DYSLEXIA SYMPTOMS AND THE ROLE OF OCCUPATIONAL THERAPY

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WHY?

WHY SHOULD OCCUPATIONAL THERAPISTS CARE ABOUT DYSLEXIA?
1. The key components fall into our scope of practice
2. Few professionals are taught specifically about dyslexia
3. It affects function across multiple body systems and performance areas
4. Knowing how to support dyslexic children is part of a holistic occupational therapy philosophy

Course Objectives

1. Understand the neurological connection between learning disabilities, motor coordination, and sensory processing
2. Identify OT’s role in supporting body systems for enhanced learning
3. Identify the key target areas when providing occupational therapy in both a medical and educational setting for a pediatric client with dyslexia
4. Create treatment plans that address all aspect’s of a child’s learning style

Key Questions

1. What do we know about body systems and learning?
2. How can occupational therapy support learning?
3. How can we as therapists address these issues within our scope of practice?
Key Question 1: What Do We Know About Body Systems And Learning?

- The use of sensory input such as therapy balls improved both teacher perception and self-perception of attention among students with dyslexia. (Goodmon et al., 2014)

Key Question 1. What Do We Know About Body Systems And Learning?

- Decreased motor performance has been correlated to decreased academic skills, inhibition, and working memory. (Haapala, 2013)

Key Question 1. What Do We Know About Body Systems And Learning?

- There is a strong correlation between a learning disability such as dyslexia and both motor coordination and executive functioning. (Gooch, Hulme, Nash, & Snowling, 2013)
Key Question 1. What Do We Know About Body Systems And Learning?

Literature Review (continued)

• Reading outcomes can be predicted in many cases by examining visual motor integration and motor-reduced visual perception along with phonological awareness. (Bellacchi et al., 2015)

We also know through clinical experience that body systems such as sensory processing, neurological development, and motor skills are highly interrelated, and that it is impossible and illogical to separate these systems, especially when considering child development.

Neurological Connection Between Learning Disabilities, Motor Coordination, and Sensory Processing

**In reality, all of the above areas are neurological in nature**

**When addressing any of these areas, starting at the brain-body connection will ensure the core issue is being addressed rather than the outward system**

PRIME EXAMPLE:
COMPLETING CORE STABILITY THERAPEUTIC EXERCISE IN PREPARATION FOR A SCHOOL BASED TASK SUCH AS HANDWRITING
Key Question 2: How Can Occupational Therapy Support Learning?

- A. Addressing Body Systems That Affect Learning
  
  **Sensory Processing**
  - Incorporate movement into as much of a child’s day as possible.
  
  - Educate other professionals and families on the importance of movement.
  
  - Use activities such as vestibular input simultaneously with tasks that require extreme focus and brain power.

- B. Consult with other disciplines to offer whole child solutions

- C. Look at learning needs through a therapist’s lens and build on strengths while compensating for weaknesses

OCCUPATIONAL THERAPISTS HAVE A UNIQUE PERSPECTIVE WHEN COMPARING A DAILY OCCUPATION WITH THE PRIMARY WEAKNESS

- A. Addressing Body Systems That Affect Learning
  
  **Motor Coordination**
  - Focus on the components of a task: leave handwriting practice to a teacher or give as homework, and spend therapy time on supportive bilateral integration skills
  
  - Prepare the body for learning by challenging the body through tasks such as obstacle courses and sudden direction changes
  
  - Ask to be involved in the structuring of a child’s school day, incorporating motor challenge tasks before periods of high concentration
Key Question 2: How Can Occupational Therapy Support Learning?

A. Addressing Body Systems That Affect Learning

Visual Perception
- Build on visual strengths to compensate for other weaknesses
- Incorporate visual perception exercises into motor coordination exercises as learning preparation
- Limit visual stimuli during periods of high concentration to improve focus

B. Consulting with other disciplines
- teachers
- other therapists
- parents

Offer solutions to actual problems rooted in clinical knowledge of body systems

C. Look at learning through a therapist's lens and build on strengths while compensating for weaknesses

- Take the time to learn a child's strengths and interests
- Know when to provide prompts (i.e. letter and number strip, multiplication tables) and when to remediate
- Educate teachers and parents if necessary, but be prepared to back up that education with clinical knowledge
Case Study

- 12 year old boy born at 24 weeks
- Diagnosis of ADHD
- Home educated
- Presented with difficulties with sight words, math facts, and daily routines

Key Question 3: How can we as therapists address these issues within our scope of practice?

- Our scope of practice includes learning because learning is an occupation of a child
- Use the child’s school work as a guide and build therapy around it, even if you are a clinical therapist
  **But as always, make it fun!!**

Application

- How can we apply what we know about body systems and learning to effective teaching and treatment strategies for children with dyslexia?
- In order to answer this question, we must decode dyslexia
Dyslexia Defined

- Dyslexia is not recognized in the Diagnostic and Statistical Manual of Mental Disorders
- It falls under specific learning disability in reading
- Most educational psychologists will use this term in place of dyslexia

Dictionary Definition: "A general term for disorders that involve difficulty in learning to read or interpret words, letters, and other symbols, but that do not affect general intelligence (www.dictionary.com)"

International Dyslexia Association: "Dyslexia is a specific learning disability that is neurobiological 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 impeded growth of vocabulary and background knowledge."
(www.dyslexiaida.org)

- First and foremost, dyslexia is a language disorder, not a perceptual disorder.
- Many students with dyslexia will demonstrate average visual perceptual skills
- DIRECT TREATMENT OF DYSLEXIA IS NOT WITHIN THE SCOPE OF PRACTICE OF AN OCCUPATIONAL THERAPIST!
Key Characteristics of Dyslexia

- Not related to decreased intelligence
- Affects both girls and boys
- Involves more than simply reversing letters
- Can appear spontaneously but there is a genetic component
- Is, above all else, a difference in neurological processing

Dyslexia Comorbidities

*Dyslexia has been shown to be highly correlated with:*
- ADHD
- Dysgraphia
- Dyscalculia
- Developmental Coordination Disorder

*But it does not necessarily involve any of these*

Myths Surrounding Dyslexia

Wrong! Symptoms of dyslexia can be seen as early as preschool.
Wrong! While it can include letter reversals, it affects much more.

Wrong! Dyslexia affects working memory, often making it seem like a child is not trying enough when they cannot remember things like simple math facts.

Wrong! As with other learning disabilities, the earlier the intervention begins, the better the outcome. "Caveat" letter reversals are common through age 7 and do not necessarily indicate dyslexia.
Patterns in the Symptoms:

- Possible Visual Perceptual Differences
- Sensory Processing Differences
- Executive Functioning Differences
- Motor Control Differences

Orton-Gillingham Method

1. Research based specialized teaching method proven effective to teach reading and spelling to dyslexic individuals

2. Uses both visual and kinesthetic techniques to teach phonemic awareness

3. Popular tutoring systems that are based on O-G include Barton, lexercise, and INLD
Unfortunately, not all dyslexic individuals have access to this style of teaching, and many special education teachers have no training in dyslexia nor Orton-Gillingham.

O-G tutors, while knowledgable in this specific teaching style, might not have the background knowledge in the areas of visual perception, kinesthesia, and sensory processing to apply the style of teaching to other areas of learning.

Occupational therapists are in the unique position of understanding the underlying body systems that affect learning for all students, as well as understanding why and how the proven teaching system works to help a child with dyslexia.
• How can we bridge the gap for children with dyslexia?

• First, we need to have knowledge of the O-G tutoring method to understand the processes by which learning happens.

**OT characteristics of O-G tutoring**

- Visual Perceptual Support
- Color Coding
- Visualization techniques
- Kinesthetic Support
  - Wooden tiles
  - Physical act of pulling down tiles

**VIDEO**
**Additional OT techniques that can improve learning outcomes:**

1. Motor – encourage movement and position changes while completing specialized instruction

2. Sensory – Use focus and calming sensory input during specialized instruction

3. Cognitive – Encourage visualization, combine reading and spelling games with executive functioning

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**? ? ? BUT HOW????**

- Incorporate directionality into therapeutic activities
- Avoid methodology that will confuse the client
- Provide visual support for rote memorization

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**Things to Avoid**

1. **Handwriting**

2. **Reading**

3. **Spelling**

   It seems counterintuitive, but if you are working with a dyslexic student who is receiving O-G tutoring, they should only be working on these specific skills during tutoring sessions.
Educational vs Medical Model

Key Target Areas

- Reading
- Writing
- Organization
- Focus and Attention
- Classroom Accommodations
- Sensory Processing
- Oculomotor Pursuits
- Reflex Integration
- Midline Crossing
- Motor Planning

Medical Model

What can we do?

- Focus on all areas of function and dysfunction
- Sensory input while working
- Multiple position changes

Medical Model

Areas of function and dysfunction

- Motor planning
- Sensory integrative therapy
- Therapeutic vision exercises
- Home exercise program
**Educational Model**

**What can we do?**

- Classroom accommodations
- Sensory support
- Midline Crossing
- Visual strategies for improved executive functioning
- Education to other professionals regarding learning differences with dyslexia

**LET’S TALK….**

- Texthelp
- Letter and Number Strips
- Multiplication Tables
- Keyboarding
- Livescribe Echo
- Kurzweil 3000
- OneNote
- Google Docs

**EXAMPLE OT SESSION FOR A STUDENT WITH DYSEXIA**

- Motor planning/gross motor warm up – Brain Gym
- Visual perception – directionality symbols progressing to letters
- Visual motor – bilateral integration, distal control
B. Marimba Game: This is a fun yet tricky game that takes some motor coordination as well. Pictures are completed in correlation with the letter presented:

- b: right arm up
- c: swing right foot
- d: swing left arm up
- e: swing left foot

These letters are then placed in rows and students complete these together reading from left to right:

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p q d b p q
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You can also make this trickier and do two body parts motions together (see picture below) or could incorporate music with this activity.
Finding Letters, ACTIVITY, with answers:

Circle the letter that matches the word in the box.

- bef db jk pd zb bdb t g /5
- tbd kl bc bx zd eab f b /5
- aij dh bbbhl bfb kl dbb /5
- db bbt cwo db qq v bp /5
- pbd dr bs db on bwb s r d /5

Choose the right color:

- red
- green
- yellow
- blue
- orange

STOP, find & color:

Follow the white path and complete the "Stop, Find & Color" maze. The secret color word is hidden at the finish line.
<table>
<thead>
<tr>
<th>Component</th>
<th>Activity</th>
<th>Relation to Dyslexia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilateral Integration</td>
<td>Brain Gym</td>
<td>LV/L reversal instruction</td>
</tr>
<tr>
<td>Oculomotor Coordination</td>
<td>Hitting a target by ball throwing or</td>
<td>Saccades in all quadrants</td>
</tr>
<tr>
<td></td>
<td>Hitting a strong ball with a a bar</td>
<td></td>
</tr>
<tr>
<td>Dysgraphic/orthographic control</td>
<td>Means, pencil activities</td>
<td>Collect the letter maze</td>
</tr>
<tr>
<td>Executive function</td>
<td>Color coding compensatory strategies</td>
<td>Color coding also used in QLS testing and will be familiar to client</td>
</tr>
<tr>
<td>organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphomotor Coordination</td>
<td>Multi-sensory copy (or not)</td>
<td>Do NOT push writing if a student is in early levels of QLS tutoring...consult with later and focus on directionality drawing</td>
</tr>
<tr>
<td>Emotional/Sensory Regulation</td>
<td>Zones of Regulation</td>
<td>Mindfulness</td>
</tr>
</tbody>
</table>
Evaluating a Child with Dyslexia

Standardized testing:

- Visual Perception - DTVP-2 or equivalent
- Motor Coordination - BOT-2 or equivalent
- Executive Functioning - BRIEF 2 or equivalent
- Clinical Observations Sheet by Jean Ayres
- Visual Efficiency: VERA Vision Screening Program or Equivalent

Purpose of Evaluation

- Check for comorbid conditions such as developmental coordination disorder
- Screen for visual efficiency to determine if client is a candidate for vision therapy
- Provide valuable information to other therapists, teachers, and families regarding how dyslexia affects other body systems

CASE STUDY

- 10 year old boy demonstrating clear learning differences for a few years, but always able to “get by.”
- Suddenly struggling in nearly every subject
- Emotional health issues – feeling stupid among peers
Case Study (continued)

- Student was failing classes and school was unable to help. After undergoing extensive testing, student was diagnosed with dyslexia along with a visual perceptual deficit. Family was advised to seek accommodations through a 504 plan.

Case Study (continued)

- Along with classroom accommodations, student began O-G tutoring and occupational therapy. Focus in OT was on visual targeting and oculomotor coordination.

- Two years later... student won award for achieving honor roll in every grading period, along with awards in science, math, and technology

What Can You Do RIGHT NOW for your clients with Dyslexia?

- Consult with their speech therapist and/or specialized tutor, if possible

- Do not work on actual writing of words if contraindicated

- Incorporate visual supports whenever possible – color coding, visualization strategies
What can you do RIGHT NOW for your clients with Dyslexia?

Do not neglect mental health! Many students with dyslexia often struggle with feeling stupid. Although we know this is not the case, it can seem that way for a child who processes information differently than their peers.

Case Study

- 12 year old boy, long suspicion of dyslexia and dyscalculia, started coming home from school and making comments about how he felt stupid among his peers. Homework ended in tears because he was not “smart enough.”

- Parents, who have some knowledge of dyslexia, decided to have him tested by an educational psychologist. The decision was not so much rooted in the fact that they needed to know how to help him, but they wanted him to be aware that dyslexia has nothing to do with intelligence and that it was simply a learning difference.

Case Study (continued)

- Once testing was completed, the parents and evaluator were able to show student the nature of his learning difference, including his strengths, and make a plan that would support him. They took the testing results to the school and advocated on his behalf for an accommodation plan.
Case Study  
(continued)

- Part of the accommodation plan included weekly counseling sessions with the school counselor to improve his self-esteem.

- Student has made excellent progress from the counseling sessions alone. Some school work continues to be a struggle, but the improvement in student's self-esteem has given him more motivation to try difficult tasks and initiate asking for help from his teachers.

Case Study  
(continued)

- Occupational therapist evaluated the following:
  - visual perception (WNL)
  - oculomotor coordination (WFL)
  - sensory processing (hyposensitive to vestibular input, short nystagmus, hypersensitive to oral-tactile input, with a sensitive gag reflex)
  - executive functioning – areas of need identified in organization, working memory - fine and gross motor (WNL)

Case Study  
(continued)

- In addition to specialized tutoring, counseling, and a school accommodation plan, occupational therapist addressed sensory needs with a home based program and executive function needs with accommodations such as One Note and color coding. Resources such as Smart But Scattered were recommended to parents to provide education regarding nature of executive functioning challenges. Consultation provided with parents and monitoring of progress with adjustments as needed.
Conclusion

Direct dyslexia treatment should be completed by a language-based professional or someone with specialized tutoring training.

However, with a little extra education, occupational therapists can bridge the gap between primary tutors and schools/families.

QUESTIONS:
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References
- Bright Solutions for Dyslexia: www.dys-add.com