

How Children Learn What can impact Learning? How can we best support them?

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Aims



- Develop an understanding of the key skills that support learning and development
- Have an understanding of how neurodiversity impacts learning
- Consider how to support all pupils to engage with and enjoy learning
- Provide an opportunity for questions and answers

Key skills for learning



Cognitive functions are the skills that we all use for the *process* of learning, reasoning and problem-solving.

Important for understanding *how* we learn rather than *what* we know.

There are many important cognitive skills that children draw upon in their learning, but some are particularly important 'core skills' which include:

- Perception
- Attention
- Memory
- Executive Functioning



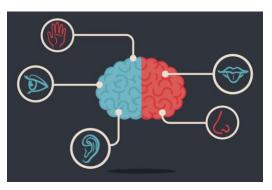
Perception



Perception refers to the *processing* of the information that we pick up in the environment around us through our senses – sights, sounds, tastes and touch.

Once this information is detected by the senses, it is processed within the brain in a way that allows us to interpret and make sense of what is going on around us.

One of the first cognitive skills that babies develop and these skills continue to mature throughout childhood. It's a key way in which infants learn about the world around them.



Perception

How does it relate to learning?

Visual perception – involved in reading, writing, movement and social interactions.

Auditory perception – involved in development of speech and language, reading.

Processing speed – refers to the amount of time it takes individuals to perceive, process and interpret sensory information. Important to be able to carry out learning activities fluently and automatically.







Attention

Attention refers to our ability to *filter* information within the environment so that we can choose to concentrate on relevant stimuli and ignore distractions.

Attention and listening skills develop in stages:

- *Fleeting attention* child might move quickly between different activities or from one thing that they hear, see, or smell to another thing.
- *Rigid attention* the child may concentrate on something so hard that they don't seem to hear anything else that goes on. You might talk to them but they do not respond. Adult help is needed to *switch their attention* between different activities.
- Flexible attention Children can listen and do two things at once the child may carry on with an activity but be able to listen to you and respond to your question at the same time.





Attention



How does it relate to learning?

- Attention allows us to select relevant aspects of the environment to focus on which is key to the formation of memories. If we don't attend to what the teacher is saying then it's not possible to commit that information to memory.
- Allows children and young people to ignore distractions so that they are able to finish tasks.
- Allows us to switch between different tasks e.g. if children are working on a maths problem but are given an instruction by the class teacher, they can switch their attention to process the instruction and then return to completing their classwork.



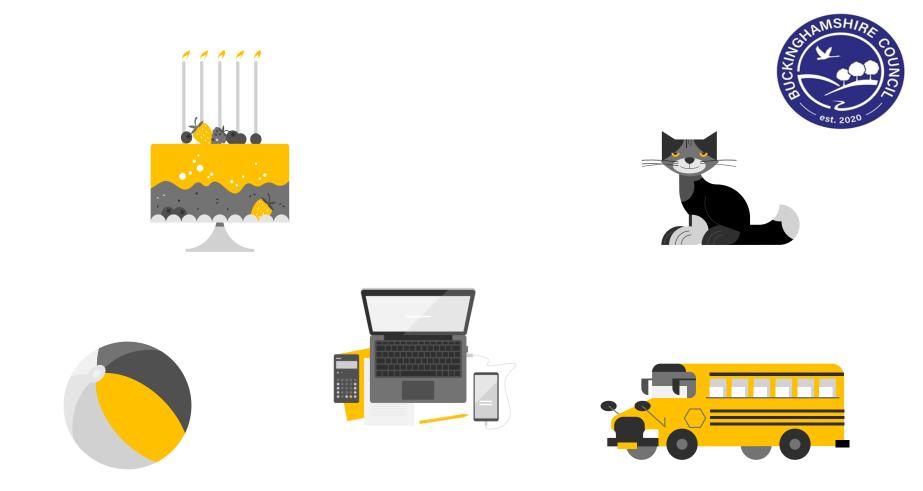












Which object has been removed?



Memory



Refers to our ability to *store*, *retain* and *retrieve* information.

Memory is all about *associations* – the brain processes something in the present moment (an idea, feeling, smell or image) and links it with similar experiences in the past.

The linking of experiences causes connections to form between synapses (brain cells). Changes that occur in the connections between cells are associated with learning and retaining new information.



Types of Memory

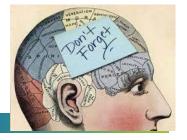


There are many different types of memory but the main categories include:

Short-term memory: Information we are currently thinking about. Usually we can hold between 5-9 items within our short term memory and if not rehearsed, this information will be lost within 15-30 seconds.

Working memory: The ability to hold information in your head and manipulate it. Important when working on solving a problem. E.g. (3x3) + (4x2) = ... or the task that you just completed.

Long-term memory: Refers to the continuing storage of information. E.g. Memory of your first date or your knowledge of the capital city of England.



Problem for you to solve:

Rachel, Linda and Eve were friends sitting in a circle on the grass. Rachel passed 3 chocolate chip cookies to the person in blue.

Who wore which colour?

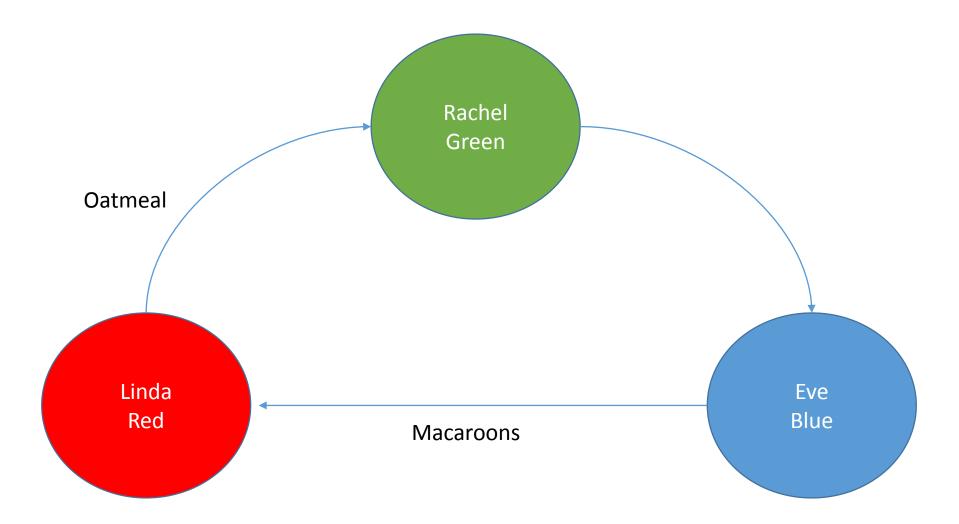
Eve passed 3 macaroons to the person who passed her cookies to the person wearing green.

Each person passed 3 cookies to the friend on her left.

Rachel, Linda and Eve were dressed in red, blue, and green, but not necessarily in that order.

The person who wore green did not get a macaroon.

The person wearing red passed along 3 oatmeal cookies.



Executive Functions



The term '*Executive functions*' refer to a group of important cognitive skills that are key in helping us plan and manage our behaviour and emotional responses.

They are behaviours that allow us to interact with the world in a goal-directed manner and are called upon when routine behaviours or automatic responses are not sufficient.

Executive functions can sometimes be thought to include three key areas of functioning:

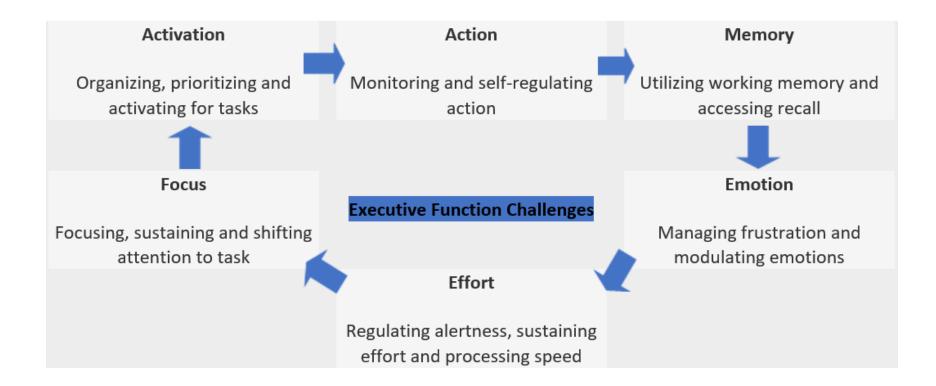
Inhibitory control – the ability to stop an inappropriate impulsive response and ignore distractions.

Working memory– the ability to maintain information in mind and manipulate it.

Shifting or switching – the ability to switch between tasks or view something from a different perspective.

Executive Functions







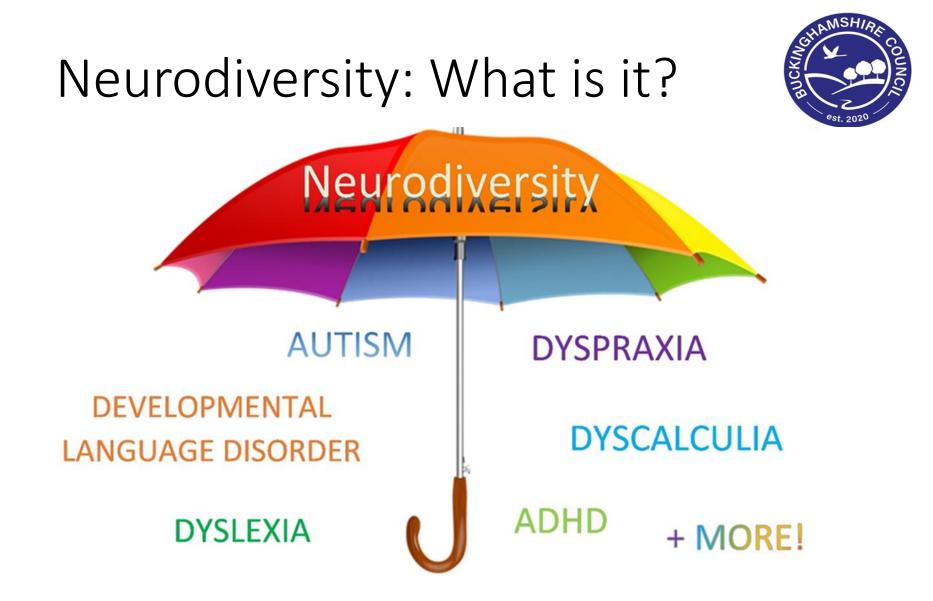




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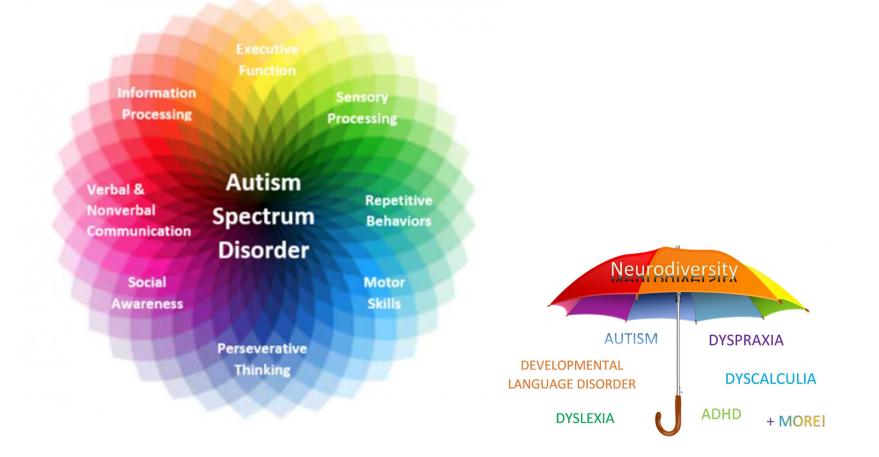
TAKE A 5-MINUTE BREAK





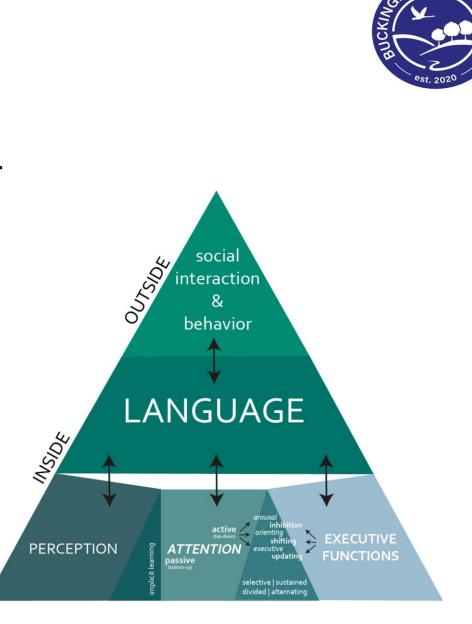
Autism/ASD/ASC/Asperger's





Specific Language Impairment (SLI), Developmental Language Disorder (DLD), Developmental Dysphasia





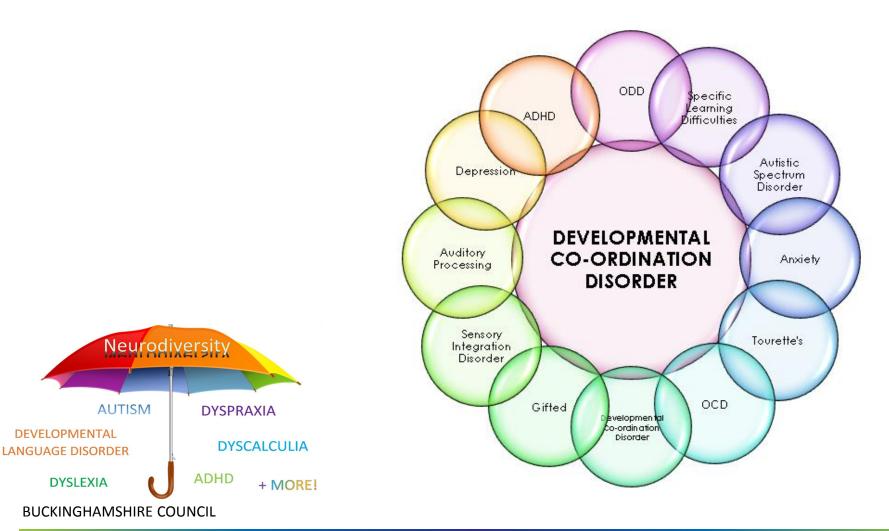
Dyslexia, Auditory Processing, Dysgraphia





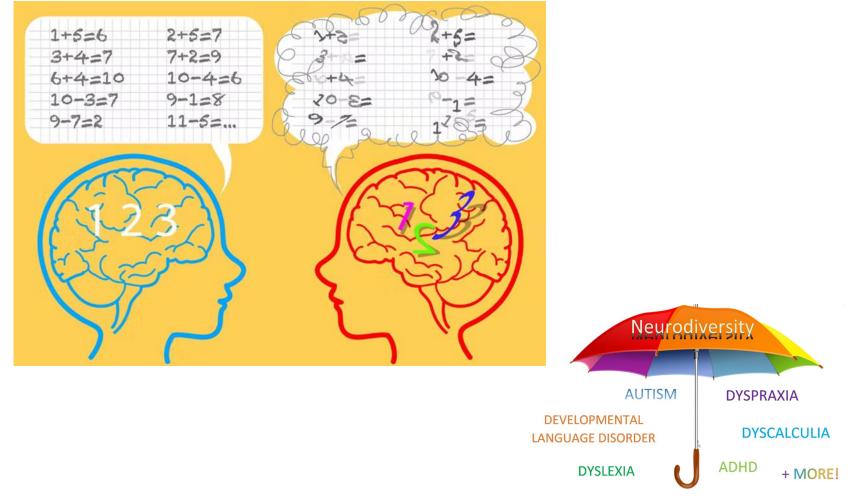
Dyspraxia, Developmental Coordination Disorder (DCD)

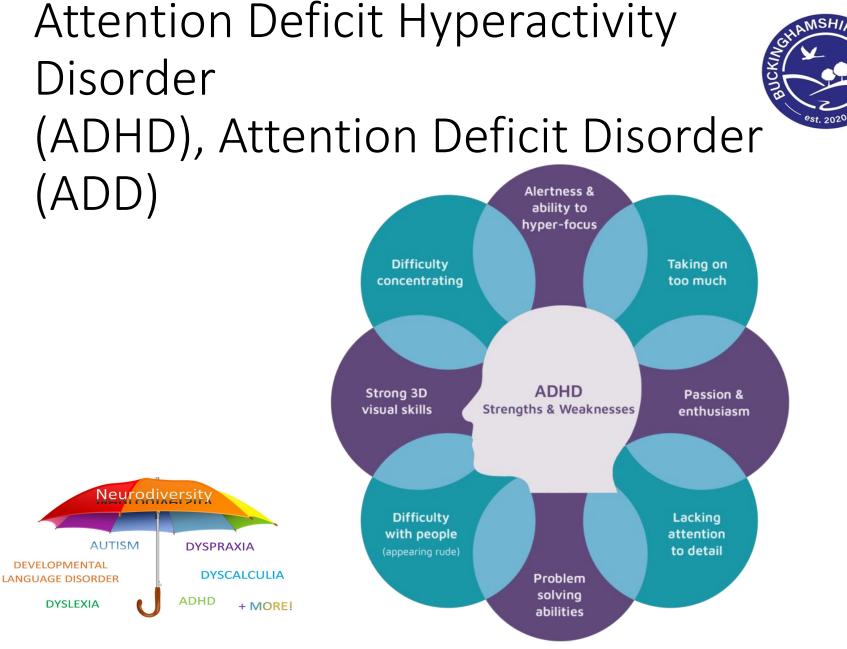




Dyscalculia









Neurodiversity and Learning

Neurodiversity can impact learning skills:



- Attention e.g. being able to maintain focus on a set task
- Memory e.g. different types of information being manipulated by our working memory
- Executive Functioning e.g. being able to plan and prioritise
- Perception e.g. due to anxiety being triggered



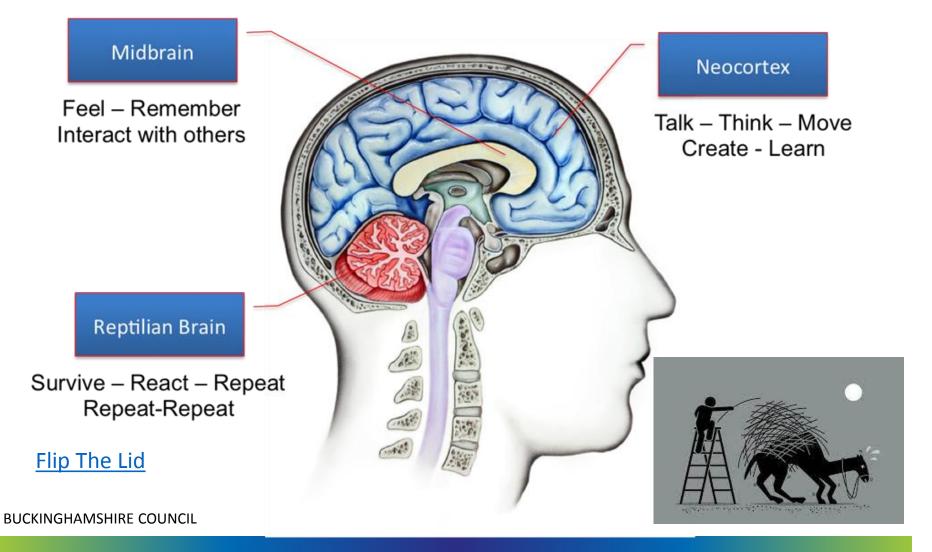
Neurodiversity and Anxiety

- Is a normal mood state experienced by everyone at times
- It helps motivate us in response to a perceived threat
- <u>Symptoms and Feelings</u>:
- 1. Emotional e.g. difficulty concentrating/making decision
- 2. Physical e.g. dry mouth
- 3. Behavioural e.g. biting nails/sleeping patterns
- 4. Health e.g. back pain
- 5. Organisational e.g. absenteeism





Emotional Hijack: Thinking versus Feeling









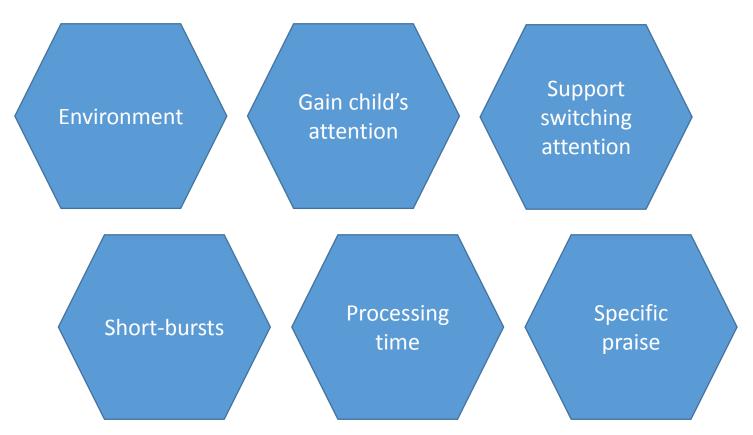
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TAKE A 5-MINUTE BREAK



Strategies to support attention



Strategies to support memory



- Attach meaning to information that they need to recall. For example, linking in a new concept with something that the child enjoys or already knows.
- Repetition, repetition, repetition...
- Use *direct instruction* and *errorless learning* techniques.
- Encourage children to use visuals to help support their memory.
- Prioritise sleep plays a key role in learning and forming new memories.



Strategies to support executive functioning



- Games!
- Help children to become aware of their own goals/plans and what they want to achieve.
- Describe what you see them trying to do and encourage them to talk about how they are doing things and their successes.
- Discuss with children different ways that they could approach a task to encourage cognitive flexibility.



Strategies to support overcoming anxiety





- Well understood, consistent boundaries and clear expectations
- Modell how to find learning points when making mistakes
- Recognise and name feelings
- Validate their emotional state
- Support problemsolving

Strategies to support overcoming anxiety











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TAKE A 5-MINUTE BREAK



Q&A



Resources



- <u>rebuild-and-recover-anxiety-tools-for-parents.pdf</u> (<u>mentallyhealthyschools.org.uk</u>) – parent pack for supporting anxiety from the Anna Freud Centre
- <u>Supporting A Child With Anxiety | Tips & Advice |</u> <u>Young Minds</u>

Reference List



- Hartley, S.L. & Sikora, D.M. (2009). Sex differences in autism spectrum disorder: An examination of developmental functioning, autistic symptoms and coexisting behaviour problems in toddlers. *Journal of Autism and Developmental Disorders*, 39(12), 1715
- Holtmann, M., Bolte, S. & Pouska, F. (2007). Autism spectrum disorders: Sex differences in autistic behaviour domains and coexisting psychopathology. *Developmental Medicine and Child Neurology*, 49(5), 361-366
- May, T., Cornish, K.& Rinehart, N. (2014). Does gender matter? A one year follow up of autistic, attention and anxiety symptoms in high functioning children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 44(5), 1077-1086