**Embracing Neurodiversity in Tech**
**Building Empathy, Unveiling Strengths**

Jonathan Fielding / 10th November 2023 / ffconf

This is a conference that I have been attending since back in 2014 and one thing I love about it is despite how the technology industry has constantly been evolving, there are so many talks that are still relevant to this day.

My aim when writing this talk about neurodiversity is to not be one of those talks. Today I will be focusing on the challenges that neurodivergent people face in the tech industry that I hope together as an industry we can irradiate, making tech a more inclusive place for us all to work.

* Duplicate slides so I can have more speaker notes
* Need to update speaker notes for autism slides
* Make sure I say clear agenda or purpose on meetings
* Slack etiquette - dont open slack messages with a hi, include context immediately
* Show photo of a colour overlay for dyslexia

From clement:
Talk early about dyspraxia, but don't explain it until later on
When talk about autism, adhd, missed transition so maybe list those different conditions first,
Talk about why this talk is important at the beginning

From group:

Sometimes I click through last point to quickly and go to next slide

On communication - might be good to have different communications, like video, text etc

Could be slightly more tech focused,

How do you make people feel psychologically safe to share that they are neurodiverse

Feedback from Natasha:

When go into list of all of them, list ones we will look at first,

Say its in alphabetical order

Maybe on dyscalcia say that its the hardest one to research

Every neurodivergent individual is different

So I wanted to start my talk by sharing my personal journey, this is the first time I have pubically talked about this however I felt it important to tell my story to give context for the rest of my talk.

Every neurodivergent individual is different

That said I also need to point out that every neurodivergent individual is different, and while my lived experiences and the information of neurodiversity shared in this talk should help you to understand what it can be like, its important that if your working with someone who has shared with you that they are neurodivergent, you ask them how you can best support them as everyone has different support needs.

I grew up in the North of England, and throughout my schooling there were always ways in which I struggled however not to the extent where it was noticed to be out of the ordinary.

Where I was struggling with my writing, the teachers suggested maybe I should try a different pen

Where I struggled with paying attention, it would be made into a joke that I distracted the class by pointing out the airplane out of the window
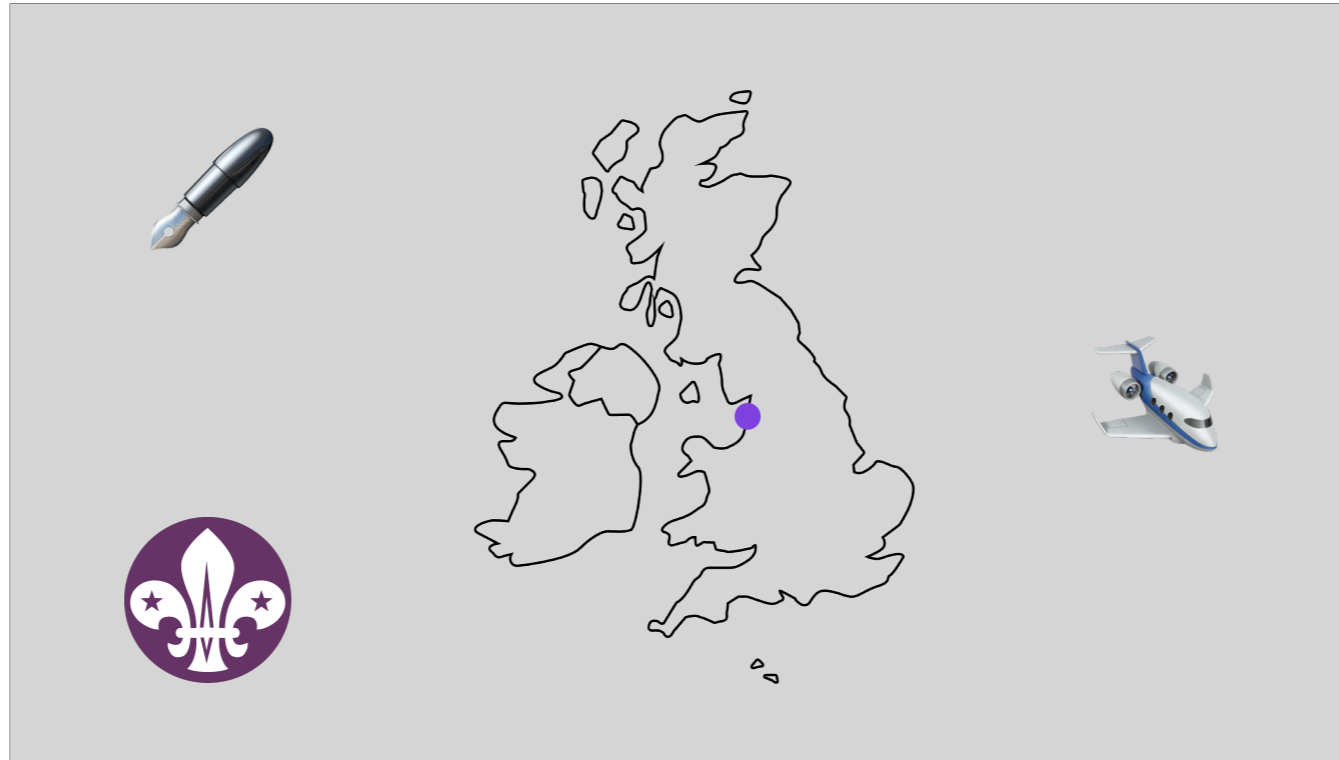
Where I struggled with social situations, my parents pushed me into things like Scouts that forced me to meet new people

# Education

Dyspraxia and Dyslexia Assessment

College

University
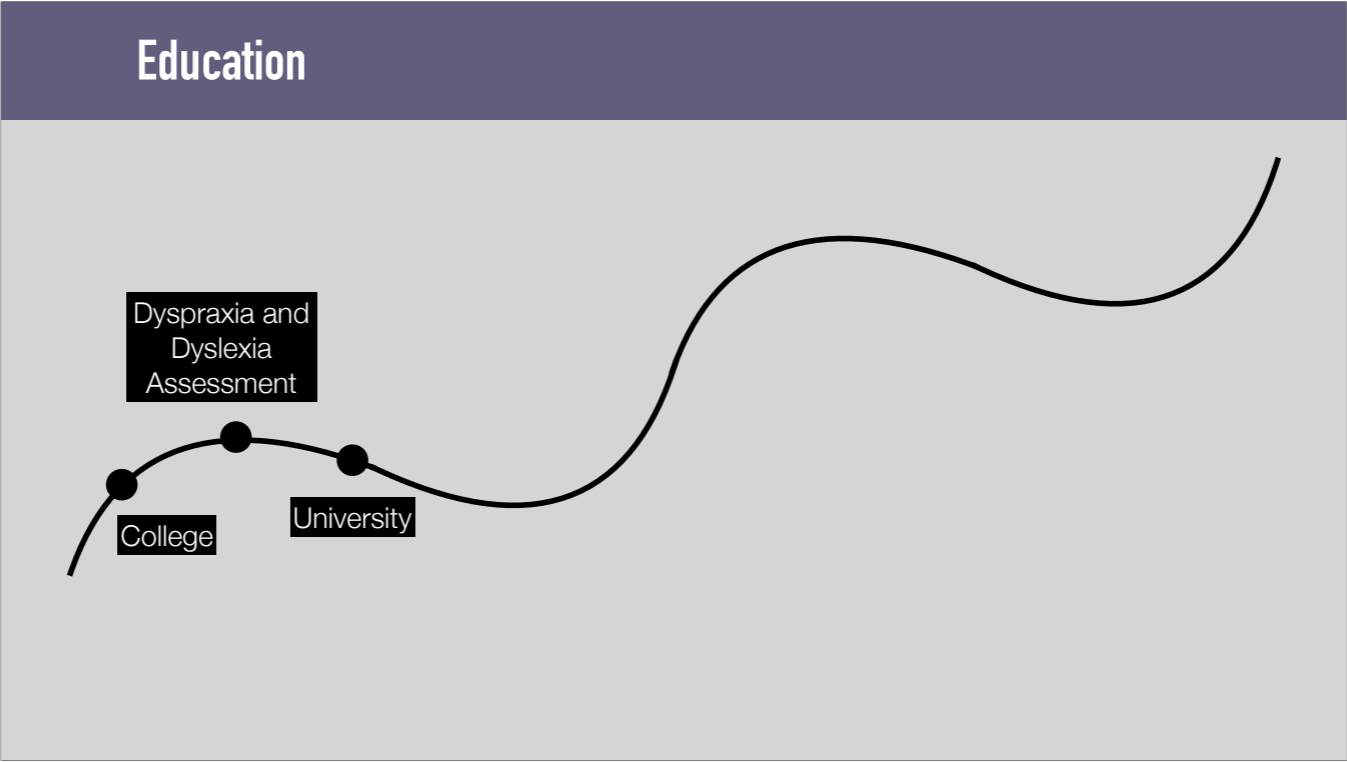
It all came to a head in college, when one of the other students noticed how disorganised I was and they suggested that the special education needs department might be able to help. I of course was apprehensive and perhaps even dismissive however she insisted that I spoke to someone about what I was struggling with,

**Education**

Dyspraxia and Dyslexia Assessment

College

University
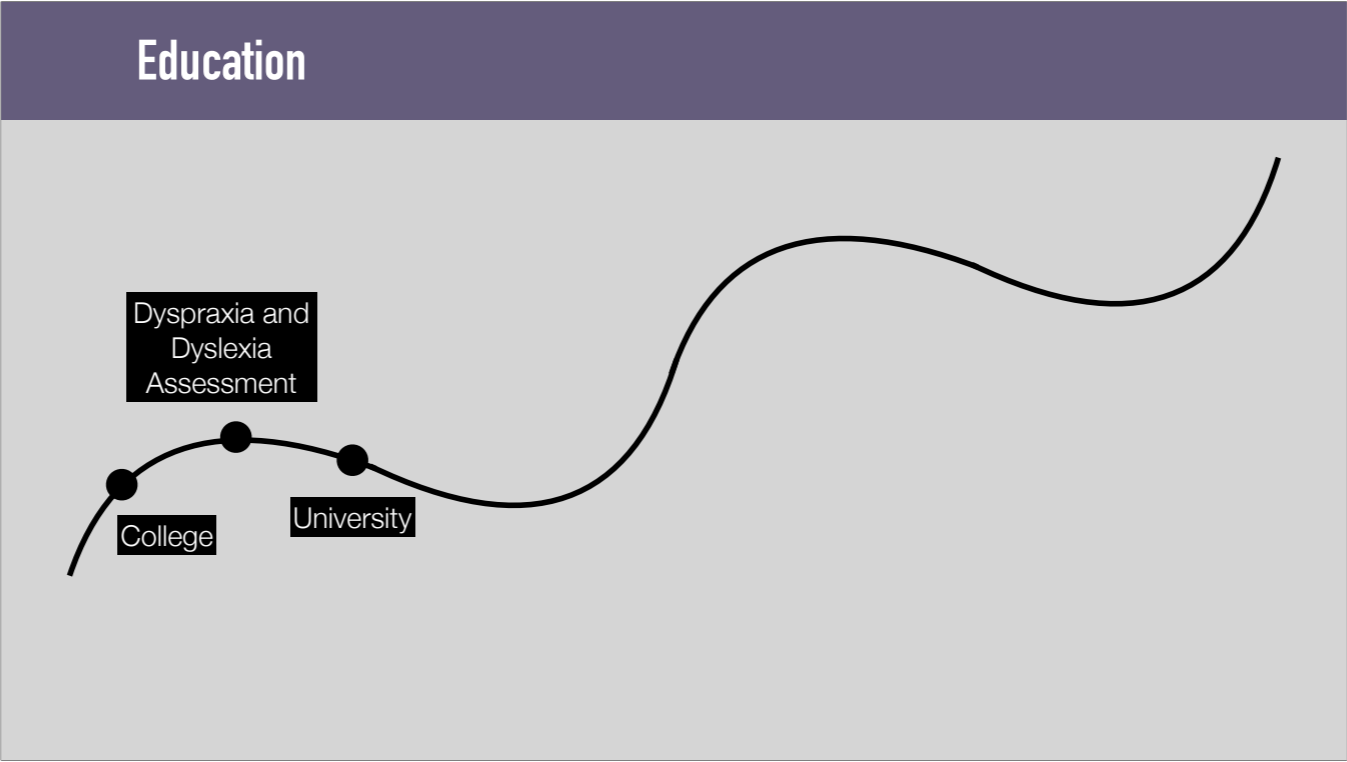
The person in the SEND department I spoke to explained both dyslexia and dyspraxia to me and that from the experiences I shared with her that it would be worth me being assessed.

## Education

Dyspraxia and Dyslexia Assessment

College

University
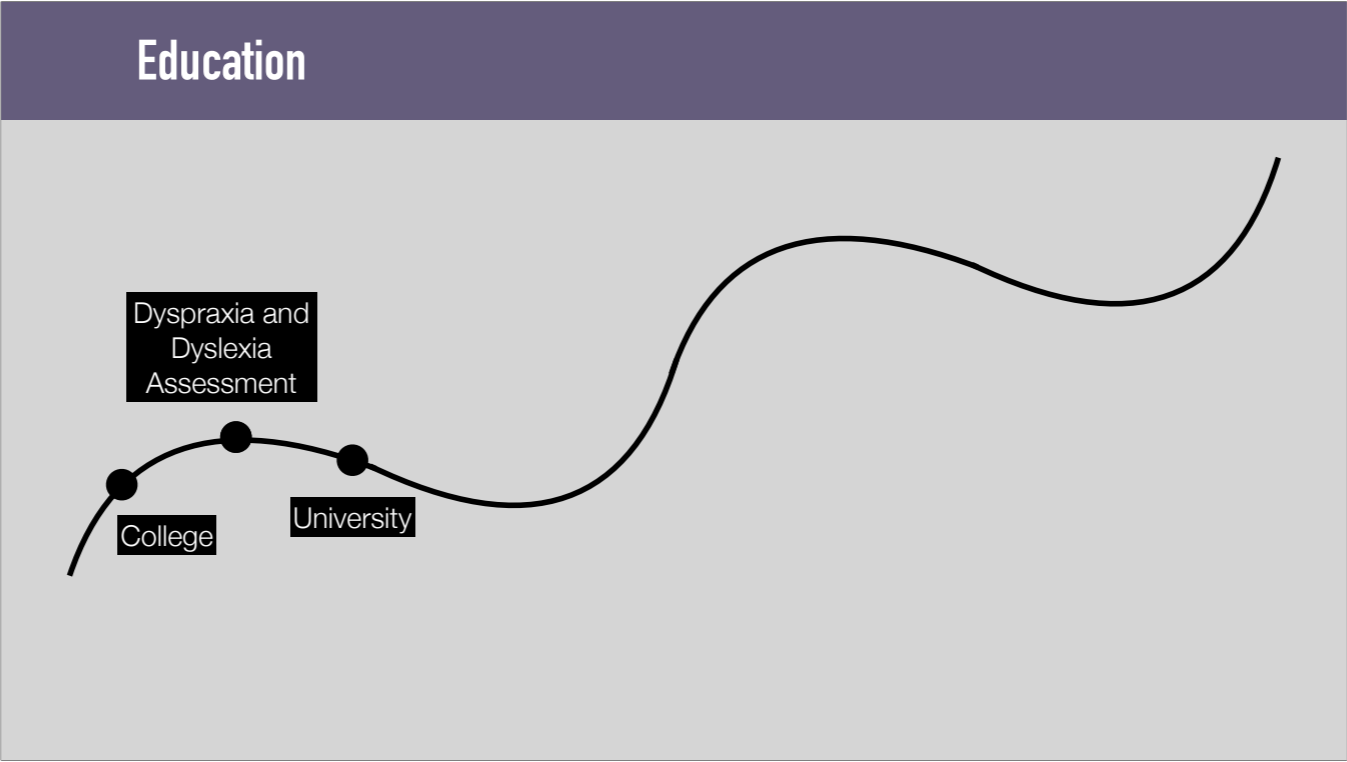
I then met a educational psychologist who asked me lots of questions, and went through a bunch of different exercises measuring things like my reading speed, my reading comprehension, my writing speed, the readability of my handwriting with the aim to understand more about me and what I struggled with.

## Education

College

Dyspraxia and Dyslexia Assessment

University
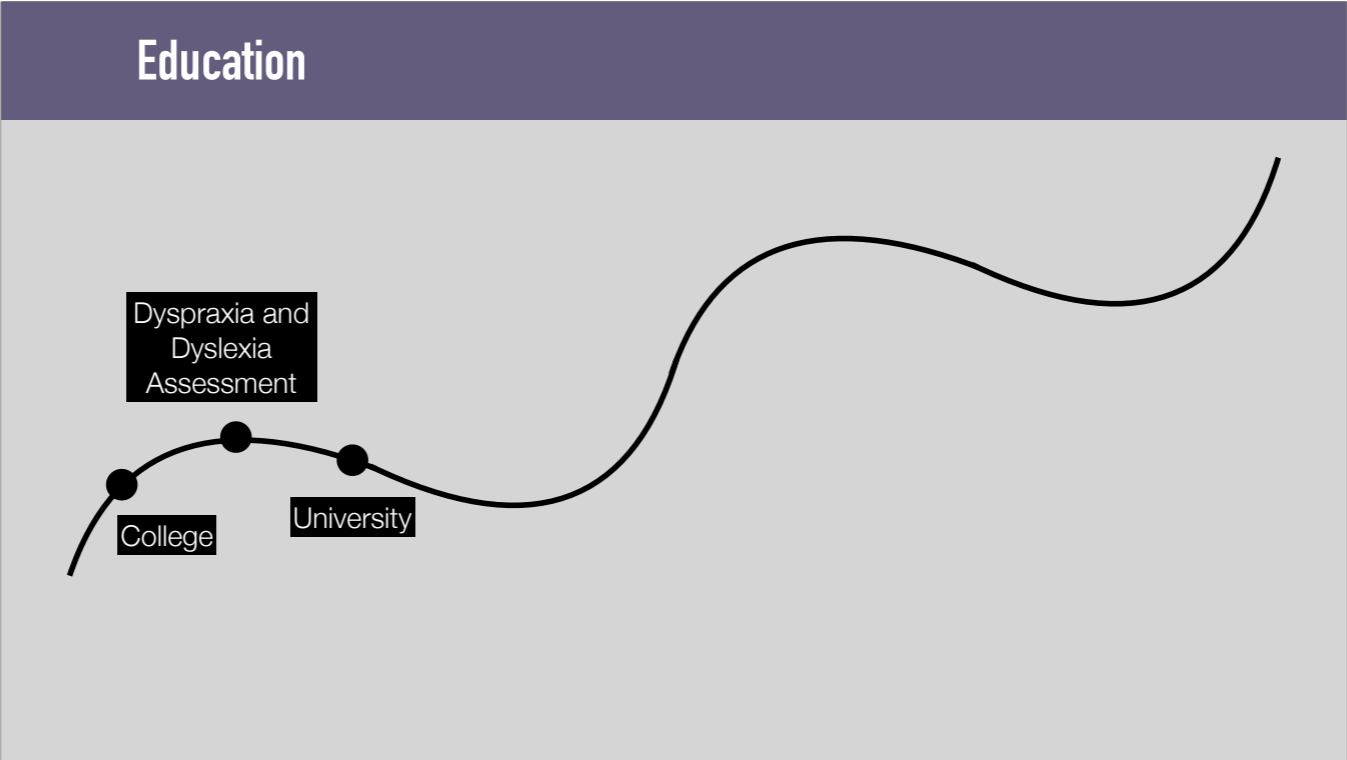
They then went away and wrote up a report detailing my dyslexia and dyspraxia assessment which also offered up ways in which my college could support me. I finally got access to things like extra time, using a computer for my exams which resulted in me actually finishing my exams for once.

## Education



Dyspraxia and Dyslexia Assessment

College
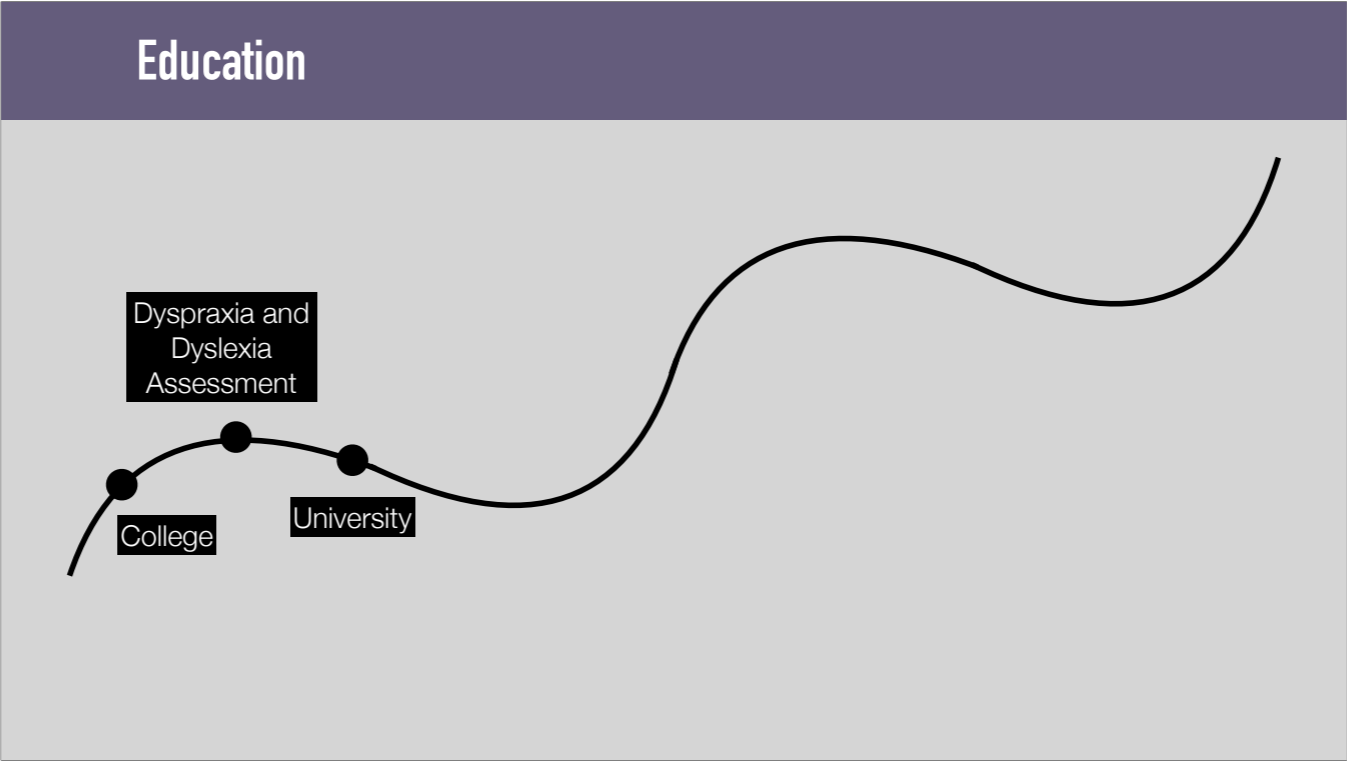
University

I subsequently then went on to university where I studied Internet Computing, a fairly niche subject at the time and was able to continue to take advantage of this enhanced support.

**Education**

**Early Career**

Dyspraxia and Dyslexia Assessment

College

University

Crayon

jQuery UK

London Ajax Talk

M&M

Future Web Design Talk
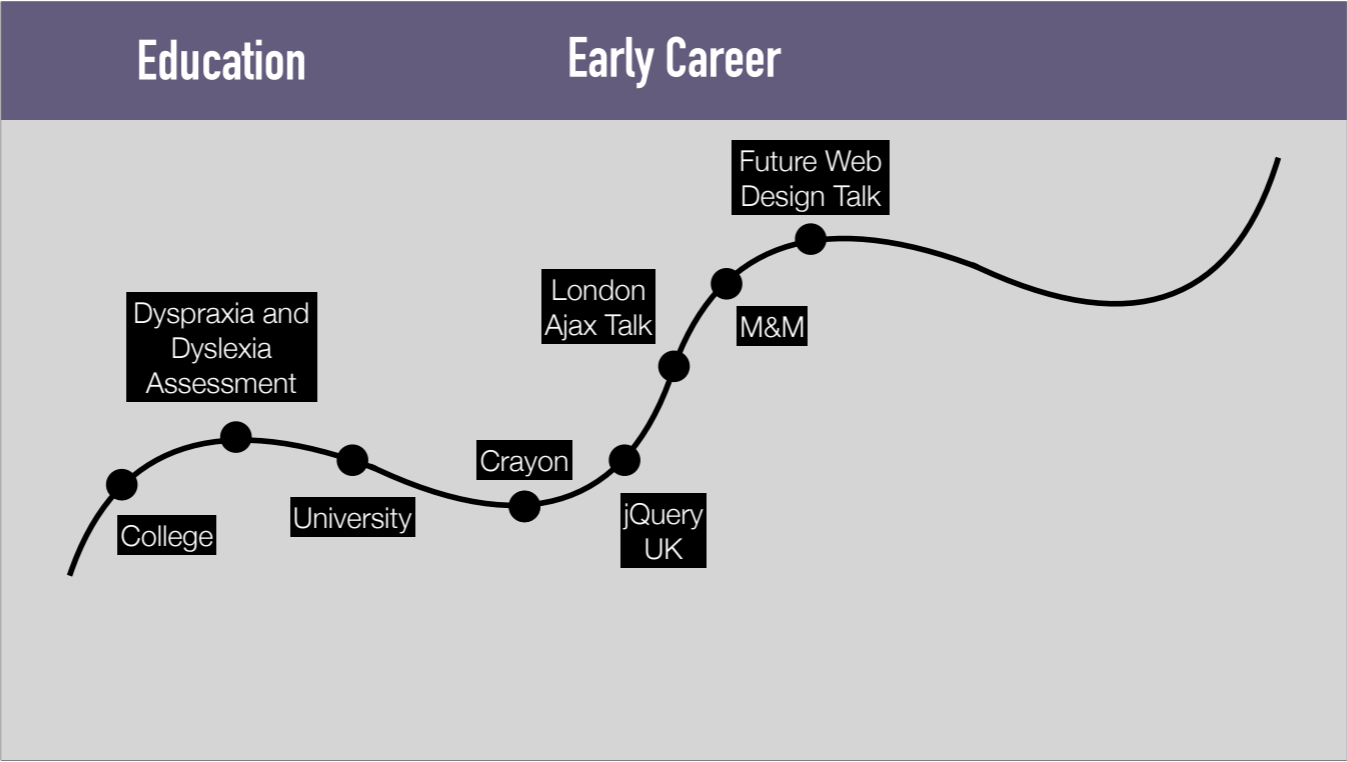
I went on to graduate in 2008 and after a couple of short roles, I was able to settle in a role at a marketing Agency called crayon.

Education  Early Career

Future Web Design Talk

Dyspraxia and Dyslexia Assessment

London Ajax Talk

M&M

Crayon

College

University
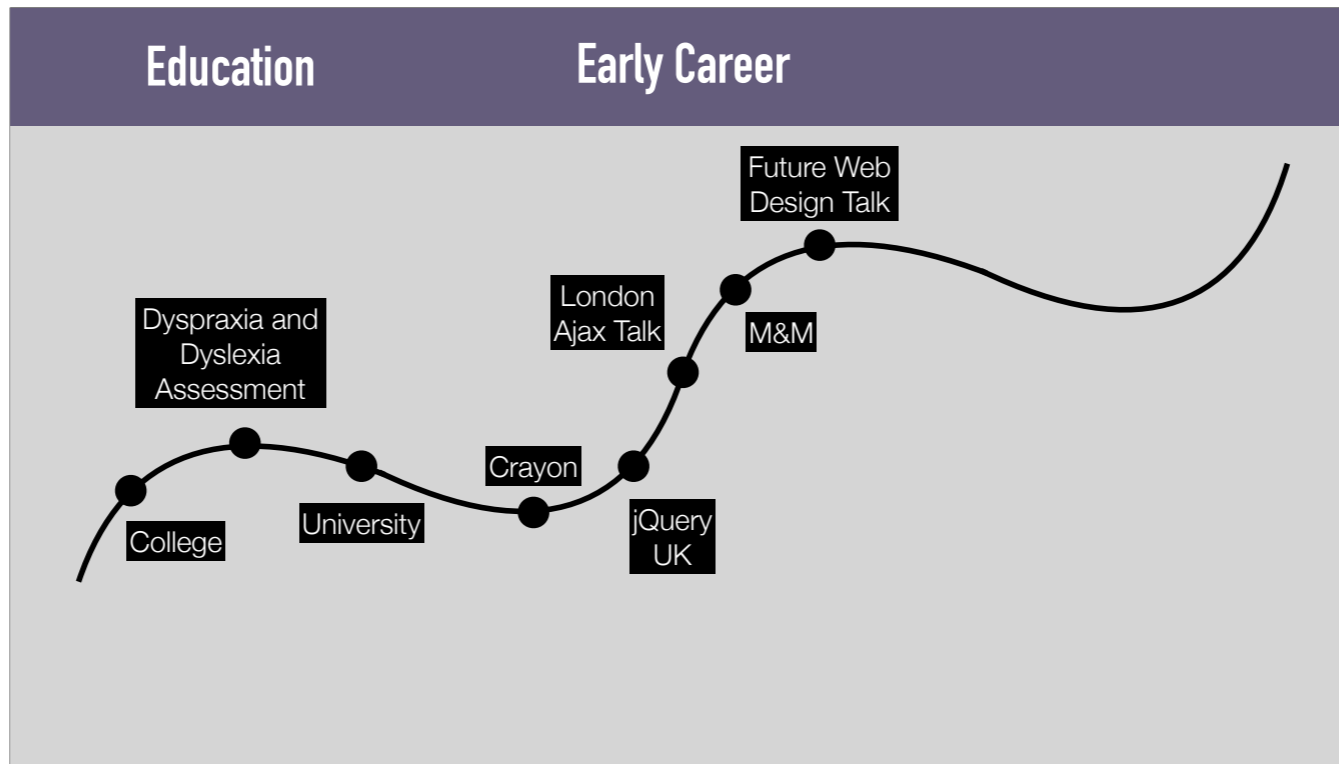
jQuery UK

As I started to get more established in my career, I also started to get more involved with the tech community, I went to my first tech conference which was the first jQuery conference here in the UK in Oxford,

Education     Early Career

Future Web Design Talk

Dyspraxia and Dyslexia Assessment

London Ajax Talk

M&M

Crayon

College

University

jQuery UK
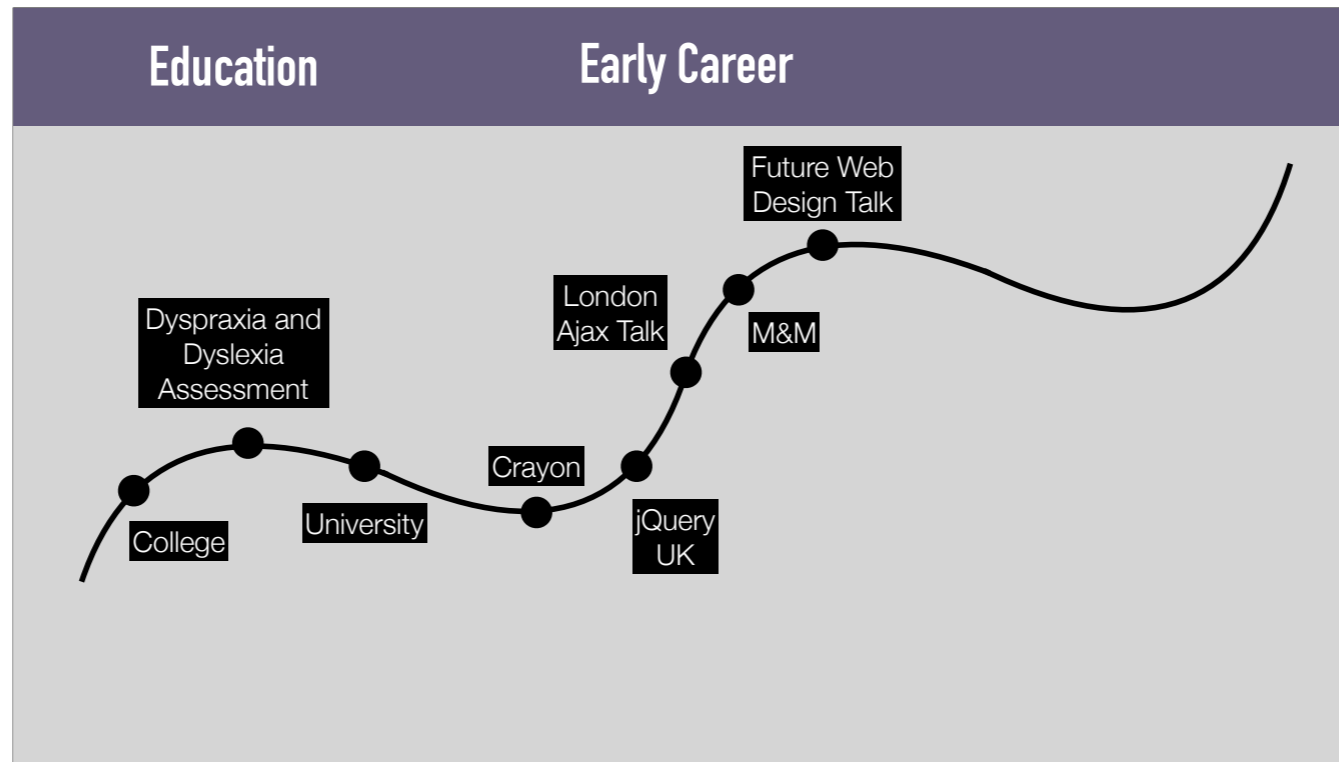
From my perspective though, I found it awkward to attend these events and internally I was struggling with the meeting new people, when I attended meet-ups for example I would often find myself feeling awkward and alone. But I kept attending these meet-ups because I was learning so much about different technologies and I knew this would be good for me and my career. I eventually also started to make friends so I was able to talk to others when attending these events and those friends introduced me to more people who then became friends, some of which are here today.

**Education**    **Early Career**

- College
- Dyspraxia and Dyslexia Assessment
- University
- Crayon
- jQuery UK
- London Ajax Talk
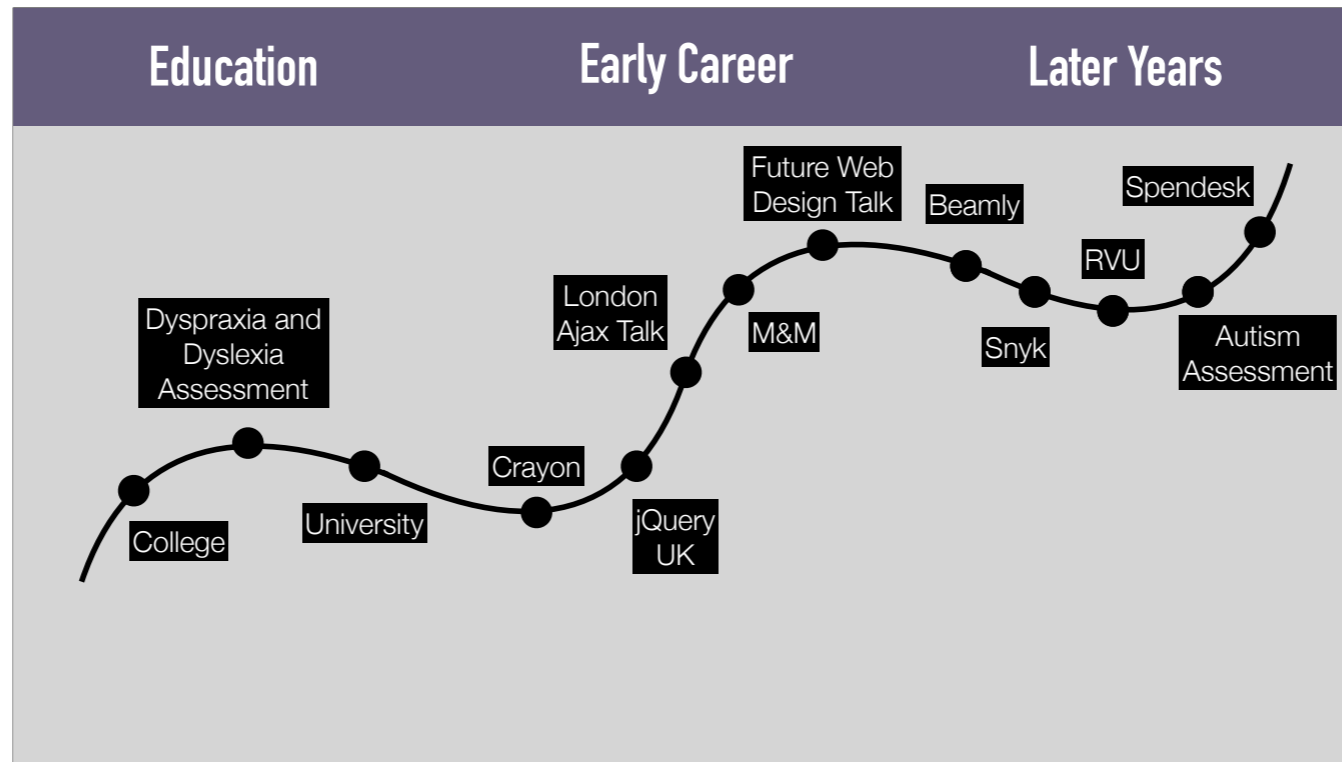- M&M
- Future Web Design Talk
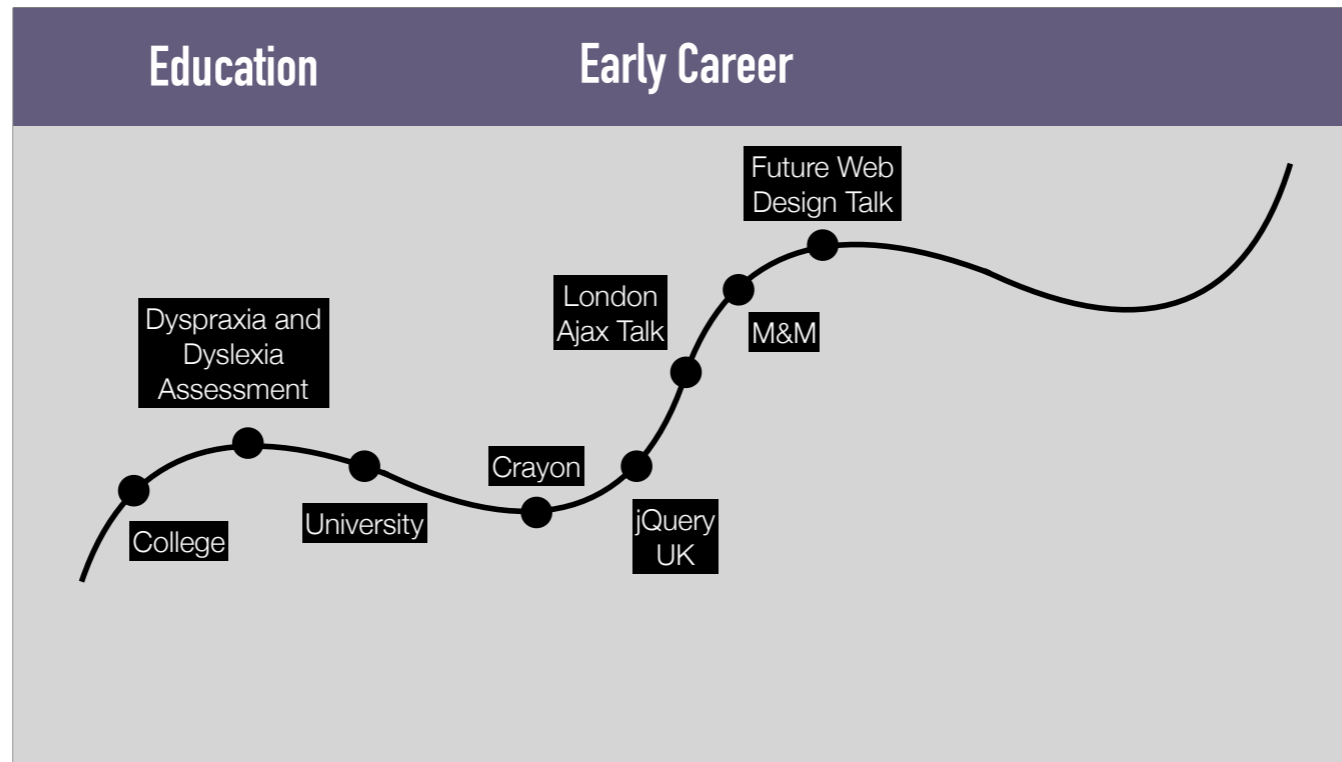
I then took the next step and started speaking at meet-ups and subsequently conferences much like this one. This was in fact easier because instead of me having to strike up conversations with people I don't know people would be approaching me, asking me questions which helped start up conversations making me feel less awkward

Education | Early Career | Later Years

- College
- Dyspraxia and Dyslexia Assessment
- University
- Crayon
- jQuery UK
- London Ajax Talk
- M&M
- Future Web Design Talk
- Beamly
- Snyk
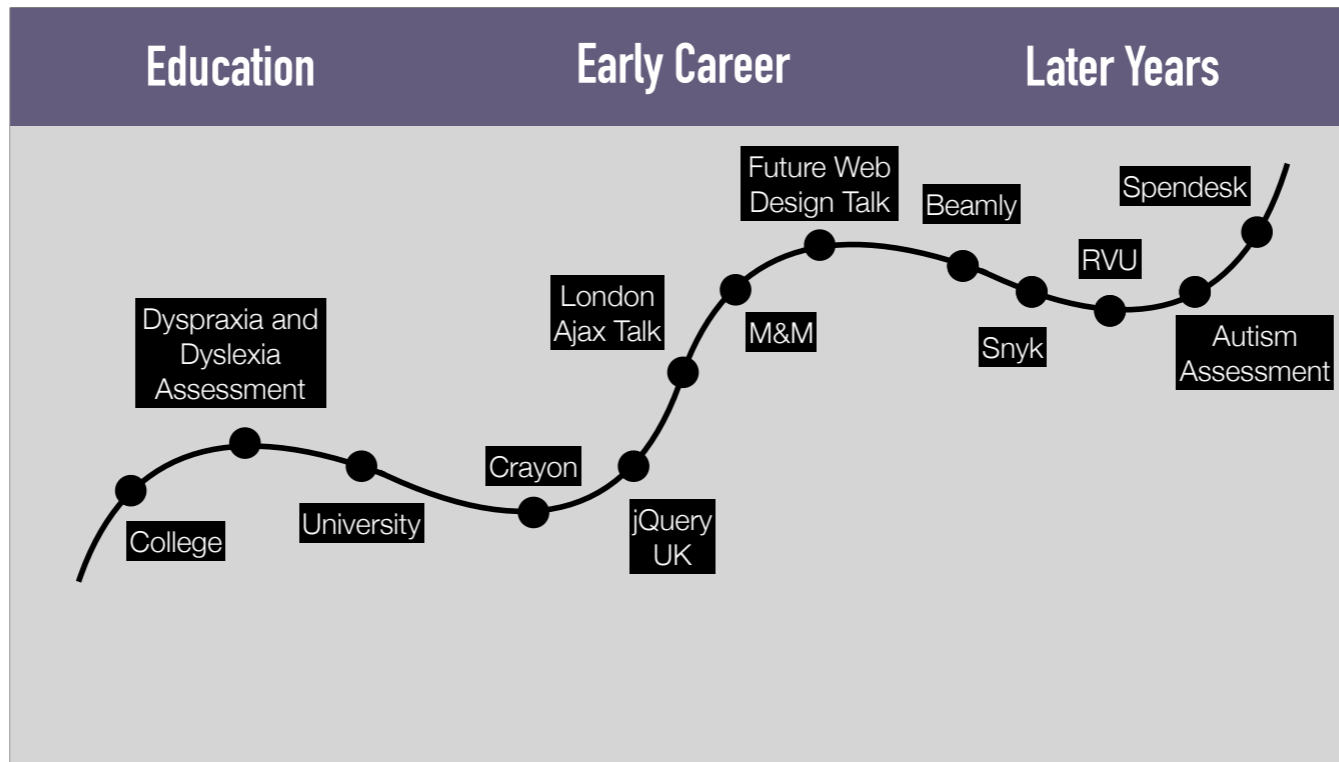- RVU
- Spendesk
- Autism Assessment
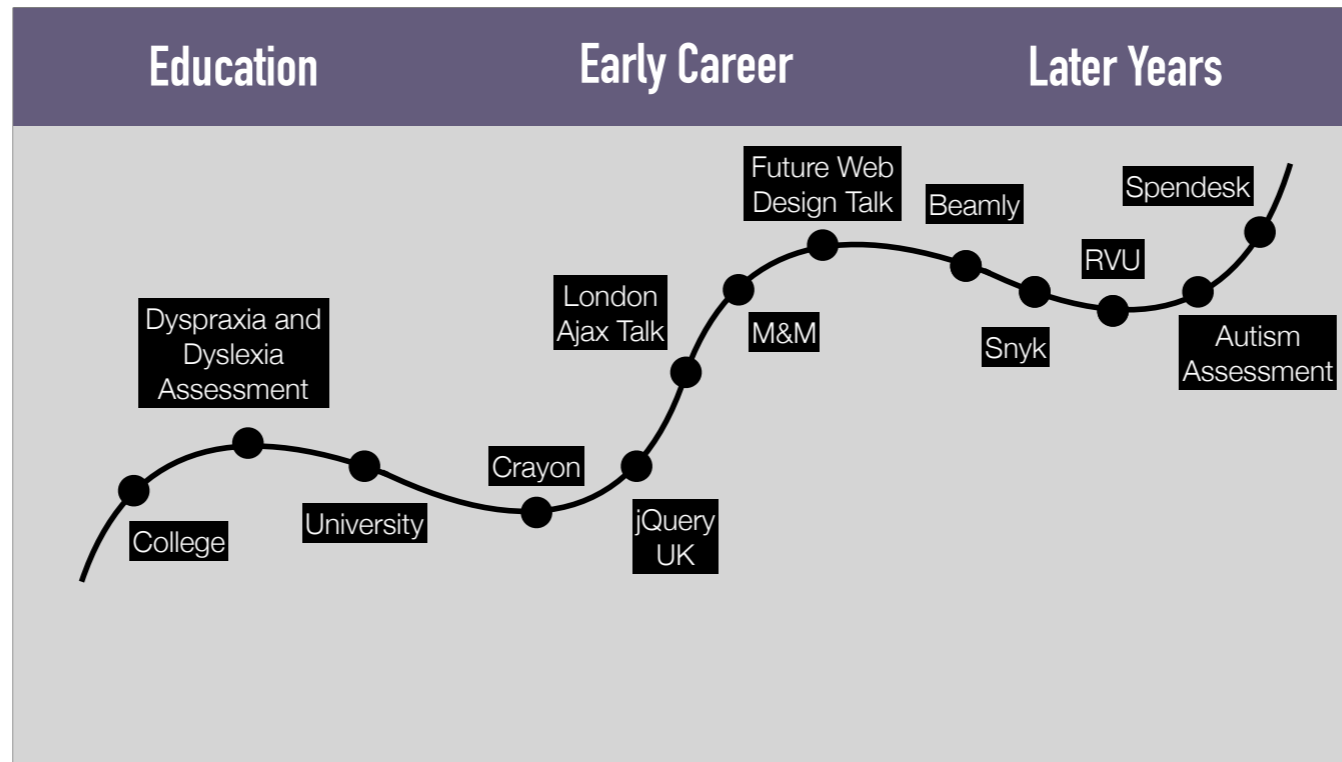
As I have continued my career I worked at a few different startups, however I still continued to push myself outside of my comfort zone by talking at many different meet-ups and conferences..

However as I switched into more senior roles I found myself struggling with imposter syndrome, and anxiety,

| Education | Early Career | Later Years |

Dyspraxia and Dyslexia Assessment

College

University

Crayon

jQuery UK

London Ajax Talk

M&M

Future Web Design Talk

Beamly

RVU

Snyk

Spendesk

Autism Assessment

After a particularly bad anxiety spiral during the COVID pandemic, I started to learn about what Autism was and I actually started hyper fixating on it, reading a lot about it and taking all the online quizzes I could find. After talking with my wife she encouraged me to get assessed which lead to me self referring myself and having an assessment. I was fortunate enough to be able to go private, and within 8 weeks I found out I was Autistic.

**Education**     **Early Career**     **Later Years**

- College
- Dyspraxia and Dyslexia Assessment
- University
- Crayon
- jQuery UK
- London Ajax Talk
- M&M
- Future Web Design Talk
- Beamly
- Snyk
- RVU
- Spendesk
- Autism Assessment

This was eye opening for me, and since then I have continued to learn so much about myself. I was able to start understanding how I was feeling and why I behaved certain ways.

**Education** **Early Career** **Later Years**

- College
- Dyspraxia and Dyslexia Assessment
- University
- Crayon
- jQuery UK
- London Ajax Talk
- M&M
- Future Web Design Talk
- Beamly
- Snyk
- RVU
- Spendesk
- Autism Assessment
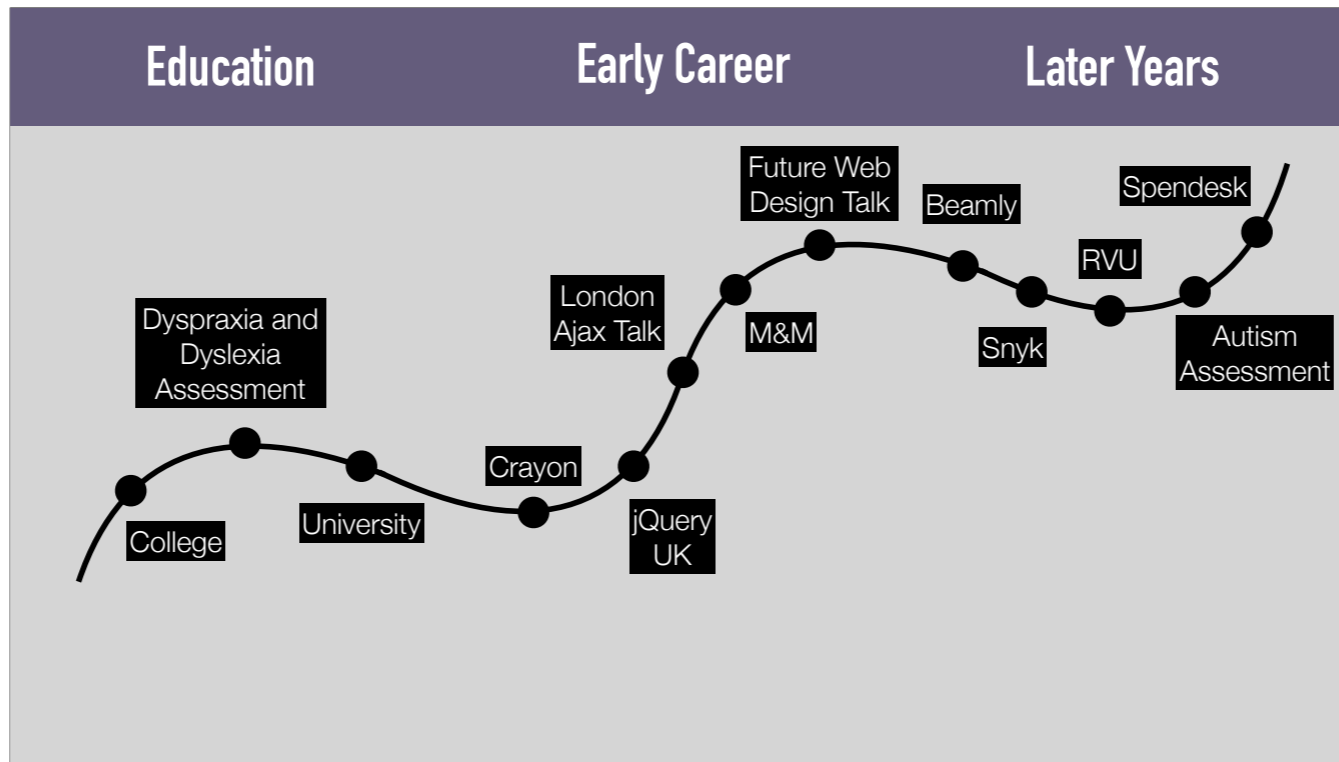
Then a year ago I found myself looking for a new role for the first time with this information about myself and it helped me to better understand what sort of company would be right for me, and in January I joined Spendesk

It was around this point where I learnt the word **Neurodiversity**

It was around the time that I got my Autism diagnosis I learnt the term Neurodiversity

So what is neurodiversity?

Having shared my person journey, and what brought me to speaking to you all about this subject here today, I want to share with you all what I have learnt about neurodiversity and some of the conditions it includes.

**So what is neurodiversity?**

Before I jump into this section, I wanted to caveat it by saying that I am not a psychologist and while I have tried to be as accurate as possible, this is all based on personal research and where I talk about symptoms I have taken these directly from the NHS website to preserve accuracy.

"Neurodiversity describes the idea that people experience and interact with the world around them in many different ways; there is no one "right" way of thinking, learning, and behaving, and differences are not viewed as deficits."

When people brains work differently from the ***norm*** they are referred to as **neurodivergent**

This means the person has different strengths and struggles from people whose brains develop or work more typically. The possible differences include medical disorders, learning disabilities and other conditions. The possible strengths include better memory, the ability to solve complex mathematical calculations in their head and even being able to think about problems in a completely different way.

It is estimated that around 1 in 7 people are **neurodivergent**

Unfortunately, neurodiverse conditions have consistently under diagnosed, this due to a combination of a lack of awareness and insufficient resources. In particular, a shortage of child psychologists has lead to waiting lists as long as 5 years in some parts of the UK, with many having to resort to going private.

This means estimating the number of neurodivergent people in the UK can be incredibly difficult however most resources tend to agree that the number is about 1 in 7 people.

Due to under diagnosis, there is a large number of people now seeking diagnosis as adults

Neurotypical ●━━━━━●━━━━━● Neurodivergent
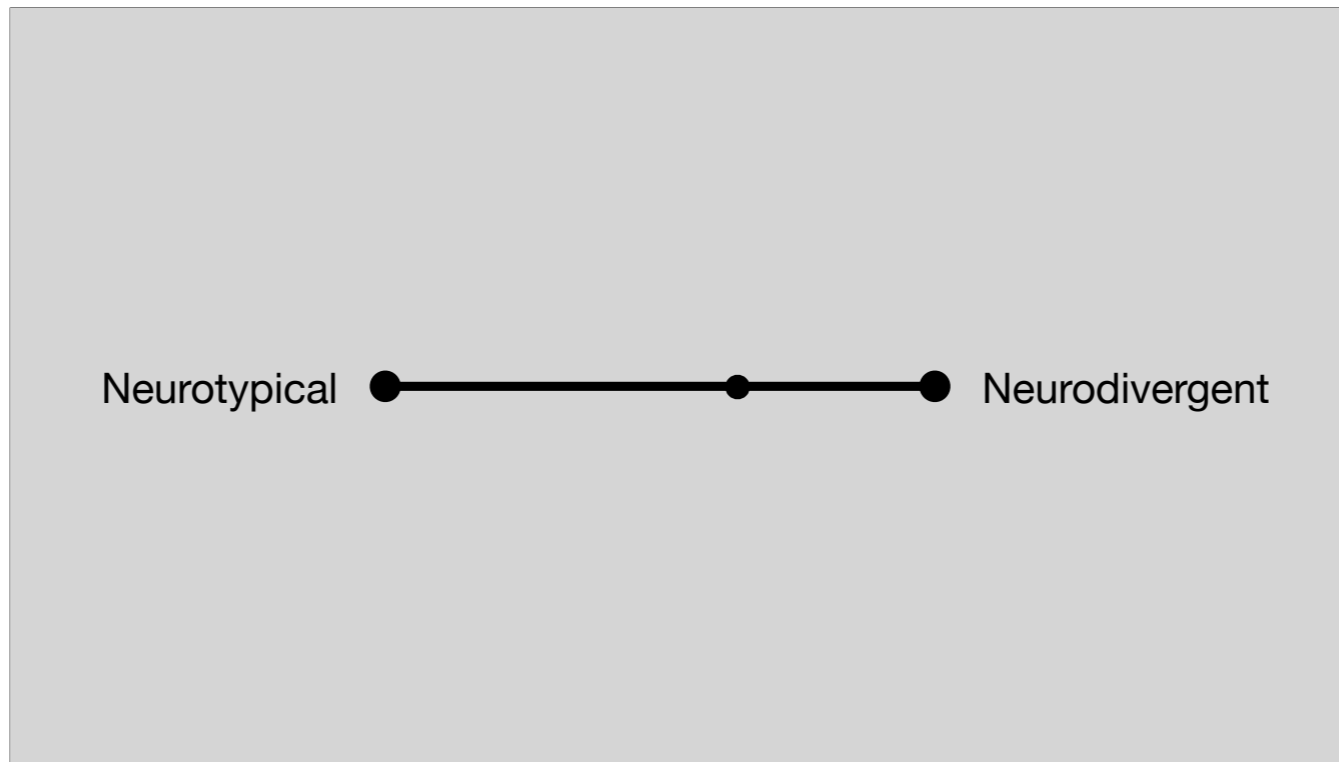
And its important to point out that, neurodiversity is a spectrum, however it is not a linear line with neurotypical at one end and neurodivergent at the other.
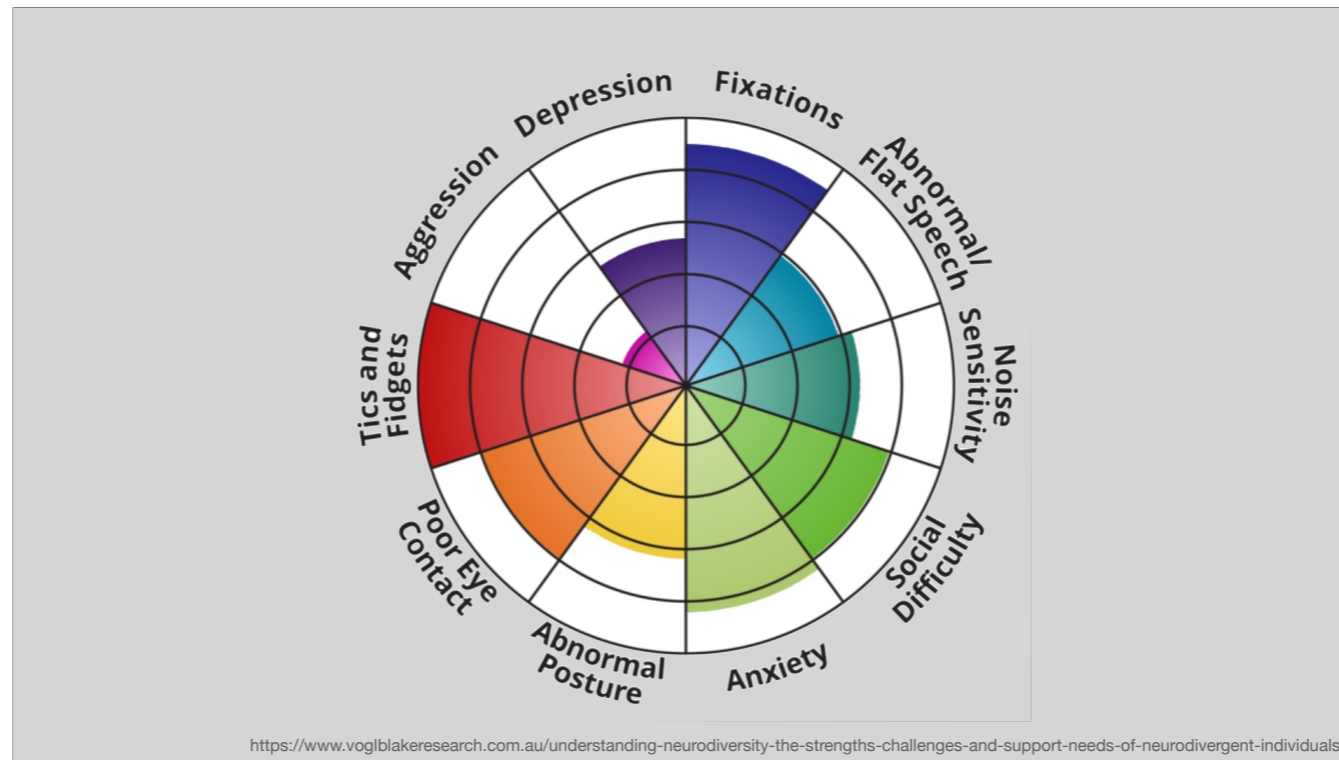
When we talk about the neurodiversity spectrum what we actually mean is a series of traits that a person might have more or less of. This means, just like a persons fingerprints, a persons traits is completely unique to them.

It is really important to make this distinction as it truly shows how diverse neurodiversity is, and highlights that the support that an individual needs can vary significantly from person to person.

Sometimes the symptoms a neurodivergent person might be hidden, this is referred to as **masking**

And while these traits vary from person to person, often you wont be able to see all the traits that do effect them because they have become so good at hiding them.

Sometimes the symptoms a neurodivergent person might be hidden, this is referred to as **masking**

This is referred to as masking,  It is an unconscious strategy all humans develop whilst growing up in order to connect with those around us. For neurodivergent folk however they often experience greater pressure to hide their true selves and spend their entire lives hiding their traits and trying to fit in.

This in itself can be harmful to their own wellbeing, and can even result in people not being diagnosed till later in life because they hid it so well in their childhood.

Neurodiverse conditions

Photo by Hal Gatewood on Unsplash

Now I am going start to look at some neurodiversities that people have however the list is by no means exhaustive as there is a wide spectrum of conditions.

For each of the neurodiversities I will talk about, I will talk about the condition itself and then aim to dispel some of the negative stereotypes typically associated, highlighting instead the strengths that they can bring to the workplace.

Today I am going to be focusing on talking about 5 common neurodiverse conditions

I will go through them in alphabetical order, and the ones I will speak about are ADHD, Autism, Dyscalculia, Dyslexia and Dyspraxia

There are many more than I have time to speak about today,

A lot of these conditions can **co-exist**

For example I have a diagnosis of Autism, Dyslexia and Dyspraxia.

ADHD

## ADHD

**Attention deficit hyperactivity disorder (ADHD) is a diagnosis given to people who have challenges with:**

- inattention
- hyperactivity
- impulsivity

I want to start by talking about ADHD, short for Attention deficit hyperactivity disorder which is diagnosed to people who have challenges with inattention, hyperactivity and impulsivity,

## ADHD

**Symptoms are categorised into two categories**

**Inattentiveness**

- having a short attention span and being easily distracted
- making careless mistakes
- appearing forgetful or losing things
- being unable to stick to tasks that are tedious or time-consuming
- appearing to be unable to listen to or carry out instructions
- having difficulty organising tasks

When you look at the symptoms of ADHD listed on the NHS website, you can see that they are split into two distinct categories, the first is inattentiveness

**ADHD**

**Symptoms are categorised into two categories**

**Hyperactivity and impulsiveness**

- constantly fidgeting
- being unable to concentrate on tasks
- excessive talking and interrupting conversations
- being unable to wait their turn
- acting without thinking
- little or no sense of danger

https://www.nhs.uk/conditions/attention-deficit-hyperactivity-disorder-adhd/symptoms/

The second category is hyperactivity and impulsiveness,

## ADHD

| Stereotypes | Reality |
| --- | --- |

Having taken the time to understand the symptoms of ADHD I now want to look at some of the stereotypes it has and dispel them by sharing the reality

The first stereotype that you will often hear is that people with ADHD will be hyperactive, running all over the place, where as in reality many with ADHD will have an internalised type of hyperactivity, where they have a busy noisy mind.

# ADHD

## Stereotypes

Hyperactivity of running around the place

## Reality

# ADHD

## Stereotypes

Hyperactivity of running around the place

## Reality

Internalised hyperactivity like a busy, noisy mind

## ADHD

### Stereotypes

Hyperactivity of running around the place

Interrupting conversations

### Reality

Internalised hyperactivity like a busy, noisy mind

Another stereotype is that someone with ADHD is always interrupting conversations, where the reality is that they are trying to work out the social cues of when to talk and sometimes get it wrong, they might also have something they need to say before they forget,

## ADHD

### Stereotypes

Hyperactivity of running around the place

Interrupting conversations

### Reality

Internalised hyperactivity like a busy, noisy mind

Trying to work out social cues of when they can talk

## ADHD

### Stereotypes

Hyperactivity of running around the place

Interrupting conversations

Unable to concentrate on tasks

### Reality

Internalised hyperactivity like a busy, noisy mind

Trying to work out social cues of when they can talk

The next stereotype is that someone with ADHD is unable to concentrate on tasks, where as the reality is that they often are thinking about 5/6 things at the same time and are struggling with their prioritisation

# ADHD

## Stereotypes

Hyperactivity of running around the place

Interrupting conversations

Unable to concentrate on tasks

## Reality

Internalised hyperactivity like a busy, noisy mind

Trying to work out social cues of when they can talk

Thinking about 5/6 things simultaneously and unable to prioritise

## ADHD

**Stereotypes**

Hyperactivity of running around the place

Interrupting conversations

Unable to concentrate on tasks

Being forgetful

**Reality**

Internalised hyperactivity like a busy, noisy mind

Trying to work out social cues of when they can talk

Thinking about 5/6 things simultaneously and unable to prioritise

And the final stereotype I wanted to talk about is that people with ADHD are forgetful, where in reality they are often self aware that they have issues with short term memory so they are doing everything they can like making notes and reminders to try and remember the things they need to remember.

## ADHD

| Stereotypes | Reality |
| --- | --- |
| Hyperactivity of running around the place | Internalised hyperactivity like a busy, noisy mind |
| Interrupting conversations | Trying to work out social cues of when they can talk |
| Unable to concentrate on tasks | Thinking about 5/6 things simultaneously and unable to prioritise |
| Being forgetful | Making notes and reminders for that thing they absolutely must remember |

## ADHD

**Reframing how we think about ADHD**

We can also start to challenge our own thoughts around ADHD by reframing some of the symptoms more positively.

Firstly, we have a short attention span, this can be reframed as an ability to rapidly change their focus to new tasks, which can be good in an environment where they are having to be doing a lot of context switching,

# ADHD

## Reframing how we think about ADHD

Short attention span

## ADHD

### Reframing how we think about ADHD

| Short attention span | → | Being able to rapidly change focus to new tasks |

## ADHD

### Reframing how we think about ADHD

| Short attention span | → | Being able to rapidly change focus to new tasks |
|---|---|---|
| Acting without thinking | | |

We can also reframe acting without thinking as being able to respond quickly in a crisis situation, this is because in times of crisis like a incident impacting production, being able to act quickly is critical.

# ADHD

## Reframing how we think about ADHD

| | | |
|---|---|---|
| Short attention span | → | Being able to rapidly change focus to new tasks |
| Acting without thinking | → | Being able to respond quickly in a crisis situation |

## ADHD

### Reframing how we think about ADHD

| | | |
|---|---|---|
| Short attention span | → | Being able to rapidly change focus to new tasks |
| Acting without thinking | → | Being able to respond quickly in a crisis situation |
| Impulsive | | |
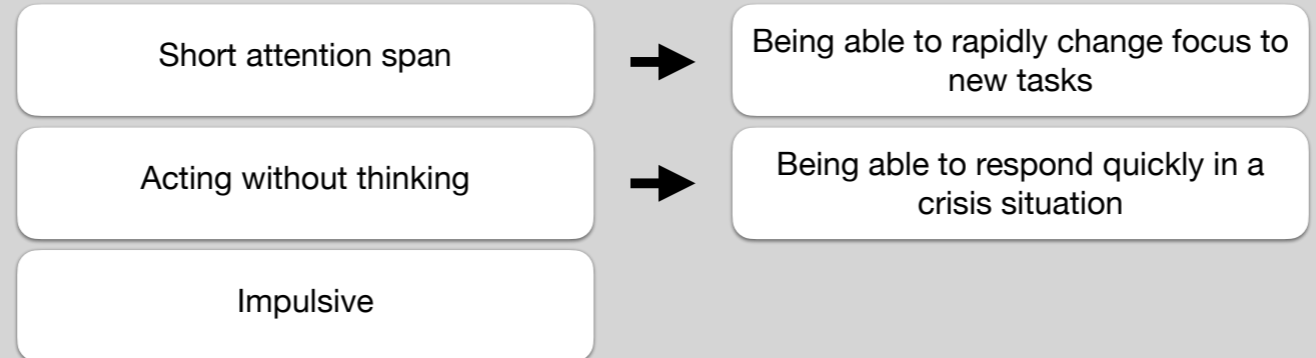
And finally we can reframe their impulsiveness as having the courage to try new things, meaning they might try new solutions to problems the team is having

## ADHD

**Strengths that can come from ADHD**

Having spoken about the challenges that come from the symptoms, I wanted to also call out some of the strengths of ADHD, in particular,

people with with ADHD are often more creative, which in a development role would mean that they may be able to come up with more creative and 'outside of the box' ideas to solve problems that they're tasked with.

# ADHD

## Strengths that can come from ADHD

Creativity

## ADHD

**Strengths that can come from ADHD**

Creativity

Hyper-focus

A state of hyper focus, which is common for people with ADHD, can allow them to zoom in on one particular task and achieve a lot in a small amount of time

# ADHD

## Strengths that can come from ADHD

Creativity

Hyper-focus

Risk tolerance

People with ADHD are also often times more risk-tolerant, meaning they may be more open to trying solutions that others might not be willing to try.

## ADHD

**Recommended Support Systems**

To help someone with ADHD get the most out of their strengths there is a number of ways in which you can help to support them.

The first is to make short term goals clear, working as a team to break down work into smaller deliverables that can be achieved in a shorter amount of time.

# ADHD

## Recommended Support Systems

Make short-term goals clear, and break down long-term goals into smaller goalposts where possible

## ADHD

### Recommended Support Systems

Make short-term goals clear, and break down long-term goals into smaller goalposts where possible

Support time management - confirm tasks, highlight important parts, reminders of deadlines in calendars

The second is to support them in their time management, by confirming when tasks need to be done by, highlighting important parts using calendars and even standups as a way to track deadlines.

## ADHD

### Recommended Support Systems

Make short-term goals clear, and break down long-term goals into smaller goalposts where possible

Support time management - confirm tasks, highlight important parts, reminders of deadlines in calendars

Help them get started

You can also better accommodate someone in your tea with ADHD is to help them get started on new tasks or projects, supporting them by using things like spikes as ways to identify ways of solving the problem ahead of the main piece of work to avoid a decision paralysis.

Autism

## Autism

**Autism is a diagnosis given to people who may have challenges with:**

- Communications and interactions with other people
- Understanding how other people think or feel
- Finding things like bright lights or loud noises overwhelming, stressful or uncomfortable
- Getting anxious or upset about unfamiliar situations and social events
- Taking longer to understand information
- Doing or thinking the same things over and over

Autism is a diagnosis given to people who often have challenges with communication and information processing skills, understanding and empathy with others, being overwhelmed by bright or loud situations, anxiety about situations outside of the 'norm', and may feel compelled to do certain things in a set way repetitively.

## Autism

**Symptoms are broadly categorised into three categories**

- Communication and interaction with others
- Interests and behaviours
- Work and life impacting functions

## Autism

| Stereotypes | Reality |
| --- | --- |
| | |

Now we understand the symptoms of Autism in more detail I now want to look at some of the stereotypes it has and dispel them by sharing the reality,

The first stereotype I want to dispel is that people with Autism only want things to be done their way, where as the reality is that often they will struggle with situations outside of what they have prepared for, for example if a meeting is brought forward and hour at short notice it can lead to them struggling

# Autism

## Stereotypes

Wanting things to be done their way or no way

## Reality

# Autism

## Stereotypes

Wanting things to be done their way or no way

## Reality

Struggling with situations outside of what they have 'prepared' for

## Autism

### Stereotypes

Wanting things to be done their way or no way

All autistic people are savants or possess exceptional talents

### Reality

Struggling with situations outside of what they have 'prepared' for

Another stereotype is that all autistic people are savants or possess exceptional talents, this is particularly played out in the media, however in reality autistic people have the same wide range of abilities, strengths and skill as their neurotypical counterparts.

# Autism

## Stereotypes

Wanting things to be done their way or no way

All autistic people are savants or possess exceptional talents

## Reality

Struggling with situations outside of what they have 'prepared' for

Autistic people have a wide range of abilities, strengths and skills

## Autism

### Stereotypes

Wanting things to be done their way or no way

All autistic people are savants or possess exceptional talents

Autistic people prefer to be alone

### Reality

Struggling with situations outside of what they have 'prepared' for

Autistic people have a wide range of abilities, strengths and skills

There is also the stereotype that autistic people prefer to be alone however in reality they often might struggle with interpreting social cues and situations which can lead them to start to isolate themselves more.

# Autism

## Stereotypes

Wanting things to be done their way or no way

All autistic people are savants or possess exceptional talents

Autistic people prefer to be alone

## Reality

Struggling with situations outside of what they have 'prepared' for

Autistic people have a wide range of abilities, strengths and skills

Difficulty interpreting social cues and situations can lead to isolation

## Autism

### Stereotypes

Wanting things to be done their way or no way

All autistic people are savants or possess exceptional talents

Autistic people prefer to be alone

Autistic people lack empathy or emotion

### Reality

Struggling with situations outside of what they have 'prepared' for

Autistic people have a wide range of abilities, strengths and skills

Difficulty interpreting social cues and situations can lead to isolation

And lastly it is common for people to think that autistic people lack empathy and emotion, however the reality is that they might struggle with expressing and processing emotions, this does not mean they lack them.

# Autism

## Stereotypes

Wanting things to be done their way or no way

All autistic people are savants or possess exceptional talents

Autistic people prefer to be alone

Autistic people lack empathy or emotion

## Reality

Struggling with situations outside of what they have 'prepared' for

Autistic people have a wide range of abilities, strengths and skills

Difficulty interpreting social cues and situations can lead to isolation

Expressing or processing emotions differently does not mean a lack of

## Autism

**Reframing how we think about Autism**

We can also start to challenge our own thoughts around Autism by reframing some of the symptoms more positively.

Lets start with autistic folk having a repetitive nature, this can be reframed as being analytical, being able to spot patterns, this can be valuable when trying to analyse a technical problem

# Autism

## Reframing how we think about Autism

Repetitive nature

# Autism

## Reframing how we think about Autism

| Repetitive nature | → | Analytical, good at spotting patterns |

## Autism

### Reframing how we think about Autism

| Repetitive nature | → | Analytical, good at spotting patterns |

| Seemingly blunt or rude |

Next  we can reframe autistic folk coming across blunt or rude by considering that they are simply using a more direct form of communication, often rooted in a black and white thinking mindset.

# Autism

## Reframing how we think about Autism

| Repetitive nature | → | Analytical, good at spotting patterns |

| Seemingly blunt or rude | → | Uses a direct form of communication |

## Autism

### Reframing how we think about Autism

| Repetitive nature | → | Analytical, good at spotting patterns |

| Seemingly blunt or rude | → | Uses a direct form of communication |

Seemingly uninterested in others opinions

And lastly, autistic folk might come across as uninterested in others opinions however we can reframe it as not understanding the social cues that their ideas have been understood by their peers so feeling like they have to reiterate upon them.

# Autism

## Reframing how we think about Autism

| | | |
|---|---|---|
| Repetitive nature | ➡ | Analytical, good at spotting patterns |
| Seemingly blunt or rude | ➡ | Uses a direct form of communication |
| Seemingly uninterested in others opinions | ➡ | Reiterating their ideas to ensure they are properly understood |

## Autism

**Strengths that can come from Autism**

When we dive into some of the strengths that are associated with autism we can see that there are many strengths they bring to the workplace.

For example, a strength in logical and methodical thinking can help someone with autism to solve complex problems.

# Autism

## Strengths that can come from Autism

Logical and methodical thinking ability

## Autism

### Strengths that can come from Autism

Logical and methodical thinking ability

Attention to detail

A strong attention to detail can help with spotting errors and mistakes, meaning they can be really good at giving a thorough review of pull requests

## Autism

### Strengths that can come from Autism

Logical and methodical thinking ability

Attention to detail

Passionate for their interests

A passion for there interests means they are likely to find a role that aligns with their interests and be passionate about building the best product for their users.

## Autism

### Strengths that can come from Autism

Logical and methodical thinking ability

Attention to detail

Passionate for their interests

Accepting of differences

And because they are different themselves they can be more accepting of differences in others meaning they are likely to push for things like accessibility.

# Autism

## Recommended Support Systems

To help someone with Autism get the most out of their strengths there is a number of ways in which you can help to support them.

The first is by having a clear and consistent schedule, and providing additional support when the schedule becomes disrupted. As I touched on earlier, changing a meeting time at last minute can be disruptive to them so this should be avoided where possible.

# Autism

## Recommended Support Systems

A clear routine and work schedule

## Autism

### Recommended Support Systems

A clear routine and work schedule

A personal desk, rather than hot-desking or shared desk space

With the return to office since covid, many companies are keeping smaller offices where hot-desking is more common. For someone with autism this can feel uncomfortable, as they like the consistency of knowing where they will sit in the office.

## Autism

### Recommended Support Systems

A clear routine and work schedule

A personal desk, rather than hot-desking or shared desk space

Reducing sensory distractions

Speaking of the office, its important that they are able to work in an environment without sensory distractions. Ideally somewhere quieter, with less people passing through that could distract them.

## Autism

### Recommended Support Systems

A clear routine and work schedule

A personal desk, rather than hot-desking or shared desk space

Reducing sensory distractions

Make meetings clear in their focus

And finally when sending them a meeting invite, provide them with as much information as possible so that they are able to properly plan ahead and don't feel anxious of not knowing what to expect

# Dyscalculia

## Dyscalculia

**Dyscalculia is a diagnosis given to people who may have challenges with:**

- Performing mathematical equations
- Retaining numerical information
- A lack of confidence with numbers
- Poor time management
- Giving or following directions

## Dyscalculia

**Symptoms are categorised as a learning disability**

- the mathematical difficulties are not caused by lack of educational opportunities
- the degree of difficulty is evidenced to be below expectations for the individual's age.

Dyscalculia is a specific learning disability that affects the ability to acquire and keep mathematical knowledge, despite having an intellect within the 'normal' range.

## Dyscalculia

| Stereotypes | Reality |
| --- | --- |
| | |

Now we understand more about Dyscalculia lets look at some of the stereotypes it has and dispel them by sharing the reality,

Lets start with the common misconception that people with Dyscalculia can't count, when the reality is that they simply find counting and calculating more difficult so might be slower, it doesn't mean they are unable.

# Dyscalculia

## Stereotypes

People with dyscalculia can't count

## Reality

# Dyscalculia

## Stereotypes

People with dyscalculia can't count

## Reality

Counting and calculating slower does not mean you are unable

## Dyscalculia

### Stereotypes

People with dyscalculia can't count

Dyscalculia is just an excuse for being 'bad at math'

### Reality

Counting and calculating slower does not mean you are unable

Another stereotype is that people who say they have Dyscalculia is just using it as an excuse for being bad at math, when in reality Dyscalculia is more common than people expect, with an estimated 5-7% of the population with it.

# Dyscalculia

## Stereotypes

People with dyscalculia can't count

Dyscalculia is just an excuse for being 'bad at math'

## Reality

Counting and calculating slower does not mean you are unable

Dyscalculia isn't rare, with an estimated 5-7% of the population with it

## Dyscalculia

### Stereotypes

People with dyscalculia can't count

Dyscalculia is just an excuse for being 'bad at math'

Dyscalculia is an intelligence problem

### Reality

Counting and calculating slower does not mean you are unable

Dyscalculia isn't rare, with an estimated 5-7% of the population with it

And lastly there is a stereotype that people with Dyscalculia lack intelligence however the reality is that its a neurological condition that is effecting their ability to process numerical information,

# Dyscalculia

## Stereotypes

People with dyscalculia can't count

Dyscalculia is just an excuse for being 'bad at math'

Dyscalculia is an intelligence problem

## Reality

Counting and calculating slower does not mean you are unable

Dyscalculia isn't rare, with an estimated 5-7% of the population with it

Neurological condition which affects the processing of numerical information

## Dyscalculia

**Reframing how we think about Dyscalculia**

Now we understand more about Dyscalculia, lets look at how we can reframe how we think about it.

Firstly we can start with reframing being Slow to comprehend mathematical equations, by thinking of it as being different in how they process information.

# Dyscalculia

## Reframing how we think about Dyscalculia

Slow to comprehend mathematical equations

# Dyscalculia

**Reframing how we think about Dyscalculia**

Slow to comprehend mathematical equations → Processes information differently

## Dyscalculia

### Reframing how we think about Dyscalculia

Slow to comprehend mathematical equations

Find it difficult to give or follow directions

→ Processes information differently

And for finding it difficult to give or follow directions, we can reframe this as being able to work more closely with others to reach a solution together.

# Dyscalculia

## Reframing how we think about Dyscalculia

| Slow to comprehend mathematical equations | → | Processes information differently |

| Find it difficult to give or follow directions | → | Able to work closely with others to reach a solution together |

## Dyscalculia

**Strengths that can come from Dyscalculia:**

Beyond the symptoms and the stereotypes, there has been research that has shown a number of strengths come from Dyscalculia

The first strength is that someone with dyscalculia might be more creative, with a flair for artistic talent

# Dyscalculia

**Strengths that can come from Dyscalculia:**

Creativitive and artistic talent

# Dyscalculia

## Strengths that can come from Dyscalculia:

Creativitive and artistic talent

Innovative problem solving

The second is they might demonstrate innovative problem solving, helping your team to solve complex problems in uniquely simple ways

## Dyscalculia

**Strengths that can come from Dyscalculia:**

Creativitive and artistic talent

Innovative problem solving

Good written and verbal communication skills

And the final strength that I want to touch on is good written and verbal communication skills , which is good for being able to write documentation or to present things as workshops helping to their their skills with others

# Dyscalculia

**Recommended Support Systems**

# Dyscalculia

## Recommended Support Systems

Supply the figures before meetings where possible

# Dyscalculia

## Recommended Support Systems

Supply the figures before meetings where possible

Use visual representations, such as pie charts

# Dyscalculia

## Recommended Support Systems

Supply the figures before meetings where possible

Use visual representations, such as pie charts

Present only essential data

# Dyscalculia

## Recommended Support Systems

Supply the figures before meetings where possible

Use visual representations, such as pie charts

Present only essential data

Alerts to help with time keeping

# Dyslexia

# Dyslexia

**Dyslexia is a diagnosis given to people who may have challenges with:**

- Reading and writing very slowly
- Having poor or inconsistent spelling
- Understanding information when told verbally, but having difficulty with information that's written down
- Planning and organisation

https://www.nhs.uk/conditions/dyslexia/

## Dyslexia

**Symptoms are categorised as a learning disability**

- Occurs across a range of intellectual abilities
- Affects reading, writing and information processing

## Dyslexia

**Stereotypes**                **Reality**

Now we understand more about Dyslexia lets look at some of the stereotypes it has and dispel them by sharing the reality, starting with the common misconception that people with Dyslexia can't read, when the reality is that they simply find it more difficult to decode and comprehend written text. In fact you might find people with Dyslexia are in the top 95% percentile for reading accuracy however struggle when it comes to the comprehension.

# Dyslexia

## Stereotypes

Dyslexic people can't read

## Reality

# Dyslexia

## Stereotypes

Dyslexic people can't read

## Reality

Dyslexia makes it difficult to decode and comprehend, not read

## Dyslexia

### Stereotypes

Dyslexic people can't read

Dyslexics just need to try harder

### Reality

Dyslexia makes it difficult to decode and comprehend, not read

Another stereotype is that people with Dyslexia simply need to try harder, when in reality the effort that someone puts into reading isn't related to how they can comprehend it.

## Dyslexia

### Stereotypes

Dyslexic people can't read

Dyslexics just need to try harder

### Reality

Dyslexia makes it difficult to decode and comprehend, not read

The type of instruction makes a difference, not the effort

## Dyslexia

### Stereotypes

Dyslexic people can't read

Dyslexics just need to try harder

Dyslexia is a visual problem

### Reality

Dyslexia makes it difficult to decode and comprehend, not read

The type of instruction makes a difference, not the effort

There is also the misconception that Dyslexia is a visual problem when in fact a dyslexic person os not any more likely to have a vision problem than someone without Dyslexia. To ensure that vision isn't the issue, before performing an dyslexia assessment the person being assessed needs to have had a recent eye test to rule that out.

# Dyslexia

## Stereotypes

Dyslexic people can't read

Dyslexics just need to try harder

Dyslexia is a visual problem

## Reality

Dyslexia makes it difficult to decode and comprehend, not read

The type of instruction makes a difference, not the effort

Dyslexic people are no more likely to have vision problems than others

# Dyslexia

## Stereotypes

Dyslexic people can't read

Dyslexics just need to try harder

Dyslexia is a visual problem

Dyslexia is caused by 'not reading enough'

## Reality

Dyslexia makes it difficult to decode and comprehend, not read

The type of instruction makes a difference, not the effort

Dyslexic people are no more likely to have vision problems than others

And lastly there is a stereotype that people with Dyslexia` do not read enough however the reality is that its a neurological condition that is effecting their ability to process written information

# Dyslexia

## Stereotypes

Dyslexic people can't read

Dyslexics just need to try harder

Dyslexia is a visual problem

Dyslexia is caused by 'not reading enough'

## Reality

Dyslexia makes it difficult to decode and comprehend, not read

The type of instruction makes a difference, not the effort

Dyslexic people are no more likely to have vision problems than others

Neurological conditions don't happen through lack of exposure

# Dyslexia

**Reframing how we think about Dyslexia**

We can also reframe how we think about dyslexia, starting with being Slow to read the same text as others, which we can reframe as simply processing written content differently.

# Dyslexia

## Reframing how we think about Dyslexia

Slow to read the same text as others

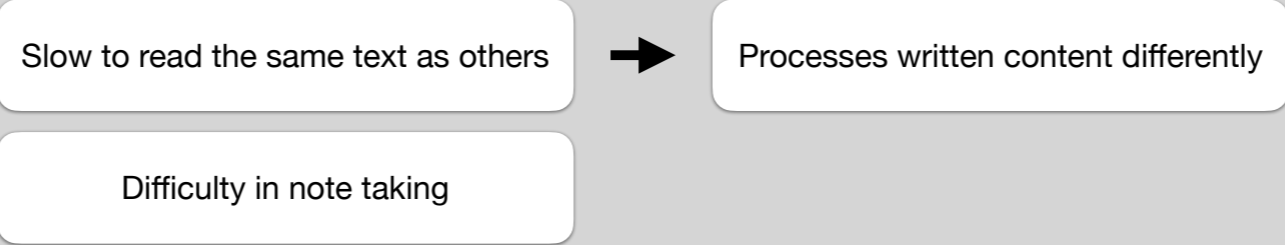# Dyslexia

## Reframing how we think about Dyslexia

Slow to read the same text as others → Processes written content differently

## Dyslexia

### Reframing how we think about Dyslexia

| Slow to read the same text as others | → | Processes written content differently |

Difficulty in note taking

We can also reframe a difficulty in note taking as an ability to learn to adapt how they keep track of information.

# Dyslexia

## Reframing how we think about Dyslexia

| Slow to read the same text as others | ➡ | Processes written content differently |

| Difficulty in note taking | ➡ | Learn to adapt how they keep track of information |

## Dyslexia

### Strengths that can come from Dyslexia

Beyond the symptoms and the stereotypes, there has been research that has shown a number of strengths come from Dyslexia

For example, a person with dyslexia might have good visual spatial reasoning, meaning they think with mental images, they are able to think multiple steps ahead, identifying mistakes they need to avoid when building out a solution

# Dyslexia

## Strengths that can come from Dyslexia

Good visual-spatial reasoning

# Dyslexia

## Strengths that can come from Dyslexia

Good visual-spatial reasoning

Strong imagination

They might also have a strong imagination, meaning they can imagine new solutions to problems,

## Dyslexia

### Strengths that can come from Dyslexia

Good visual-spatial reasoning

Strong imagination

Think outside of the box

And beyond simply having a strong imagination, they are also good at thinking out of the box

## Dyslexia

### Strengths that can come from Dyslexia

Good visual-spatial reasoning

Strong imagination

Think outside of the box

Excel in areas that do not depend on reading, such as math and computers

And while they might struggle with reading and writing, areas that do not depend on this as much such as math and computing can become a strength as well

# Dyslexia

## Recommended Support Systems

# Dyslexia

## Recommended Support Systems

Find out if there is a colour on which they can read best on

# Dyslexia

## Recommended Support Systems

Find out if there is a colour on which they can read best on

Support important communications in more than one format

# Dyslexia

## Recommended Support Systems

Find out if there is a colour on which they can read best on

Support important communications in more than one format

Highlight key points in documents

# Dyslexia

## Recommended Support Systems

Find out if there is a colour on which they can read best on

Support important communications in more than one format

Highlight key points in documents

Explore supportive technology options

# Developmental Coordination Disorder (Dyspraxia)

## Developmental Coordination Disorder (Dyspraxia)

**Dyspraxia is a diagnosis given to people who may have challenges with:**

- Co-ordination, balance and movement
- Learning new skills, thinking and remembering information
- Writing, typing, drawing and grasping small objects
- Managing emotions
- Time management, planning and organisational skill

Dyspraxia is the more commonly known name for developmental coordination disorder or (DCD)

# Developmental Coordination Disorder (Dyspraxia)

**Symptoms are categorised into two categories**

**Movement**

- Clumsy
- Tire easily
- Difficulty with writing and physical activities

https://www.nhs.uk/conditions/developmental-coordination-disorder-dyspraxia/

## Developmental Coordination Disorder (Dyspraxia)

**Symptoms are categorised into two categories**

**Co-ordination**

- Bump into people or objects
- Make a mess when eating
- Have trouble with time management and planning

https://www.nhs.uk/conditions/developmental-coordination-disorder-dyspraxia/

## Developmental Coordination Disorder (Dyspraxia)

| Stereotypes | Reality |
|---|---|
| | |

Now we understand the symptoms of Dyspraxia in more detail I now want to look at some of the stereotypes it has and dispel them by sharing the reality, starting with the stereotype that people with dyspraxia are just clumsy.

The reality is that even with the most careful walking everywhere they still end up bumping into and tripping over things

## Developmental Coordination Disorder (Dyspraxia)

**Stereotypes**

People with dyspraxia are just clumsy

**Reality**

## Developmental Coordination Disorder (Dyspraxia)

**Stereotypes**

People with dyspraxia are just clumsy

**Reality**

Carefully walking everywhere but still bumping into and tripping over things

## Developmental Coordination Disorder (Dyspraxia)

### Stereotypes

People with dyspraxia are just clumsy

People with dyspraxia have low intelligence

### Reality

Carefully walking everywhere but still bumping into and tripping over things

There is a stereotype that people with dyspraxia have low intelligence however the reality is that Struggling with fine motor skills is not related to the level of the persons intelligence.

## Developmental Coordination Disorder (Dyspraxia)

**Stereotypes**

People with dyspraxia are just clumsy

People with dyspraxia have low intelligence

**Reality**

Carefully walking everywhere but still bumping into and tripping over things

Struggles with fine motor skills does not equate a low intellect

## Developmental Coordination Disorder (Dyspraxia)

### Stereotypes

People with dyspraxia are just clumsy

People with dyspraxia have low intelligence

People with Dyspraxia are just disorganised

### Reality

Carefully walking everywhere but still bumping into and tripping over things

Struggles with fine motor skills does not equate a low intellect

There is also a belief that people with dyspraxia are just disorganised however the reality is no matter how much effort they put into keeping everything In order they still lack any clear organisation

## Developmental Coordination Disorder (Dyspraxia)

**Stereotypes**

People with dyspraxia are just clumsy

People with dyspraxia have low intelligence

People with Dyspraxia are just disorganised

**Reality**

Carefully walking everywhere but still bumping into and tripping over things

Struggles with fine motor skills does not equate a low intellect

Trying to keep everything in order and still having no clear "organisation"

## Developmental Coordination Disorder (Dyspraxia)

### Stereotypes

People with dyspraxia are just clumsy

People with dyspraxia have low intelligence

People with Dyspraxia are just disorganised

Socially awkward

### Reality

Carefully walking everywhere but still bumping into and tripping over things

Struggles with fine motor skills does not equate a low intellect

Trying to keep everything in order and still having no clear "organisation"

And lastly the stereotype that they are socially awkward is really a difficulty with how they word and express themselses, which makes it more difficult to handle social situations.

## Developmental Coordination Disorder (Dyspraxia)

| Stereotypes | Reality |
|---|---|
| People with dyspraxia are just clumsy | Carefully walking everywhere but still bumping into and tripping over things |
| People with dyspraxia have low intelligence | Struggles with fine motor skills does not equate a low intellect |
| People with Dyspraxia are just disorganised | Trying to keep everything in order and still having no clear "organisation" |
| Socially awkward | Difficulty with words and expressing yourself makes social situations harder |

## Developmental Coordination Disorder (Dyspraxia)

**Reframing how we think about Dyspraxia**

And like how we reframed the other neurodivergent conditions, we can also reframe the symptoms of Dyspraxia starting with how someone with dyspraxia might Speak without thinking things through. We can reframe this as speaking literally and factually about things,

# Developmental Coordination Disorder (Dyspraxia)

## Reframing how we think about Dyspraxia

Speak without thinking things through

# Developmental Coordination Disorder (Dyspraxia)

**Reframing how we think about Dyspraxia**

Speak without thinking things through → Literal and factual

## Developmental Coordination Disorder (Dyspraxia)

**Reframing how we think about Dyspraxia**

Speak without thinking things through ➡ Literal and factual

Appear as if they're not listening

We can also reframe how they might appear as if they're not listening as a preference to observe situations, making mental notes of

## Developmental Coordination Disorder (Dyspraxia)

**Reframing how we think about Dyspraxia**

| Speak without thinking things through | → | Literal and factual |
|---|---|---|
| Appear as if they're not listening | → | Observing and making mental notes |

## Developmental Coordination Disorder (Dyspraxia)

**Reframing how we think about Dyspraxia**

| | | |
|---|---|---|
| Speak without thinking things through | ➡️ | Literal and factual |
| Appear as if they're not listening | ➡️ | Observing and making mental notes |
| Difficult to read writing | | |
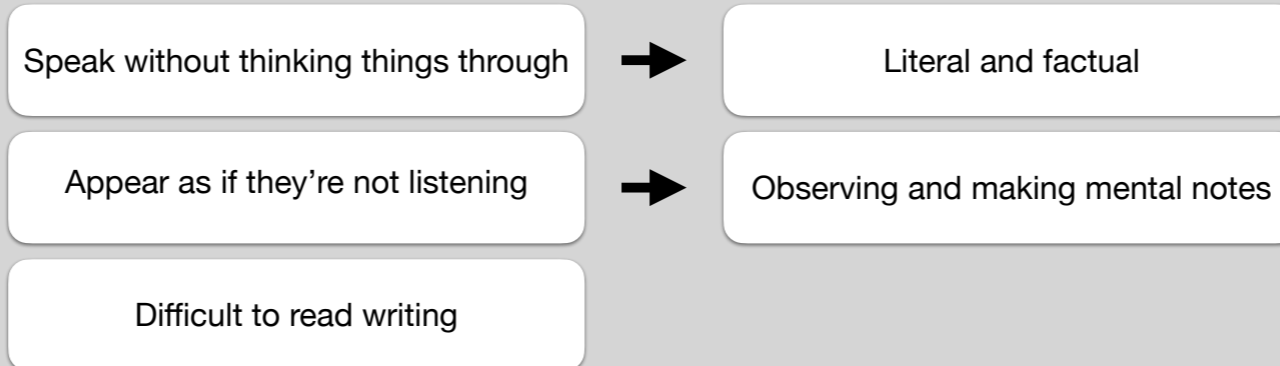
Finally a difficulty to read writing can be reframed as prioritise getting the information down so they don't miss anything

# Developmental Coordination Disorder (Dyspraxia)

## Reframing how we think about Dyspraxia

| | | |
|---|---|---|
| Speak without thinking things through | ➡ | Literal and factual |
| Appear as if they're not listening | ➡ | Observing and making mental notes |
| Difficult to read writing | ➡ | Prioritises getting the information down |
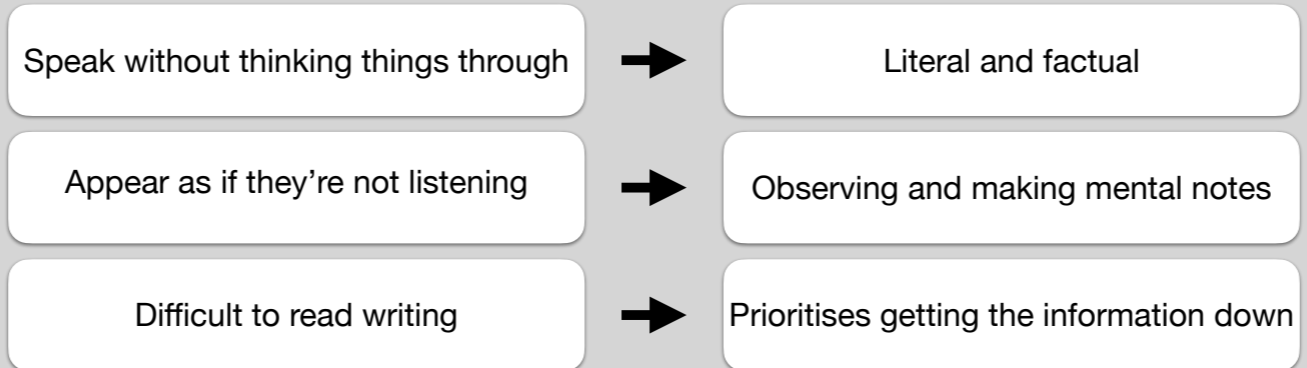
## Developmental Coordination Disorder (Dyspraxia)

**Strengths that can come from Dyspraxia**

Beyond the symptoms and the stereotypes, there has been research that has shown a number of strengths come from Dyspraxia, some of which I wanted to touch on today.

Firstly, people with Dyspraxia can be creative with how they think, helping them to identify new and unique ideas which can push the products were building forward in a meaningful way

# Developmental Coordination Disorder (Dyspraxia)

## Strengths that can come from Dyspraxia

Creative thinking

## Developmental Coordination Disorder (Dyspraxia)

### Strengths that can come from Dyspraxia

Creative thinking

Excel at problem solving

They might also excel at problem solving, thinking of unique ways in which they can solve problems they face

## Developmental Coordination Disorder (Dyspraxia)

### Strengths that can come from Dyspraxia

Creative thinking

Excel at problem solving

Sensitive to the needs of others

And they are also likely sensitive to the needs of others, which means they make a good Ally for pushing for improving inclusivity.

## Developmental Coordination Disorder (Dyspraxia)

**Recommended Support Systems**

# Developmental Coordination Disorder (Dyspraxia)

## Recommended Support Systems

Clear and concise instructions for tasks

# Developmental Coordination Disorder (Dyspraxia)

## Recommended Support Systems

Clear and concise instructions for tasks

Break tasks down into parts to avoid overwhelm

# Developmental Coordination Disorder (Dyspraxia)

## Recommended Support Systems

Clear and concise instructions for tasks

Break tasks down into parts to avoid overwhelm

Give adequate time for learning new skills

# Developmental Coordination Disorder (Dyspraxia)

## Recommended Support Systems

Clear and concise instructions for tasks

Break tasks down into parts to avoid overwhelm

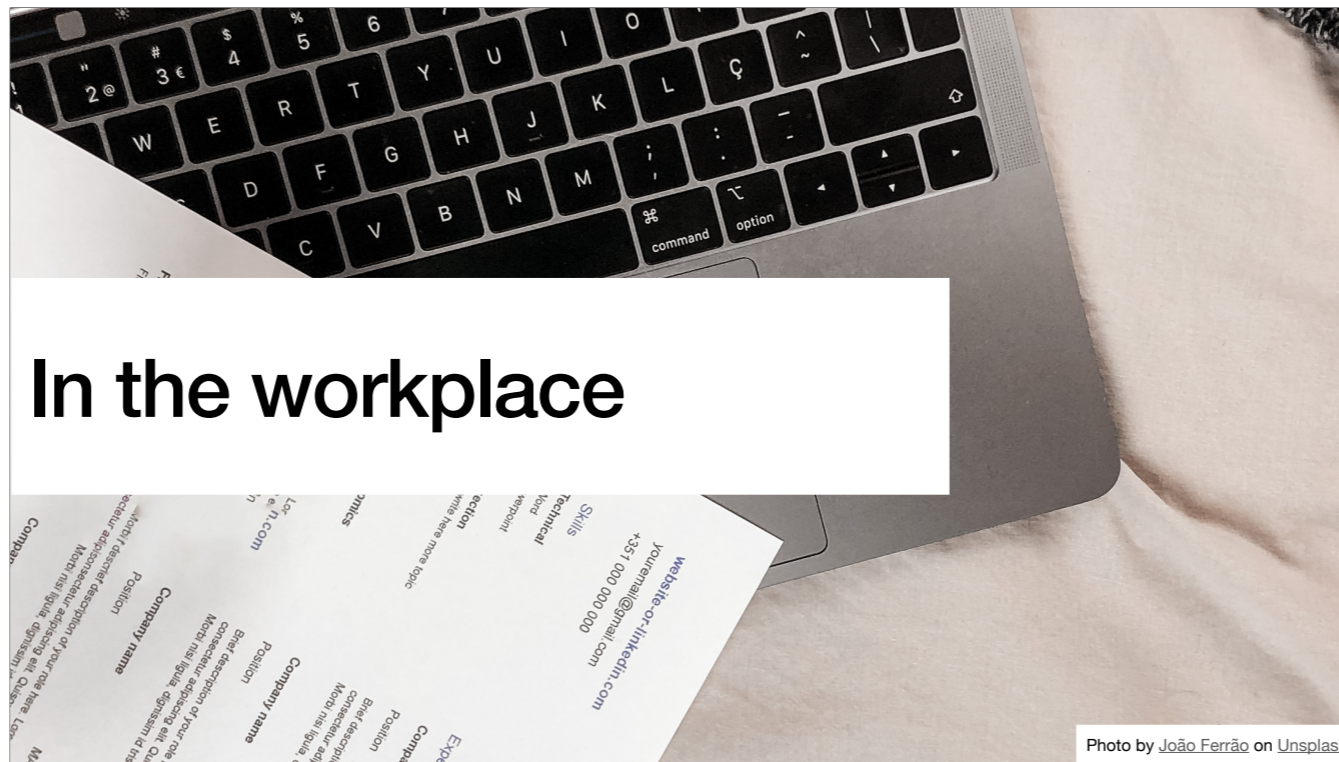Give adequate time for learning new skills

Alerts for meetings

# In the workplace

Having taken the time to understand neurodiversity, I hope now were starting to have a bit more empathy for the areas that they might find more diffucult, and now understand more about what their strengths might be.

I want to now focus more on what it is like to work in tech as a neurodivergent individual. To help me with this, over the past few months I have interviewed some neurodivergent developers who kindly shared their own experiences with me from which I will draw examples.

Make it clear that it is safe to share neurodiversities.

When someone joins a business or is late diagnosed with a neurodiversity they will likely be unsure about whether they should share it with their employer. They will be thinking whether they need to let HR know, whether they need to let their Manager know and if they need to let their colleague know.

And there are advantages and disadvantages of telling these people,

Make it clear that it is safe to share neurodiversities.

For example, letting HR know of your disability should mean they are then able to help with any accomdatations you might need, such as tools that aid with writing, or organisation.

Letting your manager know will help you to figure out the best way for you to communicate, and for them to adapt how they give you feedback

Letting your colleagues know might help you in effectively communicating with them

The problem is, it isn't a given that your HR department, Manager or Colleagues will support you in this way and unfortunately, in some cases you might be made to feel like your simply causing problems.

For me, I need to feel psychologically safe in my workplace to be able to tell people and while I don't expect my manager to be immediately knowledgeable of my needs, I want a manager who cares enough to want to learn and grow as a person as well.

Make it clear that it is safe to share neurodiversities.

The problem is, it isn't a given that your HR department, Manager or Colleagues will support you in this way and unfortunately, in some cases you might be made to feel like your simply causing problems.

For me, I need to feel psychologically safe in my workplace to be able to tell people and while I don't expect my manager to be immediately knowledgeable of my needs, I want a manager who cares enough to want to learn and grow as a person as well.

Adapt how we carry out training

many companies have a bunch of mandatory training that all employees need to do to learn about the business and legal things like GDPR, Anti-bribery and health and safety

This can take many forms, sometimes its a onboarding manual, pre-recorded video or even an e-learning platform however in most cases the content is generalised information and doesn't take into account how the individual learns.

While this impacts all employees, for those who have ADHD, they might struggle to focus on this content for extended lengths of time, with it being easy for them to become distracted, and if they do manage to pay attention they might still struggle to recall the content later.

The way in which businesses can adapt this is to offer the training in various different formats, such offering both a e-learning based platform and workshops so people can choose what is right for them

Adapt hiring and interview processes

Another area in which we need to make adaptations is in the hiring and interview process,

firstly by being more accommodating with how we review CVs by focusing on skills rather grammatical capabilities

Then in the interview process, allowing the candidate to not use their camera in video interviews, using quiet meeting rooms for onsite interviews and for the coding exercise portion allow them to choose between doing it as a pairing exercise or doing it independently at home.

Use clear, concise communication

The first thing that we can do to help our neurodivergent colleagues in the workplace is to ensure that we are using clear and concise communication.

They might struggle with sarcasm or jokes so ensure that you make it clear if you are being sarcastic or making a joke as to avoid a mis-commiunication.

It can also be helpful to use closed rather than open questions where approriate as it can help avoid them being confused on what you mean.

Assume best intent in communication

Another way that you can be more mindful towards your colleagues is to assume the best intent when they communicate with you.

Sometimes they might come across as direct about something because its something they see as clear cut, or they are trying to respond in a timely manor.

They might also try to push a certain idea over others, however this can just be a case of being passionate.

Rather than assuming the worse, try to clarify the situation and give feedback if you think they could handle that communication in a better way as they likely appreciate it.

Be mindful of their focus time

Another way in which you can help your colleagues is to be mindful of their focus time, while this will help all your colleagues, your neurodivergent colleagues in particular will really appreciate

Ensure there is adequate spacing between meetings

its really important that you give your colleagues time to decompress after meetings,

Use language based on how the person refers to themselves

If you find yourself in the position where you need to describe someone who is neurodiverse it is important to consider the language you use.

There is two really common ways in which people like to be referred that I wanted to touch on, in these examples I will use Autism.

The first is to use person first language, so to refer to someone as a person with Autism. This puts the person first and the diagnosis second.

The alternative is called identity first language where someone would be referred to as an autistic person. The reason some people prefer this is because they feel its an integral part of their identity

Prioritise the needs of the few rather than the convenience of the many

Finally there its important point that should not be overlooked, in that you should prioritise the needs of the few over the convenience of the many

I wanted to tie this back to an experience I had where the team had already a busy day of meetings and the team lead wanted to add in another, he put in a vote to either add it to this day or to push it to the following week and the vote was in favour of getting it out of the way. This meant the only time I had to decompress from the rest of the meetings would be taken up.

Fostering inclusion in the tech community

Photo by Seb Lee-Delisle on Flickr

Having focused much of this talk on how we can support our colleagues by providing supporting, inclusive and emotionally safe spaces to work in, I wanted to include a final section in this talk about events, much like this one,

I wanted to look at the ways in which events can be made more inclusive and how, as an attendee you can make people feel both included and safe to be themselves

Give people **space**

I want to start with what you can do as an attendee of a conference or meet-up, and first up I wanted to talk about how we should ensure that we are giving people the space they need when they need it.

While it might be tempting if you see someone alone to start a conversation and introduce yourself as you don't want them to be feeling left out, be mindful that they might just be taking a quiet moment for themselves.
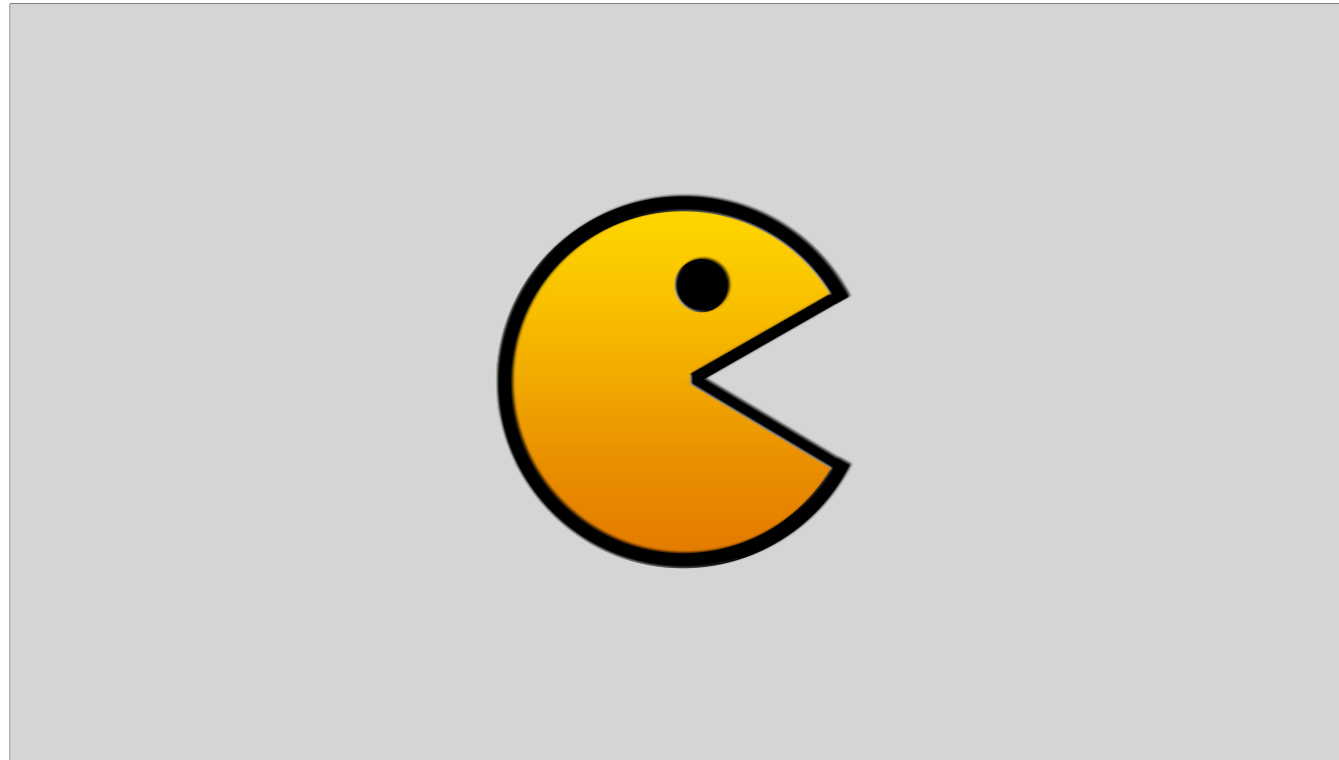
Because we want to give people space, we also want to give them the opportunity to join in group conversations, there a really nice way to do this, is by standing in a pacman formation
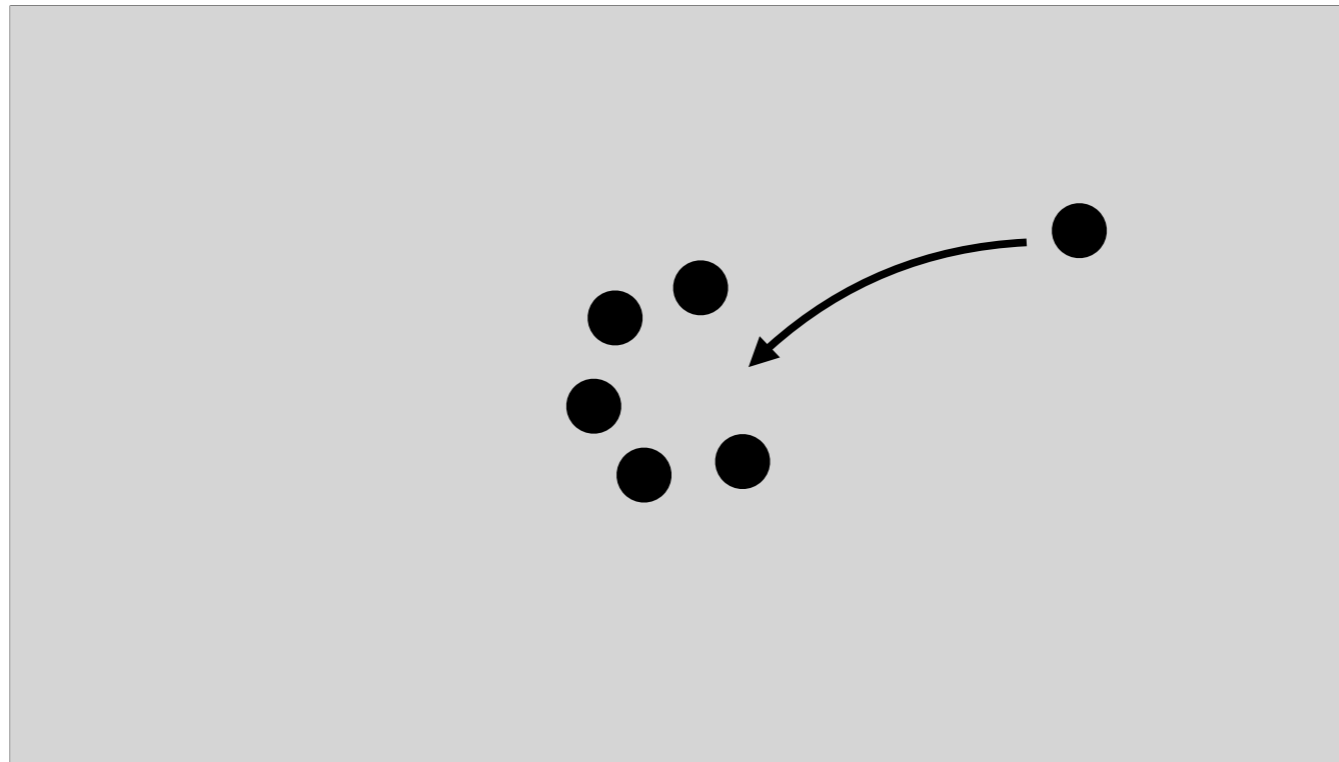
The idea is that by leaving a gap people can join the group
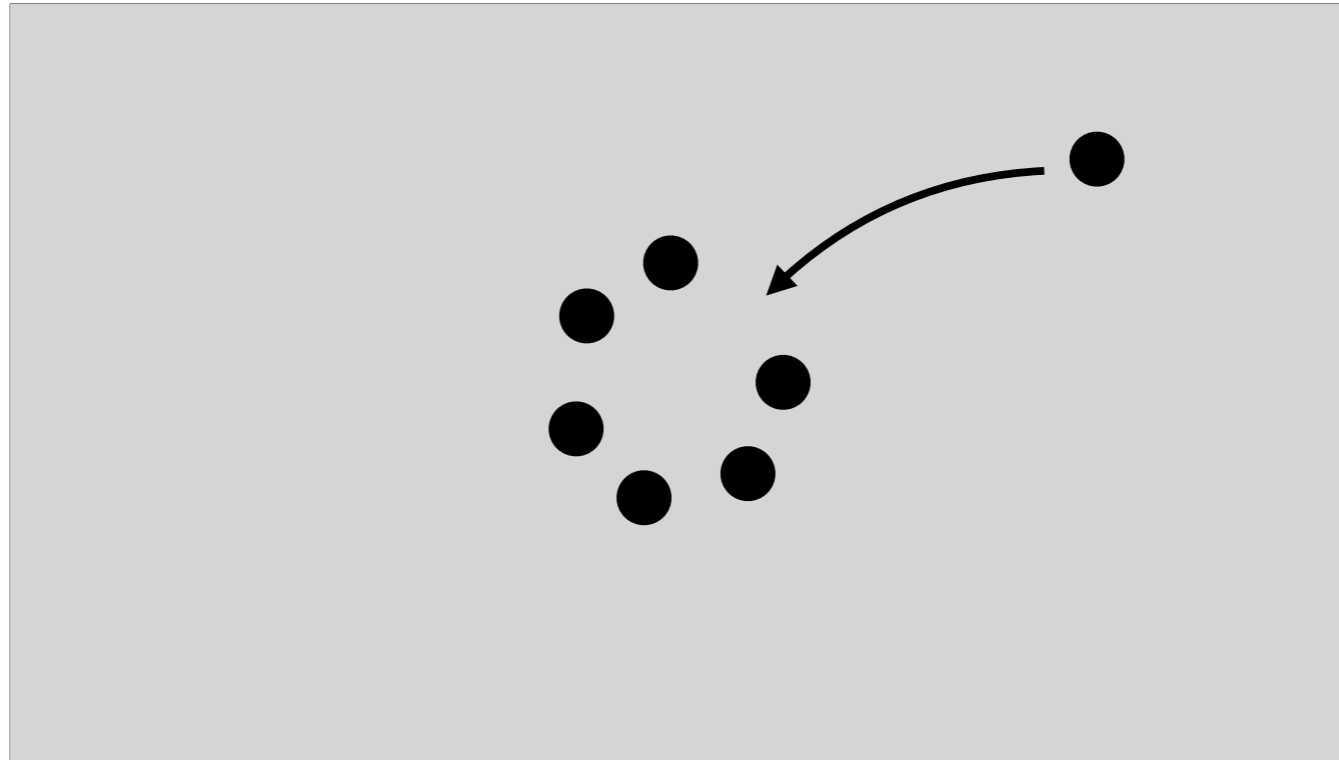
And then when they join you readust the group to ensure there is always space for another person to join

> **Eric Holscher**
>
> **Leaving room for new people when standing in a group is a physical way to show an inclusive and welcoming environment.** It reduces the feeling of there being cliques, and allows people to integrate themselves into the community.
>
> https://www.ericholscher.com/blog/2017/aug/2/pacman-rule-conferences/

This idea came from Eric Holsher, who gave a really good explanation of why we should be going this

Share as much information as possible
**in plain language**

The first you can do is to share as much information as possible up front, this includes the schedule for the day, details about the venue and details on how to get there. This can be helpful for everyone, however for neurodivergent individuals this can help prevent them being nervous or anxious about uncertainty about the day.

Establish **feedback** channels

Finally, as an event organiser it is also incredibly important you provide channels where people can give feedback on how the event can be improved. This will help you to continue to learn about how to make your event more inclusive and if you learn something really valuable, blog about it so other event organisers can also learn how to make their events more inclusive as well.

Wrapping up

Every neurodivergent individual is different

Today I hope you have all learnt more about many of the different kinds of neurodiversity and how we can embrace there strengths

And as we start to wrap up I wanted to re-emphasis the point I made at the beginning.

Every neurodivergent individual is going to be different and so are any support needs that they have.
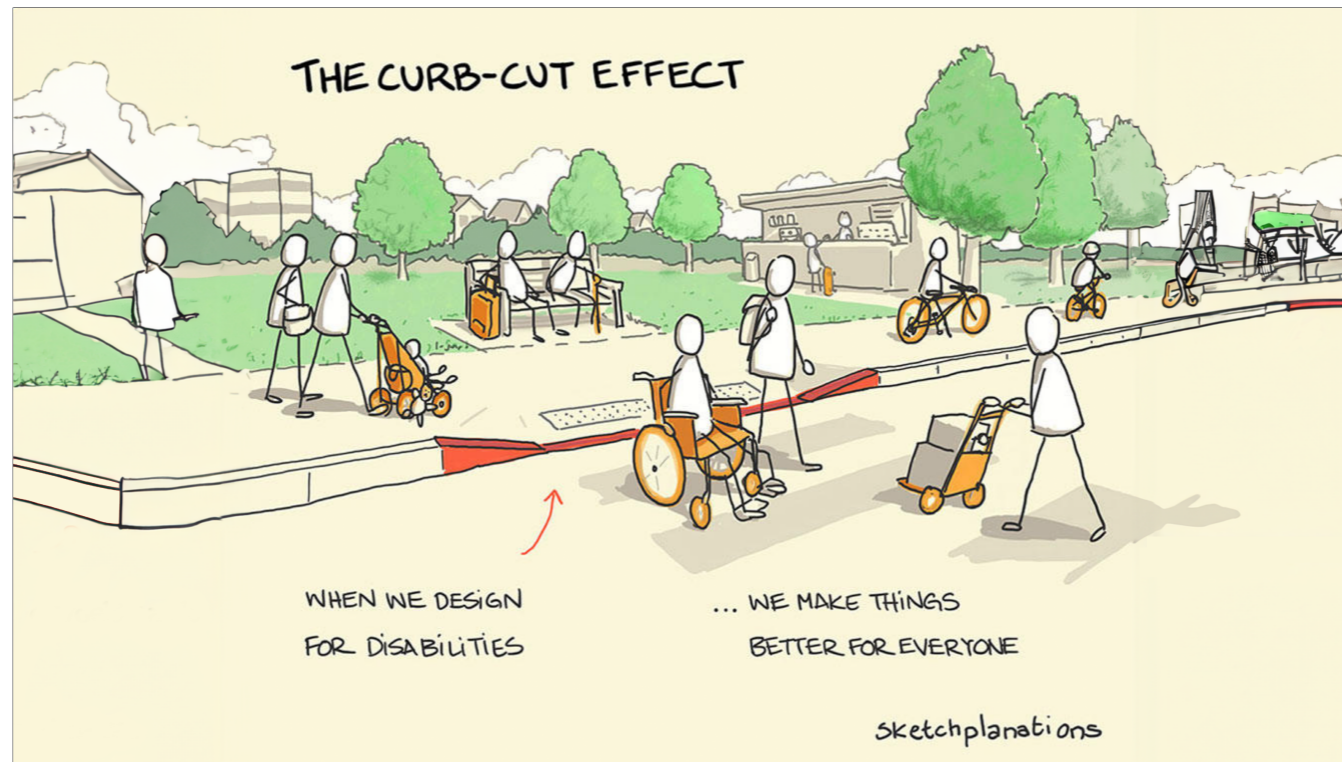
Through having empathy, we can help our colleagues be at their best

Through having empathy for our neurodivergent colleagues and the areas in which they might need our help, we can help them to play to their strengths

This will lead to our teams working in a more inclusive way

This will ultimately me our teams more inclusive

Want to learn more, further resources at:

www.jonathanfielding.com/ffconf

THE CURB-CUT EFFECT

WHEN WE DESIGN FOR DISABILITIES

... WE MAKE THINGS BETTER FOR EVERYONE

Sketchplanations

And finally before I hand the mic back to Remy I have one last thought to leave you with.

When you start to improve the way we organise our teams to be more accessible to those who are neurodivergent, we also improve them for everyone else.

There is a term for this, the curb-cut effect, coined after when we adapt our streets for those less physically abled we also improve them for everyone else.