# Developmental Language Disorder Unpacked– A day for parents

**Wednesday 16th October 2019, University of Bath**
**10 am – 4 pm**

An event for parents of children with DLD to discuss ideas relating to options for support and current findings from research.

Listen to talks, engage with experts.
Lunch and refreshments provided.

# Developmental Language Disorder and other conditions:
# What can and can't be considered DLD?

Devlopmental Language Disorder (DLD) used to be called Specific Language Impairment by some, and language disorder by others. It was decided by a group of experts in 2017 that DLD should be the correct label to use when a person has impaired language skills in the abscence of any known cause. For example children who have a history of hearing loss or a genetic condition associated with language problems, should not be given a diagnosis of DLD.
But what about other conditions? Who gets the diagnostic label DLD?

- **Reading difficulties, including Dyslexia**
- **Motor problems, including Developmental Coordination Disorder**
- **Attention Deficit Hyperactivity Disorder (ADHD)**

- ✗ **Autism Spectrum Disorder (ASD)**
- ✗ **Intellectual disability**
- ✗ **Acquired Brain Injury**

# What causes DLD?

## The case for a genetic basis

Dr Dianne Newbury and Dr Umar Toseeb

Many psychological disorders are influenced by both genes and the environment and DLD is no exception. Over the last couple of decades, researchers have tried to identify which genetic changes increase the risk of DLD in children. Genetic testing can't tell us which children will definitely have DLD, but if we can understand it better, it could tell us who is at increased risk.

### What is heritability?

Heritability measures genetic contributions to any given trait. The heritability of DLD is quite high –it is thought to be on average about 70% [1], which varies depending on the specific type of DLD.

This means that if we look at general population, whether or not a child has DLD can be largely explained by genetic differences. To put this into perspective, the heritability estimate for Autism is 70%, height is 80%, and breast cancer is about 10% [2].

Heritability percentages tell us nothing about an individual child's risk of having DLD but they do tell us that DLD is mostly caused by genetic variation.

### Why search for genes?

If we can find genetic variation that increase or decrease the risk for DLD, we can identify children who are at increased risk and put support in place early on. Currently, it's difficult to identify children with DLD until they are about 4-5 years old because language is so unpredictable before then. We know what a child's genes look like at birth (even before) and, generally, they don't change. If we can find the genetic variation that increase risk then we don't need to wait 4-5 years to intervene, we can start at birth.

### Is there a single gene that causes DLD?

The initial search for a genetic cause assumed that there was a single gene that increased children's risk of having DLD. There were some initial successes. A number of different researchers identified changes in genes, with names like ATP2C2, CNTNAP2, DCDC2, FOXP2, and KIAA0319, that were associated with childhood language [3-6]. The problem was that changes that were associated with language in one sample of children, each with a very small effect, appeared to have no effect in a different sample. This led researchers to reconsider their approach.

### A combination of genes?

Another way of thinking about it is to consider the possibility that there is no single genetic change that increases the risk of DLD. Instead, there are lots of genetic changes, each of which contributes a very small amount to the overall risk of having DLD. Some of our recent research has found that there are 65 genetic variations (across 6 genes), which if combined together, predict a small part of childhood language ability [7]. There are many more that are yet to be discovered. We are confident that they are there, we just need to find them. The research is moving very fast and we hope that in the coming years, more and more genetic changes for DLD will be identified making it easier to predict risk and provide earlier support.

# What causes DLD?

## The case for "working memory"

Professor Nicola Botting and Vanessa Lloyd-Esenkaya

The way we process things happening in the present moment is referred to as "Working Memory". Often memory and language are closely linked. Many researchers have wondered whether the language impairments found in DLD might result from a more general problem with working memory.

According to the Working Memory Model (1), there are many processes involved in Working Memory (see the diagram to the right). There is a system for temporarily storing information we see and another for storing information we hear. These systems are flexible and seem to link with other long-term memory stores. Another system named the "central executive" is thought to help us combine and organise these different pieces of information into coherent episodes. There is evidence to suggest that people with DLD could have difficulties with each of these different processes. Experiments have consistently shown that children with DLD have difficulties temporarily storing the verbal information they have just heard (2). So for example a child with DLD might find it hard to accurately repeat back a sentence they have just heard someone say.

**Working memory** = A concept where information is stored temporarily in order to complete complex cognitive tasks

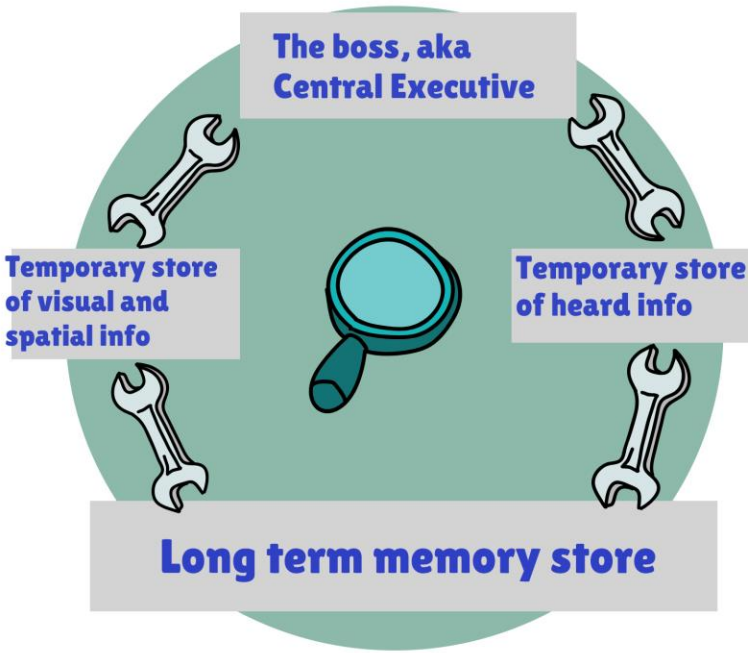
But children with DLD show a lot of variation in their working memory abilities and not all children with DLD have difficulties in these different areas. Also it is not yet clear exactly how language and memory are linked. There is an issue of: Okay these two things could be happening, which one causes the other?

Some scientists have suggested (3) that different things could be taking place for different children with DLD:

**For some children with DLD: Working memory difficulties might cause language difficulties**

**For other children with DLD: Language difficulties might cause working memory difficulties**

**Or it might be that problems in both areas just occur together – one skill might not actually cause problems in the other.**




This illustration is based on, but a simplified version of the Alan Baddeley's (2000) Working Memory Model(1).

Some of the latest research is trying to unpick exactly what is happening with language and working memory.

# DLD and bilingualism

**Did you know around 21% of primary school children in England speak more than one language!**

**Many of these children learn one language at home and learn English when they go to nursery or school.**

Learning different languages is an important way to connect with friends and family, and for children to learn more about different cultures. For many bilingual children keeping their home language is important for contact with grandparents and relatives in other countries.

There is no evidence that being bilingual is confusing or harmful for children with DLD. In fact, in some cases researchers have found that bilingual children with DLD may actually do better on some language tasks than monolingual children with DLD. The reasons for this are not yet clear and need more research.

- **Children with DLD can learn more than one language.**
- **Children with DLD will have difficulties that show up in all the languages they speak.**
- **Learning more than one language will not confuse children with DLD.**

Your speech and language therapist should assess your child in all of their languages and discuss treatment options with you. Usually it is best to work in the child's first or main language(s).

**Remember, working on language skills in ANY of a child's languages can help them to improve!**

Dr Jenny Gibson

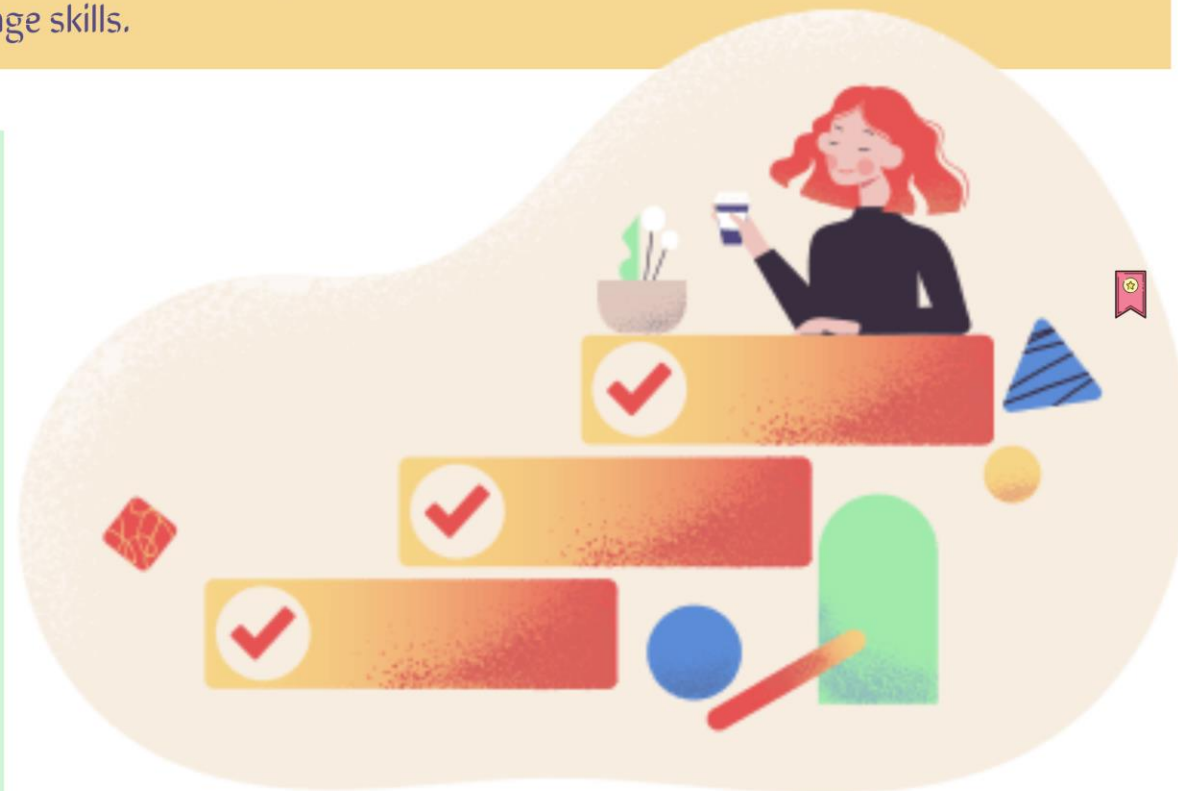
# How does DLD shape academic life?

## DLD and maths

Vanessa Lloyd-Esenkaya

Research has shown that many children with DLD struggle with concepts used in maths, like making number sequences and processing numbers (1).

Language skills are useful for many of the subjects that children learn at school. It is easy to imagine how important language is for English lessons but language is also important for learning maths. Research in this area shows that many children with DLD find it hard to cope with a lot of maths problems. Children with DLD will benefit from getting extra support with subjects like maths, that are not immediately obvious for using language skills.



### How does maths use language?

To solve a maths problem, you need to first understand what the maths question is asking you to do. And to do this, you need to accurately interpret the word order.

### Here's an example:

Some children are on the bus. At the 1st stop 5 more children get on. 1 child gets off to go to the shop. There are now twice as many children on the bus as there were to start with. How many children are on the bus?

a) 9

b) 4

c) 8

Children with DLD vary a lot in their maths abilities. Although language skills are useful for maths lessons, maths uses a lot of other skills too (2). There is evidence that some children with DLD are just as good at maths, English and science as children with no language difficulties (2). This just goes to show that with the right support, children can overcome their challenges in using language.

# How does DLD shape academic life?

## DLD and reading

Dr Emma Hayiou-Thomas

Reading builds on a foundation of spoken language skills, so it is not surprising that learning to read can be challenging for many children with DLD. In fact, there may be as much as a 50% overlap between DLD and dyslexia (1, 2, 3). There are two key processes in reading: one is 'decoding', or correctly pronouncing written words, and the other is comprehension – understanding the meaning of written text. Some children will DLD will have difficulties with both aspects of reading, while others may learn to decode well (1, 3), but struggle to extract the meaning of what they've read (4).

## Timing Matters

The timing of language difficulties matters for reading development: if spoken language difficulties are present at the time that children start school, they are likely to have an impact on learning to read. However, if language difficulties have largely resolved by the start of school, then reading outcomes are much better (6, 4).

### What is the source of reading difficulties?

Different parts of spoken language are important for the different components of reading. A large body of research has established that phonological skills – the ability to mentally manipulate the sounds of spoken language – are the basis for decoding. This includes phonics skills like blending and segmenting (Which sounds is the word cat made up of? 'C-a-t'). Children with weak phonological skills are likely to have difficulties with decoding (5); this includes children with dyslexia, and children with DLD whose language profile includes phonological weaknesses (3). Children with relatively good phonological skills, however, can become accurate word-readers, even if they have difficulties in other areas of language (6, 1, 3).

Reading comprehension, on the other hand, relies heavily on broader language skills, such as vocabulary, grammar, and understanding narrative. These are often the skills that are weakest in DLD (4), and research has confirmed that reading comprehension is indeed the most challenging aspect of learning to read for children with DLD (4).

### Intervention and educational support

Choosing the appropriate intervention to support reading will depend on the nature of the underlying difficulty, and we now have a good evidence base evaluating the effectiveness of different types of intervention. Interventions that support phonological and decoding skills can be very effective for improving reading accuracy (7), while reading comprehension is better supported by interventions that focus on oral language skills (8). A good example is is a recently developed program called the Nuffield Early Language Intervention (NELI), which focuses on building language skills in a school setting, for Reception-aged children. NELI has been robustly evaluated, and appears to be a promising approach for supporting language and reading development in young children with weak spoken language skills.

# What impact does DLD have on social skills?

In the past DLD has been viewed as a condition which only affects language skills. Researchers are now finding that many children with DLD also have difficulties with motor skills, memory, and social skills (1). There is now evidence that children with DLD often experience peer problems.

**What has research into the social skills of children with DLD found?**

## Play: A tricky business

When children are playing a game on the playground, it can be hard for children with DLD to join in. Rather than ask if they can play too, they might wait until someone says, "Do you want to play?" (2).

It can also be hard for children with DLD to keep conversations going. Instead of introducing new topics to talk about, children with DLD might re-use topics of conversation that have already been brought up (3).

It is common for children to have conflicts with each other at school. There is some evidence showing children with DLD find it hard to manage conflicts on their own, without help from an adult. It is possible that children with DLD do not understand how to deal with conflicts effectively (4).

## Positive experiences

Despite the obstacles associated with playtime, play seems to provide many opportunities to for children with DLD to develop their friendships. During play children seem to talk more about things which are happening in the present moment, rather than things happening in the past or future. Some think this makes it easier for children with DLD to join in with their peers (5).

## All children are unique

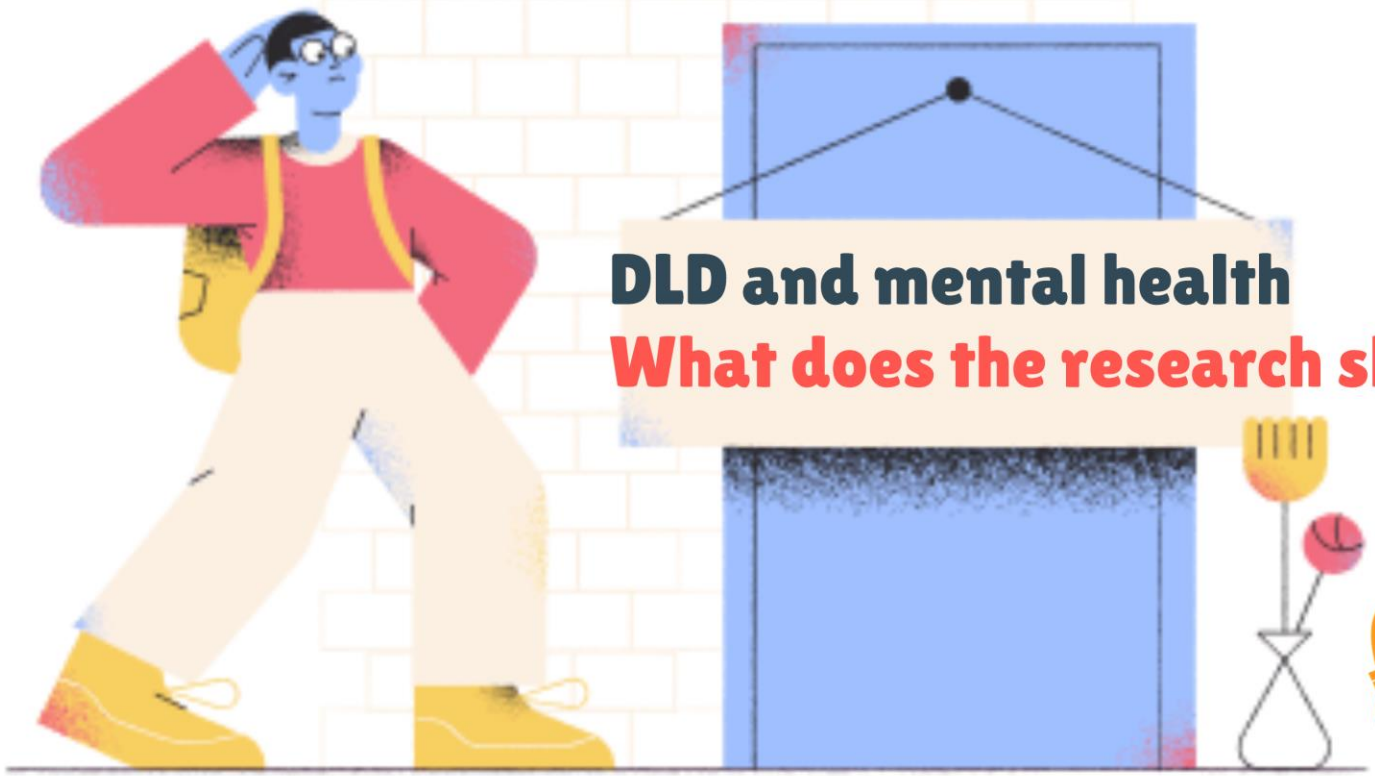
Every child is different. Some children with DLD find it easier to socialise than others. While some children with DLD rarely play with their peers on the playground, others show high levels of social behaviour (6). There are some children with DLD who have good social skills and are able to cooperate with other children without any problems (7).

## A work in progress

There is certainly room for more research to be conducted into the social experiences of children with DLD. There are many unanswered questions we still need to work on:

1) Why do some children with DLD find it hard to join in with play?
2) Why is it hard for some children with DLD to resolve peer disputes?
3) Some children with DLD have good social skills. What is it that stops these children having peer problems? And will knowing this help us to support those children who find socialising harder?

**Vanessa Lloyd-Esenkaya**



# DLD and mental health

## What does the research show?

Children and adolescents with DLD are at higher risk of mental health difficulties. Children with DLD have more behaviour problems in childhood, but this declines in adolescence (1). Children and adolescence are also more likely to experience emotional difficulties, such as anxiety and depression symptoms (1, 2). However, there is variability in childhood and adolescent outcomes, so difficulties with mental health does not always occur.

In adolescence, we do see increased rates of psychiatric disorders (3), but these return to expected levels in adulthood (4). Some research indicates that the link with poorer emotional health is linked to individuals "self-efficacy", or the belief that one can achieve goals independently (5).
This may indicate that helping children and adolescents learn to be independent may help reduce risk of mental health difficulties.

Research also suggests that emotional health may be linked to peer difficulties (6). Indeed, recent research indicates that increased emotional symptoms may be partially explained by levels of peer difficulties earlier in development (7). Prosocial skills are a strength of children with DLD (8). Overall, this indicates that supporting children's social skills may also be a key preventative factor for poor mental health.

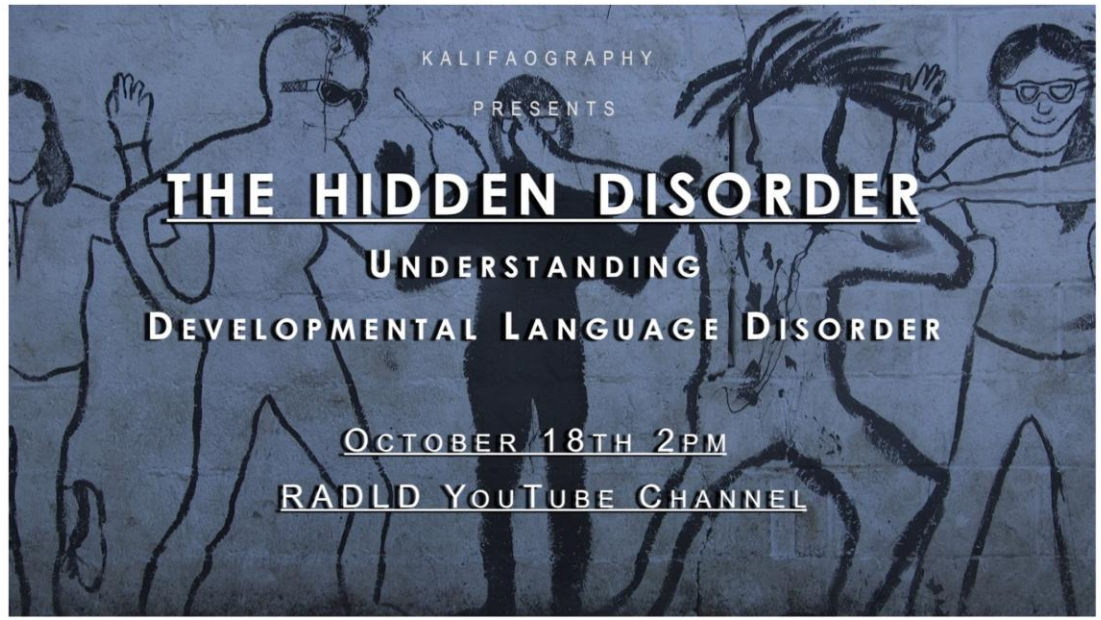
Dr Michelle St Clair

# STORIES FROM OTHERS WITH DLD

Juliet is 15 and loves to draw. She got a high grade in her GCSE Art exam, she is proud of her work in helping other children with DLD. She has spoken at conferences to hundreds of people up and down the country from heads of the NHS, University professors and speech and language therapists to raise awareness for DLD.

What Juliet wants you know is that it would change her life if more people knew about DLD. Also that "**you can be just as brainy as everyone else it's just the words you find hard.** "


Juliet is pictured here receiving a Giving Voice Award at the RCSLT ceremony for her activity to raise awareness of DLD.




Ryan Kalifa is a talented young adult with DLD who has a degree in Media Culture & Production. This year, he is releasing a film he has produced about his experiences of having DLD.

This will be available to view on the RADLD channel.

# STORIES FROM OTHERS WITH DLD: R's story

**This is a story about a boy named R and his family friend L. Told with permission from R.**

R and L were the same age. L loved reading and always got top grades at school.

L moved away from home and studied Maths at University.

After she graduated, she went on to complete more courses at the University of Oxford.

L enjoys long walks on the weekends. She has a job which she enjoys that makes the most of her maths skills.

**R knows that every person has their gifts and people reach success in different ways!**

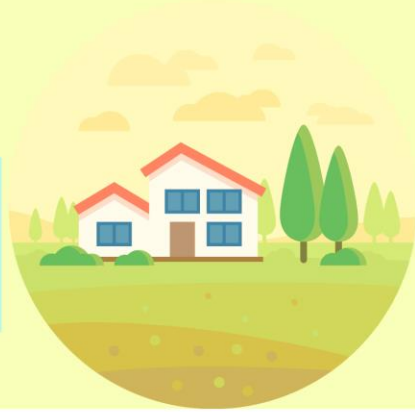
R found writing difficult but he loved to build things. He spent all his spare time in the workshop, learning to make beautifully crafted wooden models.

R also moved away from home and did an apprenticeship with a good engineering company.

R worked in a busy industrial city. He enjoyed working with a team and he worked his way up in the company.

R has been promoted twice. He now works in a leadership role in a busy manufacturing plant. He earns just over £50,000 a year.

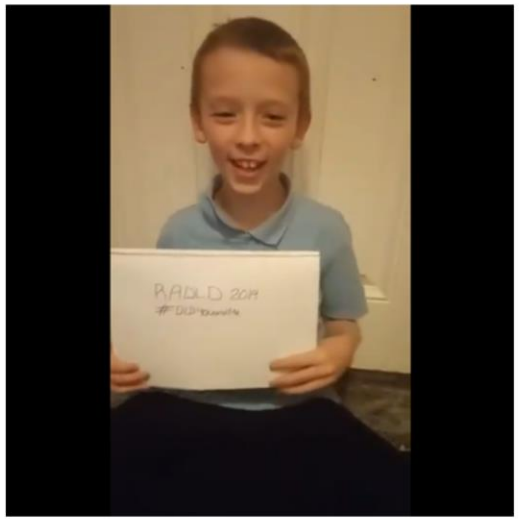
R loves his life. He knows that putting extra time into doing things he is good at has paid off.



# DLD You and Me: Stories and videos

Visit www.youtube/RADLDCam to view these videos


https://www.youtube.com/watch?v=rwOfkj0dj_0



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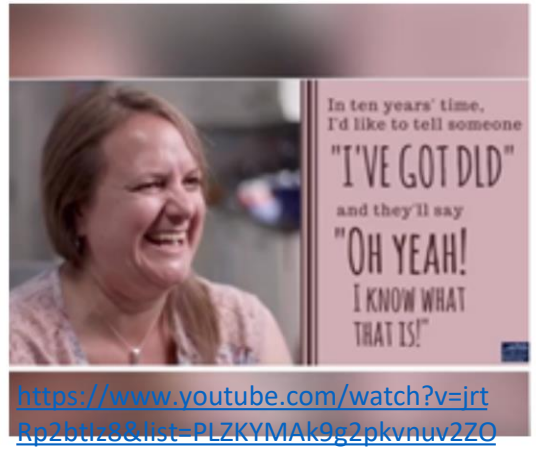



https://www.youtube.com/watch?v=jrtRp2btIz8&list=PLZKYMAk9g2pkvnuv2ZOssWcSIAqIEPXOc&index=10&t=0s

**See even more @RADLDcam on Twitter and on the RADLD Youtube channel**

# DLD You and Me: Stories and videos


https://www.youtube.com/watch?v=h57J_Ux6qkw


https://www.youtube.com/watch?v=qIRSBsS4i2k

https://www.youtube.com/watch?v=i5OCZcPsNFA


https://www.youtube.com/watch?v=V8L0-BvAbb0


https://www.youtube.com/watch?v=hOkArvLHcbw


https://www.youtube.com/watch?v=DxOGJIxL_RU

# More videos to raise awareness

We have collaborated with a local filmaker and two Speech and Language Therapy organisations in Bristol, ChildSpeech and Talk Speech and Language Therapy. We have produced 2 short films to explain what DLD is and more broadly, what Speech and Language Therapists do. These can be shared with family members, friends and educators.


https://www.youtube.com/watch?v=42UR3zC3a90&feature=youtu.be


https://www.youtube.com/watch?v=Xb96XUDhiKo&feature=youtu.be

Child Speech
Speech, Language & Communication

UNIVERSITY OF BATH

talk
Speech & Language Therapy

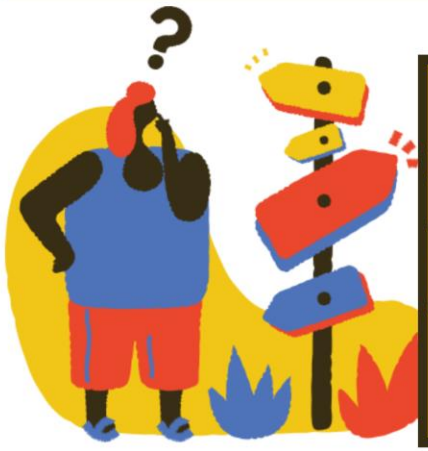
# A teacher's guide to DLD

## I've never heard of DLD. What is it?

DLD stands for Developmental Language Disorder. It is where people have difficulties understanding or using their native language. It is not rare and is thought to affect approximately 2 children in every class of 30.

**Is DLD the label given to anyone with language difficulties?**
**No.**
People with a genetic condition associated with language difficulties, such as Down Syndrome, or a history of hearing loss or a diagnosis of Autism, are not considered to have DLD.

**Does DLD only affect children?**
**No.**
While language skills improve over the years, people with DLD will have persistent difficulties using language throughout their life. So DLD also affects adults. Some people are not diagnosed until adulthood.



**2 in 30 children meet diagnostic criteria for DLD**


## Does it only affect literacy?

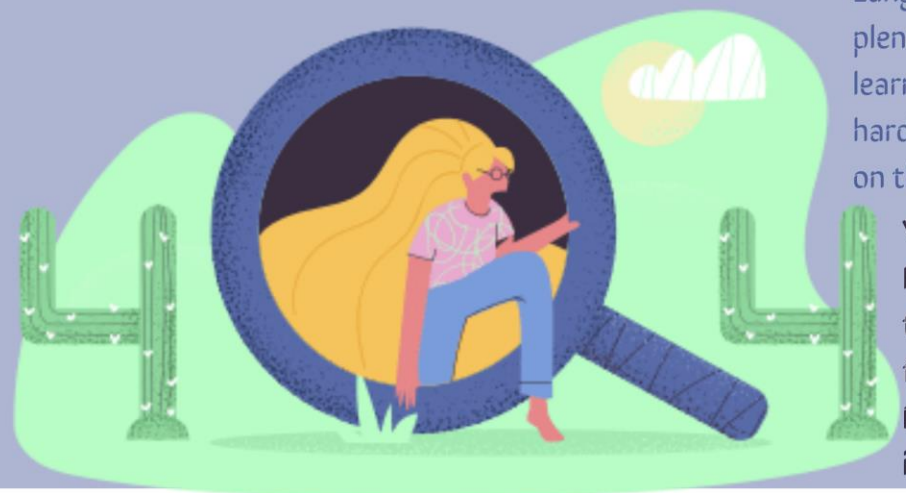
DLD affects more skills than just literacy. Research has shown that many children with DLD struggle with concepts used in maths.

To solve a maths problem, you need to first understand what the maths question is asking you to do. And to do this, you need to be able to accurately interpret the word order, which is something children with DLD struggle with. Language difficulties also seem to make it harder for people to use calculations and do the problem solving required to complete maths problems.

Children with DLD may need additional support to access the maths curriculum.

## What else should I be looking out for?

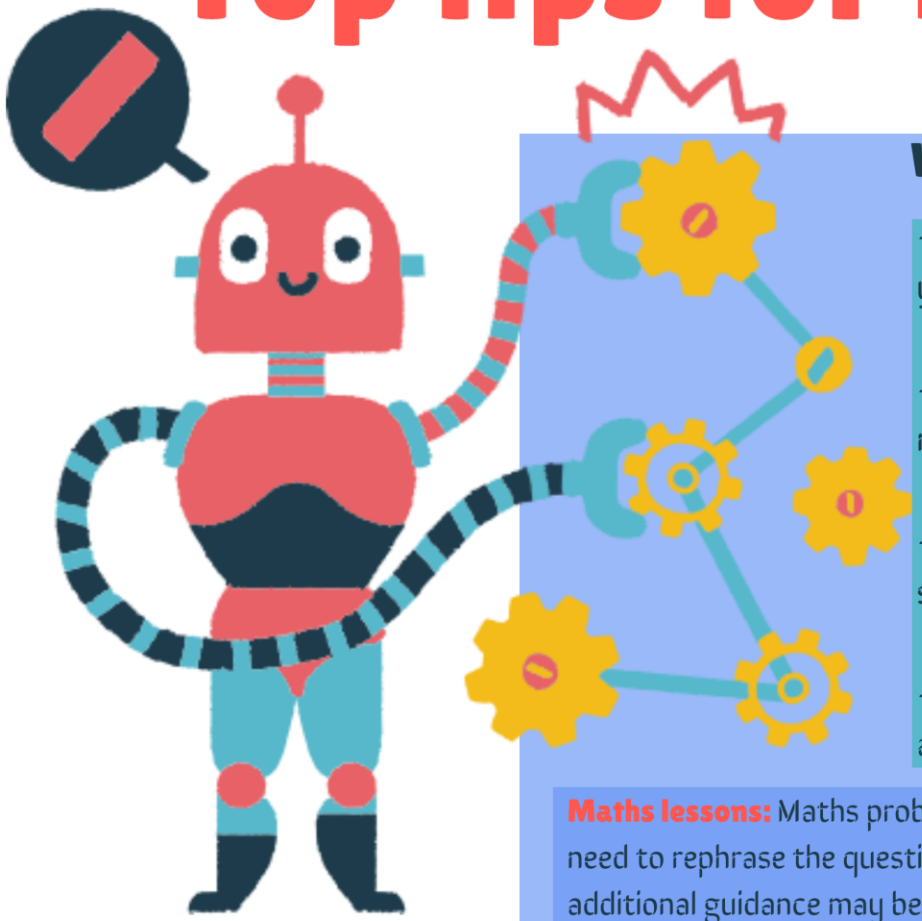
Young people with DLD often find it diffiult to follow instructions. If you find a child isn't doing what you've asked of them, ask yourself, "Have they understood what I've said?"



Language processing is difficult. It is useful to allow plenty of time and opportunities for children to learn new vocabulary. Also, children may find it hard to understand and resolve problems with peers on their own.

Young people with DLD can be very withdrawn. In the classroom they may be reluctant to put themselves forward. In the playground, they may find it hard to join in with their peers. A child with DLD will likely need extra encouragement to join in with activites.

# Top tips for teachers



## What can teachers do to support children with DLD?

--> **Use plenty of visuals!** Are there images you can use to describe your point? Images are likely to convey your message more effectively than words.

--> **Explain things in different ways!** If a child doesn't seem to be following your instructions, they may not have understood them. Explain the lesson objective in more than one way.

--> **Use short sentences!** Long sentences with multiple instructions are hard to understand. Break your sentences down into smaller parts.

--> **Use sentence stems!** Support children in forming answers by giving stems they can build on. E.g. "I agree that...because" or "I think the answer is...because". This can help students feel more confident.

**Maths lessons:** Maths problems often use language processing. You may need to rephrase the question in different ways before it is understood. Also, additional guidance may be necessary for children to learn effective strategies to solve maths problems.

**Science lessons:** Provide students with new science terminology before the lesson. Return to it multiple times. It may not be learnt and retained the first time around! In fact, this need not be limited to science. This is also useful for other lessons including Maths, History and Geography.

**Beyond the classroom: what about social skills?**

-> Raise awareness of the importance of language and language disorders through the whole school! Help children to recognise the challenges some of their peers have using language. This could help children to be able to support each other in their social worlds.

16.10.2019

# Take part in research.

## Get involved!

## Is your child aged 7, 8 or 9?

At the University of Bath, we're conducting a new study. We want to learn more about the **social and emotional development** of children between the ages of 7-9 who have DLD. Parents are given short questionnaires and children take part in several activities on a computer and ipad. For this study, we come to you! There's no need to travel anywhere because we visit your home.

To find out more or to sign up, please email Vanessa at v.e.r.lloyd@bath.ac.uk

Study running through to 2020. This study has received ethical approval from the University of Bath, Ethics code 18-340.

# Sources for research

## The case for a genetic basis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## The case for working memory


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## DLD and literacy


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