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# DYSGRAPHIA

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# DYSGRAPHIA



## WHAT IS DYSGRAPHIA?

Dysgraphia is a 'transcription disability', i.e. it is a learning difference that affects writing. It is associated with impaired handwriting, orthographic coding and finger sequencing. It usually becomes evident because of the gap between the ideas and understanding a child can demonstrate when speaking compared to when they are writing.

The term 'dysgraphia' is not a medical term. The Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) uses the phrase "an impairment in written expression" under the category of "specific learning disorder". Literacy Specialists and Educational Psychologists use the term 'dysgraphia' to describe this type of specific learning difference.

The DSM-5 suggests that a learning disability is present when writing skills are below what would be expected given a person's age (given their intelligence and age appropriate education). It is not clear in this definition if writing refers to the narrow definition of motor skills processes only or also orthographic skills and spelling.

However most professionals characterise dysgraphia as a neurological condition that impairs writing and memory processing. It must be understood that some people use the word dysgraphia to refer to the writing of a child with messy writing who may not show any memory processing issues or orthographic difficulties. It is important to be clear about this distinction as it has implications regarding appropriate support.

## HOW CAN YOU TELL IF A CHILD HAS DYSGRAPHIA?

### SPATIAL SKILLS / FINE MOTOR SKILLS

- Messy handwriting
- Poor legibility
- Unfinished letters.
- Letter reversal, inversion, transpositions and elision
- Slow writing speed
- Irregular letter size
- Letters may not sit on the line
- Mix of cursive and non-cursive styles
- Letters are bunched or spaced unevenly
- Writing isn't justified to left of page
- Odd posture, pencil grip or paper angle
- Writing fatigue and cramping
- May have difficulty with other fine motor skills such as tying shoelaces
- Slow copying speed.
- Need to watch pen to write legibly.
- Inconsistent letter formation
- Slow or laboured writing (which may be neat)

### LITERACY SKILLS / ORTHOGRAPHIC CODING AND PROCESSING

- Poor spelling
- May skip words
- Poor punctuation
- Word errors - writing a different word to the target
- Difficulty with syntax structure or grammar
- Words ordered incorrectly
- Incorrect verb and pronoun usage
- Word ending errors

### COGNITIVE SKILLS / WORKING MEMORY

- Difficulty putting ideas in writing
- Disorganised writing
- Writing that lacks coherence

May have wider difficulties associated with working memory issues such as difficulty following multistep instructions or poor organising.

As with dyslexia, difficulty with the fundamental skills such as letter formation can lead to problems with higher order skills. Basically the child is putting so much effort into the physical process of letter formation, that there is little processing space left for checking punctuation, spelling errors, sentence planning etc. As a result children's work may become disjointed with poor punctuation and spelling not because of specific difficulties in these areas but because of fluency and automaticity issues. Once automaticity and fluency issues are resolved (either through developing fine motor skills or by word processing) there is often a marked improvement in higher order skills too.

Copying or writing to consolidate learning is particularly unlikely to work for these children as they will be focusing on letter formation and presentation rather than the meaning of what they write.

# DYSGRAPHIA SUBTYPES



Not all specialist teachers divide dysgraphia into subtypes, but those that do usually refer to 3 types of dysgraphia, each focused on a different processing difficulty.

	DYSLEXIC DYSGRAPHIA	MOTOR DYSGRAPHIA	SPATIAL DYSGRAPHIA
	<b>MAJOR ISSUE - ORTHOGRAPHIC</b>	<b>MAJOR ISSUE - MOTOR SKILLS</b>	<b>MAJOR ISSUE - SPATIAL</b>
<b>ability to copy</b>	<ul style="list-style-type: none"> <li>• Illegible independent work</li> <li>• Can copy reasonably legibly</li> </ul>	<ul style="list-style-type: none"> <li>• Illegible independent work</li> <li>• Cannot copy legibly</li> </ul>	<ul style="list-style-type: none"> <li>• Illegible independent work</li> <li>• Cannot copy legibly</li> </ul>
<b>spelling knowledge</b>	<ul style="list-style-type: none"> <li>• Spelling is very poor</li> </ul>	<ul style="list-style-type: none"> <li>• Spelling orally may be fine.</li> </ul>	<ul style="list-style-type: none"> <li>• Normal spelling</li> </ul>
<b>letter formation</b>	<ul style="list-style-type: none"> <li>• Fine-motor skills may be intact</li> <li>• Normal pen grip and posture</li> </ul>	<ul style="list-style-type: none"> <li>• Fine-motor skills are poor, with limited dexterity and poor muscle tone.</li> <li>• Work gets progressively untidier with time.</li> <li>• letter formation is irregular.</li> <li>• Pencil grip and posture may be odd, often strained.</li> </ul>	<ul style="list-style-type: none"> <li>• Fine-motor skills are intact</li> <li>• Normal pen grip and posture</li> </ul>
<b>spatial layout</b>	<ul style="list-style-type: none"> <li>• Spatially consistent writing</li> </ul>	<ul style="list-style-type: none"> <li>• Spatially consistent writing</li> </ul>	<ul style="list-style-type: none"> <li>• Spatially inconsistent lettering</li> <li>• does not relate to lines or margins consistently.</li> </ul>
<b>drawing</b>	<ul style="list-style-type: none"> <li>• No difficulty drawing</li> </ul>	<ul style="list-style-type: none"> <li>• Difficulty drawing</li> </ul>	<ul style="list-style-type: none"> <li>• Difficulty drawing</li> </ul>

These subtypes are described in their purest form in the interests of clarity. However there is often overlap between different types of dysgraphia and children will usually present with a mix of signs of dysgraphia.

## DIFFERENTIAL DIAGNOSIS

Dysgraphia has signs in common with other learning differences. However, there are specific distinctions which delineate one specific learning difference from another.

**Dyslexia** - Major distinction from dyslexia is that for children with dysgraphia reading is not affected. Children with dyslexia tend to have phonological difficulties alongside orthographic difficulties. Children with dysgraphia tend to have orthographic difficulties alongside motor difficulties.

**Dyspraxia** - Major distinction from dyspraxia is that gross motor skills are generally not affected. Children with dyspraxia tend not to have orthographical difficulties.

**SLI** - Major distinction is children with SLI /Oral and Written Language Learning Difficulty - (OWL/LD) tend to have difficulties with phonological, orthographical and morphological aspects of language development. Children with dysgraphia tend not to have morphological difficulties and have no spoken language difficulty.

Dysgraphia is understood to be more than underdeveloped or poor handwriting skills although fine motor skills are affected. The extent to which working memory issues associated with dysgraphia affect other aspects of life and learning is in line with dyslexia. Therefore children may show similar difficulties with multistep instructions, remembering sentences while writing etc.

## WHAT IS THE OVERLAP WITH OTHER DISORDERS CO-OCCURRENCE?

Children with dysgraphia may also have ADHD (attention-deficit disorder), SLI (selective language impairment), Dyspraxia or Dyslexia. There appears to be a high correlation between these learning differences with many children having more than one issue identified.

# ASSESSING DYSGRAPHIA



One of the reasons that Dysgraphia is hard to assess is that you really need to rule out alternative explanations for writing difficulties and identify which sort of dysgraphia the child has. This means considering their broader literacy skills and motor skills issues and comparing them to their current level of attainment and underlying ability.

## **ASSESSMENT FOR ATTAINMENT/ACHIEVEMENT**

Wide Range Achievement Test 4 (WRAT4) this compares them to their peer group in relation to maths, spelling and reading ability.

## **ASSESSMENT FOR ABILITY**

Wide Range Intelligence Test (WRIT) this measures their verbal and non-verbal ability. These general assessment allows us to see the impact of a specific learning difficulty on a child's learning, and check that there are no broader cognitive difficulties that might be holding them back.

## **WRITING ASSESSMENT**

Process Assessment of the Learner™ (PAL™) Test Battery for Reading and Writing. This assesses whether orthographic coding difficulties are affecting the learner and to what extent.

- Phonological Processing
- Orthographic Coding
- Rapid Automatised Naming
- Integration of Listening, Note-taking & Summary Writing Skills

(see also USA) Test of Written Language - Fourth Edition (TOWL-4)

(see also USA) Test of Early Written Language, Third Edition (TEWL-3)

TWS-5: Test of Written Spelling-Fifth Edition

## **MOTOR AND SPATIAL SKILLS ASSESSMENT**

Beery-Buktenica Developmental Test of Visual-Motor Integration, Sixth Edition (Beery VMI) allows us to see whether the child's motor and spatial skills more broadly are affecting their writing.

- Gross motor skills
- Fine motor co-ordination
- Visual perception
- Visual Perception and Motor Co-ordination integration

## **READING ASSESSMENT**

Gray Oral Reading Tests (GORT-5) - Fifth Edition - may also be used in instances where it is not clear whether a identification of dyslexia or dysgraphia is more appropriate.

- oral reading fluency (rate and accuracy)
- comprehension

## **INFORMAL ASSESSMENT**

In addition to these formal standardised assessment a child may be asked to self generate written sentences and paragraphs which are then compared to age appropriate copied text. The assessor will also be looking at output, posture and writing grip.

There is not one universal test for dysgraphia. Different professionals will assess for dysgraphia in slightly different ways and may even conceptualise it slightly differently. The tests above are an indicator of what types of tests are appropriate and which specific areas they focus on.

# SUPPORTING CHILDREN WHO HAVE DYSGRAPHIA



## REMEDIATION

### SKILLS SUPPORT

#### Motor Control

This could include Occupational therapy focused on developing coordination, strength, control of fine motor skills, eye hand coordination. These are often child specific exercises.

#### Letter Formation and Handwriting

- Playing with clay to develop fine motor control and develop hand muscles
- Following mazes or dot-dots to practice hand eye coordination and motor control
- Tracing letters or pictures to develop hand eye coordination and motor control

Teach letter formation explicitly. Model letters stroke by stroke. Encourage the child to complete one stroke at a time while they build confidence.

Strengthen visual memory for letter shapes. Show a letter prompt card and then cover it, asking the child to visualise the letter before writing it. Increase the delay between covering the letter and writing the letter. Encourage the child to visualise the letter and drawing the letter in their head while they wait.

Develop kinaesthetic memory for letter shapes. Practice letter formation and developing a motor rather than visual memory of letter shapes. Air writing and moving from gross to fine motor movement letter formations.

#### Writing Strain Reduction

Consider posture and pen grip. Consider pencil force as many children push down hard when they writing making writing a tiring and sometimes painful process. Mechanical pencils often break when excessive force is used. These can help when supporting children to relax their grip. Practice writing softly on soft surfaces.

#### Teach Compensation Strategies

Teach mind-mapping and other planning techniques that help separate out developing ideas from writing them down. Practice audio recording or drawing ideas before writing them down.

Develop a checklist strategy for self-correcting work. Separate out tasks like checking spelling, punctuation and coherence.

Teach strategies for breaking tasks into small manageable chunks. Break assignments into planning ideas, organising ideas, drafting assignments, review and editing and final assignment stages.

Teaching notetaking shorthand (e.g. b/c for because) to reduce amount of writing. Teach note takings skills explicitly - focusing on key words and information and not trying to record every word.

#### Multisensory Literacy Teaching

Providing a sequential multisensory literacy support programme can support the child in developing their spelling skills. This will reduce the cognitive load of spelling when writing and support the child's literacy more generally.

#### Emotional and Behavioural Support

The difficulties encountered when writing can lead to stress, anxiety and low self-esteem.

- Provide plenty of praise and encouragement.
- Ensure tasks are manageable and achievable.
- Understand task avoidance may be due to anxiety rather than laziness.

# SUPPORTING CHILDREN WHO HAVE DYSGRAPHIA



## MODIFICATION

### CHANGING TASK OR EXPECTATION

#### **Additional time to complete tasks or assignments**

##### **Allow a modified writing style**

- Some children find it easier to print rather than write in a joined cursive.
- Others find cursive helps as it overcomes spacing issues within a word and fewer letters are reversible.
- Development of a fluent writing style- letter formation and guided practice to achieve automaticity.

##### **Provide writing supports**

- Pencil grips
- Sloped surfaces
- Soft grip pens
- Raised lines of paper provide sensory guide
- Use line widths that work for that child, some children find handwriting lines easier than standard guides.

##### **Reduce copying**

- Provide notes to the student.
- Print out presentations for the student

##### **Focus on quality of ideas**

- Avoid volume based targets (e.g. 2 pages or 500 words) for assignments.
- Stop marking for spelling or neatness on tasks where this is not the main aim.
- Provide group work projects with different roles such as writer, proof-reader and illustrator.

## ACCOMMODATION

### ALTERNATIVES TO WRITING

#### **Provide assistive technology**

- Using word processing or speech to text software can make a huge difference
- Teaching touch typing skills to develop a fluent and fast typing speed
- Provide speaking spellcheckers or electronic dictionaries

#### **Allow alternative ways of demonstrating knowledge**

- Poster presentations
- Verbal reports
- Videos
- Provide a scribe so the child can dictate their work

Many children with dysgraphia, given the technological age they are growing up in, may never enjoy handwriting. It may never be the most effective and efficient way for them to express their written ideas.

Handwriting is losing its place in our culture, and for some people is rarely used once they leave school. However, there is something really important about feeling component and being able to handwrite is one of those basic competencies that continue to affect our egos long after we leave school.

Therefore we need to seek a balance between providing assistive technology and teaching children to use it effectively, and teaching basic handwriting skills.

We need to develop two key areas. The first is making sure the child can shine and demonstrate their knowledge and ideas without being held back by their dysgraphia. Technology can be a great way of bridging this gap.

The other is strengthening the core skills that the child is struggling with. This is to ensure that they become confident and literate adults. They may still choose to use technology for some tasks, but they can also choose to handwrite for everyday tasks like writing a shopping list. Developing a more fluent and automatic handwriting style is part of this process.

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To have a specific learning difficulty in writing you need to have substantial difficulty in that area of learning. to have eligibility for support that difficulty must be impacting your learning.

identification (neuropsychologist? )

## ACCESSING SEN SUPPORT

### ACCESSING SUPPORT IN US SCHOOL SYSTEM-

To access SEN services a child must have an issue named or described in Individuals with Disabilities Education Act (IDEA). Professionals who seek support for children with dysgraphia argue that it is described under the category of "specific learning disability." This includes issues with understanding or using language (spoken or written) that make it difficult to listen, think, speak, read, write, spell or to do mathematical calculations.

The difficulty must have persisted for at least 6 months despite the provision of interventions that target those difficulties and has caused substantially and quantifiably lower-than-expected written expression skill for the individual's chronological age and causes significant interference with academic or occupational performance or with activities of daily living as confirmed by individually administered standardized achievement measures and comprehensive clinical assessment.

Mild: Difficulties are mild enough severity that the individual may be able to compensate or function well when provided with appropriate accommodations or support services, especially during the school years

Moderate: Marked difficulties in written expression such that the individual is unlikely to become proficient without some intervals of intensive and specialized teaching during the school years; some accommodations or supportive services at least part of the day at school, in the workplace, or at home may be needed to complete activities accurately and efficiently

Severe: Severe difficulties cause the individual to be unlikely to learn without ongoing intensive individualized and specialized teaching for most of the school years and even with an array of appropriate accommodations or services at home, at school, or in the workplace; the individual may not be able to complete all activities efficiently

Further, poor spelling or handwriting alone, in the absence of other writing difficulties, is insufficient for the diagnosis of specific learning disorder with impairment in written expression. For children with poor motor coordination that causes poor handwriting, a diagnosis of developmental coordination disorder (315.4/F82) may be appropriate.

A medical diagnosis of a learning disorder may or may not be sufficient to establish eligibility for special services, depending on the discrepancy between intellect and achievement used for the diagnosis and the individual school district. The discrepancy needed to diagnose a learning disorder is defined by *DSM-IV* criteria as achievement that is substantially below intellect. Substantially below refers to more than 2 standard deviations between the scores on 2 tests; this is a standardized measure of achievement and a measure of intellectual functioning. This difference can be less, between 1 and 2 standard deviations, if the intellectual assessment has been impacted negatively by a cognitive or other mental or medical disorder.

### ACCESSING SUPPORT IN THE UK SCHOOL SYSTEM

In the UK, the government body for assessing disabled students (The Disabled Student's Allowance for Student Finance England) accept it as a disability which requires adjustments for those who study at universities. It is diagnosed by educational psychologists or LSPD assessor.