the Neuroconnection News

Winter of 2024

Defining Dyslexia

Dyslexia is one of the most common learning disabilities—though not all presentations are exactly the same.

Dyslexia is a neurodevelopmental disorder that negatively impacts an individual's reading and spelling abilities, frequently leading to struggles at work or school and reduced feelings of self-efficacy. In typical descriptions of dyslexia, the disorder is depicted as a frustrating scrambling of letters on a page; and while this represents one popular presentation of dyslexia, the disorder is actually far more complex than this limited definition. Dyslexia manifests on a spectrum of various symptoms. Reading and spelling require a combination of several types of skills and dyslexia can stem from a deficit in any one of those individual skills. Therefore, four different subtypes of dyslexia have been identified, with each subtype encompassing a unique presentation of reading and spelling related difficulties: phonological dyslexia, surface dyslexia, rapid naming deficit, and visual dyslexia.

In this issue of the Neuroconnection News, we will be taking a deep dive into the many presentations of dyslexia and its influences on learning, academic performance, and mental wellness. We also investigate the current approaches to managing dyslexia, including new research into the use of neurofeedback for dyslexia treatment, and describe how reading comprehension is being improved right here in our office at The Neuroconnection.

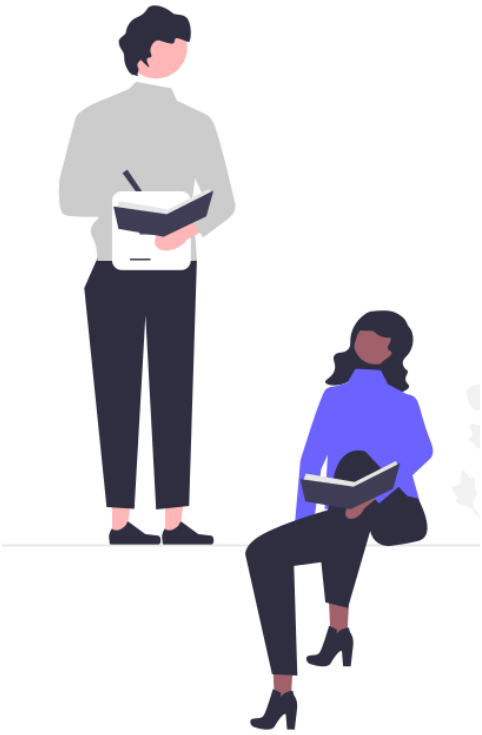
Inside this issue

Special points of interest

- Dyslexia is heterogenous: not all cases look exactly alike.
- Evidence suggests that Neurofeedback can improve reading comprehension for people with dyslexia.
- Stigma and negative stereotypes are pervasive for those with dyslexia, but you can do your part to be supportive.

A Continuum of Symptoms

A diagnosis of dyslexia can look very different from child to child, as the effected reading skill may differ substantially between individuals.



Phonological Dyslexia

This subtype emerges from a child's inability to match the basic sounds of language with their written symbols. Children with this type of dyslexia will therefore tend to experience scrambled letters, mis-pronunciations and misspellings, or skip words altogether while reading.

Surface Dyslexia

Children with surface dyslexia struggle to recall the "images" of sight words or common letter patterns. Therefore, they are limited in their ability to recognize words or to spell out words that have unintuitive

Rapid Naming Deficit

Rapid naming deficit impacts a dyslexic child's ability to quickly recall and identify sequences of letters. These children can successfully name the letters slowly, however at rapid paces they struggle significantly. This may influence skills such as word retrieval and overall reading fluency.

Visual Dyslexia

Unlike surface dyslexia, which influences a child's ability to "see" a word in their mind's eye, visual dyslexia diminishes reading comprehension by reducing their ability to track words as they sprawl along a page. Given the visual tracking limitations of these children, their handwriting may also be effected as they cannot coordinate letter size/shape/direction across a page.

Not Just a Learning Disability: Emotional Impacts of Dyslexia

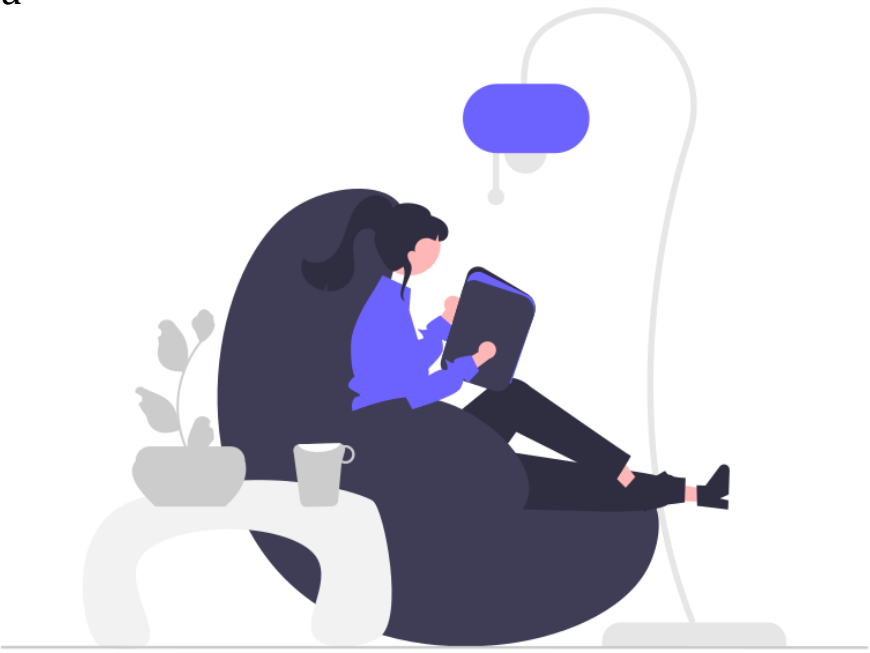
Teachers and parents are typically quick to note the reading, spelling, and writing deficits that emerge from a child's struggles with dyslexia, however the emotional and social consequences of having a learning disability sometimes go unattuned to. Children with dyslexia are more prone to developing a negative self-concept, perfectionistic tendencies, and waning motivation at school. Students with dyslexia may become anxious about their poor performance and depressed about their disability's effects on their future. Caring for a child's emotional response to dyslexia can be just as important as remedying their reading or spelling.

Read the articles: Sako, E. (2016). The emotional and social effects of dyslexia. European Journal of Interdisciplinary Studies, 2(2), 175-183.
https://www.arcadialiteracy.com/post/types-of-dyslexia

Living With Dyslexia: How Parents Can Help

Instilling a love for reading can be difficult even for children with typical skills in reading comprehension. As a parent of a dyslexic child, it is important to approach reading with your child from a place of compassion, patience, and curiosity. Children with dyslexia may feel that it's impossible for them to be "good" at school or at reading. Praising your child often and sincerely at even their small reading wins can help them to build confidence in their self-worth and academic performance. You may also find that providing books in their own unique areas of interest may promote reading for pleasure. Leveraging the interests and strengths of your child may ease some of the frustrations that emerge as you read together. Show your child that reading doesn't need to be stressful or tied to a grade—reading can simply be for fun!

Treatment Modalities for Dyslexia



According to the American Psychiatric Association, poor responses to treatment is a defining characteristic of dyslexia. Therefore, even effective, evidence-based remediation techniques can result in only marginal improvements in reading and spelling. As such, many different forms of dyslexia treatment options have emerged – with some showing greater efficacy than others.

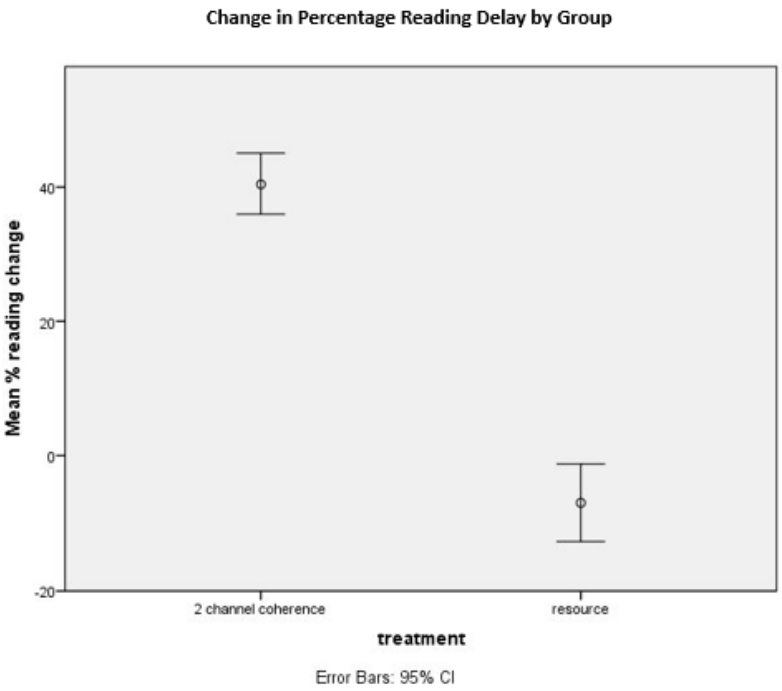
A 2014 meta-analysis of randomized controlled trials on dyslexia interventions sought to explore the wide variety of available options, and test for their overall success in improving reading and spelling skills. The comparisons evaluated fluency trainings, phonemic awareness instructions, reading comprehension trainings, phonics instructions, auditory trainings, medical treatments, and interventions using colored lenses. Comparing each of these interventions, phonics instruction was by far and away the most popular approach – and the only approach to show statistical significance in improving performance. Even phonics instructions suffered from medium effect sizes, however, indicating that even the most effective treatment option may not produce ideal results for every student.

Read the articles: Galuschka, K., Ise, E., Krick, K., & Schulte-Körne, G. (2014). Effectiveness of treatment approaches for children and adolescents with reading disabilities: A meta-analysis of randomized controlled trials. PloS one, 9(2), e89900.

Neurofeedback for Dyslexia: A Randomized-Control Trial

While there are many in-school remedial options available for treating reading delays, some children make only limited progress while utilizing these programs. Reading improvements may stall out or fail to improve altogether, leaving students, teachers, and parents feeling frustrated and hopeless. Research into alternative methods of treatment has been becoming increasingly popular within the past decade, with explorations into neurofeedback showing initial promise for its efficacy.

A 2015 randomized controlled study highlights the substantial improvements neurofeedback can yield in reading comprehension. In this study, 42 school-aged children previously diagnosed with dyslexia were broken up into two groups: the experimental group, receiving personalized neurofeedback training sessions and in-school remedial services and a control group of children only participating in the in-school interventions. Both groups were given a battery of reading and educational assessments to measure baseline reading skills in addition to a QEEG scan. Children randomly assigned to the neurofeedback treatment group were then given a personalized neurofeedback protocols on the basis of his or her original QEEG findings for power and coherence. Over the course of the next 10 weeks, the experimental group would receive 20 neurofeedback sessions in addition to their typical in-school interventions alongside their control-group peers.



The results at the termination of the experiment were staggering. The 21 dyslexic children in the control group, who were only exposed to their school's remedial services, saw no improvements in their reading comprehension assessment results at the end of 10 weeks. In fact, the control group saw a slight but significant *decline* of 7% in their reading comprehension assessments. The neurofeedback group, on the other hand, displayed major improvements in their ability to read. This treatment group showed 40% improvements on their assessments, amounting to an incredible 1.2 grade level increase in reading skills.

Previous studies have shown neurofeedback's capacity to improve academic success for children with learning disabilities, and this study corroborates those earlier findings. Research indicates that neurofeedback may offer a dramatic enhancement of reading capacity in dyslexic students within a short timeframe – potentially offering dyslexic children adults an alternative avenue for finding relief from their symptoms.

Read the articles: Coben, R., Wright, E. K., Decker, S. L., & Morgan, T. (2015). The impact of coherence neurofeedback on reading delays in learning disabled children: A randomized controlled study. NeuroRegulation, 2(4), 168-168.

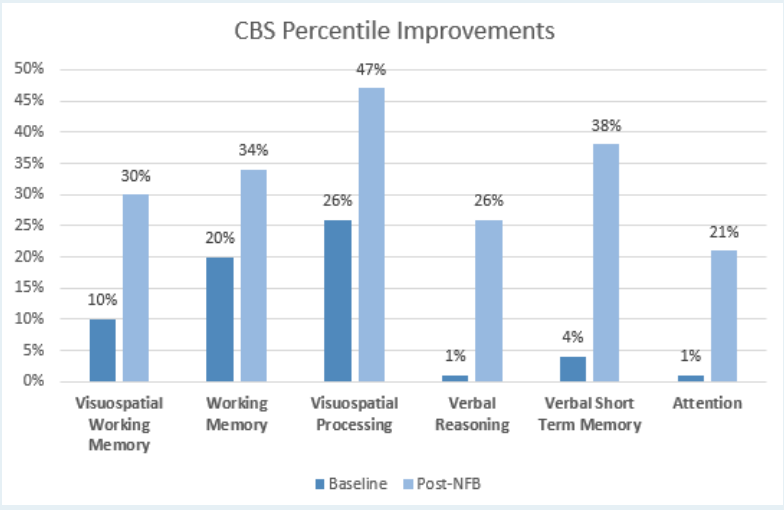
Joseph's Story

Dyslexia is just one element in the tapestry that comprises an individual's life. Joseph was referred to the Neuroconnection not only with the hopes of improving the reading and spelling challenges from his dyslexia, but also for alleviating some of the emotional pain of a history of developmental trauma.

Joseph came into our office struggling with a variety of symptoms, both in and out of the classroom. While his dyslexia made it difficult to perform well in school, Joseph also struggled with regular panic attacks, low mood, difficulty finding motivation, and spontaneous bouts of irritability. Depression medications reduced his energy levels and did not alleviate his trauma-related symptoms. Joseph was feeling stuck and his family hoped neurofeedback could make some lasting change in his life.

At the Neuroconnection, we regularly utilize a digital cognitive assessment to track changes in a client's progress across several domains, such as attention, memory, and executive functioning. For a client like Joseph, whose dyslexia limits his capacity to track words on a page, recall grammar rules, read aloud, or comprehend written communication, a cognitive assessment is an excellent tool to quantify improvements in these areas as he progresses through neurofeedback training. Joseph took a pre–test to establish his baseline cognitive skills and took yet another test after three neurofeedback training protocols, amounting to 45 sessions overall.

As visualized in the figure below, Joseph's improvements across his dyslexia–related symptoms were astounding. Joseph's visuospatial working memory and processing, two critical aspects of word tracking, improved by 20% or more. His verbal reasoning, verbal short term memory, and attention also radically changed, suggesting a major increase in Joseph's ability to follow and attend to verbal instructions, read aloud, and remain focused in class.



In addition to improvements in his ability to track words, Joseph was able to decrease and eventually completely eliminate his need for depression medication. He became brighter and more willing to connect with others. With a better mood and experiencing greater success in school, Joseph left the Neuroconnection with an undeniably bright future ahead of him.

What is Connectivity Neurofeedback?

Connectivity Neurofeedback (CNFB) is an advanced form of Neurofeedback (NFB) that allows the brain to make changes in brain wave patterns across cortical regions in order to develop more functional neuropathways. CNFB is more accurate than traditional NFB because it measures the neuronal network activity in three dimensions across regions. This is in contrast to traditional NFB which only trains specific sites. CNFB allows for improved communication within the brain and in turn decreases neurologically rooted symptoms.

Learning disabilities, ADHD, Autism, and other problems impacting school success have specific connectivity patterns. These patterns are identified via a QEEG brain map, and they are found to improve with CNFB training. Typical functional improvements include: improved focus, attention, and cognitive abilities, improved mood and behavior, increased learning capacity and academic performance, and better sleep regulation. Because CNFB creates new neural pathways, changes in the brain are lasting and involve none of the adverse side effects that may be experienced with medications.

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The professionals at The Neuroconnection understand that neuropsychological conditions, if left untreated, can adversely affect an individual's quality of life. Our Mission at The Neuroconnection is to provide quality, personalized care using the most up-to-date and researched neurofeedback methods to empower adults and children to reach their optimum potential. We understand the value and importance of coordinating care with other health, educational and mental health providers, and we are committed to integrating neurofeedback with other treatments and services to produce the best outcome for our clients. In basic terms: at the Neuroconnection, it's always a collaborative process.

Who can benefit?

Improvements in Mental Health

*Attention Deficit /Hyperactivity Disorder
*Autism Spectrum Disorders
*Anxiety
*Addictions
*Chronic Fatigue
*Learning Disabilities
*Memory
*Mood Disorders and Depression
*Obsessive Compulsive Disorders
*PTSD/C-PTSD
*Seizure Disorders
*Traumatic Brain Injuries

Improvements of Symptoms

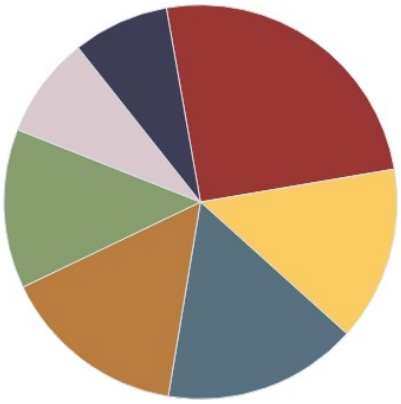
*Executive Functioning and Processing
*Attention and Motivation
*Sensory Sensitivity
*Mood and Behaviors
*Obsessive Thoughts
*Academic Performance
*Social and Motor Skills
*Sleep Quality

TNC Results & Symptom Improvements

With Connectivity Neurofeedback

Since 2001, TNC has empowered over 800 children and adults to reach their fullest potential by helping their brains learn how to self-regulate, thereby reducing or eliminating the need for medication and creating lasting improvement for a wide range of neuropsychological symptoms. Below we have provided a breakdown of the common symptoms addressed at our office, along with examples of the long-term benefits experienced by those who completed at least 10 sessions of CNFB training.

SYMPTOMS TREATED



ADD/ADHD	25%
ASD	14%
ANXIETY/PTSD	16%
SEIZURE/ PAROXYSMAL EVENTS	15%
MOOD DISORDER	13%
LEARNING DISABILITY	8%
NO FORMAL DX	8%

LONG-TERM BENEFITS

73% **of patients reduced or eliminated the need for medication**

average decrease in anxiety symptoms — measured via Beck's Anxiety Inventories

average decrease in depression symptoms — measured via Beck's Depression Inventories

average decrease in symptoms associated with Autism — measured via ATEC

OTHER COMMON IMPROVEMENTS

- √ Executive functioning
- √ Processing speed
- √ Attention
- √ Organization
- √ Sleep
- √ Obsessive thinking
- √ Planning
- √ Motivation
- √ Motor skills
- √ Social skills
- √ Test performance
- √ Speech & language use
- √ Reading comprehension
- √ Math concepts
- √ Sensory sensitivities

Upon seeing such excellent results in the past 11 years with Connectivity-Neurofeedback (CNFB), our professionals aimed to extend access to training for those outside of our geographic area or inflexible schedules.

As a result, The Neuroconnection designed an @ Home Training program to offer CNFB sessions in the convenience of your home. For eight years, we have been able to provide our expertise and therapeutic treatment to families across the world. The opportunity for daily neurofeedback training at home has brought successful results for clients living as far as Russia and India.

Request more information from The Neuroconnection Website!
www.theneuroconnection.com

Meet Our Director

Ann L. Rigby, MSW, LCSW, BCN has over 30 years of experience in the mental health field. Ms. Rigby has been providing Neurofeedback services since 2001. She founded "The Neuroconnection", a Brain Mapping and Neurofeedback clinic that provides an advanced, research-based form of Neurofeedback known as Connectivity Neurofeedback.

Ms. Rigby is a past Board Chair for the Autism Society of Illinois. She is a fellow and Board Certified member of The Biofeedback Certification International Alliance. She is also a field placement instructor for graduate students at Benedictine University and holds memberships with the International Society of Neurofeedback and Research (ISNR), the Biofeedback Certification Institute of America (BCIA), and the National Association of Social Workers (NASW). Ms. Rigby is a frequent speaker and exhibitor at many national and regional conferences throughout the year on topics related to the benefits of Connectivity Neurofeedback.

For more info about upcoming speaking engagements, go to our website www.theneuroconnection.com and visit our News and Events tab.

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