



The Dyslexia Compass Guide



Understanding the Key Dyslexia Assessment Elements

The Dyslexia Compass

The Guide

«Understanding the Key Dyslexia Assessment Elements»

Introduction

The Dyslexia Compass is here to help. It's here to help assessors see the bigger picture of how dyslexia is tested for around Europe; it's here to help policy-makers formulate a consistent approach to making new laws and provisions across borders; and it's here to help authorities understand how a dyslexia assessment in one country can be valid in another.

But most of all, it's here to help you.

It's here to help you: the teacher, the parent, and the dyslexic. The Dyslexia Compass is here to help you understand in simple terms what an assessment for dyslexia means, without the jargon.

When somebody is tested for dyslexia, the tests typically cover several areas. These are what we have called the **Key Assessment Elements**, and these key assessment elements are fairly consistently tested for around Europe. If you can understand what they are, you can have a better understanding of what your dyslexia assessment actually means.

And if you can understand what a dyslexia assessment actually means, you can talk about, explain, and justify that assessment to other people, in terms they can recognise, no matter where you are in Europe.



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Contributors

The guide has been compiled through a process of desk research, interviews, and focus groups with dyslexia assessors and specialists throughout Europe. The major contributors to this process have come from dyslexia specialist organisations and education providers with international experience of dyslexia provision. These are:

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Definitions of Dyslexia

How to define dyslexia is a question that many authors and scientists have tried and are still trying to answer. Definitions of dyslexia evolved with the improvement of scientific methods: from “word blindness” in the 19th century to “language-based difficulty” in more recent times.

Currently, some definitions are more influential than others. They are given by different dyslexia research organisations, such as:

1. The British Dyslexia Association
2. European Dyslexia Association
3. International Dyslexia Association
4. American Dyslexia Association

The British Dyslexia Association (BDA) has adopted the Rose (2009) definition that states that dyslexia is a learning difficulty that primarily affects the skills involved in accurate and fluent word reading and spelling. Difficulties are in phonological awareness, verbal memory, and verbal processing speed (see the British Dyslexia Association, 2010, <https://www.bdadyslexia.org.uk/dyslexia/about-dyslexia/what-is-dyslexia>).

The BDA acknowledges both the visual and auditory processing difficulties that some people experience, and that some individuals have strengths in other areas, such as problem solving or creative skills.

The European Dyslexia Association (EDA) defines dyslexia as “a disorder that is mainly characterised by severe difficulties in acquiring reading,



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spelling and writing skills” (<https://eda-info.eu/what-is-dyslexia/>). It is neurobiological in origin and is caused by difficulties in phonological processing (that is, the person’s ability to translate the written words on a page into sounds in the head). Verbal working memory, rapid naming and sequencing skills are also affected. The EDA explains that “there is no relationship between a person’s level of intelligence, individual effort or socio-economic position and the presence of dyslexia”.

The International Dyslexia Association (IDA) states that dyslexia is a specific learning disability that is neurological in origin (IDA, 2002, <https://dyslexiaida.org/definition-of-dyslexia/>). It is characterised by difficulties with accurate and / or fluent word recognition and by poor spelling abilities. These difficulties typically result from a deficit in the phonological component of language. This is often unexpected in relation to other intellectual abilities and levels of teaching experienced by the dyslexic. Secondary consequences may include problems in reading comprehension and reduced reading experience that can hurt the growth of vocabulary and background knowledge.

The IDA’s definition evolved through the years “to reflect ongoing advanced neurological research” (<https://dyslexiaida.org/definition-consensus-project/>) and many states in the USA have adopted this definition.

These three definitions find the cause of dyslexia in problems with the phonological component of language.

The American Dyslexia Association says that dyslexia is a problem with sensory perceptions that are genetically determined and inherited in the family. Precisely, that errors in reading, writing, and maths were caused due to sensory perceptions and resulting inattention.



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Our consortium, and assessors we have spoken to, consider this latter definition controversial.

Each of the definitions has something in common and something that distinguishes them from each other. But they are generally quite broad and not very precise.

Why are definitions important?

To know how to test for dyslexia, we have to know what it is we are testing for. For that, we need a definition of what dyslexia is.

But there is no universal definition of dyslexia, in Europe or elsewhere. Some nations, like Spain, use different definitions within the same country.

The question is – can we have one globally accepted definition of this specific learning disability? A unified definition of dyslexia is important for knowing what to test to see if a person is dyslexic. Also, with a uniform definition, it would be easier for parents and teachers to recognise that a child is dyslexic.

The lack of a consistent and universally agreed understanding of dyslexia has the potential for serious consequences for students who need reading help. That is especially important considering the need for early intervention.



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Phonological Awareness, Letter Recognition, Decoding, and Rapid Automatised Naming

It's commonly believed that we start learning to read when we first go to school (or sometimes before). But there are some steps that we have to take before we can start with reading. One of these steps is that children should become aware that words are made up of sounds, and that we can transfer these sounds to paper. The development of this is simple for some, while others struggle with it. These abilities develop in preschool years.

One of these abilities is phonological awareness. It is the ability to notice sound structure in words. For example, that the word "cat" is made out of the sounds /k - a - t/.

Children learning to read an alphabetic language whose spelling and sound are closely connected develop phonological awareness more quickly. For example, Croatian students that are in their first year of schooling develop it more quickly than English students, because Croatian spelling is easier and more consistent than it is in English.

Phonological awareness includes:

1. Sentence awareness – this refers to the awareness that sentences are formed from words and that we know how to spot these words.
Task example: Tell me how many words are in the sentence: "The sun is shining today" (there are five).
2. Word awareness – this refers to rhyme recognition, being able to find the odd word out, saying learned rhymes, and creating new ones.
Task example: Tell me which two words rhyme? "stair", "steel", "chair" (it is "stair" and "chair").



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3. Syllable awareness – this involves different tasks from the simple to the complex, like counting syllables in words, breaking words up into syllables, and deleting syllables.

Task example: What are the syllables in the word “running”? (there are two: “run” and “ing”); or: Say parsnip. Now say it again, but don’t say the first syllable (in other words, miss out the syllable “par”).

4. Onset–rime awareness – this strange-sounding ability is how we separate words into two parts: the onset, which is the consonant or set of consonants at the start of a syllable; and the rime, which is the remainder of the syllable.

For example, in the word “stick”, “st” is the onset, and “ick” is the rime.

5. Phonemic awareness - this is the ability to manipulate the individual sounds in words.

What are phonemes? They are the smallest individual sounds that make up words. In some languages, some phonemes are made up of two or more letters (in English for example, the letters “t” and “h” go together to make up a single sound). Phonemic awareness includes the ability to hear the different sounds in a word.

Task example: Say the first sound in “shoelace” (“sh”).

It also includes the ability to put sounds together to make a word.

Task example: What word is made up of the following three sounds: “b”, “a”, and “t”? (it is “bat”).

It also includes the ability to change a sound in a word to get a new word.

Task example: “Here are two words: ‘Shrink’ and ‘Shrank’. What sound have I changed?” (the assessor changed the ‘i’ sound into the ‘a’ sound).



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It also includes the ability to remove sounds from words to get new words.

Task example: "Say 'prank'. Now say it without the 'p' sound" ("rank").

In addition to phonological awareness, some other abilities have proven to be extremely important in reading. In our research, we have seen that in some countries the following abilities are also being tested:

- Letter recognition: the skill to pick out a letter from a group of letters.

Some researchers say that letter recognition can be a good starting point for screening children who are at risk of developing reading and writing difficulties (see for instance research by Lenček and Užarević, 2016 - <https://doi.org/10.31299/hrri.52.2.5>).

Task example: Tell me names of these letters: B C A D P L K M E R

- Decoding: seeing letters and reading them as sounds in our minds (NICHD, 2000, pp. 2-11.). When we start reading, all the words are new to us. When we read, in every word we come across, we have to look carefully at each letter to be able to know what it sounds like. Dyslexics can struggle with this their entire lives.

- Rapid automatised naming (RAN): this is the ability to quickly name a series of familiar items when they are presented to you. These can include letters, numbers, colours, or objects. Children with dyslexia are frequently slower on RAN tests.

(<https://www.understood.org/articles/en/rapid-automatized-naming-tests-what-you-need-to-know>).

In a RAN test, the examiner typically starts by going over the names of the set of items with the child. Then the child has to name all of



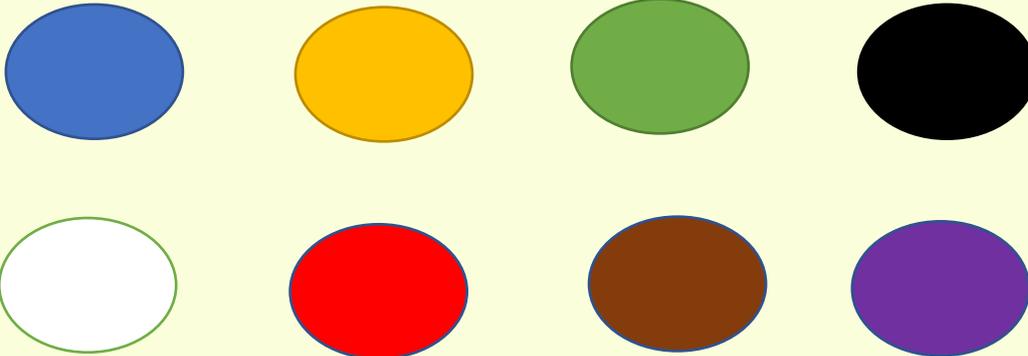
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the items aloud as quickly as possible, from first to last, row by row. Both speed and accuracy are recorded, but the time is of real interest.

Task example: Name these colours quickly and accurately:



Children with RAN and phonemic awareness problems have more severe reading difficulties and they may have a harder time improving their reading than kids who only struggle with phonemes.

See for instance: <https://www.britannica.com/topic/phoneme>, September 26th 2022.



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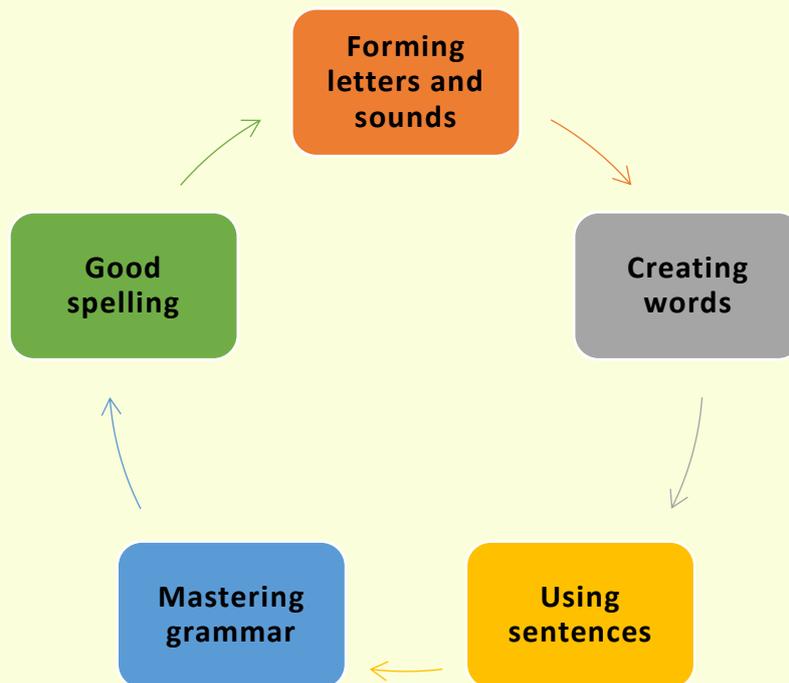
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Writing

Simply put, "writing" is the process of using symbols (letters of the alphabet, punctuation, and spaces) to communicate thoughts and ideas in a readable form. We often think of writing as a simple task, but for many people with dyslexia it can be a very complex process.

But what are the connections between writing and dyslexia? Many individuals with dyslexia experience writing difficulties. This is not surprising, as dyslexics often experience challenges when reading, and reading is often said to be a central component of writing (e.g., Graham, 2018; Hayes, 1996).

Good writing skills require:



When assessing dyslexia, writing is a "key factor". The findings of a study published in the November 2017 edition of *Cognitive Neuropsychology* showed that dyslexia can affect people so much that it can modify or impair their writing skills.



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Guiding factors in the process of identifying writing problems – "Writing window"	
Learning and / or comprehension (understanding)	Physical causes such as poor coordination, pencil grip, seating and / or positioning

The writing difficulties of children with dyslexia can be because of their reading difficulties (dyslexics often have difficulty identifying the sounds of words) and can manifest as poor spelling, limited vocabulary, poor idea development, lack of organization, or even messiness. (Source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6430506/>).

Dyslexia and writing difficulties co-occur for two main reasons:

- | | |
|--|---|
| 1) Reading and writing rely on related underlying processes (Graham & Hebert, 2010,2011) | 2) Reading is a subskill required throughout the writing process. |
|--|---|

Keep in mind:

For dyslexics, struggles and challenges with writing can lead to frustration, stress, and a lack of motivation to continue learning. The skills involved in the "writing technique" are varied and different from one dyslexic person to another. Therefore, support is needed and the process of measuring, assessing, and evaluating dyslexia must be accurate and tailored to specific needs.

Some of the main signals to look out for when writing skills are affected:

- difficulty remembering what words look like;
- spelling words as they sound rather than as they should look (for example, "thro" for "thorough");
- guessing simple words like "it" and "on" (and sometimes getting them wrong);

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- reversing letters (b vs d);
- reversing the order of letters (from vs form);
- splitting words up (such as writing “tho rough” instead of “thorough”);
- mixing up upper case and lower case letters (capital letters and non capital letters);
- sounding out every word when reading and writing;
- underdeveloped writing skills due to knowing fewer words;



Table 1. © Sonia Kandel, GIPSA-Lab (CNRS/Université Grenoble Alpes/Grenoble INP).

Above: The word “regard” written by a child with dyslexia. Black lines show what the child actually wrote on the page; grey lines, recorded by the tablet, show in-air movements when the child paused. This example shows that the child started to write; stopped, then continued. The result is an irregularly produced word which presents a spelling mistake at the end.



Table 2. © Sonia Kandel, GIPSA-Lab (CNRS/Université Grenoble Alpes/Grenoble INP).

Above: The word “cuvette” written by a child with dyslexia. The child had apparent difficulties with the double “t” in this word.



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Black lines show what the child actually wrote on the page; grey lines, recorded by the tablet, show in-air movements when the child paused. Blue squares indicate that the child lifted his or her head to look at the spelling of the word on the computer screen.

(<https://www.cnrs.fr/en/dyslexia-when-spelling-problems-impair-writing-acquisition>)

Takeaways

- When a child or adult has difficulty visualising letters in the mind's eye, reading and spelling become extremely challenging.
- Children with dyslexia will rely heavily on sounding out very common words that should be locked in their memories.
- They will likely confuse simple words like 'it' and 'on'.
- They may spell words as they think they sound, rather than as they are actually spelt.

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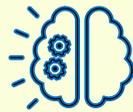
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Working Memory

Memory plays an important role in reading and learning. Our short-term memory allows our brain to hold onto information for a brief period of time while doing something else. We can call it a temporary sticky note in the brain

(<https://www.understood.org/en/articles/working-memory-what-it-is-and-how-it-works>).

You may be wondering how then this sticky note can affect reading and learning.



Working memory can be important in identifying and comparing sounds. Consider a frequent rhyming exercise for pre-schoolers: "Tell me which word rhymes with fox: truck, dog, or box."

To identify the two rhyming words, the child must hold the different sounds in his or her working memory, and then compare them (so: "fox" with "truck", "fox" with "dog", and "fox" with "box").

Or when children attempt to sound out new words, they use their working memory to remember the entire sequence of sounds long enough to put them together into the new words.

It also plays a crucial role in putting sounds into the correct order for spelling, and for connecting ideas when writing.

We also rely on working memory in reading comprehension. When reading a long sentence, paragraph, or passage in a book, working memory is what allows us to remember the information we read earlier



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so that we can understand the whole text, not just the sentence we have just read.

Individuals with poor working memory tend to have trouble planning, organizing, and carrying out daily chores because it requires mentally formulating a "to do" list.

It appears that working memory capabilities increase as we get older. (see <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4207727/>). So for instance, in the most common tests for working memory assessment, the number of items that a person can repeat increases with age.

How do we test working memory?

1. A person is asked to remember a random string of numbers. She must then say them in the order she was asked to remember them.
2. Repeating backwards: a person is asked to repeat a string of numbers, but do it backwards! (So, if she's asked to remember 5, 3, and 1, she must say: "1, 3, 5").
3. Letter-Number Sequencing: this involves listening to and remembering a string of numbers and letters, then recalling the information by repeating the numbers in chronological order, followed by the letters in alphabetical order.

Example: A - 7 - X - 2 - M - 4

Response: 2, 4, 7, A, M, X

4. Arithmetic: this includes mental arithmetic problem-solving.

Example: Michelle is 2 years younger than Peter and 5 years older than Sam. If Sam is 6 how old is Michelle?

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Example: How many carrots are there in this picture?



How can we help?

We can help someone develop strategies for working memory challenges. For example, we can:

- use different colours for each part of a task;
- provide step-by-step instructions;
- use numbers rather than bullet points so pupils can keep track of where you are up to;
- repeat key information regularly;
- provide information in a visual or multisensory way;
- in maths, provide multiplication tables, number lines, and calculators.

But we must emphasise that every child is different and has different challenges. Therefore, we cannot use the same procedures with everyone. We need to get to know each child and adapt to his or her needs.



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Organizational skills

What does it mean to be organised?

It is the way we arrange and plan our daily lives. People with dyslexia can struggle with planning and carrying out simple step-by-step instructions. A person's ability to organise things will affect their daily life, leading him or her to become anxious and overwhelmed.

Often, people with dyslexia have problems with planning and carrying out daily tasks because they require mentally formulating or following a "to do" list organised by time, place, and location. We can define organisational skill as the ability to look at a process, coordinate information, and see connections and solutions to problems.

Our ability to organise is going to affect our daily life, from keeping appointments to getting things done. But it also affects the way we learn, and how we feel about learning. If organising comes easily to us, it will be easier to learn new material. If it doesn't come easily, learning new things like reading and writing will be a greater challenge. It will require greater effort and be more tiring.

Things like bus and train timetables can be hard for some dyslexic people to follow. Spreadsheets that use columns to organise information can have the opposite effect for people with dyslexia, and make understanding that information harder.

Often people with dyslexia struggle keeping time and might be late to class, or miscalculate how long a task will take them to do. It can be difficult identifying poor timekeeping as part of somebody's dyslexia as there might be lots of other reasons a person is continually late (such as having no motivation, or having too many other things to do).

This, and other organisational difficulties, should be viewed over time and as part of a larger context of struggles.



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Some examples of organisational difficulties, and how they can appear in learning, might be:

1. Difficulties following a plan step by step (“first, I need to do this... and then I need to do this... and then I need to do this...”);
2. Appearing unstructured in solving problems (maybe we cannot follow their structure, and they cannot follow ours);
3. Struggling to find specific information in a written text;
4. Difficulties with defining short- or long-term goals, or splitting up a main goal into smaller ones;
5. Time management problems (perhaps the person with dyslexia is always late, or gets her dates mixed up, or double-books herself, or finds it difficult working out how long something will take to do, or simply finds it difficult to tell the time);
6. Difficulties choosing between alternatives (they might find making choices hard);
7. Difficulties putting things in the right order (this can become obvious when making plans, getting ready for school, or packing to go on holiday);
8. Learning new things (if you struggle to organise information, or the things you are trying to learn, then learning will naturally become more challenging).

Poor organisation skills can make a student think that they aren’t “good” at school, or aren’t “smart enough” to get good grades, and this can affect their self-esteem and mental health. This means that helping people learn strategies to organise things can improve their overall chances in life.

Dyslexic people all have different and unique abilities, such as great problem-solving skills and creative ways of looking at things. Struggling to be organised can take a lot of effort, meaning they won’t focus on their strengths. They may therefore need extra help in finding out how their dyslexia affects their ability to learn. They may need extra help in finding strategies which work for them on how to organise their work.



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If we can find simple short-term solutions to their organisation difficulties, we can eventually turn these into long term solutions which work not only in their education, but in daily life too.

Main takeaways:

- Learning requires a greater effort if you have organisation difficulties. Variations and breaks can help relieve this.
- Helping students find good strategies for structuring their work can have a big impact for them in all learning situations.



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Visual Perception

Overview

There is much discussion about the relationships between dyslexia and visual perception / visual processing. Some countries don't test for these issues at all when testing for dyslexia, while many countries report that assessments are used which measure visual processing in some way. Visual-spatial skills are taken into account when testing for dyslexia in Sweden, while Spanish assessors look for visual scanning, and visual perception is accounted for in Croatia, and to some extent the United Kingdom.

Yet debate remains hot, not only about whether visual perception is a key element of dyslexia, but about what "visual perception" actually means in these instances. Some studies have indicated that visual perception deficits may play an important role in both dyslexia and dyscalculia, while others have reported visual perception deficits as less important, even irrelevant factors. This appears to reflect the differences in what those studies are looking for. But where studies report a strong correlation between dyslexia and visual processing deficits, we have to take them seriously as describing a possible aspect of dyslexia.

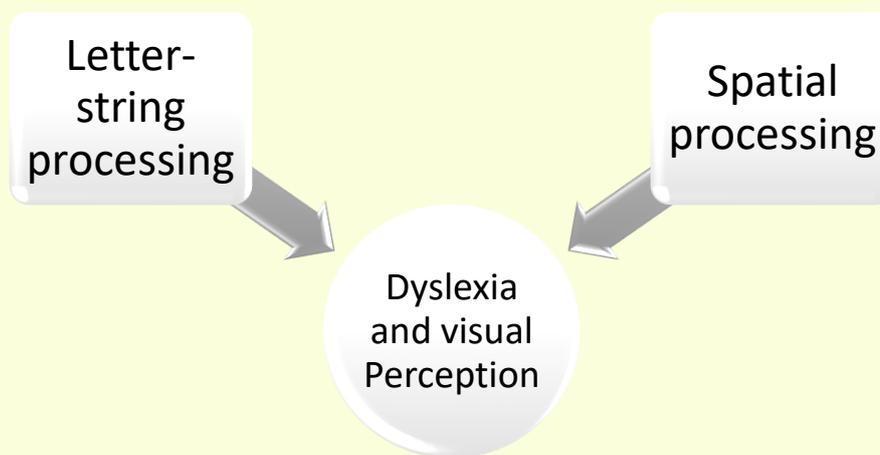
What "Visual Perception" in Dyslexia (almost certainly) Isn't

In some dyslexia tests, assessors have been reported as asking subjects to read through coloured filters. This indicates strongly that they are looking for a condition called Meares-Irlen Syndrome (sometimes simply: Irlen Syndrome). While Irlen syndrome is itself a subject of some controversy, it is certainly not the same as dyslexia; although somewhere between a third and a half of dyslexics reporting having it.

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What "Visual Perception" in Dyslexia (probably) Is

Many studies (see for instance Valdois, Fischer, Cheng, and others) broadly identify two major candidates for visual perception difficulties in dyslexic subjects: *poor letter-string recognition and processing*, and problems with *spatial processing*.



Letter-String Processing

Regarding the deficit in letter-string processing, this reflects a visual processing disorder compatible with other reported elements of dyslexia, such as working memory issues and visual attention span disorder (*i.e.*, a deficit in the number of distinct visual elements that can be processed, in parallel, in a multi-element arrangement).

It manifests mainly in the recognition and processing of letter position (including place and orientation) within a series of letters.

Subjects may experience difficulties in identifying where a letter is, which it is, or "which way round" it is (such as confusing "b" and "d") within a letter string (that is, within a written word).

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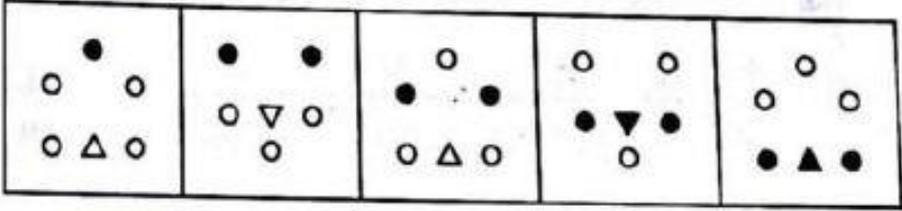
Spatial Processing

Regarding the spatial processing aspect of visual perception, this concerns a subject's capacity to detect fast changes in small visual patterns and pattern orientation, or coherently moving dots on a screen. Dyslexics as a whole tend to perform significantly below the level of non-dyslexic subjects in activities testing for this. Other indications may include a difficulty in seeing how fast something moves, or where it is, or even which way round it is; but also, interestingly, the detection, discrimination, and manipulation of letter-strings.

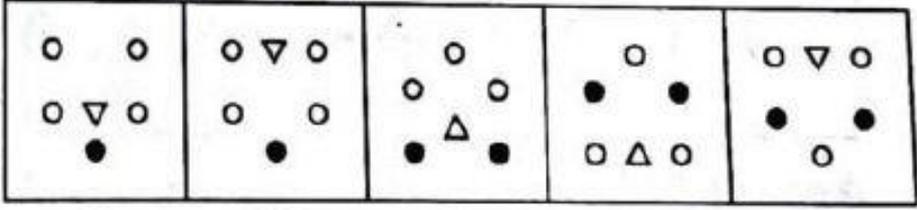
For example, determining which letter comes next in a sequence; which letter is missing from a sequence; which geometric shape is the same as, or is a rotation of, one of a choice of options; or which figure completes a logical sequence, may be typical of such a skill.

Select the correct answer figure which will continue the series:

Problem Figures



Answer Figures



(a) (b) (c) (d) (e)

Taken from Non-Verbal Series Practice Questions: Questions & Listed Answers (toppr.com)



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In Summary:

Overall, “visual perception” refers to one (or both) of two things: either (a) finding (and writing) letters in the right places in a word or sentence; or (b) being able to recognise shapes and patterns, see whether a particular shape is the same as (or perhaps a mirror image of) another shape, or see changes in sequences.

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Motor Skills

Introduction

Most studies on dyslexia focus on the links between the academic performance of a child and their reading and writing ability. However, several studies have indicated that there is also a strong link between dyslexia and motor skills.

Although motor skills are NOT the main issue when talking about dyslexia, several sources say that in between 35% to 60% of the cases, dyslexia and challenges with fine motor skills do co-exist.

Problems in motor skills, both gross and fine, can have a big impact on the quality of life of children with dyslexia as a certain level of proficiency in motor skills is important to be able to function well in everyday life.

Fine motor skills and dyslexia

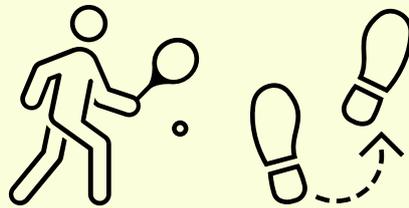
Fine motor skills are essential in many aspects of life. They are our ability to perform delicate or fiddly movements, usually with our hands and fingers.



Things like hand posture while writing, buttoning your shirt, using scissors, turning keys, handling coins, tying shoelaces, opening and closing zippers, etc., are activities involving fine motor skills, and are all part of our daily lives. Sometimes even adults will struggle with fine motor skills. Bad handwriting is a good example of this.

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Opposed to fine motor skills, gross motor skills are those that involve the large muscles in the arms, legs and torso. Depending on age, some examples of gross motor skills could be crawling, walking, running, kicking, throwing and catching a ball, etc. Gross motor skills are also related to other abilities such as balance and coordination. It is often reported that children with dyslexia have deficits in gross motor skills, specifically with balance and posture, and might come across as “clumsy”.



But movements are not limited to the hands, arms or legs. Our eyes are also involved in sequential movements, like when our eyes follow a moving light. This activity is called sequential tracking and is one of the most fundamental components of reading. After all, we have to read things in the correct order for us to understand them.

Sequential tracking is related to the way we move our eyes, and research has shown that eye movement in people with dyslexia is very different from that of other people their own age that do not have dyslexia.

Dyslexia is also sometimes linked to a deficit in processing the sensory information (such as what we see, smell, touch, etc) the brain receives. For people with dyslexia, researchers have found that their reaction to the sensory information they received was on average about half the speed of those without dyslexia.

In that perspective, we could say that fluent reading relies on linking letters with sounds – both of which involve sensory information.



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What can you do to help

Although it remains an area to be explored further, early intervention by training balance and coordination is sometimes said to help. Practicing motor skills also improves attention and general processing speed, which could have a positive effect on academic performance and reading.

Things one can do to improve motor skills with small children could be dressing and undressing dolls, tearing pieces of paper, throwing and catching a ball, threading beads, etc. "Crabbing" (a form of crawling) across the floor can also be a fun way to practise motor coordination. It's important to repeat these activities over time and make them playful and fun, because these are ways you can help make motor skill development more appealing while improving a child's self-esteem.



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Maths Skills

Introduction

Dyslexia is not something that only affects language, it can also affect maths skills. But before talking about dyslexia and maths skills we should ask ourselves: what are maths skills?

They include number knowledge, counting and reasoning abilities, understanding mathematical concepts, accurately writing down numbers and calculations, and understanding time and space.

Mathematical skills also require a series of skills such as memory, symbol recognition, and general comprehension, among other things.

Dyslexia and difficulties with maths

Dyslexia is often defined as an unexpected difficulty in reading. However dyslexic students may also have difficulty in mathematics.

How can this be explained? It so happens that the same problems that students with dyslexia face in language-related tasks can also occur in maths-related tasks. Maths skills depend on many factors such as counting, having basic number skills, understanding amounts, and remembering facts. They also depend on motivation, levels of maths anxiety, and the environment that a student associates with doing maths.

Students with dyslexia might get confused when dealing with sequences – perhaps they have to create sequences of numbers or calculations, “work backwards” to a solution, or deal with mathematical problems where things are “not in the right order”. We can see this for example in activities such as counting backwards.





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As poor mathematical skills in children and adults may lead to people seeing them as “not very clever”, this can lead to emotional and behavioural disengagement or low self-esteem. Maths difficulties are therefore linked with potentially poor life outcomes, if we don't recognise them.

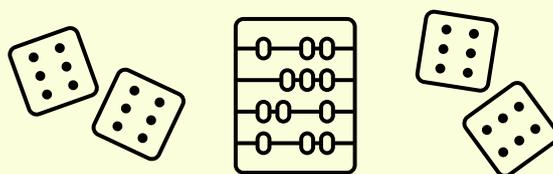
Dyslexia or Dyscalculia?

When we talk about mathematics and dyslexia, on many occasions the concept of dyscalculia arises.

Dyscalculia mainly presents in the following ways:

- Difficulty recognising mathematical symbols;
- Difficulty recognising patterns;
- Difficulty in memorising rules and procedures;
- Difficulty in applying what has been learned to other aspects of mathematics.

Even where dyscalculia is different from dyslexia, some studies show that students with dyslexia are generally weak in certain aspects of mathematics. In some cases, students showed poor understanding and poor execution of certain mathematical problems, not necessarily because of poor mathematical ability, but because of a poor understanding of the statement. Having a problem with reading, these students were not able to understand correctly what they should do in the problem and ended up performing poorly.





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How to work with it:

Task analysis

This means splitting tasks into smaller steps to make them easier. Some students have a great difficulty in sequencing, so breaking longer tasks into smaller steps allows them to focus on one task at a time and reach the end goal more easily.

One way to do this can be as follows:

1. before reading the statement, do a pre-reading (What is it that we are going to read?)
2. read the statement and underline or highlight the most important information
3. read the question, and ask: what do we have to find out?
4. write down the data we have
5. do the necessary calculations

Explicit instructions

It is also necessary that students are given very specific instructions for the exercises and activities. It is necessary that the instructions are clear so that they know exactly what they must do at each moment.

Multisensory instructions.

A very useful way of working is with multisensory learning. Introducing sight, sound, and touch elements helps the retention of knowledge, something that might otherwise be difficult for dyslexic students.

One way to work with them would be the use of drawings or figures and make the concepts less abstract and more "visual". Students visualise each step of the mathematical process and, this way, can understand and memorise these mathematical aspects better.



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Scaffolding

When we talk about scaffolding it means that we work with dyslexic students using examples of how a calculation can be done in a step-by-step and structured way, using a lot of repetition so that they can link new knowledge with previously learned knowledge.

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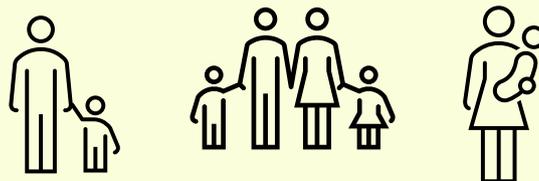
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Interviews with Parents

Children who grow up in an environment where they are encouraged to read and write from an early age may find reading and writing easier at school than other pupils. Children who have happy experiences at schools, and whose teachers are skilled in teaching reading and writing to young pupils, will also have an easier time than those who have less happy experiences at school. Children who are allowed to develop at their own rate, rather than forced to read above (or below) their expected reading levels, will have a different relationship to reading and writing than those who aren't allowed to develop so naturally.

In other words, the environment will affect a child's reading abilities, and interviews with parents are an attempt to understand the bigger picture of why a child might be struggling at school.

Interviews with parents can tell an assessor a lot about a child's reading and writing development, and a well conducted interview will give the assessor the confidence to make a more informed assessment about the child she is testing.



But it is not only the school environment that an assessor will want to find out about. Studies show that children with dyslexic parents are highly likely to develop dyslexia themselves. Other studies (Snowling and Melbye Leirvåg 2016) show that dyslexia can be detected in toddlers. In early years these presented themselves as slow language development, and as children started school they showed difficulties with phonological awareness (reading the letters in a word and knowing what they sounded like), as well as rapid naming and reading comprehension.



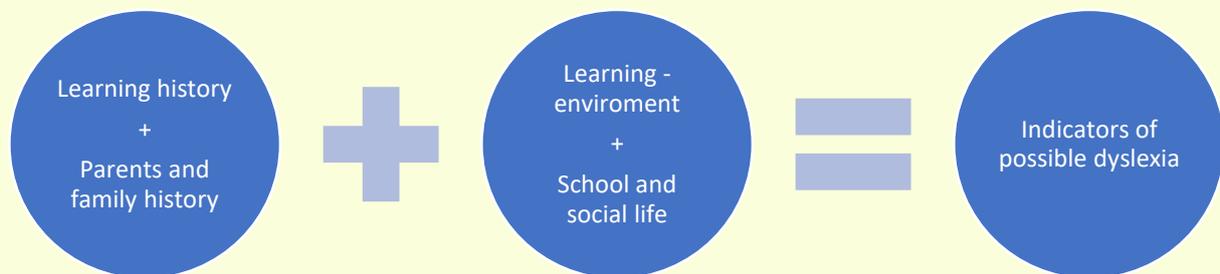
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In interviews with parents, it is important for the assessor to find out if there is any family history of reading or writing difficulties, language difficulties, or maths difficulties, as these would strongly suggest that the child in question may well have inherited dyslexia (Midtbø Aas 2021). Other dyslexic children in a family would also indicate this. The interview can also discover what the child's early language experiences were, such as speech development, reading struggles, and vocabulary building.

Assessors should find out whether those she is testing for dyslexia have also been tested for other issues, such as sight and hearing difficulties, if only to rule them out as a possible cause of the troubles the child may be experiencing. There is also a similarity between some signs of dyslexia and some signs of ADD/ADHD. One does not rule out the other, but it helps the assessor to form a bigger picture of the person being tested, to know what else, if anything, might be going on.



Pupils will have had language teaching in school, and whether this teaching has been competent or not can be important for the assessor to get a clear picture of how this has affected the child. Other areas of interest could be: has the child had many different teachers, or inconsistent teaching methods?

Dyslexia is recognised as a persistent difficulty, which means that the passage of time and measures to overcome the difficulty will have had little effect. There may have been some specially adapted measures taken to help the child, and it's important to the assessor to know if these have had any effect (Pene 2019).



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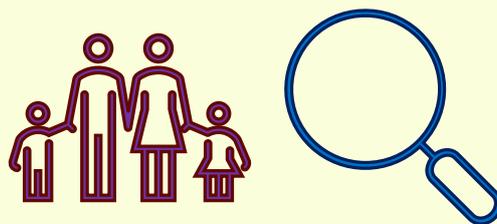
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To be able to compare how the pupil or student performs in tests vs what we would expect from a typical pupil of the same age, the assessor will need to know if he or she has experienced any emotional or motivational problems at school, and the parents can be of help identifying this.

The parents have in-depth knowledge of the child's language, motor skills, reading difficulties, possible troubles "jumbling letters up", and overall learning development. They will have knowledge of whether there have been any similar issues in the family. And they will have knowledge of when any difficulties first showed themselves, how they affect the child today, and what measures (if any) have been tried in school. All such knowledge can help the assessor get to the bottom of what is going on in the child's life (Lundeberg & Høien, 2019).

Parents can have great expectations to the assessment, and many questions. A good interview with the parents gives the assessor a great opportunity to answer these questions, clear any misconceptions up, and give advice on how they can best support their child.

In assessing dyslexia, it is important for the assessor to see the big picture - to fully understand how the difficulties occur and how they affect which tasks. Dyslexia is individual to each and every dyslexic, and will influence people in different ways. A big picture understanding of how each individual is affected is key to finding the right help to overcome whatever difficulties are present. A good interview with the parents will give the information to help determine this.





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Understanding the Key Dyslexia Assessment Elements

Main takeaways:

- An assessment should give a big picture view of a dyslexic's development.
- Dyslexia is regarded as a persistent difficulty, which means the problems have been there over time. When and how the difficulty has appeared can give a lot of information on how to help the dyslexic in the best way possible.
- An interview with parents can be of great help for parents, in understanding the difficulty and best help they're son or daughter.

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