

Dyslexia

Introduction

Dyslexia is a common learning difficulty that mainly affects the way people read and spell words.

Signs and symptoms

Dyslexia is a spectrum disorder, with symptoms ranging from mild to severe. People with dyslexia have particular difficulty with:

- phonological awareness
- verbal memory
- rapid serial naming
- verbal processing speed

These terms are explained in more detail below.

Phonological awareness

Phonological awareness is thought to be a key skill in early reading and spelling development. It is the ability to identify how words are made up of smaller units of sound, known as phonemes. Changes in the sounds that make up words can lead to changes in their meaning.

For example, a child with a good level of phonological awareness would understand that if you change the letter "p" in the word "pat" to "s", the word becomes "sat".

Verbal memory

Verbal memory is the ability to remember a sequence of verbal information for a short period of time.

For example, the ability to remember a short list such as "red, blue, green", or a set of simple instructions, such as "Put on your gloves and your hat, find the lead for the dog and then go to the park."

Rapid serial naming

This is the ability to name a series of colours, objects or numbers as fast as possible.

Verbal processing speed

Verbal processing speed is the time it takes to process and recognise familiar verbal information, such as letters and digits.

For example, someone with a good verbal processing speed has the ability to quickly write down unfamiliar words when they are spelled out, or write down telephone numbers they are told.

Dyslexia and intelligence

Dyslexia only affects some skills and abilities, and is not linked to a person's general level of intelligence.

Children of all intellectual abilities, from low to high intelligence, can be affected by dyslexia.

Similarly, the difficulty a child with dyslexia has with reading and spelling is not determined by their intelligence, but by how severe their dyslexia is. Children with average intelligence and mild dyslexia are likely to be more skilled at reading and writing than children with high intelligence and more severe dyslexia.

How common is dyslexia?

Dyslexia is thought to be one of the most common learning difficulties. It's estimated that up to 1 in every 10 people in the UK has a certain degree of dyslexia.

Dyslexia affects people of all ethnic backgrounds, and has even been shown to affect languages based on symbols rather than letters, such as Cantonese.

However, a person's native language can play an important role in the condition. For example, dyslexia is less problematic in languages with consistent rules around pronunciation, such as Italian and Spanish.

Languages such as English, where there is often no clear connection between the written form and sound (for example, words such as "cough" and "dough"), can be more challenging for a person with dyslexia.

What causes dyslexia?

The exact cause of dyslexia is unknown, but it's seen more commonly in families.

Six genes have been identified that may be responsible for the condition, four of which affect the way the brain is formed during early life. Specialist brain scans (functional magnetic resonance imaging (MRI) scans) also show there is reduced function of one area towards the back of the brain, called the occipito-temporal cortex.

Identifying dyslexia

It can be difficult to diagnose dyslexia in young children as the signs are not always obvious. If you think your child has dyslexia, the first step is to speak to their teacher or the school's special needs coordinator.

Identifying your child's strengths (such as picture puzzles or maths) as well as their difficulties can be helpful. Many schools identify children who are having difficulty learning in particular areas and offer additional support.

If your child does not make progress when offered this support, the school may request a more in-depth assessment from either a specialist teacher or educational psychologist. It is also possible to request private assessments, either directly from an educational psychologist or through voluntary organisations such as [Dyslexia Action](#).

Adults who wish to be assessed for dyslexia can visit their [local Dyslexia Action Centre](#).

Treating dyslexia

Although dyslexia is a lifelong problem, a range of educational programmes and interventions are often effective in improving reading and writing skills in many children with the condition. Research has shown that the earlier appropriate interventions are adopted, the better.

Most children respond well to educational interventions and go on to make progress with reading and writing, although some children continue to find reading and writing difficult and will require more intensive support and long-term assistance to help them learn strategies for managing their difficulties.

Children with dyslexia face challenges on a day-to-day basis, but even children who have severe dyslexia can go on to lead full and productive lives.

Support groups

As well as national dyslexia charities, such as [Dyslexia Action](#) and the [British Dyslexia Association \(BDA\)](#), there are several local dyslexia associations (LDAs). These are independently registered charities that run workshops and help to provide local support and access to information.

You can [find your local LDA](#) on the BDA website

Symptoms of dyslexia

The symptoms of dyslexia can differ from person to person, and each individual with the condition will have a unique pattern of strengths and weaknesses.

Preschool children

In some cases, it's possible to detect symptoms of dyslexia before a child starts school. Symptoms can include:

- delayed speech development in comparison with other children of the same age (although this can have many different causes besides dyslexia)
- speech problems, such as not being able to pronounce long words properly and "jumbling" up phrases – for example, saying "hecilopter" instead of "helicopter", or "beddy tear" instead of "teddy bear"
- problems expressing themselves using spoken language, such as being unable to remember the right word to use, or putting together sentences incorrectly
- little understanding or appreciation of rhyming words, such as "the cat sat on the mat", or nursery rhymes
- difficulty with, or little interest in, learning letters of the alphabet

School children

Symptoms of dyslexia usually become more obvious when children start school and begin to focus more on learning how to read and write.

Symptoms of dyslexia in children aged 5-12 include:

- problems learning the names and sounds of letters
- spelling that is unpredictable and inconsistent
- putting letters and figures the wrong way round –such as putting "6" instead "9", or "b" instead of "d"
- confusing the order of letters in words
- reading slowly or making errors when reading aloud
- visual disturbances when reading – for example, a child may describe letters and words as seeming to move around or appear blurred
- answering questions well orally, but having difficulty writing down the answer
- difficulty carrying out a sequence of directions
- struggling to learn sequences, such as days of the week or the alphabet
- slow writing speed
- poor handwriting
- problems copying written language, and taking longer than normal to complete written work
- poor phonological awareness and "word attack skills" (see below)

Phonological awareness

Phonological awareness is the ability to recognise that words are made up of smaller units of sound (phonemes) and that changing and manipulating phonemes can create new words and meanings.

A child with poor phonological awareness may not be able to correctly answer these questions:

- what sounds do you think make up the word "hot", and are these different from the sounds that make up the word "hat"?
- what word would you have if you changed the "p" sound in 'pot' to an "h" sound?
- how many words can you think of that rhyme with the word "cat"?

Word attack skills

Young children with dyslexia also have problems with "word attack skills". This is the ability to make sense of unfamiliar words by looking for smaller words or collections of letters, such as "ph" or "ing", that a child has previously learnt.

For example, a child with good word attack skills may read the word "sunbathing" for the first time and gain a sense of the meaning of the word by breaking it down into "sun", "bath", and "ing".

Teenagers and adults

As well as the problems mentioned above, the symptoms of dyslexia in older children and adults can include:

- poorly organised written work that lacks expression –for example, even though they may be very knowledgeable about a certain subject, they may have problems expressing that knowledge in writing
- difficulty planning and writing essays, letters or reports
- difficulties revising for examinations
- trying to avoid reading and writing whenever possible
- difficulty taking notes or copying
- poor spelling
- struggling to remember things such as a PINs or telephone numbers
- struggling to meet deadlines

Seeking advice about your child

If you are concerned about your child's progress with reading and writing, first talk to their school teacher.

If you or your child's teacher has a continuing concern, take your child to visit a GP so they can check for signs of any underlying health issues, such as hearing or vision problems.

If your child doesn't have any obvious underlying health problems to explain their learning difficulties, different teaching methods may need to be tried, or you may want to request an assessment to identify any special needs they may have.

Associated symptoms of dyslexia

Some people with dyslexia also have other problems not directly connected to reading or writing, such as:

- difficulties with numbers (dyscalculia)
- poor short-term memory
- problems concentrating and a short attention span
- poor organisation and time-management
- physical coordination problems ([dyspraxia](#))

Causes of dyslexia

There are several theories about the causes of dyslexia, but it is generally accepted to be a condition passed on through families.

It has been shown that if you have dyslexia, there is a significant chance your child will also have the condition, and if one identical twin is born with dyslexia, it is very likely the other twin will also have it.

Research has shown there are six possible genes that may contribute to dyslexia; however, there are thought to be many factors that cause the condition. Four of the genes have been shown to affect neuronal migration, which is part of the process in the brain's development that leads to specific areas of the brain having specialised functions.

This idea is also supported by research where brain scans have shown problems in the occipito-temporal cortex, which is an area towards the back of the brain.

It is thought these problems in the brain can contribute to dyslexia by affecting what is known as "phonological processing".

Phonological processing

The most widely supported theory of how dyslexia affects reading and writing is known as the "phonological processing impairment theory". To better understand this theory, it is useful to distinguish between how spoken and written language are understood.

The ability to understand spoken language seems to be a natural capacity of the human brain. This is why children as young as three years old can often speak and understand relatively complicated sentences.

As a result of this natural ability, when we listen to spoken language, we do not register that a word is made up of phonemes (the smallest units of sound that make up words). We only hear the word itself.

For example, when you hear the word "crocodile", you hear it as one word. You do not have to break up the word into its phonemes and then reassemble them to make sense of it (which would be the sounds "crok", "o", "dyle").

The same is not true of reading and writing. Both these skills require the ability to first recognise the letters in a word, then use these letters to identify the phonemes and assemble them to make sense of the word.

This ability is known as phonological processing. It is thought that people with dyslexia find phonological processing much more difficult than other people, because their brains function in a different way.

Diagnosing dyslexia

The earlier a child with dyslexia is diagnosed, the more effective their treatment is likely to be.

In practice, however, identifying dyslexia in younger children can be difficult for both parents and teachers, because the signs and symptoms are not always obvious.

Many children, including younger children, also develop ways to compensate for their dyslexia, such as relying on their long-term memory more than is usual, or by "picturing" the whole word.

If you are worried about your child

If you are concerned about your child's progress with reading and writing, first talk to their teacher. You may also want to meet with other staff in the school.

If the concern continues, take your child to visit a GP. It may be that your child has health problems not connected to dyslexia that are affecting their ability to read or write. For example, they may have:

- **vision problems**, such as [short-sightedness](#) or a [squint](#)
- **hearing problems**, as the result of a condition such as [glue ear](#)
- **other conditions**, such as [attention deficit hyperactivity disorder \(ADHD\)](#)

If your child does not have any obvious underlying health problems to explain their learning difficulties, it may be that they are not responding very well to the teaching method, and a different approach may be needed.

Assessments

If there are still concerns about your child's progress after they have received additional teaching and support, a more in-depth assessment may be recommended.

The assessment will be carried out by an educational psychologist or appropriately qualified specialist dyslexia teacher, who will be able to support yourself, your child and your child's teacher. They will try to improve your understanding of the child's learning difficulties and suggest targeted support.

An educational psychologist specialises in assisting children who have problems progressing with their education as a result of emotional, psychological, cognitive (learning) or behavioural issues.

Requesting an assessment

There are various ways to request an assessment for your child, although it can sometimes be a time-consuming and frustrating process.

The first step is to meet your child's teacher and their school's special educational needs co-ordinator (SENCO). A SENCO is a teacher who is responsible for special educational needs within a school. All schools have a SENCO, and they work with other teachers and parents to ensure the needs of pupils with special educational needs are properly met.

At the meeting, you can discuss your concerns and interventions that have been tried already. The first step is to ensure appropriate interventions for your child are being taken by the school. If your child continues to have difficulties after these interventions, you can ask for them to be referred for assessment and advice by a local educational authority (LEA) educational psychologist or other specialist in dyslexia.

If your child's teacher and the SENCO do not agree that an assessment is appropriate or required, you have other options. You can challenge the decision and request your child is formally assessed through the statutory

assessment process by contacting the special needs department of your LEA directly.

The [Independent Parental Special Education Advice \(IPSEA\)](#) is an independent charity for parents of children with special needs. Their website contains information about steps you can take to have the educational needs of your child assessed, as well as advice about how to appeal a decision and arrange an assessment with your LEA.

Alternatively, you can arrange to have your child assessed by an independent educational psychologist or another suitably qualified professional. You can do this by contacting an educational psychologist directly. You can find a [directory of chartered psychologists](#) on the British Psychological Society's website.

You can also visit the Dyslexia Action website for help arranging an assessment. Dyslexia Action is a national organisation for people with dyslexia, and it can arrange appointments with psychologists who have a special interest in dyslexia. Find your [nearest Dyslexia Action Centre](#).

Dyslexia Action centres will charge for the assessment. The costs varies slightly from centre to centre, but is usually in the region of £300-£500.

The assessment procedure

Before the assessment takes place, you and your child's school may be sent a questionnaire that asks about your child and related issues, such as their general state of health, how well they perform certain tasks and what you think needs to change.

Various different assessment methods may be used, but all involve your child taking part in a series of tests and observing them in their learning environment, as well as talking with key adults involved with your child's learning. The tests are not limited to your child's reading and writing abilities; they also examine other skills, including:

- language development vocabulary
- logical reasoning
- memory
- the speed they can process visual and auditory (sound) information
- organisational skills
- approaches to learning

Dyslexia can usually be confidently diagnosed if a child's reading and writing skills are poorly developed despite the use of appropriate teaching methods and the child's other abilities, such as their understanding of logic or their verbal skills, are unaffected.

After your child has been assessed, you will receive a report that outlines their strengths and weaknesses, with recommendations of what could be done to improve areas they are having difficulties with. Understanding what your child is good at and what they enjoy is an important step in developing an educational plan that tackles their weaknesses.

Depending on the severity of your child's learning difficulties, it may be possible for your child's literacy difficulties to be managed through a specific action plan drawn up for them and undertaken by their school. If this is the way forward, an individual education plan (IEP) will be drawn up for your child, that will be reviewed with you and your child each term.

In a small number of cases, where a child's difficulties do not improve and progress does not seem to be made, despite appropriate interventions from the school, you may want to request a fuller assessment that covers all aspects of your child's development.

This would result in a more formal, legally binding educational plan being drawn up for your child, usually known as a Statement of Special Education Needs (SEN) – in September 2014, this will change to an Education Healthcare Plan (EHC). If this level of intervention is considered necessary, it will set out what your child's educational needs are and the support required to meet those needs in a document that is reviewed formally every year.

See the GOV.UK website for more information about [children with special educational needs \(SEN\)](#).

Assessment in adults

If you are an adult and think you may have dyslexia or a related difficulty that has not been identified, you can also arrange to have an assessment through your [local Dyslexia Action Centre](#).

Employers, colleges and universities may make a contribution to cover some or all of the cost of this assessment. However, this is at their discretion, and they have no legal obligation to fund the costs of your assessment.

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Dyslexia - Treatment

Treating dyslexia

While dyslexia is a lifelong problem, there is a range of specialist educational interventions that can help children with dyslexia with their reading and writing.

The amount and type of intervention necessary will depend on the severity of their condition. In some cases, a specific action plan for your child can be drawn up and implemented by their school.

Most children with dyslexia will only need to miss a few hours of their regular classes each week to receive specialist one-to-one teaching, or teaching in small groups. A small number of children with dyslexia may need to be transferred to a specialist school. Many specialist schools charge a fee, although financial support may be available from your Local Educational Authority (LEA).

Early educational interventions

Research has found that early educational interventions, ideally before a child reaches seven or eight years old, are the most effective way of achieving long-term improvements in their reading and writing.

A wide range of educational interventions and programmes are available, and it can be difficult for parents to find out which would most benefit their child.

However, there is a large body of good quality evidence that interventions focusing on phonological skills (the ability to identify and process sounds) are the most effective way of improving reading and writing. These types of educational interventions are often referred to as phonics. This is a

system widely used to teach all children to read and write, not just those with dyslexia.

Phonics - core elements

Phonics focuses on the six core elements described below.

Phonemic awareness

Phonemic awareness teaches children how to recognise and identify sounds (phonemes) in spoken words. For example, it helps a child to recognise that even very short words such as "hat" are actually made up of three phonemes: "h", "a" and "t".

Another important part of phonemic awareness involves understanding that you can manipulate phonemes to change words, such as changing the "h" to a "c" to create the word "cat".

Phonics instruction

Phonics instruction teaches children how to sound out printed words by recognising the written letters that correspond to spoken phonemes. Letters that correspond to phonemes are known as graphemes.

Phonics also teaches children how to decode multisyllabic words, such as "crocodile" and apply previous learned rules so they have a better understanding of new words.

Spelling and writing instruction

Spelling and writing instruction encourages children to combine letters and graphemes to create words, and then, over time, to use the words to create more complex sentences.

Fluency instruction

Fluency instruction allows children to practice reading words accurately. The goal is for a child to be able to read with a good level of accuracy and speed.

This is important because if a child spends a lot of time trying to focus on reading individual words, it is easy to lose track of the text as a whole, and they may not properly understand what they are reading.

Vocabulary instruction

Vocabulary instruction teaches children to recognise words they are reading, while building and understanding new words.

Comprehension instruction

Comprehension instruction teaches children to monitor their own understanding while they read. They are encouraged to ask questions if they notice gaps in their understanding, while also linking what they are reading to information they have previously learned.

Phonics - important features

There is good evidence to indicate that the most effective methods of teaching phonics to children with dyslexia contain the features described below.

Structure

Teaching should be highly structured, with development in small steps, building logically on what has been previously learnt.

Multisensory

Children with dyslexia learn better when they use as many different senses as possible. An example of multisensory teaching is where a child is taught to see the letter "a", say its name and sound, and write it in the air (all at the same time).

Reinforcement

Skills should be reinforced through regular practice, because children with dyslexia often have to "overlearn" skills already mastered. This helps to improve their automatic recognition of correct phonemes, letters and rules in reading and writing.

Skill teaching

Early interventions in children with dyslexia should focus on development of useful skills that can be transferred to other areas, rather than teaching

children to learn and retain big chunks of information that could place unnecessary strain on their memory.

Metacognition

Metacognition means "thinking about the way you think". In practice, metacognition involves encouraging children to recognise that there are different learning methods and approaches available to them, and then thinking about which ones would be best for them to use in different circumstances.

Breaking down emotional barriers

Another important feature of any educational intervention is to recognise that many children with dyslexia can develop emotional barriers that can make learning more difficult, such as anxiety, frustration and low confidence.

Therefore, it is important to break down these barriers through encouragement, empathy and fostering the child's self-esteem.

How you can help your child

As a parent, you may want to help your children with their reading, but you may be unsure about the best way to do it. You may find the following advice useful:

- **Read to your child** – this will improve their vocabulary and listening skills, and it will also encourage their interest in books.
- **Share reading** – both read some of the book and then discuss what is happening, or what might happen.
- **"Overlearning"** – you may get bored of reading your child's favourite book over and over, but repetition will reinforce their understanding and means they will become familiar with the text.
- **Silent reading** – children need the chance to read alone to encourage their independence and fluency.
- **Make reading fun** – reading should be a pleasure, not a chore. Use books about subjects your child is interested in, and ensure that reading takes place in a relaxed and comfortable environment.

Parents also play a significant role in improving their child's confidence, so it's important to encourage and support your child as they learn.

Technology for older children

Many older children with dyslexia feel more comfortable working with a computer than an exercise book. This may be because a computer uses a visual environment that corresponds more closely to their method of thinking.

Word processing programmes can also be useful because they have a spellchecker and an auto-correct facility that can highlight mistakes in your child's writing.

Most web browsers and word processing software also have "text-to-speech" functions, where the computer reads the text as it appears on the screen.

Speech recognition software can also be used to translate what a person is saying into written text. This software can be useful for children with dyslexia because their language abilities are often better than their writing skills. The software can take a considerable amount of time and effort to use before it can be used with speed, but some children may find the effort worthwhile.

There are also many educational interactive software applications that may provide your child with a more engaging way of learning a subject, rather than simply reading from a textbook.

Adults

Much of the advice and techniques used to help children with dyslexia are also relevant for adults. Making use of technology, such as word processors and electronic organisers, can help with your writing and to organise daily activities.

The best way to learn something is to use a multi-sensory approach. For example, you could use a digital recorder to record a lecture, and then listen to it as you read your notes. It is also recommended that you break large tasks and activities down into smaller steps.

If you need to draw up a plan or make notes about a certain topic, you may find it useful to create a 'mind map', rather than writing a list. Mind maps are diagrams that use images and keywords to create a visual representation of a subject or plan.

Adjustments at work

Let your employer know that you have dyslexia, as they are required by law to make reasonable adjustments to the workplace to assist you.

Examples of reasonable adjustments may include:

- providing you with assistance technology, such as voice-recognition software
- allowing you extra time for tasks you find particularly difficult
- providing you with information in formats you find accessible