Including Language Learners with ADHD, Autism, and Dyslexia

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NEURODIVERGENT LEARNING DIFFERENCES

Including Language Learners with ADHD, Autism, and Dyslexia

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Neurodivergence
(Weber et al 2022, Bertilsdotter Rosqvist et al 2022)

- Neurodivergence refers to a divergence in neurological function which is observed as atypical but not abnormal.

- It is also referenced as neurodiversity.

- Recognition of neurodivergence helps teachers to better understand and accommodate different ways of learning in the class.

"Different not Less"
Present Learning Differences to the Entire Class

- It is important that all class participants know that learning differences exist among their classmates and are valued by you.

- Some students may come from backgrounds where these types of differences are a source of shame, so it helps to immediately counter this at the outset of a new course.

- The following slides: 4 – 9 are presented and discussed with my classes at the beginning of every new course. Students are free to also suggest additional learning differences.
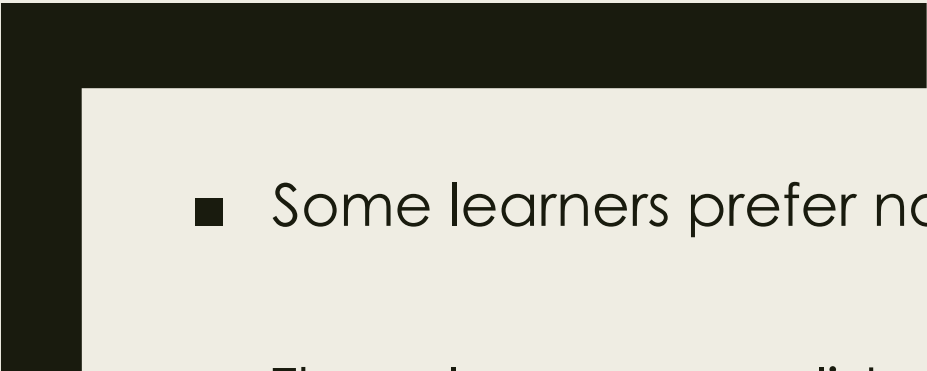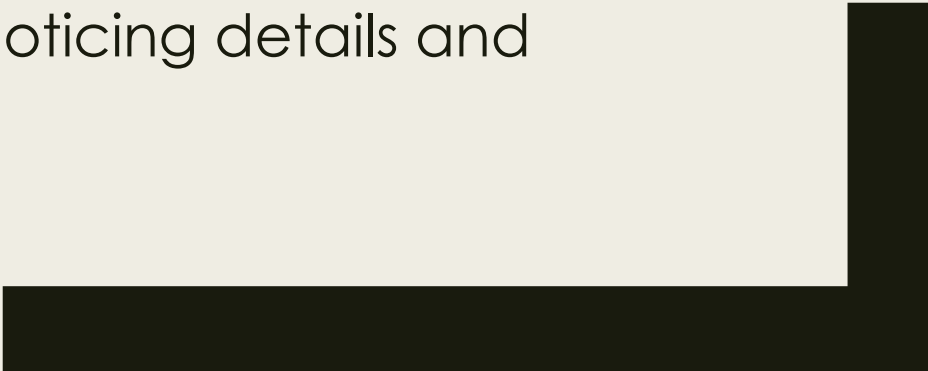
- ■ Some learners can have a difficult time reading, and this is not always because of language.

- ■ Certain letters, fonts and colors can make reading too difficult.

- ■ These learners can do well with pictures and other kinds of visuals.

- ■ These learners can also learn very well by doing something instead of reading about it.

Different ways of learning

Different ways of learning

- Some learners do not learn well when they must focus on one thing for a long time.

- These learners might get distracted quickly, but they can also be very good at doing multiple tasks at one time.

- These learners may not pay attention to time or homework deadlines, but they can sometimes get a lot of work done in a short amount of time.

- Some learners prefer not to discuss topics in a group.

- These learners can listen and think a lot about what others are saying, but they may choose not to speak. It does not mean they are not participating.

- These learners can also be very good at noticing details and patterns that other people do not notice.

Different ways of learning

Different ways of learning

- Some learners might move repetitively, for example :

- tapping feet or fingers

- moving legs

- rocking back and forth

- This can help them calm down if necessary and process information.

Different ways of learning

- Some learners might speak a lot when they have many ideas in their mind.

- They might speak for a long time about something that interests them, even when others want to speak.

- This does not mean they are rude or seeking attention for themselves.

Respect learning differences in class

- Students who learn differently add to the diversity of a class.

- There is more than one way to be a successful learner in class.

Note to teachers:

- It is not necessary to label these learning differences using diagnostic language when presenting them to students.

- The remaining slides are for teaching faculty, teaching assistants, and administrative staff.

Neurodivergent Learning Differences

- **Dyslexia, Dysgraphia, Dyscalculia**

- **Attention Deficit (Hyperactive) Disorder**

- **Autism Spectrum Disorder**

Strengths of Dyslexia
(Eide & Eide, 2011)

- **Material Reasoning:**

three-dimensional awareness of physical and material environment– shapes, sizes, motion, position, orientation and how these interact

Strengths in Dyslexia
(Eide & Eide, 2011)

Interconnected Reasoning:

- notice how objects, ideas, events or experiences are connected by similarity

- understand phenomena from varied perspectives

- unite varied information about a particular phenomenon into a bigger picture context

Strengths in Dyslexia
(Eide & Eide, 2011)

Narrative Reasoning:

- connect pieces of personal experience using episodic or personal memory

- use the connection to recall and explain past, present and stimulate future possibilities

- understand and test important concepts

Strengths in Dyslexia
(Eide & Eide, 2011)

Dynamic Reasoning:

- **make accurate predictions using episodic simulation** (produce a mental image by recombining past experiences to simulate an event/situation)

- **think about past or future states with components that are ambiguous and variable** (unclear and often changing)

- **create working hypotheses when precise answers cannot be found**

Strengths in Dyslexia
(Eide & Eide, 2011)

REMEMBER:

Material Reasoning
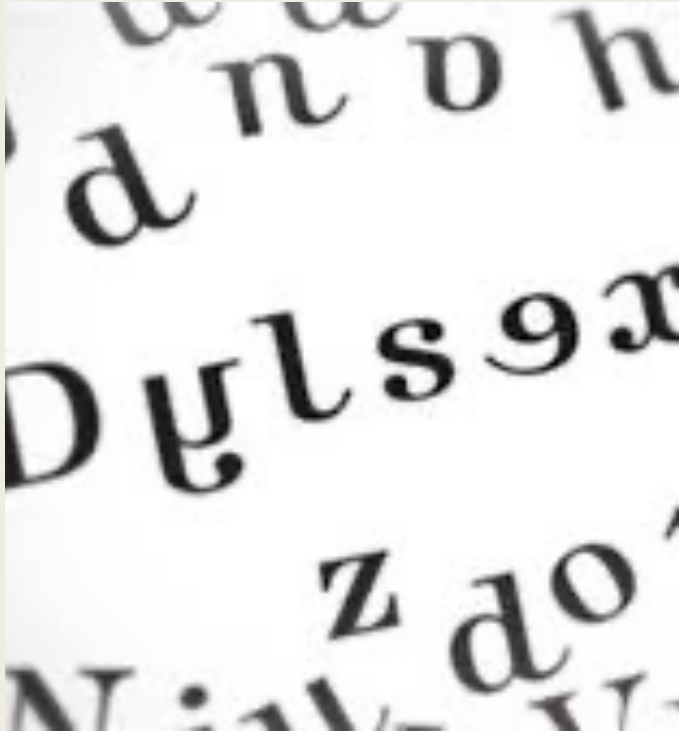
Interconnected Reasoning

Narrative Reasoning
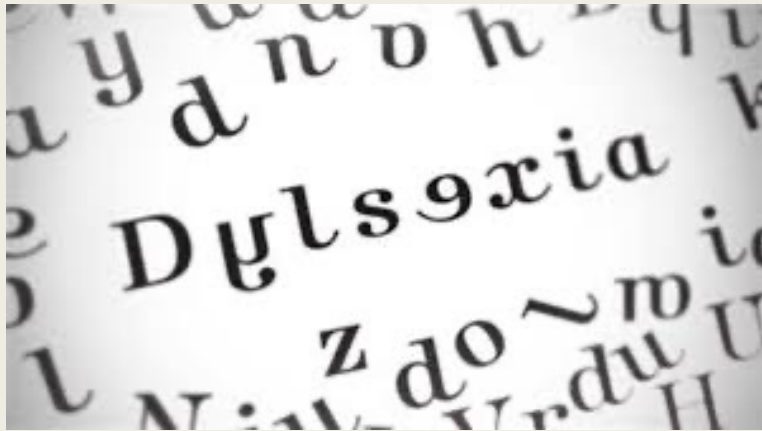
Dynamic Reasoning

= MIND SKILLS

Challenges in dyslexia

- Sequential processes

- Long forms to fill out

- Unfamiliar fonts and italics

Challenges in dyslexia

- Words used out of context

- Capitalization & punctuation (inconsistent phonetic spelling)

- Reading aloud

- Recall of conversations or sequence of events

Dysgraphia
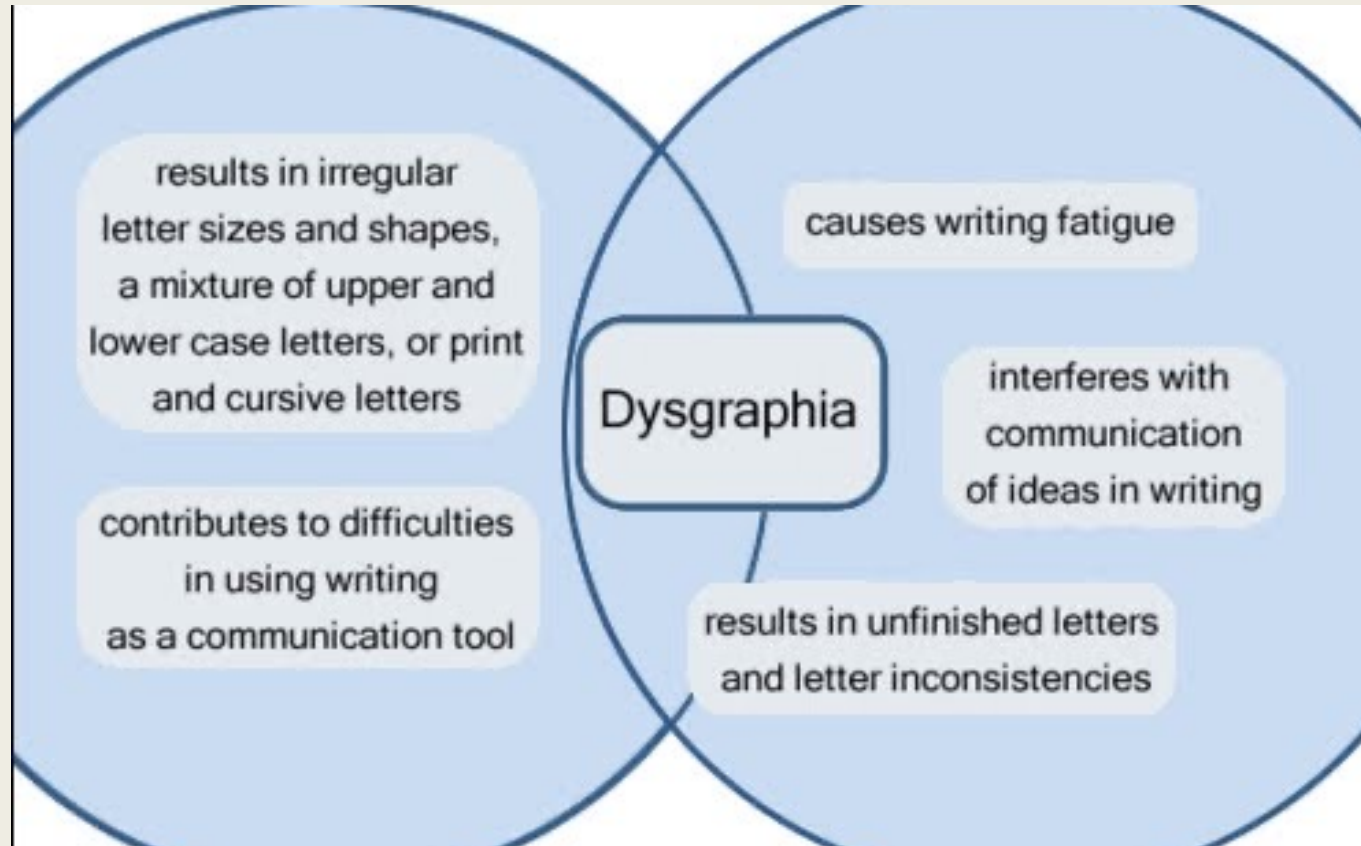
results in irregular letter sizes and shapes, a mixture of upper and lower case letters, or print and cursive letters

contributes to difficulties in using writing as a communication tool

Dysgraphia

causes writing fatigue

interferes with communication of ideas in writing

results in unfinished letters and letter inconsistencies
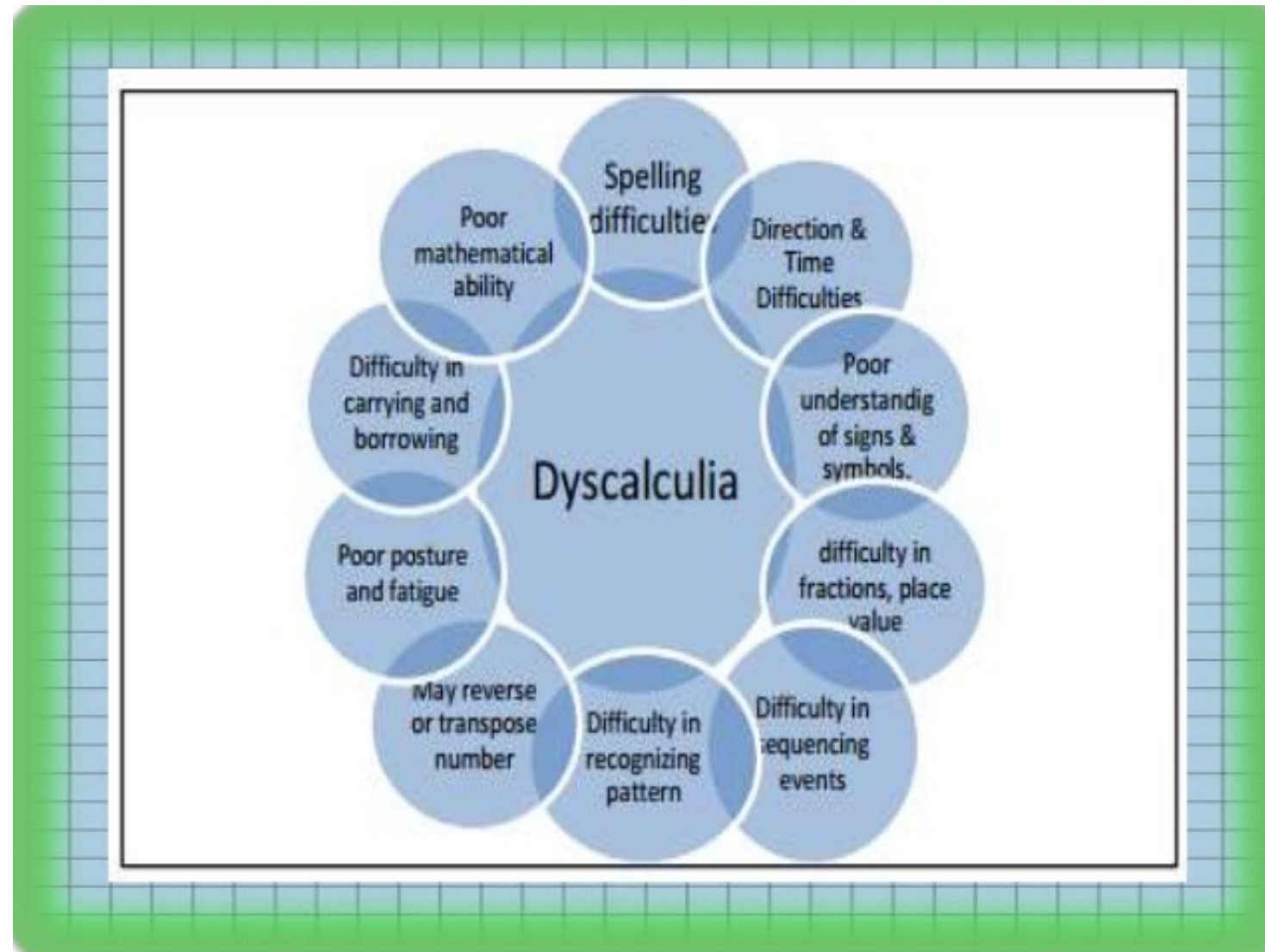
ATTENTION DEFICIT (HYPERACTIVE) DISORDER

Learners with ADHD may:

- be repeatedly late

- misread instructions

- have very messy notes

- neglect details

Learners with ADHD may

Learn kinesthetically

- move / pace / "stim"

Ask a lot of questions

- even 5 minutes after you've already answered those same questions

Stare a lot

- look at something on the board, wall or table

Learners with ADHD may:

- Stare blankly above your head

- Interrupt a lot

- Forget to stop talking even after they've told you they will

- Appear not to care

Learners with ADHD may:

■ Gravitate toward or create chaotic situation for forced prioritization

– a means of coping with or addressing a deficiency –

"everything has to be an emergency"

■ Not understand how long a task will take – perceive that they have more time than they really have

Learners with ADHD may:

- Struggle to regulate focus even though they can focus

- Procrastinate by waiting for adrenaline to come before they begin an assignment

- Have good reflexes in performance-based tasks; not need to think before reacting

Dyslexia and ADHD can often co-occur with Autism.
(Russel & Pavelka, 2013)

■ It not uncommon for one diagnosis to overshadow another. Often, autism is undiagnosed in individuals who have an ADHD and/or dyslexia diagnosis.

■ It is also possible that a learner may view one more unfavorably than the other and refuse to disclose.

Many autistic learners may:

- Demonstrate strong attention to detail

- Have a very good memory

- Have exceptionally high intelligence and possess knowledge on very specific topics of interest

- Be very concerned with justice and fairness, as well as logical consistency

Autistic learners may also:

- Avoid eye contact or stare

- Think or interpret literally and not abstractly

- *Speak and/or write using stream of consciousness and no organization

- Feel overwhelmed by written instructions or prompts and overanalyze them

Autistic learners may:

- Use fixed, rigid patterns of learning or task completion

- Criticize or question others for lack of attention to details or fixed patterns

- Become stressed and resistant when routine is changed

Some sensory issues include:

- Bright or flickering lights / sudden noises

- Distracting sounds: pencils, papers, chairs moving

- Movement in peripheral

More sensory issues

- Multiple voices speaking at once in the room

- Temperature change

- Physical touch (may seek or avoid touch)

"Stimming" behaviors help to cope with anxiety caused by the environment or situation. These can include:

- rocking

- excessively moving or bouncing legs or feet

- flapping arms

- pacing

- fidgeting excessively with object or chewing it

- playing with a "stim toy"

When discussing a topic, some autistic learners may:

- Not understand or appreciate humor

- Speak very directly and be misunderstood as rude

- Stim when anxious or put on the spot

- Mistake smiles, praise or attention for a special kind of interest

Some autistic learners may:

- Mimic peers' behavior, gestures and speech

- Speak or write on and on about their special interests

- Struggle to regulate emotion and articulate feelings or concerns

- React strongly to perceived injustice, or appear to not care about others

Some autistic learners may:

- Try to dominate in group tasks

- Interrupt frequently

- Become impatient with ideas or instructions that they perceive to be senseless or lacking creativity

- Have a public meltdown and then become withdrawn

Hyperlexia- very advanced reading skills beyond a person's age/education level

- **Sometimes associated with autism as a "savant skill"**

- **Ability to sound out and decode words far exceeds reading comprehension skill**

- **Exceptional vocabulary**

- **Ability to complete a task or assessment very quickly**

- **Miss critical ideas and inferences needed for writing or presenting**

ASD + ADHD

ASD

ADHD

WM= working memory

ASD circle:
Attention
Monitoring
WM
Fluency
Concept formation
Preparatory processing

Overlap:
Flexibility
Planning
Response inhibition

ADHD circle:
Attention
Monitoring
WM
Fluency
Concept formation
Preparatory processing
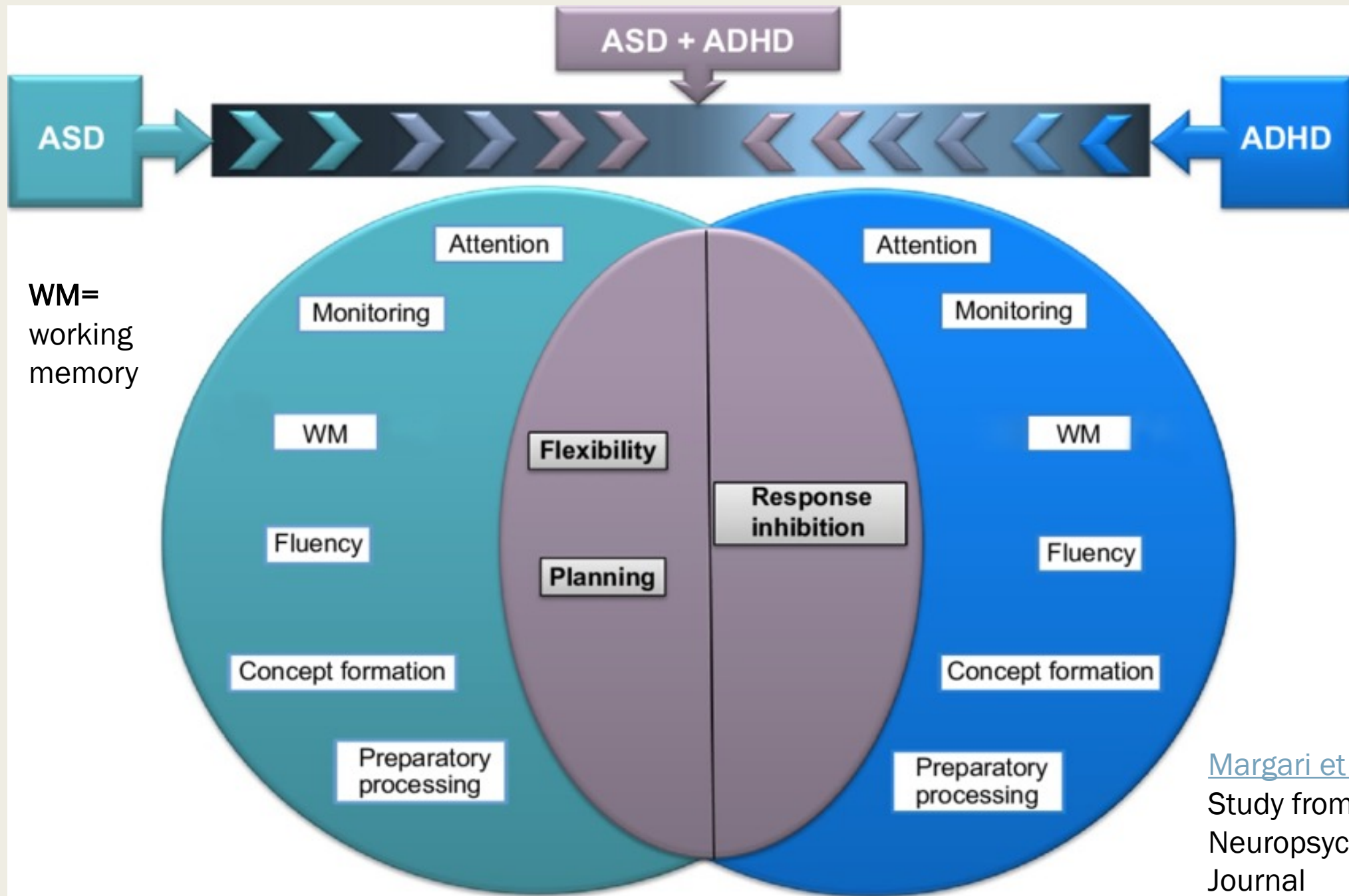
Margari et al, 2016
Study from Neuropsychiatric Journal

**Routines: ADHD vs Autism

- Routines are a **very important** part of autism.

- In ADHD, routines can lead to boredom, which then can lead to extreme stress. Changing routines, even suddenly, can help to offset the boredom in ADHD.

- In autism, changing routines, especially suddenly, can cause severe emotional and psychological stress.

- If a person has both ADHD and autism, it is possible that ADHD can help them when a routine is suddenly changed. It is also possible that the autism can help them manage routines better.

UNIVERSAL DESIGN FOR LEARNING - UDL

- UDL is a method of instruction that considers different learning and language abilities in an audience, class, or workplace.

- UDL usually relies on an awareness of neurodiversity.

- UDL aims to be as inclusive as possible, but it is not a perfect solution for avoiding exclusion.
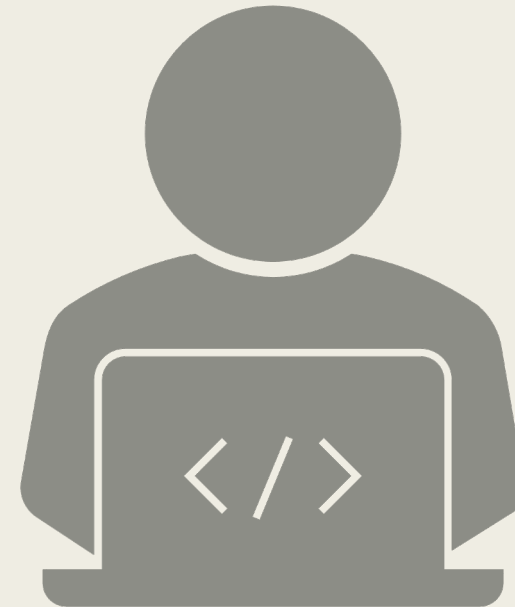
Access is key to universal design for learning!

Universal design means that the **entire class** is offered the same access options.

The access options can be built into the syllabus, materials, lectures, and assessments with the understanding that there will be neurodivergent learners in the course.

This removes the necessity for formal documentation of a diagnosis, which will not always be accessible.

This can also allow learners to participate more comfortably without disclosing their diagnosis.

Tips for syllabi

- Use uncrowded fonts, such as Century Gothic, Lucida Console, Calibiri, Arial (etc.) Avoid italics.

- A free open dyslexic font can also be downloaded in multiple browsers.

- Provide the syllabus as an accessible Word document or pdf compatible with screen readers.

Documents and Slides

- **Only use images that do not obscure text.**

- **Use sharp color contrasts with dark text on light backgrounds.**

- **Where possible, use concise bullet points.**

- **Be aware that animation effects in slides can trigger sensory integration problems** (Prezi can be very disorienting for some viewers).

Multiple assessment options:

- The entire class can have multiple options for demonstrating learning.

- Not all assessments need to be traditional papers, timed exams, or presentations, though these can be included as options.

- Other options can include research posters, student-led class discussions with clear assessment criteria, or a combination of two assessment options (e. g. a paper and student-led discussion).

- Provide examples of these assignments on the Learning Management System.

Learning Management Systems (LMS)
Canvas, Blackboard, Moodle (etc)

- Provide a statement of diversity that acknowledges learning differences without labeling them.

- Provide a survey of learning preferences and encourage students to complete it during the first several days of the course.

- Provide clear contact information for the university's disability office.

- Post relevant materials to your LMS at least one week before each meeting if you don't already post your materials at the beginning of the course.

A Few Useful Links

- 3 Steps to Creating an Accessible PDF file (without Adobe Acrobat): https://www.framingham.edu/Assets/uploads/about-fsu/accessibility/_documents/3-steps-accessible-pdf.pdf

- Sample Learning Style Questionnaire from University of California, Merced: https://learning.ucmerced.edu/sites/learning.ucmerced.edu/files/page/documents/learningstylequestionnaire.pdf

- Creating Accessible PowerPoint Presentations: https://www.gov.wales/how-create-accessible-powerpoint-presentations

- Open Dyslexic Font (free download): https://opendyslexic.org/download

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Russell, G., & Pavelka, Z. (2013). Co-occurrence of developmental disorders: children who share symptoms of autism, dyslexia and attention deficit hyperactivity disorder. In *Recent advances in autism spectrum disorders. 1* (pp. 361-386). INTECH.

Weber, C., Krieger, B., Häne, E., Yarker, J., & McDowall, A. (2022). Physical workplace adjustments to support neurodivergent workers: A systematic review. *Applied Psychology*

Followup Tasks:

- The following three vignettes are based on real neurodivergent students in a university setting.

- In breakout rooms, discuss a possible pedagogical strategy for supporting the student assigned to your group.

- Consider how the entire class could benefit from this strategy instead of the single student.

Hannah

- Hannah struggles with in-person attendance in class due to sensory overload in this particular classroom and her anxiety over what to say when she is asked to speak.

- She finds herself tapping her feet loudly and repetitively during these situations. Her classmates and instructor think she is showing her impatience, so she tries very hard to stay still… but sometimes she cannot.

- Though she likes the topic, Hannah dreads attending this class and tries to prepare a script for what to say if she is ever asked to speak or give her view. It helps sometimes, but other times, it makes her appear and feel more awkward and anxious.

Stefan

- Stefan is excited to start a new task that his professor has assigned because the topic interests him. He becomes hyper-focused when it is new and interesting.

- Later, Stefan becomes anxious when he is reminded that there is a deadline for completing the assignment. He has already become distracted by other expectations and this assignment has lost its novelty.

- He waits until the day before the assignment is due, and stays up all night to complete it.

- He receives a low score for poor quality and not following the instructions, which demoralizes him and makes him want to drop the class, even though it is too late.

Jae Seun

- Jae Seun struggles with following written instructions and directions.

- He also struggles to accurately copy information such as phone numbers, email addresses, websites, and notes on the board.

- When he receives and writes down information, he must often try multiple combinations of numbers or letters. Often, none of his combinations will be correct.

- He prefers to keep trying different combinations rather than to ask for assistance from the lecturer or his classmates.