the school district where each side presents their position, and a hearing officer makes the decision about what is the appropriate educational program, based on requirements in law.

School districts must give parents a written copy of special education procedural safeguards. This document outlines the steps for due process hearings and mediation. A copy of their procedural safeguards must be given to parents once each year except that a copy also shall be given to them:

a. upon initial referral or parental request for evaluation;
b. upon the first occurrence of the filing of a complaint under subsection (b)(6); and
c. upon their request.

from THE INTERNATIONAL DYSLEXIA ASSOCIATION.

Is My Child Dyslexic?

Individuals with dyslexia have trouble with reading, writing, spelling and/or math even though they have the ability and have had opportunities to learn. Individuals with dyslexia can learn, but they often need specialized instruction to overcome the problem. Often these individuals, who have talented and productive minds, are said to have a language learning difference.

Common characteristics of dyslexia

Most of us have one or two of these characteristics. That does not mean that everyone has dyslexia. *A person with dyslexia usually has several of these characteristics that persist over time and interfere with his or her learning.*

Oral language

- Late learning to talk
- Difficulty pronouncing words
- Difficulty acquiring vocabulary or using age appropriate grammar
- Difficulty following directions
- Confusion with before/after, right/left, and so on
- Difficulty learning the alphabet, nursery rhymes, or songs
- Difficulty understanding concepts and relationships
- Difficulty with word retrieval or naming problems

Reading

- Difficulty learning to read
- Difficulty identifying or generating rhyming words, or counting syllables in words (phonological awareness)
- Difficulty with hearing and manipulating sounds in words (phonemic awareness)
- Difficulty distinguishing different sounds in words (phonological processing)
- Difficulty in learning the sounds of letters (phonics)
- Difficulty remembering names and shapes of letters, or naming letters rapidly
- Transposing the order of letters when reading or spelling
- Misreading or omitting common short words
- "Stumbles" through longer words
- Poor reading comprehension during oral or silent reading, often because words are not accurately read
- Slow, laborious oral reading

Written language

- Difficulty putting ideas on paper
- Many spelling mistakes
- May do well on weekly spelling tests, but may have many spelling mistakes in daily work
- Difficulty proofreading

Other common symptoms that occur with dyslexia

- Difficulty naming colors, objects, and letters rapidly, in a sequence (RAN: rapid automatized naming)
- Weak memory for lists, directions, or facts
- Needs to see or hear concepts many times to learn them
- Distracted by visual or auditory stimuli
- Downward trend in achievement test scores or school performance
- Inconsistent school work
- Teacher says, "If only she would try harder," or "He's lazy."
- Relatives may have similar problems

Common characteristics of other related learning disorders

Dysgraphia (Handwriting)

- Unsure of handedness
- Poor or slow handwriting
- Messy and unorganized papers
- Difficulty copying
- Poor fine motor skills
- Difficulty remembering the kinesthetic movements to form letters correctly

Dyscalculia (Math)

- Difficulty counting accurately
- May misread numbers
- Difficulty memorizing and retrieving math facts
- Difficulty copying math problems and organizing written work
- Many calculation errors
- Difficulty retaining math vocabulary and concepts

ADHD—Attention-Deficit/ Hyperactivity Disorder (Attention)

- Inattention
- Variable attention
- Distractibility
- Impulsivity
- Hyperactivity

Dyspraxia (Motor skills)

- Difficulty planning and coordinating body movements
- Difficulty coordinating facial muscles to produce sounds

Executive Function/ Organization

- Loses papers
- Poor sense of time
- Forgets homework
- Messy desk
- Overwhelmed by too much input
- Works slowly

If your child is having difficulties learning to read and you have noted several of these characteristics in your child, he or she may need to be evaluated for dyslexia or a related disorder.

What kind of instruction does my child need?

Dyslexia and other related learning disorders cannot be cured. Proper instruction promotes reading success and alleviates many difficulties associated with dyslexia. Instruction for individuals with reading and related learning disabilities should be:

- Intensive – given every day or very frequently for sufficient time.
- Explicit – component skills for reading, spelling, and writing are explained, directly taught, and modeled by the teacher. Children are discouraged from guessing at words.
- Systematic and cumulative – has a definite, logical sequence of concept introduction; concepts are ordered from simple to more complex; each new concept builds upon previously introduced concepts, with built in review to aid memory and retrieval.
- Structured – has step-by-step procedures for introducing, reviewing, and practicing concepts.
- Multisensory – links listening, speaking, reading, and writing together; involves movement and "hands on" learning.

Suggested Readings

Moats, L. C., & Dakin, K. E. (2007). *Basic facts about dyslexia and other reading problems*. Baltimore: The International Dyslexia Association.

Shaywitz, S. (2003). *Overcoming dyslexia: A new and complete science-based program for reading problems at any level*. New York: Knopf.

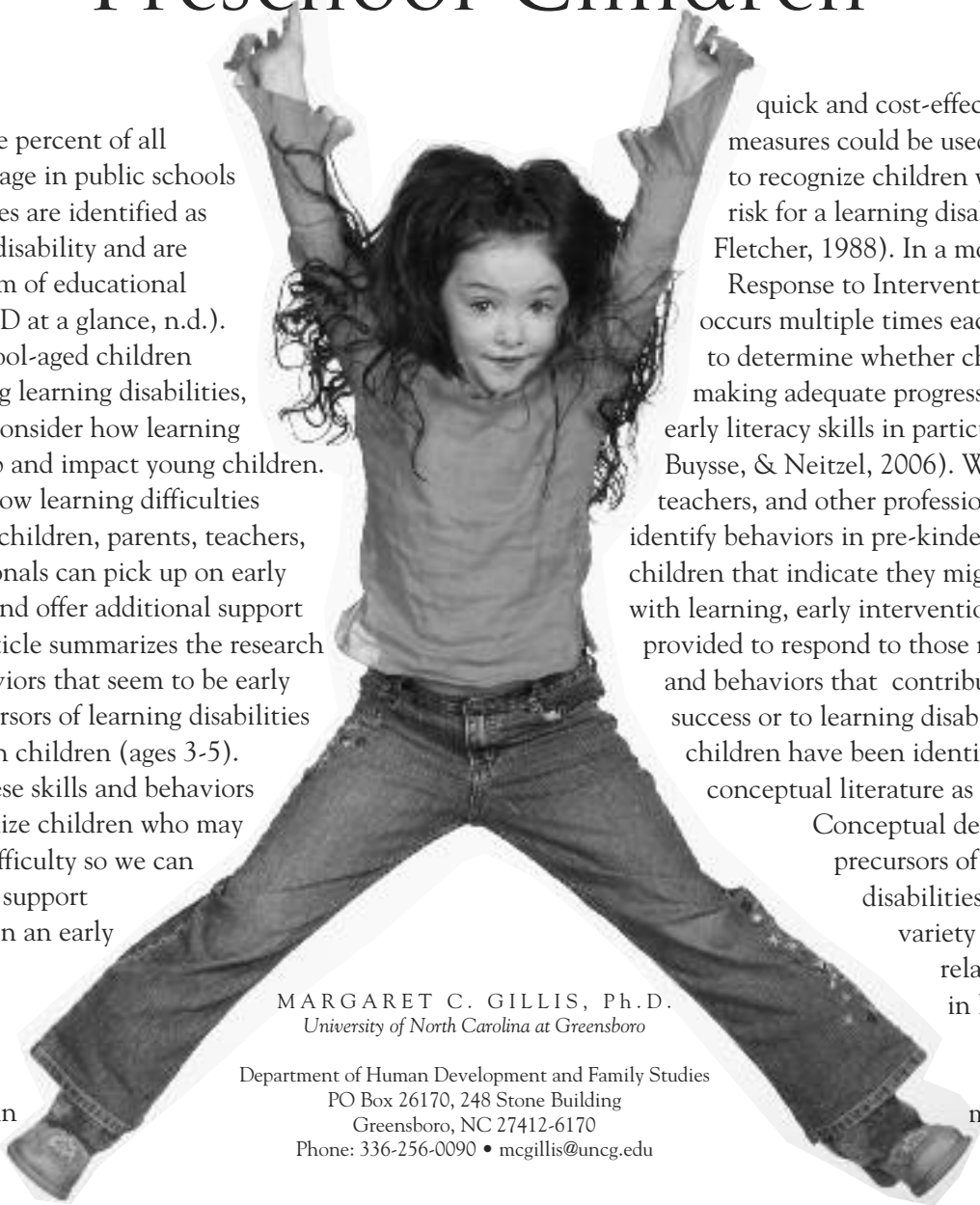
Tridas, E. Q. (Ed.). (2007). *From ABC to ADHD: What every parent should know about dyslexia*. Baltimore: The International Dyslexia Association.

The International Dyslexia Association thanks Suzanne Carreker for her assistance in the preparation of this fact sheet.

"Promoting literacy through research, education and advocacy"™
The International Dyslexia Association ·
40 York Road · Fourth Floor · Baltimore · MD · 21204
Tel: 410-296-0232 · Fax: 410-321-5069 ·
E-mail: info@interdys.org · Website: http://www.interdys.org

Fact sheet revised September 2008.

Promoting Success: Early Indicators of Learning Disabilities in Preschool Children



MARGARET C. GILLIS, Ph.D.
University of North Carolina at Greensboro

Department of Human Development and Family Studies
PO Box 26170, 248 Stone Building
Greensboro, NC 27412-6170
Phone: 336-256-0090 • mcgillis@uncg.edu

Background

Approximately five percent of all children of school age in public schools in the United States are identified as having a learning disability and are receiving some form of educational support services (LD at a glance, n.d.). With so many school-aged children identified as having learning disabilities, it is important to consider how learning disabilities develop and impact young children. If we understand how learning difficulties manifest in young children, parents, teachers, and other professionals can pick up on early signs of difficulty and offer additional support as needed. This article summarizes the research on skills and behaviors that seem to be early indicators or precursors of learning disabilities in pre-kindergarten children (ages 3-5). Understanding these skills and behaviors will help us recognize children who may be experiencing difficulty so we can provide additional support placing the child on an early pathway for success.

Children may exhibit observable behavior patterns in early childhood that foreshadow learning disabilities (Lowenthal, 1998; Steele, 2004). Early intervention and educational support before children enter school may smooth the transition allowing them to be more successful in kindergarten and beyond. Although children may not be formally identified as having a learning disability until they reach school-age, quick and cost-effective screening measures could be used in preschool to recognize children who may be at risk for a learning disability (Satz & Fletcher, 1988). In a model such as Response to Intervention, screening occurs multiple times each year in order to determine whether children are making adequate progress on key skills, early literacy skills in particular (Coleman, Buysse, & Neitzel, 2006). When parents, teachers, and other professionals are able to identify behaviors in pre-kindergarten-age children that indicate they might be struggling with learning, early intervention can be provided to respond to those needs. The skills and behaviors that contribute to academic success or to learning disabilities in young children have been identified through conceptual literature as well as research.

Conceptual descriptions of precursors of learning disabilities include a wide variety of behaviors relating to deficits in language and literacy skills (Joshi, 2003), memory, social-emotional, self-regulation, and motor skills (Lowenthal, 1998). Catts and Hogan (2003) argue that developmental language impairment in early childhood is the most reliable sign of a potential reading problem, while others suggest that skills such as name-writing could be indicative of early literacy skills (Haney, 2002). Aspects of a child's temperament, such as activity

level and attention span, also may impact learning (Teglasi, Cohn, & Meshbesher, 2004).

Although relatively few research studies have specifically investigated early indicators of learning disabilities, many have contributed to the pool of knowledge by investigating predictors of achievement or academic skills and discussing the low end of the spectrum of skills and achievement as it relates to learning difficulty (e.g., Badian, 1982; Ellis & Large, 1987; Gilbertson & Bramlett, 1998). The skills and behaviors identified by researchers as early indicators of learning disabilities can be grouped into six general skill categories: language, literacy, early math, social-emotional, self-management, and perceptual motor. The skills identified give us an idea of which areas to focus on when screening and assessing young children in pre-kindergarten and the early school years.

Language Skills

Early language skills appear to be one of the most important contributors for future reading and academic success. Skills such as sound blending (e.g., c/a/t makes cat), rhyming, discrimination of beginning sounds, morphology (i.e., combining words, word stems, and affixes to express meaning), and speech comprehension have contributed to children's reading skills and ability up to several years after initial assessment (Ellis & Large, 1987; Felton, 1992; Gilbertson & Bramlett, 1998; Olofsson & Niedersoe, 1999). Children's vocabulary also has been identified as a predictor of reading skills (Ellis & Large, 1987; Olofsson & Niedersoe, 1999). Receptive language measures have been found to predict overall academic achievement (Agostin & Bain, 1997). Other studies identified Rapid Automatized Naming (RAN) of letters and objects as a predictor of reading skills (Blumsack, Lewandowski, & Waterman, 1997; O'Malley et al., 2002). Additionally, children classified as poor readers have been shown to have deficits in sentence memory, spoken language, and naming rate of letters, colors, and shapes (Badian, 1994).

Children's skills with semantics (i.e., the meaning of words and language) and word production have been found to predict difficulty with word learning (Gray, 2004). Also, children with learning disabilities have been shown to exhibit deficits in phonological processing (i.e., detecting and discriminating speech sounds) (O'Malley et al., 2002). Finally, children with language delays or language impairments in early childhood and the early school years were significantly more likely than children without delays or impairments to have a learning disability or reading difficulty in two studies (Catts, Fey, Tomblin, & Zhang, 2002; Silva, McGee, & Williams, 1983). Together, the results of these studies suggest that assessments in early childhood should contain measures of both receptive language skills and expressive language skills in order to screen children who might have learning difficulties.

The skills and behaviors identified by researchers as early indicators of learning disabilities can be grouped into six general skill categories: language, literacy, early math, social-emotional, self-management, and perceptual motor.

Early Literacy Skills

Early literacy skills also contribute to learning difficulty or disability. Phonological awareness and phonological processing skills have been found to play a role in reading ability or at risk status (Badian, 1994; Most et al., 2000). Other skills identified as predictors of reading ability or skills include letter sounds knowledge, discrimination of beginning sounds, phoneme awareness (e.g., understanding "cat" is made up of /c/, /a/, /t/), phoneme manipulation, printing letters, spelling, and sentence construction (Blumsack, Lewandowski, & Waterman, 1997; Ellis & Large, 1987; Felton, 1992; Gilbertson & Bramlett, 1998; Mann & Foy, 2003; Olofsson & Niedersoe, 1999). Additionally, children at risk for disabilities have been shown to have lower phonological awareness skills than their peers who were not at risk (Most et al., 2000).

Early Math Skills

A number of early math skills have been identified that contribute to future mathematical ability or disability as well. Children with math disabilities have exhibited deficits in numeric processing (Mazzocco & Thompson, 2005). These deficits can manifest themselves in observable ways, such as immature counting strategies or inability to read numerals. Additionally, the counting subtest in one study was identified as a predictor of reading ability (Badian, 1983).

Social Emotional Skills

Consistent with some of the conceptual descriptions of learning disabilities, research finds evidence that children at risk for and with disabilities exhibit some social-emotional difficulties. Most and colleagues (2000) found that children at risk for disabilities were less socially accepted by their peers and had a lower sense of coherence

than their peers without disabilities. Additionally, work-related social skills, including participation in groups, appear to contribute to academic success (McClelland & Morrison, 2003; McClelland, Morrison, & Holmes, 2000). This suggests that children with disabilities or those who are at risk for disabilities may have difficulty with skills like cooperation.

Self-Management Skills

In addition to cooperation, the construct of work-related social skills includes many behaviors relating to self-management skills. Skills such as staying on task, organizing work materials, and listening and following directions also contribute to academic performance (McClelland & Morrison, 2003; McClelland, Morrison, & Holmes, 2000). Not surprisingly, self-control has also has been found as a predictor of school success (Agostin & Bain, 1997). Additionally, the ability to maintain attention to a task has been identified as a discriminator between children with and without learning disabilities (Blumsack, Lewandowski, & Waterman, 1997). Again, the findings of these studies are consistent with conceptual descriptions of learning disabilities that take into account self-management skills that help children succeed in school (Lowenthal, 1998).

Perceptual Motor Skills

The final area in which skills that contribute to academic outcomes have been identified is perceptual motor. Skills such as working memory, visual analogical reasoning (i.e., visually comparing new and understood concepts in order to gain an understanding of the new concept), and visual memory appear to contribute to academic skills later (Agostin & Bain, 1997; Holopainen, Ahonen, & Lyytinen, 2001). Additionally, children classified as poor readers have been found to have deficits in visual memory (Badian, 1994). The ability to follow multi-step directions also has been identified as a discriminator between children with and without learning disabilities (Blumsack, Lewandowski, & Waterman, 1997). Finally, children identified as learning disabled have been shown to have deficits in perceptual discrimination (e.g., identifying speech sounds) and visual motor integration (e.g., hand-eye coordination) (O'Malley et al., 2002).

There is much evidence showing the contribution of language and early literacy skills to reading and academic outcomes and a growing body of evidence identifying the importance of social and adaptive contributions to aspects of life in a classroom for children's success. The research summarized suggests that children may exhibit difficulty in one or more areas and that early assessment should look at the whole child.

Conclusions and Recommendations

The research described above provides evidence that it is possible to identify children who are at risk for learning disabilities or difficulties as young as pre-kindergarten. Evidence also supports the positive effects of early intervening to promote children's school success. Ongoing screening and assessment is needed for teachers, parents, and specialists to recognize children who may show signs of struggle in the areas identified as early indicators of learning disabilities. Once areas of difficulty are recognized, targeted intervention responses may help prevent emerging problems from developing into learning disabilities. It is possible that early recognition of and response to children's needs may have an immediate impact on the number of children referred for special education.

It is also evident that in order to effectively screen children for learning difficulties or emerging disabilities, we must know more about how learning disabilities develop and manifest in young children. The literature included in this article provides a foundation for understanding the early indicators of learning disabilities. However, longitudinal studies are necessary to understand the processes underlying the development of learning disabilities at various ages leading up to school entry. We must also learn more about the most effective strategies for intervening with young children to prevent learning difficulties from turning into learning disabilities.

Recognition of the early indicators of learning disabilities is important, however it is a "means" and not an "end." The recognition of early indicators of learning disabilities becomes powerful only if parents and professionals use this knowledge appropriately by intervening early. When recognition of a child's needs is combined with appropriate responses early, we cannot only prevent failure — we can promote success.

Margaret C. Gillis, Ph.D., is a Visiting Assistant Professor of early childhood education in the Department of Human Development and Family Studies at the University of North Carolina at Greensboro. Dr. Gillis is one of the developers of the Early Learning Observation and Rating Scale (ELORS), a tool designed to help parents and professionals recognize young children who may be at risk for learning disabilities.

Article originally published in *Perspectives on Language and Literacy*: Gillis. M. (2011). Promoting success: Early indicators of learning disabilities in pre-school children. *Perspectives on Language and Literacy,* 37(3), 29-31.

REFERENCES

Agostin, T.M. & Bain, S.K. (1997). Predicting early school success with developmental and social skills screeners. Psychology in the Schools, 34, 219-228.

Badian, N.A. (1982). The prediction of good and poor reading before kindergarten entry: A 4-year follow-up. The Journal of Special Education, 16, 309-318.

Badian, N.A. (1994). Preschool prediction: Orthographic and phonological skills, and reading. Annals of Dyslexia, 44, 3-25.

Blumsack, J., Lewandowski, L., & Waterman, B. (1997). Neurodevelopmental precursors to learning disabilities: A preliminary report from a parent survey. Journal of Learning Disabilities, 30, 228-237.

Catts, H.W., Fey, M.E., Tomblin, J.B., & Zhang, X. (2002). A longitudinal investigation of reading outcomes in children with language impairments. Journal of Speech, Language, and Hearing Research, 45, 1142-1157.

Catts, H.W., & Hogan, T.P. (2003). Language basis of reading disabilities and implications for early identification and remediation. Reading Psychology, 24, 223-246.

Coleman, M.R., Buysse, V., & Neitzel, J. (2006). Recognition and response: An early intervening system for young children at risk for learning disabilities. Chapel Hill, NC: The University of North Carolina at Chapel Hill, FPG Child Development Institute.

Ellis, N., & Large, B. (1987). The development of reading: As you seek so shall you find. British Journal of Psychology, 78, 1-28.

Felton, R. (1992). Early identification of children at risk for reading disabilities. Topics in Early Childhood Special Education, 12, 212-229.

Gilbertson, M., & Bramlett, R.K. (1998). Phonological awareness screening to identify at-risk readers: Implications for practitioners. Language, Speech, and Hearing Services in Schools, 29, 109-116.

Gray, S. (2004). Word learning by preschoolers with specific language impairment: Predictors and poor learners. Journal of Speech, Language, and Hearing Research, 47, 1117-1132.

Haney, R.R. (2002). Name writing: A window into the emergent literacy skills of young children. Early Childhood Education Journal, 30, 101-105.

Holopainen, L., Ahonen, T., & Lyytinen, H. (2001). Predicting delay in reading achievement in a highly transparent language. Journal of Learning Disabilities, 34, 401-413.

Joshi, R.M. (2003). Misconceptions about the assessment and diagnosis of reading disability. Reading Psychology, 24, 247-266.

Lowenthal, B. (1998). Precursors of learning disabilities in the inclusive preschool. Learning Disabilities, 9, 25-31.

LD at a glance (n.d.). Retrieved November 16, 2006, from www.ncld.org/content/view/448/480.

Mann, V.A., & Foy, J.G. (2003). Phonological awareness, speech development, and letter knowledge in preschool children. Annals of Dyslexia, 53, 149-173.

Mazzocco, M.M.M., & Thompson, R.E. (2005). Kindergarten predictors of math learning disability. Learning Disabilities Research & Practice, 20, 142-155.

McClelland, M.M., & Morrison, F.J. (2003). The emergence of learning-related social skills in preschool children. Early Childhood Research Quarterly, 18, 206-224.

McClelland, M.M., Morrison, F.J., & Holmes, D.L. (2000). Children at risk for early academic problems: The role of learning related social skills. Early Childhood Research Quarterly, 15, 307-329.

Most, T., Al-Yagon, M., Tur-Kaspa, H., & Margalit, M. (2000). Phonological awareness, peer nominations, and social competence among preschool children at risk for developing learning disabilities. International Journal of Disability, Development and Education, 47, 89-105.

Olofsson, A., & Niedersoe, J. (1999). Early language development and kindergarten phonological awareness as predictors of reading problems: From 3 to 11 years of age. Journal of Learning Disabilities, 32, 464-472.

O'Malley, K. J., Francis, D.J., Foorman, B.R., Fletcher, J.M., & Swank, P.R. (2002). Growth in precursor and reading-related skills: Do low-achieving and IQ-discrepant readers develop differently?. Learning Disabilities Research & Practice, 17, 19-34.

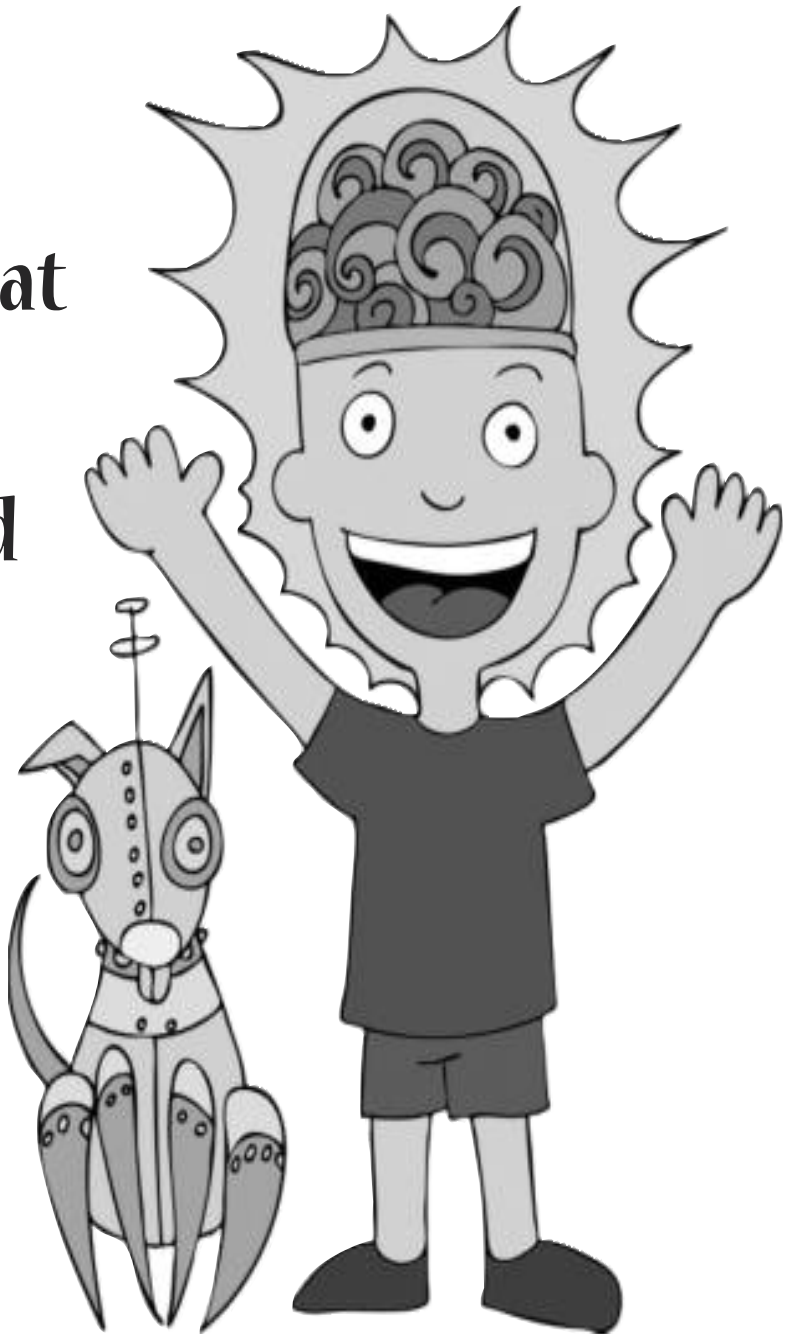
Satz, P., & Fletcher, J.M. (1988). Early identification of learning disabled children: An old problem revisited. Journal of Consulting and Clinical Psychology, 56, 824-829.

Silva, P.A., McGee, R., & Williams, S.M. (1983). Developmental language delay from three to seven years and its significance for low intelligence and reading difficulties at age seven. Developmental Medicine & Child Neurology, 25, 783-793.

Steele, M.M. (2004). Making the case for early identification and intervention for young children at risk for learning disabilities. Early Childhood Education Journal, 32, 75-79.

Teglasi, H., Cohn, A., & Meshbesher, N. (2004). Temperament and learning disability. Learning Disabilities Quarterly, 27, 9-20.

New imaging research shows that the reduced brain activity associated with the onset of dyslexia appears to develop before, not after, a child starts to read.



KEY PARTS OF THE BRAIN'S REAR LEFT HEMISPHERE CRITICAL TO LANGUAGE PROCESSING do not undergo activity changes as a consequence of dyslexia, the study suggests, but may instead be part of the cause.

The finding could ultimately help clinicians screen for at-risk children at an early pre-reading age, when interventions to reduce the severity of the condition might be most effective.

"We already knew that children and adults with a diagnosis of dyslexia show brain alterations within the left posterior—back—part of the brain," said study co-author Nadine Gaab, an assistant professor of pediatrics in the neuroscience program at Harvard Medical School and Children's Hospital Boston. "However, it was unclear whether these alterations are a result of dyslexia [that] show up after years of reading failure or whether they predate the reading onset," she noted.

"[Here] we could show that they predate reading onset," Gaab said. "This suggests that children are either born with it or that it develops within the first few years of life."

The study, published in the Jan. 23 issue of the Proceedings of the National Academy of Sciences, focused on 36 healthy kindergarteners aged 5 and 6 years who had not begun to read.

Half of the children were at a high risk for developing dyslexia, as at least one of their immediate family members had been previously diagnosed with the disability. None of the children had difficulty with hearing or vision, and none had a history of either neurological or psychological illness.

After completing standard pre-reading language and vocabulary skills assessments, all of the children participated in a couple of audio-identification tasks. First, they were asked to listen to a male or female voice uttering a single word twice and then indicate if the two words sounded the same. Next, they listened to a pairing of words and were asked to indicate if the gender of the voice uttering each successive word was the same.

Throughout the testing, the children also underwent functional MRI (fMRI) to monitor their brain activity, with particular focus on two regions of the rear, left brain: the bilateral occipitotemporal and left temporoparietal areas. Both have previously been shown to have a role in dyslexia.

The results: Children in the at-risk group were found to have reduced brain activity in the two key brain areas, compared to their peers with similar age and IQ who did not have family risk factors.

In addition, the research team found that among at-risk pre-reading children there was no evidence of activity increases in key frontal lobe brain regions previously linked to dyslexia. This, they said, suggested that the brain's method for trying to compensate for the problems associated with dyslexia does not appear to be set in motion until after children begin to read.

"Early identification of children at risk in kindergarten or even before then offers a chance to reduce the clinical, psychological and social implications of reading disability/dyslexia," Gaab said. "Identifying early predictors will also help educators, parents and scientists to find ways to support the academic and cognitive development of children with reading disability/dyslexia and may also lead to strategies that will reduce the severity of reading disability."

The question has always been, are these physiological changes the result of dyslexia or are they there to begin with?"

Guinevere Eden, director of the Center for the Study of Learning and a professor of pediatrics at Georgetown University in Washington, D.C., expressed enthusiasm for what she deemed to be 'the first study of its kind."

"The question has always been, are these physiological changes the result of dyslexia or are they there to begin with?' said Eden, who is also the immediate past-president of the International Dyslexia Association.

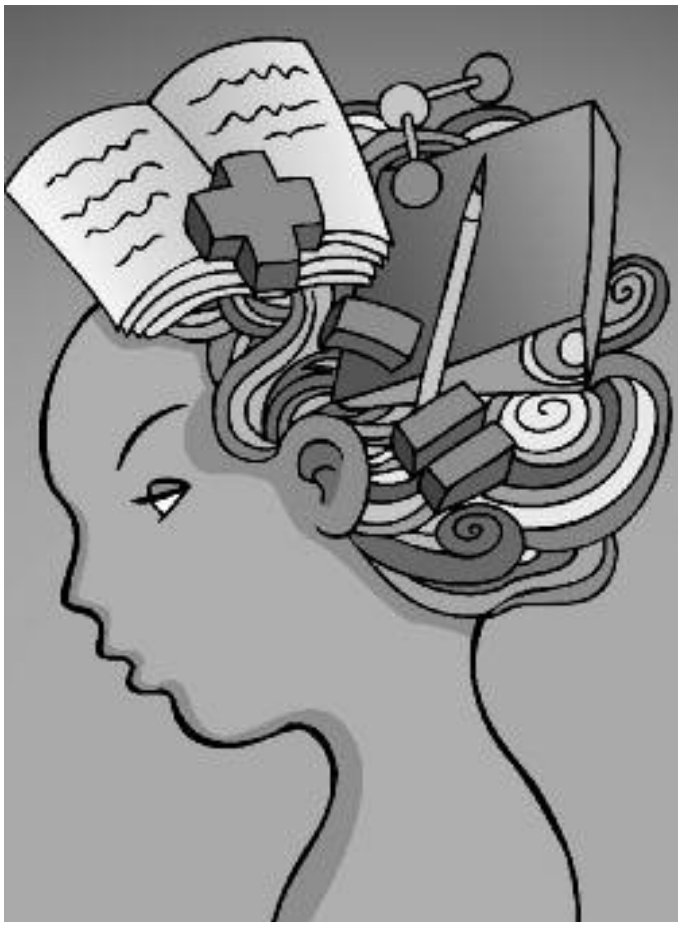
"And so what's interesting about this study, is that by using non-invasive tools, they were able to find that the kind of differences that have been shown in older people with dyslexia are apparently already present in children at risk for dyslexia before they even begin to read," Eden said.

"And that means they have found a physiological signature for a child who is likely at risk for dyslexia, which will be of great help in doing what everyone really wants to do: identifying and treating children with dyslexia as early as possible," Eden added.

SOURCES: Nadine Gaab, Ph.D., assistant professor of pediatrics, Laboratories of Cognitive Neuroscience, Harvard Medical School and Children's Hospital Boston; Guinevere Eden, D.Phil., director, Center for the Study of Learning, and professor of pediatrics, Georgetown University, Washington, D.C., and immediate past-president International Dyslexia Association; Jan. 23, 2012, Proceedings of the National Academy of Sciences

by DANIEL B BERCH PH.D from Spring Edition 2011 *Perspectives on Language & Literacy* Volume 37, No. 2

Working Memory Limitations in Mathematics Learning: Their Development, Assessment, and Remediation



SOME SCHOOL-AGE CHILDREN STRUGGLE with mathematics, routinely experiencing difficulty in learning or remembering basic arithmetic facts and carrying out even the seemingly most elementary numerical operations (Berch & Mazzocco, 2007). Such difficulties are compounded when students are expected to build upon these basics skills as they are introduced to increasingly abstract, mathematical content domains. Consider a letter published in the Washington Post written by a seventh-grade teacher not that long ago:

> Many of the seventh graders I teach have a poor sense of numbers. They don't understand that adding two numbers results in a larger number, that multiplication is repeated addition, that 5 × 6 is larger than 5 × 4 or that one quarter is smaller than one half. This lack of basic math facts detracts from their ability to focus on the more abstract operations required in math at a higher level" (Susan B. Sheridan, Washington Post, December 27, 2004).

What are the key factors contributing to this state of affairs? Is the problem due primarily to poor instruction, or is there something inherently difficult about learning even basic arithmetic because of the ways in which the developing child's mind works? Have we been able to trace the origins of extremely low math performance that would warrant the diagnosis of a mathematical learning disability? And do effective remedial approaches exist for improving the mathematics achievement of such children?

As it turns out, definitive answers to these weighty questions still elude us. Nonetheless, progress is being made on a number of fronts, especially in the study of the fundamental cognitive processes that underlie mathematical thinking in general and those that are crucial for achieving proficiency in carrying out arithmetic calculations in particular. In this article, I will review what we have learned about the contributions of an especially important factor known as "working memory," along with the difficulties which can arise for students who exhibit weaknesses if not

outright deficits in the full complement of skills comprising this construct.

Introduction to the Concept of Working Memory

Precisely what do we mean when invoking the concept of working memory? As this cognitive construct actually encompasses several mental operations, definitions of working memory tend to vary considerably (Dowker, 2005; Shah & Miyake, 1999). Furthermore, although this concept seems comparatively straightforward at one level, it turns out to be much more complicated at another. Such a view is shared by many, including Susan Pickering, a leading researcher in this field who acknowledged that "The concept of working memory is both reassuringly simple and frustratingly complex" (2006, p. xvi).

As a consequence, it may prove instructive to present an example of how working memory can influence arithmetic problem solving before providing a definition. To begin with, consider the following quote taken from Lewis Carroll's Through the Looking-Glass (1871) which Kaufman (2010) describes as "A working memory lapse in Wonderland" (p. 153): "'And you do addition?' the White Queen asked. 'What's one and one and one and one and one and one and one and one and one and one?' 'I don't know,' said Alice, 'I lost count.'"

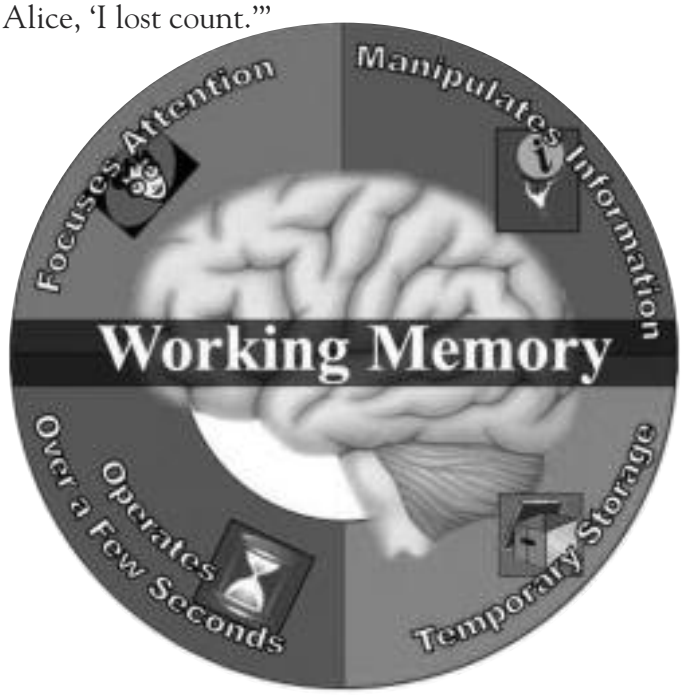


Figure 1. Graphic illustration of the defining features and components of the working memory system. Reprinted from Working-Memory-and-Education – Introduction to Working Memory (WM), D. B. Berch, Retrieved November 17, 2010, from http://working-memory-and-education.wikispaces.com/Introduction+to+Working+Memory+(WM). Copyright 2009 by Carren Tatton. Reprinted with permission.

Although it is doubtful that Alice's failure to solve this problem is attributable to a mathematical learning disability, the example illustrates nicely some of the key components of working memory depicted in Figure 1. That is, in order not to lose count when attempting to solve such a problem, an individual would have to: a) focus attention on each new addend as it is presented, b) manipulate the information by mentally adding the "ones," and at the same time, c) selectively maintain some of the information (in this case, the most recent prior sum) in temporary mental storage, and d) complete all of these tasks within the span of a few seconds. In other words, working memory is probably best defined as a limited capacity system responsible for temporarily storing, maintaining, and mentally manipulating information over brief time periods to serve other ongoing cognitive activities and operations. In essence, it constitutes the mind's workspace.

Getting back to the White Queen's arithmetic problem, while adding single digits should be comparatively easy for most typically achieving seven-and-a-half-year-olds (Alice's age), it is evident from this example that one can excessively tax working memory by requiring a learner to simultaneously attend, store, and mentally process a rather large amount of information (albeit elementary in some sense) within a relatively short period of time. As Susan Gathercole, another leading researcher in this field has pointed out, overloading this fragile mental workspace can lead to "complete and catastrophic loss of information from working memory" (Gathercole, 2008, p. 382).

. . . working memory is probably best defined as a limited capacity system responsible for temporarily storing, maintaining, and mentally manipulating information over brief time periods to serve other ongoing cognitive activities and operations.

Obviously, no teacher would deliberately choose to overload his or her students' working memory capacity. Nevertheless, mathematical information can sometimes be presented in a manner (e.g., orally or in textbooks) that inadvertently strains the processing capacity of students. Practitioners can learn to readily avoid these situations if they are furnished with some basic information about the nature of working memory, its limitations,

and the ways in which students can differ with respect to its constituent skills. Accordingly, the purpose of this article is to provide non-specialists with a succinct overview of the latest research on this topic, which I have organized in a way that will hopefully shed light on some of the most important questions pertaining to the role of working memory in learning school mathematics, including: What are the ways in which working memory's component skills can be measured? How do limitations in working memory contribute to the development of mathematical learning difficulties and disabilities? And finally, what kinds of instructional interventions or remedial approaches are available for mitigating the detrimental effects of working memory limitations on mathematics achievement?

How Are Working Memory Skills Measured?

Children's working memory skills are customarily assessed with a variety of what are referred to as "simple" and "complex" span tasks. Simple span tasks are used to measure the short-term storage capacity of two types of domain-specific representations: verbal and visuospatial. To appraise the former, a reading or listening span measure is usually employed that entails the recall of word or number sequences; when assessing the latter, either the recall of random block-tapping sequences or randomly filled cells in a visual matrix or grid is typically required.

In contrast, complex span tasks gauge domain-general, central attentional resources by imposing substantial demands both on mental storage and processing (Holmes, Gathercole, & Dunning, 2010). As I have described elsewhere (Berch, 2008), a particularly representative example of such a measure is the Backward Digit Span task in which a random string of number words is spoken by the examiner (e.g., saying "seven, two, five, eight..."), and the child must try to repeat the sequence in reverse order. Note that rather than simply having to recall the numbers in the same forward order (which is considered a measure of the short-term, verbal storage component per se), the backward span task requires that the child both store and maintain the forward order (i.e., verbal component) of the number words while simultaneously having to mentally manipulate this information to accurately recite the original sequence in the opposite order. It is this dynamic coordination and control of attention combined with the storing and manipulation of information in support of ongoing cognitive activities that I characterized earlier as being the sine qua non of working memory.

To carry out a comprehensive assessment of children's working memory capacities, most researchers currently make use of one of two standardized batteries—the Working Memory Test Battery for Children (Pickering & Gathercole, 2001) or the Automated Working Memory Assessment (Alloway, 2007). As Holmes and her colleagues (2010) describe, each of these is comprised of several subtests, affording multiple assessments of different

Table 1: Principles of the Classroom-Based Working Memory Approach

Principles	Further Information
Recognize working memory failures	Warning signs include recall, failure to follow instructions, place-keeping errors, and task abandonment
Monitor the child	Look out for warning signs, and ask the child
Evaluate working memory loads	Heavy loads caused by lengthy sequences, unfamiliar and meaningless content, and demanding mental processing activities
Reduce working memory loads	Reduce the amount of material to be remembered, increase the meaningfulness and familiarity of the material, simplify mental processing, and restructure complex tasks
Repeat important information	Repetition can be supplied by teachers or fellow pupils nominated as memory guides
Encourage use of memory aids	These include wall charts and posters, useful spellings, personalized dictionaries, cubes,counters, abaci, Unifix blocks, number lines, multiplication grids, calculators, memory cards, audio recorders, and computer software
Develop the child's own strategies	These include asking for help, rehearsal, note taking, use of long-term memory, and place-keeping and organizational strategies

Note: Adapted from "Working memory in the classroom," by S. E. Gathercole, 2008, The Psychologist, 21, 382–385. Copyright 2008 by The British Psychological Society. Adapted with permission.

facets of working memory (e.g., central attentional resources as well as verbal and visuospatial short-term storage components). Additionally, these batteries permit the identification of children with poor working memory for their chronological age, based on existing norms.

Another technique for identifying children with poor working memory is derived from ratings provided by a child's teacher, a prominent example being the Working Memory Rating Scale (Alloway, Gathercole, & Kirkwood, 2008). This measure consists of approximately 20 statements of problem behaviors such as "She lost her place in a task with multiple steps" and "The child raised his hand but when called upon, he had forgotten his response." Teachers rate how typical each of these behaviors is of a given child using a four-point scale. Although this technique affords a fast and efficient method for initial identification of working memory problems in a school setting (Holmes et al., 2010), it is probably best used as one component of a comprehensive evaluation by the school psychologist. Furthermore, if need be, teachers can choose to make supplementary, informal observations for guiding adjustments to their instructional approaches with particular children.

How Do Working Memory Limitations Contribute to Mathematical Learning Difficulties?

As noted earlier, measures of working memory are usually designed to assess one or more of three presumed subsystems comprising what is known as a multicomponent model: a domain-general, limited capacity central executive that governs the storage and temporary maintenance of information in two domain-specific representational subsystems—the phonological loop and visuospatial sketchpad—by means of attentional control (Baddeley, 1990, 1996; Baddeley & Hitch, 1974). To date, the vast majority of investigations aimed at determining particular relationships between various working memory skills and mathematics learning or performance have been based on this model.

Such relationships have been studied in children ranging from preschool age to adolescence, and for math skills extending from the very basic (e.g., numerical transcoding—writing an Arabic numerical in response to hearing a number word, counting, numerical magnitude comparison, and single-digit addition and subtraction) to more complex mathematical operations and content domains, such as multidigit arithmetic, rational numbers, and algebraic word problem solving. Furthermore, according to Raghubar, Barnes, and Hecht (2010), numerous other factors may influence and therefore complicate the interpretation of findings pertaining to the relations between working memory and math performance, including but not limited to skill level, language of instruction, how math problems are presented, the type of math skill at issue, whether that skill is just being acquired or has already been mastered, the type of working memory task administered, and the kinds of strategies that different-aged children operating at diverse skill levels may employ for a given task.

Consistent with this perspective, Geary and his colleagues (Meyer, Salimpoor, Wu, Geary, & Menon 2010) highlighted the importance of their findings that the contributions of particular components of working memory to individual differences in mathematics achievement can vary with grade level or the type of math content being assessed. More specifically, these researchers showed that the central executive and phonological loop play a more important role in facilitating mathematics performance for second graders, while the visuospatial sketchpad does so for third graders. Furthermore, they provide a compelling argument that this grade-level difference is attributable to instruction and practice rather than a developmental change in working memory capacity.

All this being said, earlier reviews of research on this topic (DeStefano & LeFevre, 2004; Swanson & Jerman, 2006) along with more recent ones (Geary, 2010; Raghubar et al., 2010) have yielded reasonably clear evidence of a generally strong association between working memory capacity and mathematics performance. Indeed, even the leading proponent of the view that the development of mathematical learning disabilities is attributable to a deficit in a domain-specific, inherited system for coding the number of objects in a set has recently acknowledged that the domain-general, central executive functions of working memory are at the very least associated (i.e., correlated) with arithmetic learning and performance (Butterworth, 2010). What is the nature of this relationship? As Geary (2010) concludes after reviewing the findings, the greater the capacity of the central executive, the better the performance both on cognitive mathematics tasks and math achievement tests (Bull, Espy, & Wiebe, 2008; Mazzocco & Kover, 2007; Passolunghi, Vercelloni, & Schadee, 2007). Furthermore, Geary notes that the phonological loop seems to be important for verbalizing numbers, as in counting (Krajewski & Schneider, 2009) and in solving math word problems (Swanson & Sachse-Lee, 2001).

Although studies have also shown that children with either math learning difficulties or disabilities exhibit deficits in all three working memory subsystems, Geary (2010) concludes that impairment in their central executive appears to be particularly troublesome (Bull, Johnston, & Roy, 1999; Swanson, 1993). However, Geary also observes that the interpretation of these findings is complicated by the fact that at least three purported subcomponents of the central executive (i.e., inhibition, updating, and attention shifting) have been found to influence math learning in different ways (Bull & Scerif, 2001; Murphy, Mazzocco, Hanich, & Early, 2007; Passolunghi, Cornoldi, & De Liberto, 1999; Passolunghi & Siegel, 2004).

In summing up what researchers have learned about associations between working memory and math learning disabilities, Geary (2010) affirms that: "At this point, we can conclude that children with MLD have pervasive deficits across all of the working memory systems that have been assessed, but our understanding of the relations between specific components of working memory and specific mathematical cognition deficits is in its infancy" (p. 62).

What Kinds of Interventions or Remedial Approaches Exist for Improving Working Memory?

In a review of techniques used to date for mitigating the difficulties encountered by children who have poor working memory, Holmes and her colleagues (2010) grouped these under three main approaches: 1) a classroom-based intervention that consists of encouraging teachers to adapt their instructional approaches in ways that minimize working memory loads; 2) training designed to teach children to make use of memory strategies for improving the efficiency of working memory, and 3) training aimed directly at improving working memory through the use of an adaptive computerized program that involves repeated practice on working memory tasks.

The classroom-based intervention is founded on a set of seven principles that originated from both classroom practice and cognitive theory (Gathercole, 2008) and are summarized in Table 1. Recently, a research team carried out an evaluation over a one-year period of two forms of this intervention aimed at primary school children with poor working memory (Elliott, Gathercole, Alloway, Holmes, & Kirkwood, 2010). Although there was no evidence that the intervention programs directly improved either working memory or academic performance, the extent to which teachers implemented these seven principles was predictive of their students' mathematical (and literacy) skills. Furthermore, teachers were reportedly very pleased about the ways in which the intervention had improved their own understanding and practice (which exemplifies the kind of mathematics knowledge enhancement that Murphy and her colleagues (this issue) promote for all teachers). Additional studies exploring how best to implement this kind of intervention are clearly warranted if we are to determine the optimal ways for practitioners to enhance children's mathematics achievement through the strengthening of working memory skills.

. . . the extent to which teachers implemented these seven principles (of working memory intervention) was predictive of their students' mathematical (and literacy) skills.

With respect to the strategy training approach, the kinds of memory strategies children have been taught to use include repetitively rehearsing information, generating sentences from words or making up stories based on them, or creating visual images of the information (Holmes et al., 2010). Strategy training incorporating all of these techniques was recently administered to children ranging in age from five to eight years old in two sessions per week over a six-to-eight-week period using a computerized adventure game (St. Clair-Thompson, Stevens, Hunt, & Bolder, 2010). Although training significantly enhanced both verbal short-term memory and working memory, there were no gains in visuospatial short-term memory. More relevant to the focus of this article, performance on a mental arithmetic task improved significantly. Furthermore, all of these gains were evidenced by children with poor working memory as well as those with average working memory. Nevertheless, no significant changes emerged on standardized assessments of arithmetic or other mathematical domains either immediately following training or five months afterward.

Finally, according to Holmes and her colleagues (2010), the most impressive gains in working memory obtained thus far have resulted from a direct training program developed originally for use with children with attention deficit hyperactivity disorder (ADHD; Klingberg et al., 2005; Klingberg, Forssberg, & Westerberg, 2002). Children undergoing this intensive training regimen participate in a variety of computerized tasks designed to repeatedly tax their working memory capacity (i.e., requiring simultaneous storage and manipulation of

information) to the greatest extent possible without exceeding a level they can still manage effectively. This is achieved by matching the difficulty of each successive task to a child's current memory span on a trial-by-trial basis. Holmes, Gathercole, and Dunning (2009) administered this so-called adaptive training program to 9- and 10-year-olds with poor working memory skills in 20 training sessions, each 35 minutes long, over a period of five to seven weeks. Not only did the children exhibit sizeable improvements in verbal and visuospatial working memory, but six months later these gains had still not declined. And even though no gains were found on a standardized mathematics reasoning test immediately after training, a small but significant improvement emerged on the six-month follow-up assessment.

In sum, although these three types of interventions have been shown to improve working memory skills, evidence of their impact on academic performance in general and on mathematics abilities in particular is as yet rather limited (Holmes et al., 2010). However, it is our hope that continued study of ways to enhance such outcomes will yield stronger proof regarding whether such training can transfer to students' mathematics performance.

One final investigation is worth describing here, primarily because even though it was a cognitive laboratory study, it has important implications for improving classroom instruction. Briefly, this investigation revealed that even though the working memory capacity of seven-year-olds is smaller than that of older children and adults, their attentional processes are just as efficient—so long as their smaller working memory capacity is not exceeded (Cowan, Morey, AuBuchon, Zwilling, & Gilchrist (2010). However, when their working memory is overloaded, attentional efficiency declines, suggesting that interventions aimed at enhancing working memory will in turn improve attentional efficiency. As these researchers put it, "In general, children's attention to relevant information can be improved by minimizing irrelevant objects or information cluttering working memory" (p. 131).

Conclusions

Taken together, the research reviewed in this article shows that we are making significant progress toward achieving a more complete understanding of the nature of working memory, its typical course of development, and the best methods for assessing its various features. We have also made important advances in discerning how working memory limitations and impairments can hinder the attainment of proficiency in mathematics, and we have just begun to explore the most promising strategies that can be implemented to enhance the working memory skills most relevant for improving students' mathematical learning and performance. Finally, I hope that the information provided here will be of some use to those of you who teach in identifying working memory limitations in your students, modifying the instructional environment to minimize extraneous or distracting information that might interfere with efficient selective attention, and designing strategies for enhancing your students' working memory skills.

Daniel B. Berch, Ph.D., is a Professor of Educational Psychology and Applied Developmental Science at the University of Virginia's Curry School of Education. He has authored assorted articles and book chapters on children's numerical cognition and mathematical learning disabilities, and is senior editor of the book (co-edited by Dr. Michèle Mazzocco), Why Is Math So Hard for Some Children? The Nature and Origins of Mathematical Learning Difficulties and Disabilities. Dr. Berch served on the National Mathematics Advisory Panel commissioned by President George W. Bush and is a member of the National Center for Learning Disabilities Professional Advisory Board.

References

Alloway, T. P. (2007). Automated working memory assessment. Oxford, UK: Pearson Assessment.

Alloway, T. P., Gathercole, S. E., & Kirkwood, H. (2008). Working Memory Rating Scale. Oxford, UK: Pearson Assessment.

Baddeley, A. D. (1990). Human memory: Theory and practice. Hove, UK: Lawrence Erlbaum Associates.

Baddeley, A. D. (1996). Exploring the central executive. Quarterly Journal of Experimental Psychology, 49A, 5–28.

Baddeley, A. D., & Hitch, G. J. (1974). Working memory. In G. H. Bower (Ed.), The psychology of learning and motivation, Vol.8 (pp. 47–89). New York: Academic Press.

Berch, D. B. (2008). Working memory and mathematical cognitive development: Limitations of limited-capacity resource models. Developmental Neuropsychology, 33, 427—446.

Berch, D. B., & Mazzocco, M. M. M. (Eds.). (2007). Why is math so hard for some children? The nature and origins of mathematical

learning difficulties and disabilities. Baltimore: Paul H. Brookes.
Bull, R., Espy, K. A., & Wiebe, S. A. (2008). Short-term memory, working memory, and executive functions in preschoolers: Longitudinal predictors of mathematical achievement at age 7 years. Developmental Neuropsychology, 33, 205–228.

Bull, R., Johnston, R. S., & Roy, J. A. (1999). Exploring the roles of the visual-spatial sketch pad and central executive in children's arithmetical skills: Views from cognition and developmental neuropsychology. Developmental Neuropsychology, 15, 421–442.

Bull, R., & Scerif, G. (2001). Executive functioning as a predictor of children's mathematical abilities: Inhibition, switching, and working memory. Developmental Neuropsychology, 19, 273–293.

Butterworth, B. (2010. Foundational numerical capacities and the origins of dyscalculia. Trends in Cognitive Sciences, 14, 534–541.

Cowan, N., Morey, C. C., AuBuchon, A. M., Zwilling, C. E., & Gilchrist, A. L. (2010). Seven-year-olds allocate attention like adults unless working memory is overloaded. Developmental Science, 13, 120–133.

DeStefano, D., & LeFevre, J.-A. (2004). The role of working memory in mental arithmetic. European Journal of Cognitive Psychology, 16, 353–386.

Dowker, A. (2005). Individual differences in arithmetic: Implications for psychology, neuroscience and education. New York: Psychology Press.

Elliott, J. G., Gathercole, S. E., Alloway, T. P., Holmes, J., & Kirkwood, H. (2010). An evaluation of a classroom-based intervention to help overcome working memory difficulties and improve long-term academic achievement. Journal of Cognitive Education and Psychology, 9, 227–250.

Gathercole, S. E. (2008). Working memory in the classroom. The Psychologist, 21, 382–385.

Geary, D. C. (2010). Mathematical learning disabilities. In J. Holmes (Ed.), Advances in Child Development and Behavior, Vol. 39 (pp. 45–77). Burlington: Academic Press.

Holmes, J., Gathercole, S. E., & Dunning, D. L. (2009). Adaptive training leads to sustained enhancement of poor working memory in children. Developmental Science, 12, F9–F15.

Holmes, J., Gathercole, S. E., & Dunning, D. L. (2010). Poor working memory: Impact and interventions. In J. Holmes (Ed.), Advances in Child Development and Behavior, Vol. 39 (pp. 1–43). Burlington: Academic Press.

Kaufman, C. (2010). Executive function in the classroom: Practical strategies for improving performance and enhancing skills for all students. Baltimore: Paul H. Brookes.

Klingberg, T., Fernell, E., Olesen, P. J., Johnson, M., Gustafsson, P., Dahlstrom, K. et al. (2005). Computerised training of working memory in children with ADHD— A randomized controlled trial. Journal of the American Academy of Child and Adolescent Psychiatry, 44, 177–186.

Klingberg, T., Forssberg, H., & Westerberg, H. (2002). Increased brain activity in frontal and parietal cortex underlies the development of visuospatial working memory capacity during childhood. Journal of Cognitive Neuroscience, 14, 1–10.

Krajewski, K., & Schneider, W. (2009). Exploring the impact of phonological aware-ness, visual–spatial working memory, and preschool quantity–number competencies on mathematics achievement in elementary school: Findings from a 3-year longitudinal study. Journal of Experimental Child Psychology, 103, 516–531.

Mazzocco, M. M. M., & Kover, S. T. (2007). A longitudinal assessment of executive function skills and their association with math performance. Child Neuropsychology, 13, 18–45.

Meyer, M. L., Salimpoor, V. N., Wu, S. S., Geary, D. C., & Menon V. (2010). Differential contribution of specific working memory components to mathematical skills in 2nd and 3rd graders. Learning and Individual Differences, 20, 101–109.

Murphy, M. M., Mazzocco, M. M. M., Hanich, L. B., & Early, M. C. (2007). Cognitive characteristics of children with mathematics learning disability (MLD) vary as a function of the cutoff criterion used to define MLD. Journal of Learning Disabilities, 40, 458–478.

Passolunghi, M. C., Cornoldi, C., & De Liberto, S. (1999). Working memory and intrusions of irrelevant information in a group of specific poor problem solvers.

Memory & Cognition, 27, 779–790.

Passolunghi, M. C., & Siegel, L. S. (2004). Working memory and access to numerical information in children with disability in mathematics. Journal of Experimental Child Psychology, 88, 348–367.

Passolunghi, M. C., Vercelloni, B., & Schadee, H. (2007). The precursors of mathematics learning: Working memory, phonological ability and numerical competence. Cognitive Development, 22, 165–184.

Can't read.
Can't spell
Can't find
Right

Which hand
Is right?
Wrong?
Right!

Hard
To make
A sentence
Right

Hard
Not to be
Wrong
Right?

Dyslexia
Is even
Hard to spell
Right!

DR. DON BAXTER 8/11/11

My
Dyslexia allows more
Sensitivity
Of mistakes in others
Of missed grammar
Of wrong turns
And slow reading
In others

So
No laughing at others
With falls or stutters
My Dyslexia is
Sensitive
To others!

DR. DON BAXTER 8/28/11

DONALD E. BAXTER, M.D., an Orthopedic Surgeon in Houston, Texas, is internationally known for his original procedures and anatomical discoveries (Nerve of Baxter). He has been a clinical professor at University of Texas and Baylor Medical Schools, teacher of many well- known Orthopedic Foot and Ankle Surgeons, and visiting professor in 27 states and 10 countries. As the author of 40 peer review articles and two medical textbooks, Dr. Baxter has gone outside the box to overcome his dyslexia.

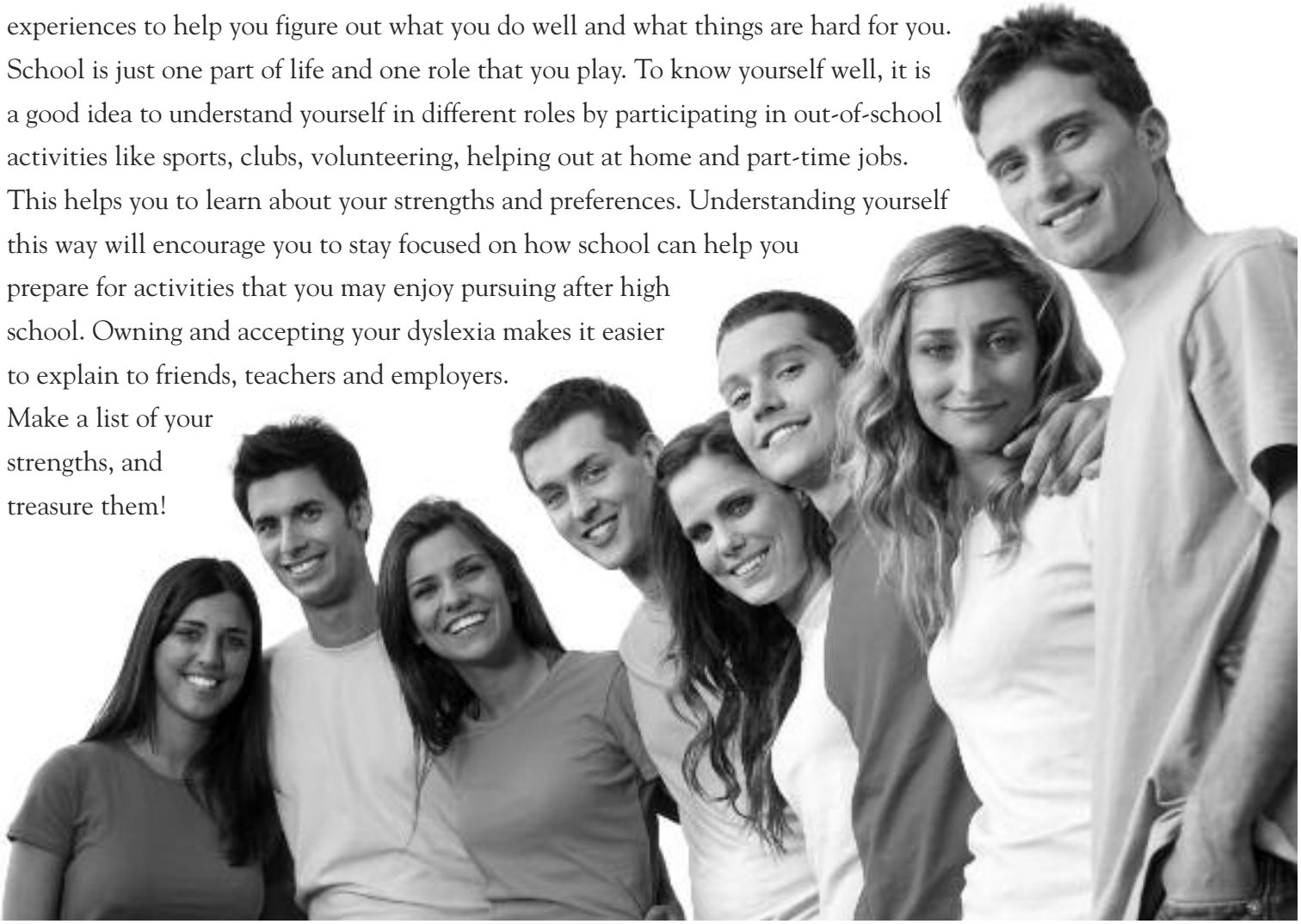
by LYLE CADENHEAD, Ph.D

Dyslexia: Middle and High Schools Don't Have to be a Nightmare

AS A TEACHER, SCHOOL COUNSELOR AND CHILD AND ADOLESCENT PSYCHOLOGIST over the past 20 years, I have listened to the stories of hundreds of students. This article is designed to answer some of the questions that you may have from hearing these tales.

Adolescence tends to be a double-edged sword. It is great to be granted more independence, freedom, later curfews, and more time with friends. However, getting older also comes with its share of stressors: increased workload at school, busy schedules, and the importance of good grades. Having dyslexia helps with creativity and "out of the box thinking," but it sure doesn't help with getting all of the schoolwork done. Students are often bewildered and perplexed about scheduling of classes, dealing with teachers, and handling peer relationships. My answer to the perplexed, is always "Know and be true to yourself." As a student with dyslexia, it is important to know yourself, where you want to go and how to get there.

The path of understanding begins with knowing yourself. To know yourself, you need many different experiences to help you figure out what you do well and what things are hard for you. School is just one part of life and one role that you play. To know yourself well, it is a good idea to understand yourself in different roles by participating in out-of-school activities like sports, clubs, volunteering, helping out at home and part-time jobs. This helps you to learn about your strengths and preferences. Understanding yourself this way will encourage you to stay focused on how school can help you prepare for activities that you may enjoy pursuing after high school. Owning and accepting your dyslexia makes it easier to explain to friends, teachers and employers. Make a list of your strengths, and treasure them!



Write a speech that you can memorize that explains what dyslexia is and how you deal with it if you need to describe it to others.

First, set yourself a goal! It is important to be involved in your IEP meetings. At first, setting goals and making plans may seem challenging, however, the more that you observe others setting goals and following plans, the more that you will learn about the process. Many students need direct instruction from a counselor or psychologist in planning skills along with support from parents, teachers or coaches.

Once you have a plan in place, begin taking the steps necessary to achieve your goal. It's important to communicate your plan with others in order to ensure you have the support you'll need.

Finally, take action and review and monitor your progress! Here's a personal story of one student's success:

My name is Elizabeth. I learned how to take charge of my IEP because my mom, my special education teacher and my counselor helped me. In middle school we all talked, and we decided together that it was time for me to learn steps that would help me become more independent. I knew that this would help me, because I looked forward to being an architect when I graduated. My counselor said, "You, know your mom won't be able to go to college with you." She was smiling when she said that. It sounded like she was joking when she said that, but I realized then that I needed to be more independent so that I could handle myself. By high school I had learned a lot of things that helped me take charge. I sent out invitations to my IEP meetings to my teachers and parents. At the meetings, I would discuss my progress in each subject. I talked about things that were hard for me. My parents and teachers would share their records of my progress. I was so happy with myself. I could talk about my reading skills and how hard it sometimes seemed. They would remind me that I had made a good choice with architecture as this would allow me to display my special talents and creativity in drawing and organizing things spatially. Thank you mom and my special teachers for helping me be independent by helping me build my own skill set!

—ELIZABETH

DR. CADENHEAD is a Psychologist in the Houston area that specializes in counseling and evaluation for children and adolescents from age 18 months to 21 years of age. Her practice focuses on issues around Attention Deficit Hyperactivity Disorder, Anxiety, Depression, Trauma, Asperger's Disorder, Adoption and Developmental Transitions. http://anurturinghome.com/index.html

So now you have a plan of action. What will you do now? Here is a sample plan for you to use. **Good Luck!**

I Need to Know Myself	I Need to know How to Plan Ahead	I Need to Know how to Express My Needs	I Need to Know how to Listen and Learn from Others	I Need to Know how to Monitor my Progress and Adjust my Goals when Necessary
What is my preferred learning style	Develop a planning system to keep track of important dates in the future (when is my term paper due)	Do I express my needs in a calm way	Can I wait my turn to speak	Do I write out my goals on a daily, weekly, monthly basis
What are my learning strengths/weaknesses	Keep track of recurring obligations (when is my tutoring session)	Do I wait for others to decide for me	Do I value others' opinions	Do I go back and check to see what I have accomplished
Learn about thigs that you like to do or might enjoy by volunteering, part-time jobs, observing others	Keep track of specific things you need to accomplish in the day	Do I yell at others to get what I want	Do I know how to reflect on what others say	Do I go back and reset my goals if necessary
	Get a calendar and use it			
	Record academic and social obligations			
	Make out a daily/weekly/ monthly/early calendar of obligations			

COMMENTARY—*EDUCATION WEEK* VOL. 31, ISSUE 13 PUBLISHED ONLINE: NOVEMBER 29, 2011

Bringing Speech Recognition to Reading Instruction

by MARILYN JAGER ADAMS

AS EVERYONE WHO FOLLOWS SUCH THINGS KNOWS, U.S. students, as a group, do not read very well. Yet, if you are among those who have read about this-indeed, if you are among those who are reading this Commentary, then you (and most of your friends, neighbors, relatives, and colleagues) are very likely a member of that subset of Americans I would term the "hyper-educated."

By "hyper-educated," I do not mean extraordinarily highly educated, though many are. By "hyper-educated," I mean that you accept that becoming educated is part of the fabric of life; you never questioned that your children would be educated, and you raised them accordingly from the start. In fact, most of the children of hyper-educated Americans read quite well; that is good. Not so good, however, is a resulting tendency for too many of the hyper-educated to think of children with reading difficulties as the exception.

To the contrary, among U.S. students, it is good readers who are the exception. As documented yet again by the recently released National Assessment of Educational Progress, or NAEP, report on reading for 2011, only one in three U.S. students is able to read and understand grade-level material. Still worse, this statistic holds across school grades and has barely budged over as many years as NAEP has tracked it. Moreover, the degree of the literacy deficit is tightly correlated with the extent to which children depend on school (as distinct from home) for their formal education. The irony, of course, is that the fundamental mission of public schooling is to offer educational opportunity-

including laying the foundation for reading well-to all children, regardless of what their homes might offer.

Toward this end, I have what some would call an unconventional idea for improving American children's reading skills; specifically, embracing the use of voice-recognition software in our nation's classrooms. It is a solution that will take the support of the "hyper-educated" so, please, hear me out.

It is not that our schools are performing more poorly than in years gone by, but that they have never been very good at teaching kids to read. Today's students don't read worse than those of yesteryear, but they read no better, either. The problem is that, today, the literacy demands for a productive, self-sufficient life have increased dramatically. Both individually and collectively, both socially and economically, the future of our country depends vitally on the education of its people.

Today's students don't read worse than those of yesteryear, but they read no better, either. The problem is that, today, the literacy demands for a productive, self-sufficient life have increased dramatically.

Nor is it that we haven't tried to fix this situation. As a recent example, the goal of the federal Reading First initiative was to make sure that all children would leave the primary grades having securely learned and understood the alphabetic basics. Coming at the problem from the other direction, the Common Core State Standards Initiative is centered on ensuring guidance and practice with more sophisticated and informative texts.

Both of these initiatives are important and well-founded, but there is also a lot that must happen in between the two. For students to grapple productively with the intellectual challenges of complex texts, they must first gain the ability to read with fluency and ongoing comprehension. It is with this intermediate challenge that most of our students fall by the wayside. In view of this, this intermediate reading period is where I chose to concentrate in a report released recently on technology for developing children's language and literacy. I wrote the report for the Joan Ganz Cooney Center at Sesame Workshop with the support of the William and Flora Hewlett Foundation.

To most, it is obvious that learning to recognize printed words involves skills and practice specific to the written domain. Yet, this is equally true of the vocabulary, grammar, background knowledge, and modes of thought that characterize text. On every dimension, the comprehension requirements of written language are more demanding, less forgiving, and in many ways qualitatively different from those that characterize oral-language situations. And two overarching factors make this situation still tougher: The first is that, because the knowledge and skills required for reading and understanding written language are specific to written language, their acquisition can come about only through experience in reading and understanding written language. The second is that what has not been understood cannot be learned.

It follows that unless and until children can read and understand texts on their own, they need support and instruction to help them through the task. The obvious reason for providing such help is so students gain from the text at hand. The more important reason is so they will be better able to manage the next text on their own.

As I argue in the report, the real crux of the reading problem lies not with the teachers, the parents, the students, television, the Web, or any of the usual culprits to which blame is often passed. The problem instead is that the individual support required for helping children learn to read is way beyond the capacity of the traditional classroom. Children learn

remarkably quickly given the opportunity, but again, one cannot learn what one does not understand. No matter how she tries, the classroom teacher cannot give each of her 20 or so students the individual support on which learning to read depends.

With this issue in mind, the specific recommendation in the report is that our country get serious about developing speech-recognition-based reading software for our schools. This is not a pie-in-the-sky proposal. Today, people around the world, using dozens of languages, depend on automatic speech recognition for telephone call-routing and directory assistance. It is widely employed in dictation and information capture in the defense, heath-care, and legal sectors. It is used for captioning live television so we can watch our favorite games in noisy sports bars, and by unnamed agencies for transcribing suspicious communications. It is used by people to talk to their computers and mobile devices, for example, while browsing the Web, creating voice commands, and managing their bookmarks. People use automatic speech recognition to issue commands to their cell phones and, in reverse, to ask their cell phones to transcribe their voice mail and send written copies to their email. They also use it to talk to their TVs, their music players, their cars, and their navigation systems. And, of course, speech recognition is very hot in the gaming industry.

Automatic speech recognition is a technology that is mature and even commonplace in industry after industry, with the salient exception of where it is needed most: education.

In other words, automatic speech recognition is a technology that is mature and even commonplace in industry after industry, with the salient exception of where it is needed most: education. Whatever the economic or social value of the applications mentioned above, most pale in comparison to the potential of speech recognition as it could and should be used to help people learn to read and read to learn.

Given "ears," the computer can listen to students as they read, offering help or prompting further thought at just the right moments, while making records of their progress and difficulties in the background. Such technology, in other words, could provide the individualized, one-on-one, interactive support and guidance on which becoming a reader so integrally depends.

In their potential for providing ample, affordable, effective reading support to every child, I believe that speech recognition-based reading applications should be a priority. Were we to redirect just a fraction of the time, genius, and creativity now devoted to developing ever more seductive ways for us to play games, to watch unwelcome ads, and otherwise to waste our time with our mobile devices and computers, we could do this. But until we somehow convince the hyper-educated to support such innovation, it will not happen.

MARILYN JAGER ADAMS is a visiting scholar in the cognitive, linguistics, and psychological sciences department at Brown University, in Providence, R.I. She has been a member of either the planning or steering committee of the National Assessment of Educational Progress in reading since 1992. Her report "Technology for Developing Children's Language and Literacy: Bringing Speech Recognition to the Classroom" can be downloaded for free here:

http://joanganzcooneycenter.org/upload_kits/jgcc_tech_for_language_and_literacy.pdf

(The report's underwriter, the Hewlett Foundation, also provides grant support to Education Week.)

by DR. ROBERT BROOKS

The Play of Children: Lessening Stress and Increasing Self-Control

IN MY DISCUSSIONS WITH PARENTS AND TEACHERS I increasingly hear an observation that should not come as a revelation to anyone who interacts on a regular basis with children, namely, that today's kids seem more stressed than those in previous generations. This is not to minimize the reality that children in the past were anxious, but rather that in today's world there appears to be a greater prevalence of kids who are stressed out. Perhaps of even greater concern is that this phenomenon is becoming evident in younger and younger children. In my travels it is not unusual for parents and educators to express concern about the noticeable worries that burden kindergarten age kids.

When I consult with schools one of my favorite activities in addition to presenting during the day with teachers and in the evening with parents is to spend time observing classrooms and chatting with students. I have been very impressed by the openness of students of all ages to share their feelings and thoughts with me. I frequently ask students about their experiences at school and what advice they would like me to offer their teachers and parents. While I am not surprised by recommendations to improve the quality of food in the cafeteria or to tell parents not to nag about homework, I have listened to kindergartners and first graders voice genuine worry about getting good grades or getting into a so-called good college. These comments are striking coming from five and six-year-olds!

Some teachers wonder if they may be contributing unintentionally to the angst of young children. A kindergarten teacher told me, "All we talk about in the teachers' lounge is preparing kids for state-wide tests. We feel that how our students do on these tests is a reflection of our teaching. Some of my colleagues teaching second and third grade have half-kiddingly encouraged me to begin to prepare the kids in

kindergarten to take tests so that their job will be easier when kids reach their classes. If you visit my class you would probably think I was teaching first-grade given the emphasis on academics. It seems we're teaching academic material at younger ages at the expense of kids playing and having fun."

I thought of this teacher's remarks as well as similar observations while reading two articles, one in *The Boston Globe* titled "Pressure-Cooker Kindergarten' by Patti Hartigan, the other in *The New York Times* titled "Can the Right Kinds of Play Teach Self-Control?" by Paul Tough. Both articles question the movement away from play towards academics in young children. (Readers may wish to read my November, 2006 article that addresses the importance of play in nurturing children's emotional and cognitive growth.)

"Children Learning that They Are Dumb"

The Globe article examines the pressure felt by kindergarten children, noting, "Increasingly in schools across Massachusetts and the United States, little children are being asked to perform academic tasks, including test taking, that early childhood researchers agree are developmentally inappropriate, even potentially damaging. If children don't meet certain requirements, they are deemed 'not proficient.' Frequently, children are screened before school begins, and some are labeled inadequate before they walk through the door...There is a growing disconnect between what the research says is best for children—a classroom free of pressure—and what's actually going on in school."

Renowned psychologist David Elkind, author of the bestselling *The Hurried Child* as well as *Miseducation* and *The Power of Play*, concurs that this disconnect exists, expressing that when children are required to engage in academic material at too early an age, they are basically being told that they are failures. Elkind offers a powerful comment. "We are sending too many children to school to learn that they are dumb. They are not dumb. They are just not there developmentally."

I agree with Elkind's perspective. Lest anyone misunderstand, I am not suggesting that if young children display developmental lags they should not be provided with services. I am a strong advocate of early intervention programs to facilitate the progress of children with documented developmental problems. However, early intervention does not imply trying to stuff information into children who are not ready to assimilate that information. Rather, intensive early intervention programs are effective when they are carefully administered to strengthen those skills in children that are significantly delayed.

Evidence for the Disconnect

Both *The Boston Globe* and *The New York Times* articles cite a recent report released by the nonprofit advocacy group Alliance for Childhood. The report, 'Crisis in the Kindergarten: Why Children Need to Play in Schools," examined the findings of nine studies of public school classrooms in the United States. Hartigan, referring to the report notes, "Kindergartners in the studies spent four to six times as much of the school day being drilled in literacy and math as they did playing. Recess has been truncated or has disappeared entirely in some schools, a double whammy, since children are stressed out by the demands and also deprived of their major stress reliever. The report cites study after study showing increasing stress, aggression, and other behavior problems, and even breakdowns.: (I addressed the importance of having regularly scheduled physical activity in schools in my September, 2008 article, in which I highlighted the excellent book *Spark* by psychiatrist John Ratey.)

In his *New York Times* piece, Tough also quotes the Alliance for Childhood report. "Kindergarten has ceased to be a garden of delight and has become a place of stress and distress. There is too much testing and too little free time and kids are being forced to try to read before they are ready." Tough notes that the authors of the report advocate an increase of "unstructured play" in kindergarten. "If kids are allowed to develop at their own paces, they will be happier and healthier and less stressed out. And there will still be plenty of time later on to learn how to read."

Different Perspectives about Play

Many educators might be skeptical about the long-term benefits of a heavy reliance on "unstructured play," arguing that little, if any, learning will transpire. Similar to most debates about educational practices, one must be careful not to adhere to extreme positions. To set up a dichotomy in which play

and learning are cast as polar opposites is to blind oneself to the ways in which each can enrich the other. I believe that play activities provide many opportunities for learning and that learning is enhanced when the environment is characterized by fun and play.

Interestingly, some developmental experts believe that creating and applying a more structured form of play might bridge any seeming gap between play and learning. For example, Deborah Leong and Elena Bodrova in Denver have devoted their attention to developing systematic programs of play to nurture self-control in young children, a topic of great interest to me, having co-authored with my friend and colleague Dr. Sam Goldstein *Raising a Self-Disciplined Child*. As we discuss in our book, the emergence of self-regulation is a key skill that impacts on all areas of a child's development.

Tough notes in his article that during the past 15 years Leong and Bodrova have drawn upon the teachings of famed Russian psychologist Lev Vygotsky and created a curriculum for prekindergarten and kindergarten students called *Tools of the Mind*. The program is now being used to teach 18,000 prekindergarten and kindergarten students in 12 states around the country.

Vygotsky envisioned as a major goal of preschool education learning to think before one acts and believed that play could serve as a vehicle through which to accomplish this goal. Tough writes, "At the heart of the *Tools of the Mind* methodology is a simple but surprising idea: that the key to developing self-regulation is play, and lots of it. But not just any play. The necessary ingredient is what Leong and Bodrova call 'mature dramatic play': complex, extended make-believe scenarios, involving multiple children and lasting for hours, even days. If you want to succeed in school and life, they say, you first need to spend hour after hour dressing up in firefighter hats and wedding gowns, cooking make-believe hamburgers and pouring nonexistent tea, doing the hard, serious work of playing pretend."

As I read "the hard, serious work of playing pretend," I could not help wondering if this was an oxymoron. How could words such as "hard' and "serious" be affixed to a description of play? Yet, as I reflected upon this seeming contradiction my thoughts drifted to the application of play in therapy, in which difficult themes in a child's life are addressed in the context of fantasy and imagination. Having used play and storytelling in many of my therapeutic endeavors reminded me that the concept of play embraced a wide continuum of activities.

Unlike several other psychologists of his time, Vygotsky believed that imaginary play was not an immature form of expression, but rather a more powerful predictor of future academic success than a child's vocabulary, counting skills, or knowledge of the alphabet.

Tough elaborates that according to Vygotsky "dramatic play was the training ground where children learned to regulate themselves...To Vygotsky dramatic play was the arena where children's actions were most tightly restricted. When a young boy is acting out the role of a daddy making breakfast, he is limited by all the rules of daddy-ness. Some of those limitations come from his playmates: if he starts acting like a baby (or a policeman or a dinosaur) in the middle of making breakfast, the other children will be sure to steer him back to the eggs and bacon. But even beyond that explicit peer pressure, Vygotsky would say the child is guided by the basic principles of play. Make-believe isn't as stimulating and satisfying—it simply isn't as much fun—if you don't stick to your role. And when children follow the rules of make-believe and push one another to follow those rules, he said, they develop important habits of self-control."

Tough continues, "There are not yet firm experimental data that prove that Tools of the Mind works. But two early studies begun in the late 1990s in Denver showed some promising results." One study found that after being exposed to the program for a year, young children performed significantly better than a similar group on basic measures of literacy. Another study found that students in the *Tough for Minds* program consistently scored higher on tests requiring "executive functioning," a concept that includes the ability to plan and organize, to think before one acts, to display self-control.

For some, the Tools of the Mind approach may be interpreted as casting play in a rigid format that appears to be anything but play. This view may be reinforced by other activities in the program such as "coaching" preschool children on dramatic play called *Make Believe Play Practice*. The latter involves the teacher guiding children through the mechanics of pretending such as comforting a crying baby doll and asking what one should do when the baby is distressed. In addition, children "review" their play

activities with their teacher on a weekly basis. Such exercises are theorized to encourage children to reflect on different behaviors and in the process to develop self-control.

Some may question whether "coached play" is deserving of the label of play. Some may argue that while the program facilitates the development of self-regulation, it presents play as an academic task, robbing it of the qualities of fun and enjoyment advocated by Elkind and the authors of the *Alliance for Childhood* report.

Tough observes, "The most lasting effect of the *Tools of the Mind* studies may be to challenge some of the basic ideas about the boundary between work and play. Today, play is seen by most teachers and education scholars as a break from hard work or a reward for positive behaviors, not a place to work on cognitive skills. But in the *Tools of the Mind* classrooms that distinction disappears: work looks a lot like play, and play is treated more like work."

There are child development specialists such as Angela Duckworth, a psychologist on the faculty of the University of Pennsylvania, who appreciate the complexity of the relationship between work and play. Duckworth is a leading researcher in the area of teaching children self-control.

Tough interviewed Duckworth about the tenuous boundaries between work and play. She answered, 'We often think of play as relaxing and doing what we want to do. Maybe it's an American thing: We work really hard, and then we go on vacation and have fun. But in fact, very few truly pleasurable moments come from complete hedonism. What *Tools of the Mind* does—and maybe what we all need to do—is to blur the line a bit between what is work and what is play. Just because something is effortful and difficult and involves some amount of constraint doesn't mean it can't be fun."

Duckworth's observations returned me once again to the theme of play in therapy. As a clinician I am acutely aware that a delicate balance is necessary when engaging in therapeutic play. I recognize that children need to feel free and safe to initiate play and fantasy activities without their experiencing me as being too directive or too intrusive. Yet, I also appreciate there are times when the play of children affords me opportunities to enter their world, to raise questions within the play, and to use their play to facilitate the learning of new skills. For example, there are features of the "Creative Characters" storytelling technique I developed for children (please see my February, 2009 article for a description of "Creative Characters") that are directed by the therapist. In refining "Creative Characters" I learned to move non-intrusively between different levels of structure, always guided by the goal of assisting children to cope more effectively with the many challenges they confront on a daily basis.

A Concluding Thought

I began this article by questioning the practice of attempting to teach children academic material before they were ready to assimilate this material, thereby leaving them vulnerable and stressed, and in some cases as Elkind emphasizes, wondering whether they are "dumb.' Instead, I focused on the importance of play, emphasizing that play should be conceptualized as existing along a continuum from unstructured to structured. Within the boundaries of this ever changing, dynamic continuum, play can provide an avenue through which to create a safe and stimulating environment in which cognitive and emotional development can flourish. In such an environment children are likely to invite us into their world of play and allow us to serve as guides as they learn more about themselves and their world, gaining a sense of confidence and mastery that will last throughout their lives.

DR. ROBERT BROOKS, has lectured nationally and internationally to audiences of parents, educators, mental health professionals, and business people on topics pertaining to motivation, resilience, self-esteem, family relationships, the qualities of effective leaders and executives, and balancing our personal and professional lives. Dr. Brooks received his doctorate in clinical psychology from Clark University and did additional training at the University of Colorado Medical School.

He is on the faculty of Harvard Medical School and has served as Director of the Department of Psychology at McLean Hospital, a private psychiatric hospital. Dr. Brooks has received many awards for his work including a Gubernatorial Award for Distinguished Public Service for his work against drugs, "Hall of Fame" awards from both CH.A.D.D. and the Connecticut Association for Children with Learning Disabilities for his work with special needs children and adolescents, and the Distinguished Leadership Award from Learning Disabilities Worldwide in recognition of his contributions and commitment to the field of learning disabilities. Dr. Brooks has served as a consultant to *Sesame Street Parents Magazine*. www.drrobertbrooks.com

By D. Renee Attaway, M.S., CCC-SLP

Anxiety in Children with Social Cognitive Difficulties

Everyone experiences anxiety to some degree. Most of us worry about anything from money, our work, school performance, relationships, our families, and more. However, the majority of us can function successfully in our daily lives even with this anxiety; we can operate in our jobs or school days, and we can interact successfully with others despite our anxiety. But so many children with anxiety cannot do this. They experience anxiety to an excessive degree, often because they believe the worst will occur, and they believe they won't be able to cope with it.

Anxiety is common in children who have social cognitive difficulties. Many of the children have more of a "world" anxiety related to noises, certain objects, storms, the dark, or other forms of environmental occurrences. On the other hand, for children who are more socially aware and have more advanced language skills, "social" anxiety can be very common. With this type of anxiety, children experience worries when it comes to interacting with the people in their environments or in entering settings where they feel less comfortable. For this type of anxiety, social cognitive therapy must be paired with anxiety strategies to help children gain the skills to interact more successfully in their world.

When "social "anxiety occurs in children, there is often a "spiral of social failure". This has been described by Michelle Garcia Winner, founder of Social Thinking®. In this spiral effect, children react to a social expectation (of interacting or going into an uncomfortable setting) by doubting their ability, making excuses, self-defeating comments, negative emotions, and avoidance, which then reinforces that they can't cope with the anxiety. As a result, they feel that they "can't do it", which

again causes them to doubt and go through the spiral process again with the next social expectation.

Different behaviors reveal anxiety in children. Children show anxiety often by refusing to talk, showing excessive shyness, not participating fully in activities, becoming upset or overly sad, avoiding certain activities or objects, or fidgeting. It is also quite common for an individual to demonstrate controlling behaviors in an attempt to ensure predictability and reduce their anxiety about the activity or environment. At times this can lead to rigidity (although rigidity can also occur for other reasons). When a child is considered "rigid", they will essentially demand sameness in their routines, environments or activities. They must have control over their environment and find it very difficult to compromise or change their ideas or plans to interact successfully in the world around them.

However, children can display anxiety through behaviors that are not as easy to decipher. Some children talk excessively, become silly or socially "unexpected" (or inappropriate), become overly competitive, or crave perfectionism—meaning their product of homework, work, or performance has to be "perfect".

Although helping children to reduce anxiety and function more successfully in their environments can be complex and challenging, there are numerous effective strategies. In nearly any approach, therapy typically begins by helping children to identify their anxiety. This involves helping them find words to label their specific worries. For example, "I am worried because we are going on a plane trip", "I am worried because the fire alarm is going off", or "I am worried about going to this slumber party". It is important to observe how anxiety affects their body. Helping the child to label how anxiety affects their entire body and emotions (i.e. upset stomach, tense body, headache, anger in their brain) can help them to more quickly identify anxiety in the future and even "catch it" before it becomes too extreme.

Next, therapy focuses on encouraging children to specifically identify what it is they are worried will happen. This is an important component to help them begin to understand realistic worries, since most of their worries are actually "worse case scenarios". After they have identified exactly what they are afraid will happen (i.e. "the plane will crash", "the building will burn", "I will fail and get an F", or "I will lose all my friends"), they can then begin to explore those worries. In Helping Your Anxious Child, Dr. Ronald Rapee describes this as "detective thinking". He encourages children to label how likely their worry is to occur, find alternative explanations for their worry, and choose the most realistic explanation for what they are worried will happen. In this common, practical approach, Dr. Rapee also encourages parents to try "stepladders" to break down their fears (i.e., sleeping in the dark, going to a slumber party, or flying on a plane) into small manageable steps. Children are guided to try each "step" and receive rewards and reinforcements for each step of progress. Each step progresses toward the end goal of independently doing what they are afraid of doing.

All of the strategies for anxiety therapy include the key component of helping children learn to cope with their worries. The ownership for attempting the strategies is placed on the child as the adults guide and support them in their attempts. This piece is critical as children must have the confidence to believe they are able to cope with anxiety. This confidence is not encouraged if adults in their world "do it for them" or if they are allowed to avoid their fears. Allowing avoidance or letting adults complete the strategies or take care of the fears reinforces to students that they cannot cope with their worries and this results in more anxiety.

Strategies to help children learn to cope with anxiety are incredibly beneficial and empower them to interact with other people and their environments.

RESOURCES:

Helping Your Anxious Child by Ronald Rapee

When My Worries Get Too Big by Kari Dunn Buron

What to Do When I Worry Too Much by Dawn Huebner

Perfectionism by Miriam Adderholt and Jan Goldberg

Thinking About You Thinking About Me by Michelle Garcia Winner (www.socialthinking.com)

RENEE ATTAWAY is a Speech Language Pathologist and the Director of Social Thinking® at The Parish School.

www.parishschool.org/cur_social_thinking.html

JUST THE FACTS...
Information provided by The International DYSLEXIA Association®

A PARENT'S GUIDE TO EFFECTIVE INSTRUCTION

READING PROBLEMS ARE THE MOST COMMON TYPE OF ACADEMIC UNDERACHIEVEMENT.
Especially for students with dyslexia, learning to read and write can be exceedingly difficult. Dyslexia and related reading and language difficulties are the result of neurobiological variations, but they can be treated with effective instruction.

Effective instruction is instruction that is tied to student needs, as determined by diagnostic testing and evaluation. It is instruction delivered by knowledgeable and skilled individuals in a step-by-step fashion that leads to the achievement of desired outcomes or goals by targeting a student's relative strengths and strengthening his or her relative weaknesses. Effective instruction also requires the ongoing monitoring of student progress to determine the ultimate course and duration of the instruction.

The earlier your child receives effective instruction the better, but people with dyslexia and related disorders can be helped at any age. Even for students with severe and persistent dyslexia who need specialized instruction outside of the regular class, competent intervention from a specialist can lessen the impact of the problem and help the student overcome and manage the most debilitating difficulties (See the International Dyslexia Association's *Knowledge and Practice Standards for Teachers of Reading*, pages 1-2, at **www.interdys.org/standards.htm**).

What Is Effective Instruction?

Effective instruction employs instructional approaches that have been studied and tested by experts in the field of education. These researchers have found that students benefit the most from instructional approaches that are explicit, systematic, cumulative, and multisensory. They integrate the teaching of listening, speaking, reading, spelling, vocabulary, fluency, handwriting, and written expression. These approaches also emphasize the structure of language: phonology, orthography, morphology, syntax, and semantics.

Effective teaching of oral language, reading, and written expression to students with dyslexia also requires teachers with expert knowledge, skills, and abilities. They must understand how language skills are acquired, how reading skills are developed, and that there are individual differences in how students learn. In addition, these teachers need teaching experiences supervised by experts, often referred to as

practicum experiences, to ensure that they learn to use these instructional approaches effectively. Teaching reading really is rocket science (Moats, 1999). So, it's important to make sure that your child has a teacher who is prepared to do this challenging work.

How Do Educators Develop and Implement Effective Instruction?

Research over the last three decades has provided a vast knowledge base that informs both our ability to identify students at risk and to effectively plan their instruction (Spear-Swerling, 2010). The International Dyslexia Association's *Knowledge and Practice Standards for Teachers of Reading* (IDA, 2010; **www.interdys.org/standards.htm**) clearly define the knowledge, skills, and abilities needed to competently teach students with dyslexia and related reading and language disorders. The standards are divided into two broad sections: Section I: Knowledge and Practice Standards and Section II: Guidelines Pertaining to Supervised Practice of Teachers of Students with Documented Reading Disabilities or Dyslexia Who Work in School, Clinical, or Private Practice Settings. Section I includes standards for content knowledge and teaching skills needed by *all teachers of reading*. Section II gives a continuum of competencies needed for application of the content knowledge and practice standards at two levels: Level I expectations for teachers and Level II expectations for specialists.

Instructional approaches and programs may differ in specific techniques and materials, but those found to be most effective include structured, explicit, systematic, cumulative instruction designed to promote understanding, memory, recall, and use of spoken and written language. Effective instruction integrates multiple components that focus on phonological processing skills, phonics and word analysis, spelling, word recognition, oral reading fluency, grammar and syntax, text comprehension, writing, and study skills.

REFERENCES

International Dyslexia Association (2010). *Knowledge and Practice Standards for Teachers of Reading* (www.interdys.org/standards.htm).

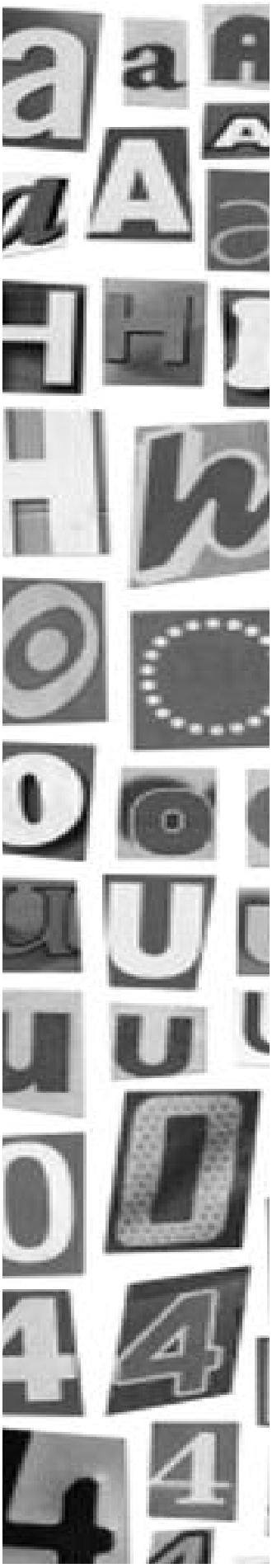
Moats, L.C. (1999). *Teaching Reading IS Rocket Science: What Expert Teachers of Reading Should Know and Be Able To Do.* (Item #372) Washington, DC: American Federation of Teachers.

Spear-Swerling, L. (Fall, 2010). IDA's Knowledge and Practice Standards and Teacher Preparation. *Perspectives*, 36 (4): 7-9. [IDA website: http://www.interdys.org]

The International Dyslexia Association (IDA) thanks Nancy Cushen White, Ed.D., for her assistance in the preparation of this fact sheet.

"promoting literacy through research, education and advocacy" ™

The International Dyslexia Association · 40 York Road · Fourth Floor · Baltimore · MD · 21204
Tel: 410-296-0232 · Fax: 410-321-5069 · E-mail: info@interdys.org · Website: http://www.interdys.org



JUST THE FACTS...
Information provided by The International DYSLEXIA Association®

SPELLING

HOW COMMON ARE SPELLING DIFFICULTIES? Spelling is difficult for many people, but there is much less research on spelling than there is on reading to tell us just how many people spell poorly or believe they spell poorly. Less is known about spelling competence in the general population than is known about reading achievement because there is no national test for spelling and many states do not test students' spelling skills.

Almost all people with dyslexia, however, struggle with spelling and face serious obstacles in learning to cope with this aspect of their learning disability. The definition of dyslexia (see Fact Sheet on Definition) notes that individuals with dyslexia have "conspicuous problems" with spelling and writing, in spite of being capable in other areas and having a normal amount of classroom instruction. Many individuals with dyslexia learn to read fairly well, but difficulties with spelling (and handwriting) tend to persist throughout life, requiring instruction, accommodations, task modifications, and understanding from those who teach or work with the individual.

What causes spelling problems?

One common but mistaken belief is that spelling problems stem from a poor visual memory for the sequences of letters in words. Recent research, however, shows that a general kind of visual memory plays a relatively minor role in learning to spell. Spelling problems, like reading problems, originate with *language* learning weaknesses. Therefore, spelling reversals of easily confused letters such as b and d, or sequences of letters, such as wnet for went are manifestations of underlying *language* learning weaknesses rather than of a visually based problem. Most of us know individuals who have excellent visual memories for pictures, color schemes, design elements, mechanical drawings, maps, and landscape features, for example, but who spell poorly. The kind of visual memory necessary for spelling is closely "wired in" to the language processing networks in the brain.

Poor spellers have trouble remembering the letters in words because they have trouble noticing, remembering, and recalling the features of language that those letters represent. Most commonly, poor spellers have weaknesses in underlying language skills including the ability to analyze and remember the individual sounds (phonemes) in the words, such as the sounds associated with *j , ch, or v,* the syllables, such as *la, mem, pos* and the meaningful parts (morphemes) of longer words, such as *sub-, -pect,* or *-able*. These weaknesses may be detected in the use of both spoken language and written language; thus, these weaknesses may be detected when someone speaks and writes.

Like other aspects of dyslexia and reading achievement, spelling ability is influenced by inherited traits. It is true that some of us were born to be better

spellers than others, but it is also true that poor spellers can be helped with good instruction and accommodations.

Diagnosis of spelling problems

If dyslexia is suspected, and the student is at the kindergarten or first-grade level, simple tests of phoneme awareness and letter naming can predict later spelling problems, just as they predict later reading problems. If a student is struggling to remember spelling words, a standardized test of spelling achievement with current national norms should be given to quantify just how serious the problem is. In addition, a spelling diagnostic test should be given to identify which sounds, syllable patterns, or meaningful parts the student does not understand or remember. A spelling diagnostic test, such as a developmental spelling inventory, will tell a teacher exactly which consonant, vowel, syllable, and word spellings the student must be taught. Third, the student should be tested on his or her knowledge of the most commonly used words in English that are necessary for writing, as these, too, should be emphasized in instruction.

How do children learn to spell?

Children gradually develop insights into how words are represented with letters in preschool, kindergarten, and first grade. This process moves ahead much more quickly (and successfully) if instruction in sounds and letters is systematic, explicit, and structured. Spelling of whole words is facilitated when the child understands that words are made up of separate speech sounds and that letters represent those sounds. As knowledge of that principle increases, children also notice patterns in the way letters are used, and they notice recurring sequences of letters that form syllables, word endings, word roots, prefixes, and suffixes. Memories for whole words are formed much faster and recalled much more easily when children have a sense of language structure and receive ample practice writing the words.

Inventive spelling or spelling words the way they sound is common in preschool and kindergarten children and is a desirable step in understanding how we use letters to spell. However, inventive spelling is not sufficient for students to learn all of the conventions and patterns of Standard English writing. Encouraging students, beyond the beginning of first grade, to invent their spellings or to ignore correct spelling is not constructive. Is the English spelling system predictable or unpredictable?

The English spelling system is not crazy or unpredictable.

It can be taught as a system that makes sense. Nearly 50% of English words are predictable based on sound-letter correspondences alone (e.g., slap, pitch, boy). An additional 37% of the more common words are almost predictable except for one sound (e.g., knit and boat). Other information, such as the language from which a word came (e.g., Old English, Latin, Greek, or French) and word meaning, also helps explain the spellings of words. Only 4% of English words are truly irregular and may have to be learned through whole word methods, such as tracing and saying the letters while the word is being memorized. Thus, it is possible to approach spelling instruction with confidence that the system by and large makes sense—an encouraging observation for students who have great difficulty forming memories for words.

What are the implications for teaching?

Spelling instruction that explores word structure, word origin, and word meaning is the most effective, even though students with dyslexia may still struggle with word

recall. Emphasizing memorization by asking students to close their eyes and imagine the words, or asking them to write words multiple times until they "stick" are only useful after students are helped to understand why a word is spelled the way it is. Students who have learned the connections between speech sounds and written symbols, who perceive the recurring letter patterns in English syllables, and who know about meaningful word parts are better at remembering whole words.

Classroom spelling programs should be organized to teach a progression of regular spelling patterns. After first grade, spelling instruction should follow and complement decoding instruction for reading. Children should be able to read the words in their spelling lesson; most learners can read many more words than they can spell.

Understanding correspondences between sounds and letters comes first. For example, before spelling a word, students can orally take the sounds of the word apart. Then, they can recall the letters that spell those sounds. Next, patterns such as the six basic syllable types of English should be taught because they represent vowel sounds in predictable ways. Third, students should be taught a few basic rules for adding endings to words, such as when letters should be doubled, when y is changed to i, and when the silent e is dropped.

A few irregular words should be practiced daily (e.g., come, they, their, who). Tracing and saying the letters, building the words with letter tiles, copying and writing in sentences, all help build memories for irregular words. Students may be able to handle only a few new words at a time, and they may need many opportunities to write words accurately and with supervision before they can remember them. As words are learned, exercises to build fluency, such as word and sentence dictations, are helpful. Having students keep a list of their own particular "spelling demons" for reference supports the development of proofreading ability and aids mastery of the spelling of those challenging words.

It is important that students learn to spell words for writing and not just for spelling tests. Transfer to spelling in everyday writing is essential. It helps if the student is taught to use a proofreading procedure that involves checking for one element at a time, such as punctuation, capitalization, spelling, sentence structure, and organization.

Computer spellcheckers are not helpful unless the student has already achieved basic spelling skill, at about a fifth-grade level, and unless the student receives other proofreading help. Spellcheckers do not identify all errors.

Important accommodations and task modifications for dyslexic students include the following:

- grading written work primarily on content,
- writing correct spellings over incorrect ones and limiting rewrites to a reasonable amount,
- providing proofreading assistance,
- encouraging students to dictate their thoughts before writing and giving them the spellings of key content words to use in writing,

- allowing students in intermediate grades and higher to type exams and papers or to use a voice-translation device on a computer,
- encouraging students to hand in early drafts of research papers and essays to allow for revision before grading.

REFERENCES

Berninger, V. W., Vaughn, K., Abbot, R. D., Brooks, A., Begay, K., Curtin, G., Byrd, K., & Graham, S. (2000). Language-based spelling instruction: Teaching children to make multiple connections between spoken and written words. *Learning Disability Quarterly, 23*, 117–135.

Carreker, S. (2011). Teaching spelling. In J. R. Birsh (Ed.), *Multisensory teaching of basic language skills* (3rd ed.) (pp. 225-292). Baltimore: Paul H. Brookes.

Cassar, M., Treiman, R., Moats, L. C., Pollo, T. C., & Kessler, B. (2005). How do the spellings of children with dyslexia compare with those of nondyslexic children? *Reading and Writing: An Interdisciplinary Journal*, 18, 27–49.

Ehri, L. C. (2000). Learning to read and learning to spell: Two sides of a coin. *Topics in Learning Disorders*, 20, 19–49.

Graham, S. (1999). Handwriting and spelling instruction for students with learning disabilities: A review. *Learning Disability Quarterly, 22*, 78–98.

Henry, M. K. (2010). Unlocking literacy: *Effective decoding and spelling instruction*, (2nd ed.) Baltimore: Paul H. Brookes.

Joshi, R. M., Treiman, R., Carreker, S., & Moats, L. C. (2008/2009). How words cast their spell: Spelling instruction focused on language, not memory, improves reading and writing. *American Educator*, 32(4), 6–16, 42–43.

Kessler, B. & Treiman, R. (2003). Is English spelling chaotic? Misconceptions concerning its irregularity. *Reading Psychology, 24, 267–289*.

Moats, L. C. (2005). How spelling supports reading: And why it is more regular and predictable than you think. *American Educator, Winter 2005/06*, 12–22, 42–43.

Moats, L.C. (2010) *Speech to print: Language essentials for teachers* (2nd ed.). Baltimore: Paul H. Brookes.

Treiman R., & Bourassa, D. (2000). The development of spelling skill. Topics in language disorders, 20, 1–18.

The International Dyslexia Association (IDA) thanks Louisa Cook Moats, Ed.D., for her assistance in the preparation of this fact sheet.

"promoting literacy through research, education and advocacy" ™

The International Dyslexia Association · 40 York Road · Fourth Floor · Baltimore · MD · 21204
Tel: 410-296-0232 · Fax: 410-321-5069 · E-mail: info@interdys.org · Website: http://www.interdys.org

2012 NANCY LaFEVERS COMMUNITY SERVICE AWARD

Lenox Reed

THE AWARDS COMMITTEE FOR THE NANCY LAFEVERS COMMUNITY SERVICE AWARD has selected the award recipient for 2012 to be Lenox Reed. Lenox was chosen for her many contributions to the Houston Branch, the community, and IDA. She came to Houston after she had been trained in Alphabetic Phonics at the Lucas Waites Center at Scottish Rite Hospital in Dallas, Texas. Her first student was Will Noel, who was diagnosed as mildly dyslexic. As her young family grew, she continued to work with other students who are now adults.

In the late 1970's she joined other enlightened Houstonians who were exploring why students struggled with reading and how they could be taught to read. This group of luminaries in the field of dyslexia founded in 1978 the Houston Branch of The Orton Society now known as IDA. Lenox was the branch's first vice president and Oscar Neuhaus was president. The Houston Branch was chartered in 1980. When Oscar Neuhaus died suddenly in March 1980, his friends obtained a grant to found Neuhaus Education Center which would provide professional development in Alphabetic Phonics to teachers of students with dyslexia. Their other possible choice was to fund a fire station in his honor but his desire to have a teacher education center won out. Lenox was Neuhaus' first executive director.

The Center set up in borrowed space and Lenox began visiting speech/language pathologists, teachers, and others and encouraging them to take Alphabetic Phonics. Peggy Engman and Nancy LaFevers were among those early students. Nancy often said that when she took the AP training at Neuhaus she had found the key to teaching students with dyslexia how to read—the piece that was missing from other programs. She became a steadfast supporter of Neuhaus.

Nancy served actively on the Houston Branch board and was part of the team that planned and executed the 1995 Orton Society National Conference in Houston along with Will Noel, Suzanne Carreker, Ann Neyland, Carolyn Wickerham, and many others. When Nancy died suddenly in 2006, the Houston Branch was planning a luncheon to honor her, but instead instituted the Community Service Award in her name with Nancy as the first recipient. Her memorial service was held at Neuhaus at the request of her husband Jerry Ambroze and memorial gifts in Nancy's name funded the Houston Branch diagnostic testing scholarships that she had expressed as one of her wishes.

Lenox dedicated her life to Neuhaus as Executive Director but continued her tremendous involvement with IDA at the local and national level, serving on many IDA committees and as a member of the IDA Board of Directors. She continues to support IDA and the Houston Branch. When Lenox was asked if she would accept the award, she said she was greatly honored but also expressed how many others were deserving of this award. After serving the dyslexic community for all her adult life, Lenox is very deserving of recognition in the Houston area, especially the award named for Nancy LaFevers. Their lives and service to the community were entwined over many years. Our special thanks and gratitude to Lenox for her service to IDA, HBIDA, and the greater Houston Community.

Lenox will receive the award at the March 3, 2012 conference luncheon.

Thank You Jim!

The Houston Branch of The International Dyslexia Association thanks JIM CARTER for his dedication and service as president of HBIDA for the past four years.

The Houston Branch of
The International Dyslexia Association
FOUNDED IN MEMORY OF SAMUEL T. ORTON

PRESENTS

Reading, Literacy & Learning

Saturday, March 3, 2012

DOUBLETREE HOTEL DOWNTOWN
ALLEN CENTER
400 DALLAS STREET
HOUSTON, TEXAS

Register before February 18th to take advantage of our discounted rates
Online registration available with a credit card at www.houstonida.org

For scholarship information, contact HBIDA at 832-282-7154

CEUs Available:
Five and one-half hours (5.5)
ALTA (Approved)

Keynote Speaker and Lenox Reed and Will Noel Lecturer:
Robert Brooks, Ph.D.

"The Power of Mindsets: Nurturing Motivation and Resilience in Children"

Dr. Robert Brooks has lectured nationally and internationally to audiences of parents, educators, mental health professionals, and business people on topics pertaining to motivation, resilience, self-esteem, family relationships, the qualities of effective leaders and executives, and balancing our personal and professional lives. Dr. Brooks received his doctorate in clinical psychology from Clark University and did additional training at the University of Colorado Medical School. He is on the faculty of Harvard Medical School and has served as Director of the Department of Psychology at McLean Hospital, a private psychiatric hospital. Dr. Brooks has received many awards for his work including a Gubernatorial Award for Distinguished Public Service for his work against drugs, "Hall of Fame" awards from both CH.A.D.D. and the Connecticut Association for Children with Learning Disabilities for his work with special needs children and adolescents, and the Distinguished Leadership Award from Learning Disabilities Worldwide in recognition of his contributions and commitment to the field of learning disabilities. Dr. Brooks has served as a consultant to *Sesame Street Parents Magazine.*

Breakout Session:
Elena Denis, L.C.S.W.

"Executive Function – What it is, What is its importance, What we can do"

Breakout Session:
Brenda Taylor, M.Ed.

"Dyslexia – Setting the Record Straight"

Breakout Session:
Elizabeth Dybell, Ph.D.

"Dyslexia Outside of the Classroom (a/k/a Dyslexia has wings and takes flight!)"

Breakout Session:
W. Daniel Williamson, M.D.

"ADHD – Connection to Dyslexia and Treatment"

Breakout Session:
Elaine Whitley, M.Ed., CALT

"Diagnosing and Diagnostic Testing"

For more information contact us at:
832-282-7154
events@houstonida.org

CEU Credit Hours:
Five and one-half (5.5) ALTA *(Approved)*
Five and one-half (5.5) TSHA *(Pending)*

GRADES 6 -12 SUCCESS WITH COMPLEX LEARNING DISABILITIES

"Brehm has helped me become more aware. I've gotten to know myself, my learning disabilities and my processing issues. If I have a problem, I now feel comfortable talking with someone about it. After making so many friends here, it's the first time in my life that I feel that I'm not alone."

— Anna

Brehm School is a unique family style boarding school for students with complex learning disabilities, grades 6-12.

Brehm is a forerunner in serving students with dyslexia, ADD/ADHD, auditory processing disorders, NVLD, aspergers and language-based learning disabilities.

Brehm students go on to college, find fulfilling careers and become successful entrepreneurs.

The one of a kind Brehm experience offers:

- A fully accredited high school
- A unique holistic program (Fulfilling our students academic, social and emotional needs)
- 4:1 student-to-teacher ratio
- Individualized academic curriculum
- Team recreational programs & Interscholastic sports
- Supervised dorm living
- 24/7 Health Services, Nursing staff and support
- 5 full-time Speech Language Pathologists on staff

OPTIONS Transitions to Independence is a comprehensive transitional program, with structured apartment living, for post high school students with complex learning disabilities.

OPTIONS helps young adult students find independent adulthood.

The OPTIONS Program offers:

- Structured living with Independent Living Counselors
- Social skills training & implementation
- Academic instruction
- Speech language therapy
- Two instructional tracks:
  - College Transition Track
    College class participation with academic support
  - Certificate of Completion Track
    Certificates include:
    Business
    Retail
    Health Services
    Computer
    Animal Care
    Social Services
    Food Services
    Janitorial Services
- Nursing staff and support
- Internship participation
- Employment readiness

POST HIGH SCHOOL SUCCESS WITH COMPLEX LEARNING DISABILITIES

"OPTIONS helped change my life.

After struggling with parochial school, I was diagnosed with ADD and OCD. Soon after, I began attending Brehm and OPTIONS, which helped me through community college and then Southern Illinois University. Thanks to the lessons I've learned from Brehm, I'm only the second person in my family to graduate from college."

— Pete

BREHM

Call Brehm today: 618.457.0371

Empowering students grades 6 through 12 with complex learning disabilities to recognize and achieve their full potential.

Brehm School 1245 E. Grand Avenue Carbondale, IL 62901 www.Brehm.org

OPTIONS
TRANSITIONS TO INDEPENDENCE

Call OPTIONS today: 618.549.4201

Empowering post high school students with complex learning disabilities to recognize and achieve their full potential.

OPTIONS 101 S. Lewis Lane Carbondale, IL 62901 www.ExperienceOptions.org

How do you achieve literacy for life?

Build a solid foundation in reading and spelling for beginning readers

Wilson Fundations® for K–3 ensures that general education and at-risk students obtain the critical skills for reading and spelling.

Close the reading gap for struggling readers

Wilson Just Words® provides a systematic study of word structure to students in grades 4–12 and adults who require word-level intervention.

Reach the most challenged readers

Wilson Reading System® is a highly structured remedial program for grades 2–12 and adults who require the intensive intervention of a research-based multisensory program.

Support teachers so they can develop fluent, independent readers

Wilson Professional Development provides teachers with the skills and confidence to teach even the most challenged readers.

Sustain program implementation and teacher support

Wilson Literacy Teams partner with school districts so they can successfully implement and sustain programs.

WILSON®
Wilson works.™

Put Wilson to work in your **Prevention, Intervention** and **Intensive** settings and get the results you're looking for.

To receive a catalog or learn more call **800-899-8454** or visit **www.wilsonlanguage.com**

Making Math Real® INSTITUTE

www.makingmathreal.org

O-G = Reading & Language
MMR = MATHEMATICS!

The Premier Multisensory Structured Professional Development for Cognitive Development in Mathematics
Fully Structured for Pre–K through Calculus

FOR MORE INFORMATION, PLEASE VISIT

www.MakingMathReal.org

SOLUTIONS FOR RTI: TIERS 1, 2, AND 3

Berkeley EXTENSION

Receive MMR through the Institute or bring MMR to your site!

MAKING MATH REAL IS PRESENTED IN ASSOCIATION WITH UC BERKELEY EXTENSION

Lindy Kahn, M.A., CEP

KAHN EDUCATIONAL GROUP, LLC

Consulting and Placement Services

Day/Boarding Schools, College Advising, Crisis Intervention (behavioral/academic, substance abuse) Special Needs Placement (LD, ADHD), Summer & Wilderness Programs, Therapeutic Schools

Ph. 713-668-2609
Fax 713-668-4551

Email: lkahn@educationalconsulting.com
URL: www.educationalconsulting.com

6717 Vanderbilt Houston, TX 77005

You're Invited...

Houston Branch

International Dyslexia Association

- Brazos Valley Regional Group

Public Meetings held in the Fall and Spring each year

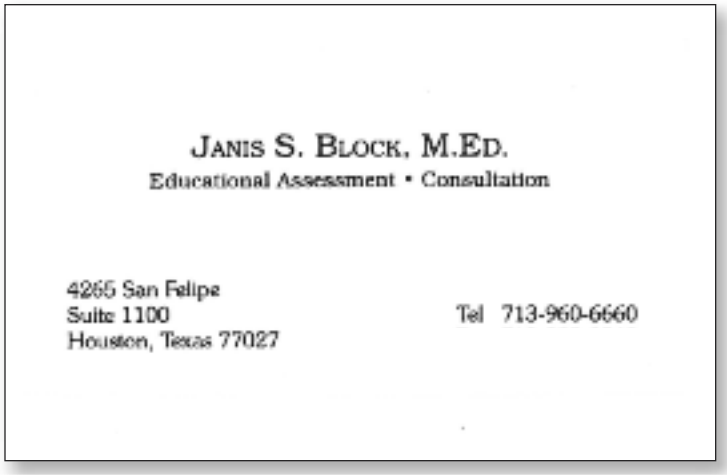
Dates, Times, and Locations TBA via HBIDA-BV Listserv

This organization is free and open to anyone with an interest in dyslexia (parents, teachers, etc.).

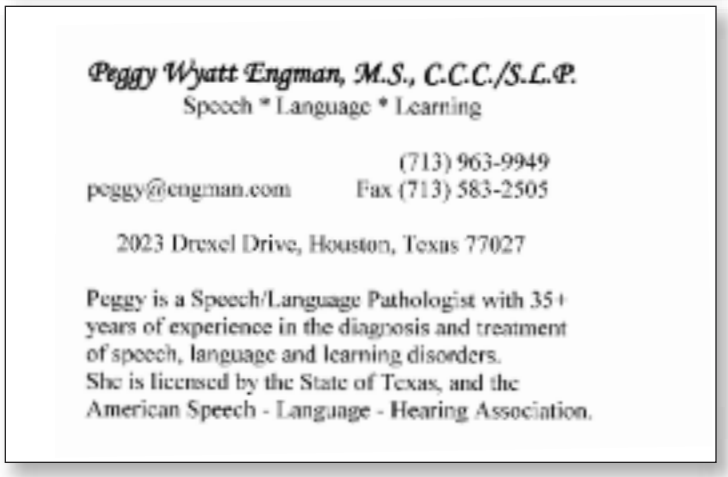
Our purpose is to promote understanding and awareness of dyslexia, publicize dyslexia events and news, and support those with dyslexia through collaboration of the Brazos Valley

For questions, comments, or more information (or to be added to our listserv), please send an e-mail to brazosvalleyida@gmail.com

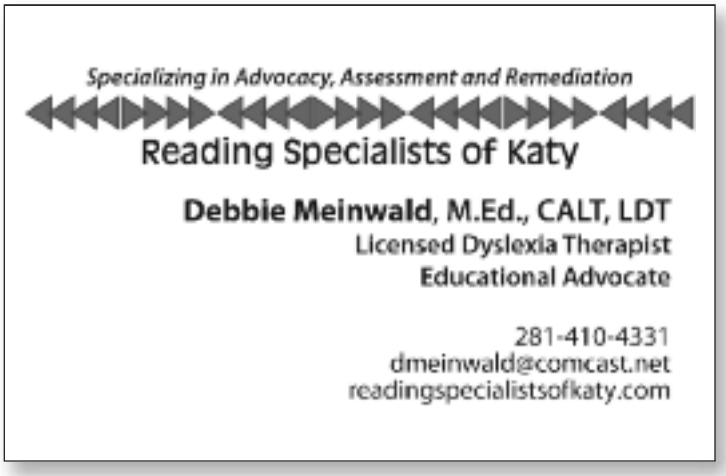

LYN ARMSTRONG, OTR
Occupational Therapist
281-438-0181
www.lynaot.com
lyn@lynaot.com

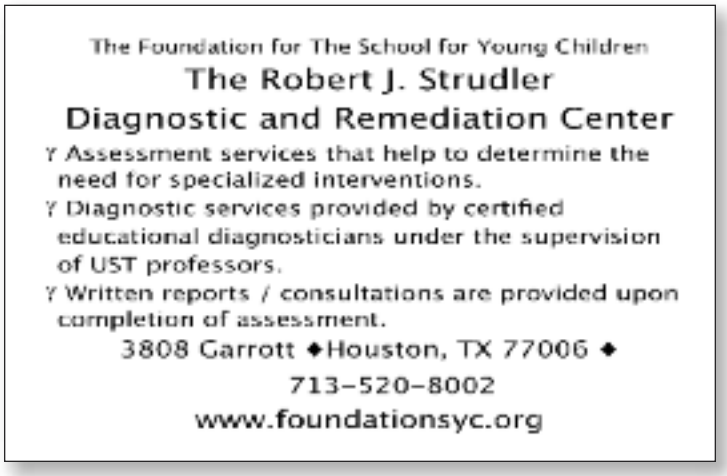

JANIS S. BLOCK, M.ED.
Educational Assessment • Consultation
4265 San Felipe
Suite 1100
Houston, Texas 77027
Tel 713-960-6660

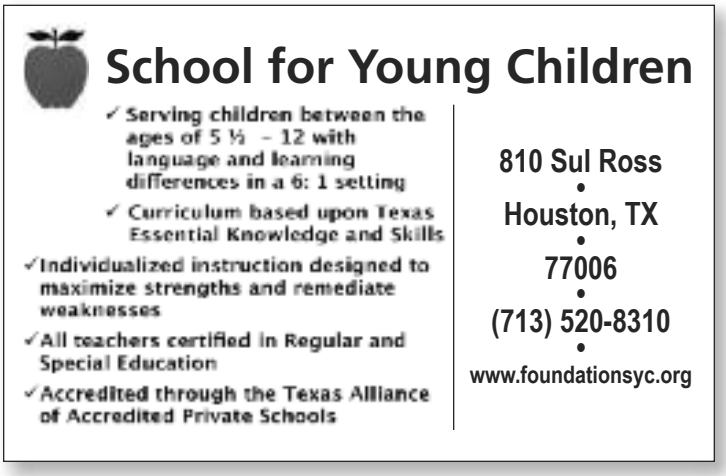

the clinic
for
academic therapy
4545 Bissonnet
Suite 215
Bellaire, Tx 77401
713-666-9343
Carolyn Hollrah, M.Ed.
Susan Kahn, M.Ed.


Peggy Wyatt Engman, M.S., C.C.C./S.L.P.
Speech * Language * Learning
(713) 963-9949
peggy@engman.com Fax (713) 583-2505
2023 Drexel Drive, Houston, Texas 77027
Peggy is a Speech/Language Pathologist with 35+
years of experience in the diagnosis and treatment
of speech, language and learning disorders.
She is licensed by the State of Texas, and the
American Speech - Language - Hearing Association.


AARON H. FINK, M.D., P.A.
Child, Adolescent and Adult Psychiatry
4550 Post Oak Place, Suite 320 • Houston, Texas 77027
www.aaronhfinkmd.com
713-622-5480


Specializing in Advocacy, Assessment and Remediation
Reading Specialists of Katy
Debbie Meinwald, M.Ed., CALT, LDT
Licensed Dyslexia Therapist
Educational Advocate
281-410-4331
dmeinwald@comcast.net
readingspecialistsofkaty.com


The Foundation for The School for Young Children
The Robert J. Strudler
Diagnostic and Remediation Center
Y Assessment services that help to determine the need for specialized interventions.
Y Diagnostic services provided by certified educational diagnosticians under the supervision of UST professors.
Y Written reports / consultations are provided upon completion of assessment.
3808 Garrott ♦Houston, TX 77006 ♦
713-520-8002
www.foundationsyc.org


School for Young Children
✓ Serving children between the ages of 5 ½ – 12 with language and learning differences in a 6: 1 setting
✓ Curriculum based upon Texas Essential Knowledge and Skills
✓Individualized instruction designed to maximize strengths and remediate weaknesses
✓All teachers certified in Regular and Special Education
✓Accredited through the Texas Alliance of Accredited Private Schools
810 Sul Ross
•
Houston, TX
•
77006
•
(713) 520-8310
•
www.foundationsyc.org

SPEECH & LANGUAGE SERVICES

POLLY GARDNER, M.A., CCC-SLP
DIRECTOR

1001 MEDICAL PLAZA DR., SUITE 140
THE WOODLANDS, TEXAS 77380
(281) 367-2035 • FAX: (281) 298-2978
pollygardner@sbcglobal.net

ASHA CERTIFIED SPEECH - LANGUAGE PATHOLOGIST

ADDA

Meeting the challenge and setting a pace for those coping with AD/HD and related conditions.

ADDA-SR is a non-profit organization whose mission is to offer education, advocacy and support.

281-897-0982 www.adda-sr.org
Serving the community since 1987

Building Ladders to Learning

Speech Language Learning

Pamela M. Bass, M.A., C.C.C.
E. Diane Blackwelder, M.A., C.C.C.
Kathie C. Hughes, M.A., C.C.C.

3400 Bissonnet, Suite 160
Houston, Texas 77005
Phone: 714.663.6868
Fax: 713.663.6876

A

App Educational Consulting, LLC
Finding best fit colleges
Joy App
Certified Independent College Counselor

281-468-0455
joyapp@comcast.net
appeducationalconsulting.com

Specializing in learning differences
Member NACAC, HECA, IECA, TACAC, SACAC, LDA

E S A
Educational Success Advisors

Elaine Whitley, M.Ed., CALT
President
Educational Diagnostician

(713) 520-9444
2402 Sunset Boulevard
Houston, Texas 77005
EWhitley@EducationalSuccessAdvisors.com
www.EducationalSuccessAdvisors.com

The Houston Branch of the
International Dyslexia Association

CELEBRATING
34 YEARS OF SERVICE
1978-2012

Would you like to advertise in HBIDA RESOURCE 2013?

Reach thousands of readers

- 4,000 printed
- distributed nationally to schools, professionals and individuals
- available on the HBIDA website

Houstonida.org

CONTACT:
Sandy Colt
mfcolt@gmail.com
713.410.6778

Literary Sources

BOOKS FOR PARENTS:

Overcoming Dyslexia by Sally Shaywitz

Straight Talk About Reading by Susan L. Hall and Louisa C. Moats

From ABC to ADHD: What Parents Should Know about Dyslexia and Attention Problems by Eric Q. Tridas

Dysgraphia: Why Johnny Can't Write (A Handbook for Parents and Teachers) by Diane W. Cavey

Wrightslaw: From Emotions to Advocacy, The Special Education Survival Guide by Pamela Darr Wright and Peter W. D. Wright

Texas Dyslexia Handbook

The Between the Lions Book for Parents: Everything You Need to Know to Help Your Child Learn to Read by Linda K. Rath and Louise Kennedy

---

BOOKS FOR STUDENTS:

The Don't Give Up Kid and Learning Disabilities by Jeanne Gehret

Josh: A Boy With Dyslexia by Caroline Janover

Thank You Mr. Falker by Patricia Polacco

Zipper: The Kid with ADHD by Caroline Janover

How Dyslexic Benny Became a Star: A Story of Hope for Dyslexic Children & Their Parents by Joe Griffith

---

BOOKS FOR TEACHERS:

Beginning to Read: Thinking and Learning About Print – A Summary by Marilyn Adams

Phonemic Awareness in Young Children: A Classroom Curriculum by Marilyn Adams

Multisensory Teaching of Basic Language Skills by Judith Birsh

Unlocking Literacy: Effective Decoding and Spelling Instruction by Marcia K. Henry

When Writing is a Problem by Regina Richards

Preventing Reading Failure in Young Children by Catherine Snow (Ed).

Proust and the Squid: The Story and Science of the Reading Brain by Maryanne Wolf

Websites

DYSLEXIA

International Dyslexia Association-Houston Branch
832-282-77154 houstonida.org
HBIDA provides four programs per year for teachers, professionals, and parents, a free Resource Directory annually, two free Newsletters annually, a local telephone helpline and email for information and referral services, and a Speakers Bureau of professionals available to present to groups about dyslexia.

Academic Language Therapy Association (ALTA)
(972) 233-9107 ext. 208
altaread.org
Referrals to Certified Academic Language Therapists; information about dyslexia.
Helpline: 1-866-283-7133

Region 10 Education Service Center
972-348-1410; (in Texas)
800-232-3030 ext. 1410
State Dyslexia Coordinator
region10.org/dyslexia/
Texas Dyslexia Law Handbook, accommodations and resources

Neuhaus Education Center
713-664-7676
neuhaus.org
Teacher and Parent education, on-line classes, adult literacy classes

Reading Teachers Network
readingteachersnetwork.org
"Neuhaus in Your Pocket" – resource for reading teachers and administrators

PRESCHOOL AND ADULT RESOURCES

Get Ready to Read **getreadytoread.org**

TECHNOLOGY

Learning Ally
Formerly Recording for the Blind and Dyslexic **learningally.org**

Texas State Library – "Talking Books Program" **tsl.state.tx.us/tbp**

LEGAL

Advocacy, Inc. (Disability Rights Texas)
713-974-7691, 800-252-9108
advocacyinc.org
Advocating for people with disabilities in Texas

The Arc of Greater Houston
713-957-1600
thearcofgreaterhouston.com
Advocating for inclusion; classes for parents, and information

Dyslexia and Related Disorders Handbook
region10.org/dyslexia/

National Center for Learning Disabilities
212-545-7510;
888-575-7373
ncld.org

US Dept. of Education Office of Special Education and Rehabilitative Services
800-872-5327
www2.ed.gov/about/offices/list/osers/osep/index.html

Wrights Law
wrightslaw.com
Workshops and information on federal special education law

ATTENTION DEFICIT HYPERACTIVITY DISORDER

Attention Deficit Disorder Association, Southern Region, ADDA-SR
adda-sr.org 281-897-0982

LEARNING DISABILITIES

Learning Disabilities Association of Texas
800-604-7500, 512-458-8234
ldat.org
Annual Texas conference, information

LD on Line
ldonline.org
Website with articles and resources

ADVOCATES

Adda-SR 59

Brazos Valley IDA 57

EDUCATIONAL SERVICES

APP Educational Consulting 59

Janis Block, M.Ed. 58

Debbie Meinwald
Reading Specialists of Katy 58

ASSESSMENT & COUNSELING

Lyn Armstrong, OTR 58

Michelle Beard, Ph.D., PLLC 52

Bonnie Brookshire, Ph.D 56

Lyle Cadenhead, Ph.D., MBA, LSSP/LPC 48

The Carruth Center 54

Clinic for Academic Therapy 58

Dan L. Duncan Children's
Neurodevelopmental Clinic 48

Elizabeth Sledden Dybell, Ph.D., P.C. 50

Peggy Wyatt Engman, M.S., CCC/SLP 58

Aaron Fink, M.D., P.A. 58

Kahn Educational Group 57

Teresa A. Langford, Ed. D. 56

Muriel Meicler, Ph.D. 53

Speech & Language
Remediation Center 56

Polly Gardner
Speech and Language Services 59

Speech Language Learning 59

Robert J. Strudler Diagnostic
& Remediation Center 58

Texas Children's Hospital,
Speech, Language & Learning Center 52

Elaine Whitley,
Educational Success advisors 59

Wilkenfeld
Speech • Language • Learning Center 56

SCHOOLS & TEACHER TRAINING

Brehm Preparatory School 49

Briarwood School 53

Crossroads School 54

Gow School 50

Options
Transitions to Independence 49

Landmark School 55

Making Math Real 57

Neuhaus Education Center INSIDE FRONT COVER

The Parish School 54

School for Young Children 58

School of the Woods 54

Special Schools Coalition 55

Wilson Language Training 51

FALL 2012 SYMPOSIUM

Save the Date!

The Houston Branch of
the International Dyslexia Association
Fall Symposium

Saturday, September 22, 2012

JUNIOR LEAGUE OF HOUSTON

Keynote Speaker

Marilyn Jager Adams, Ph.D.

Author of
Beginning to Read: Thinking and Learning About Print

Full day, free parking, lunch, and continuing education credit

Visit ww.houstonida.org
to join our mailing list or
call our helpline 832.282.7154

SPRING
2013
CONFERENCE

& Details to be Announced

Keynote Speaker

•

Dates

and

Location to be Announced

visit our website for upcoming information

www.houstonida.org

Join our mailing list or
call our helpline 832.282.7154

HBIDA RESOURCE—
a resource directory
published annually
by the Houston Branch
of the International
Dyslexia Association

for information or if
you would like
additional copies of
HBIDA RESOURCE contact:
info@houstonida.org
Helpline: 832.282.7154
www.houstonida.org

EDITORS
Sandy Colt
Margaret Noecker

GRAPHIC DESIGN
Sharon Tooley Design

SPECIAL THANKS
Dee Ann and Yandell Rogers
for their support with
the printing of
2012 RESOURCE

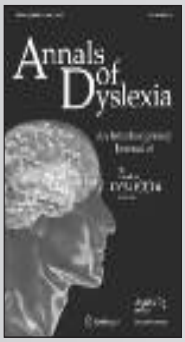
**HOUSTON BRANCH
OF THE INTERNATIONAL
DYSLEXIA ASSOCIATION**
P.O. Box 540504,
Houston, Texas 77254-0504
Helpline phone number:
832-282-7154
info@houstonida.org
www.houstonida.org

CALENDAR OF EVENTS

March 3, 2012	HBIDA Annual Conference Doubletree Hotel, Allen Center
September 22, 2012	HBIDA Fall Symposium Marilyn Jager Adams – Early Intervention Junior League of Houston
October 24 – 27, 2012	International Dyslexia Association 63th Annual Conference Baltimore, Maryland
January 9, 2013	College Panel Neuhaus Education Center, 7 p.m.
Spring, 2013	HBIDA Annual Conference
November 6 - 9, 2013	International Dyslexia Association 64th Annual Conference New Orleans, Louisiana
November 12 - 15, 2014	International Dyslexia Association 65th Annual Conference San Diego, California
October 28 - 31, 2015	International Dyslexia Association 66th Annual Conference Grapevine, Texas

IDA MEMBERSHIP BENEFITS

Membership in IDA brings you many unique opportunities to advance your profession and interact with peers in the LD community. We equip you with the latest dyslexia research, developments in the field and best-practices. In addition, your Membership includes:



ANNALS OF DYSLEXIA online

IDA's semi-annual journal of the most current, peer-reviewed dyslexia research. Annals (including all back issues) is available online and as an optional (2 volumes/yr.) printed edition.

PERSPECTIVES ON LANGUAGE AND LITERACY print & online

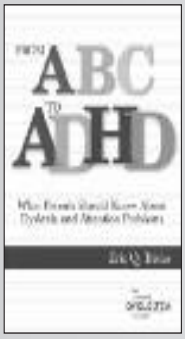
IDA's quarterly publication discusses educational bestpractices, curriculum methods, case studies and first-person application of multisensory structured language techniques.

THE JOURNAL OF READING & WRITING online

In addition to online access to *Annals of Dyslexia*, IDA Members also have Members-only access to all issues of *Reading & Writing: An Interdisciplinary Journal*.

MEMBERS-ONLY DISCOUNTS AT NATIONAL & LOCAL CONFERENCES

Enjoy Members-only registration discounts when attending IDA's national conference or any local Branch conference.



IDA PUBLICATION DISCOUNTS

Enjoy members-only pricing discounts on LD-related publications and other items purchased in the IDA online bookstore. (www.interdys.org)

Liberty Mutual

AVIS®

INSURANCE, CAR RENTAL & VISA CARD DISCOUNTS

IDA has special member-affinity relationships with Liberty Mutual Insurance, Avis, and VISA, offering IDA-discounted products.

PROFESSIONAL REFERRAL FOR SERVICE DATABASE

IDA Professional members may opt for a contact listing in the national IDA Referral For Services database as a service provider.

LOCAL BRANCH MEMBERSHIP

Your membership in IDA includes membership and affiliation with any one of 48 IDA local Branches in North America.

PROFESSIONAL LIABILITY INSURANCE

For Independent Educators with EducatorProtect program

The International DYSLEXIA Association®

Promoting literacy through research, education, and advocacy.™

Become a member of IDA and take advantage of substantial Members-Only registration discounts to our Annual Conference!

FOR MEMBERSHIP INFORMATION:
Visit www.interdys.org and click the "Join IDA" link or call 1-800-ABCD123 x405

BEST IN AMERICA
CERTIFIED BY INDEPENDENT CHARITIES OF AMERICA

IDA Receives "Best in America" Recognition

The International Dyslexia Association has been awarded the "Best in America" seal from Independent Charities of America, a distinction awarded to less than one percent of charities. IDA was recognized for making the most efficient use of donations, ensuring contributions are making an impact on all struggling readers, their families and the professionals who serve them.