Early behavioral predictors of co-occurring ADHD in autistic youth

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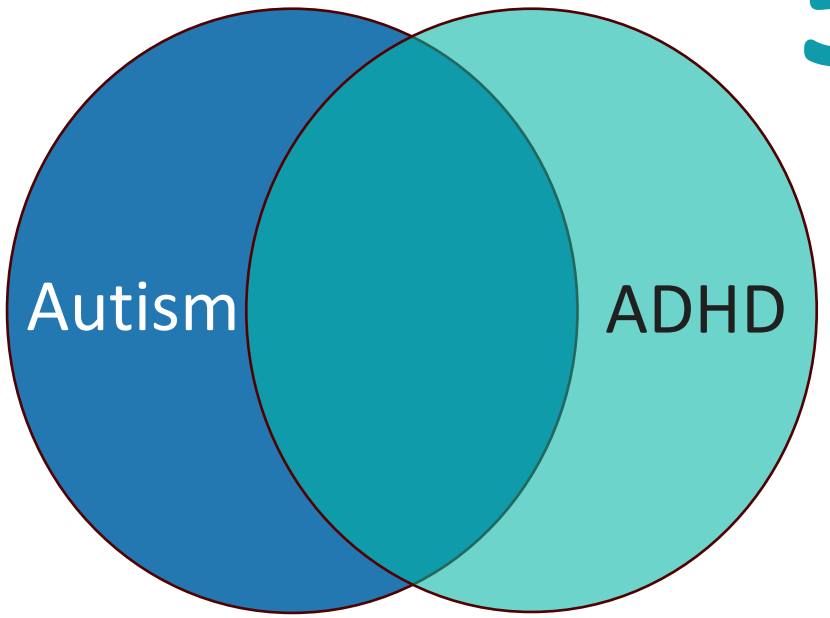
High Co-Occurrence of Autism and ADHD



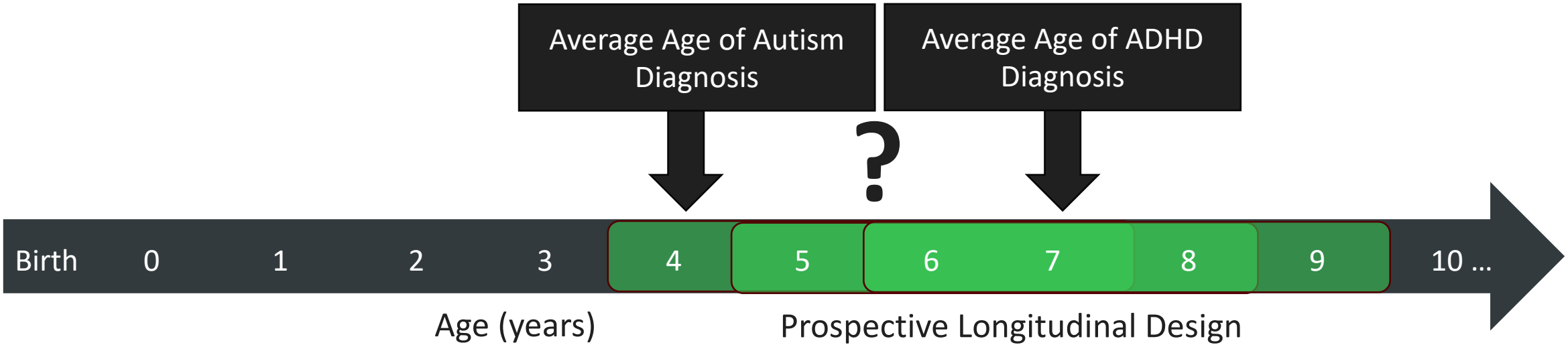
50% of autistic individuals present with elevated features of ADHD

Which can lead to difficulties with:

- Inhibitory control, attention, & working memory
- Externalizing behaviors
- Social skills & daily living skills

Berenguer-Forner et al., 2015; Carta et al., 2020; Grzadzinski et al., 2016; Lai et al., 2019; Miller et al., 2023; Rao & Landa, 2014

Which autistic children will vs. will not develop ADHD?

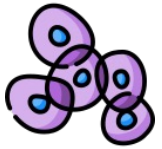


- University of Wisconsin Longitudinal Imaging and Neurogenetics in Kids Study (UW LINK)
  Data collected at three time points, each one year apart, beginning at the age of 4.0-7.9 years


Behavioral features

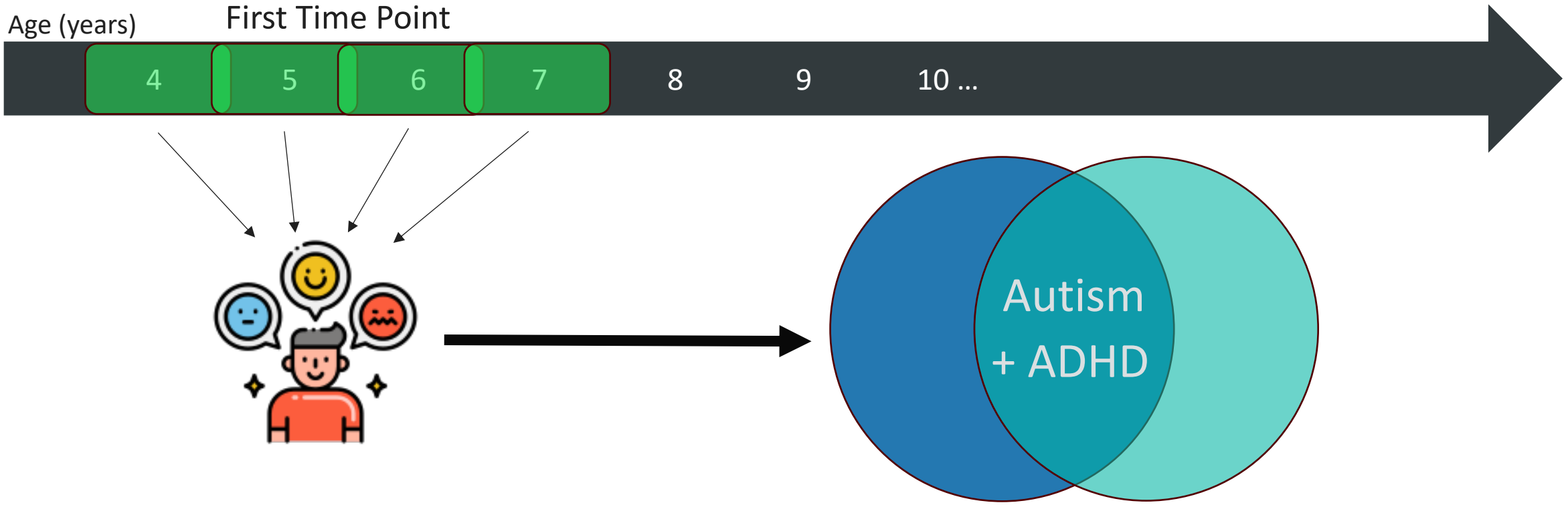

Brain structure & microstructure


Genetics


Cellular & molecular information (IPSC's)


Retro- & prospective treatment

What behavioral features **distinguish** autistic children with and without **co-occurring ADHD**?

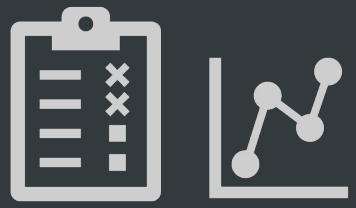


Methods

Participants

- 33 autistic youth (Aut)
- 42 autistic youth with ADHD (Aut+ADHD)
  - KSADS utilized to diagnose ADHD
- 4.18-7.99 years-old

Population-Representative Sample
32% female
31% had an IQ below 70 (DAS II)



Behavioral Measures & Analysis

- Autism features (SRS-2 & SCQ) and repetitive behaviors (RBS-R)
- Executive functioning (BRIEF-2)
- Externalizing, internalizing behaviors, and anxiety (CBCL)
- Sleep patterns (CSHQ)

- Independent samples t-tests

Autistic youth with ADHD showed pattern of specific differences in autism measures.

Medium to large increase in autism features on the SRS-2, $p < .001$, $d = -0.74$.

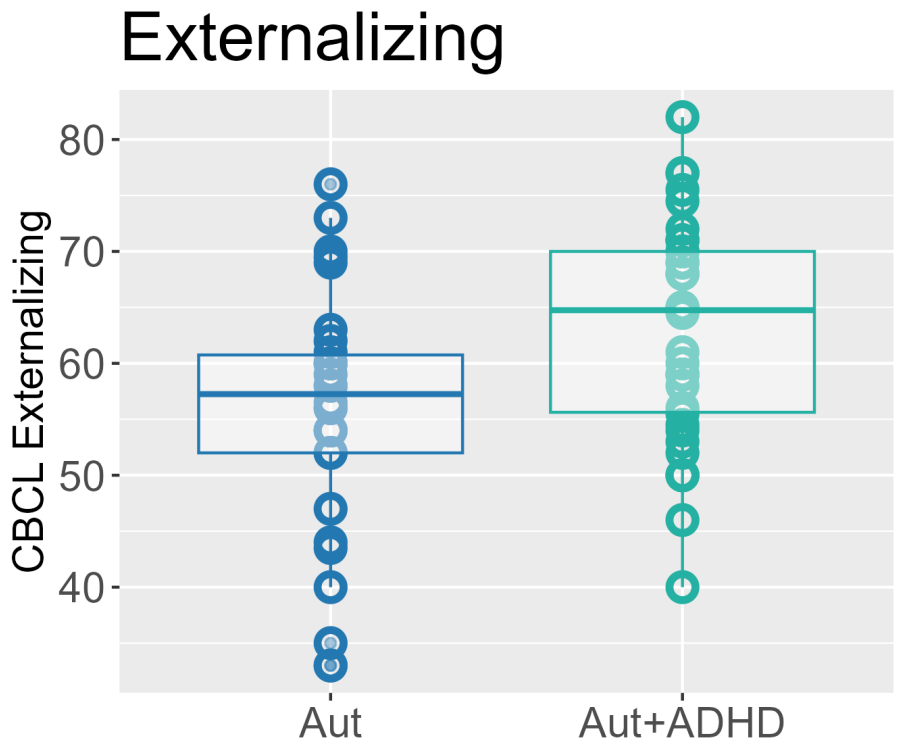
But no differences in autism features on the SCQ (considers retrospective information) nor in repetitive behaviors

✖ Social Communication (SCQ)

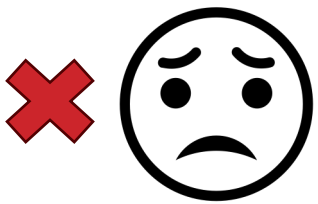
✖ Repetitive behaviors (RBS-R)

Autistic youth with ADHD showed increased externalizing behaviors.

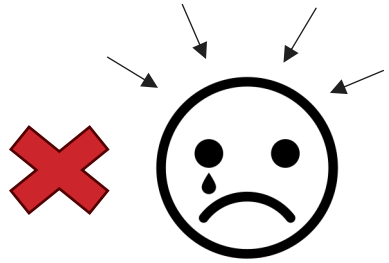
Medium to large increase in externalizing behaviors (CBCL), $p < .01$, $d = -0.74$.



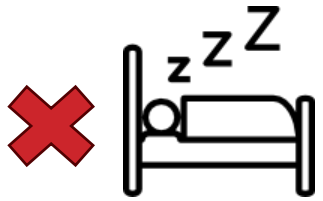
But no differences in:



Anxiety (CBCL)



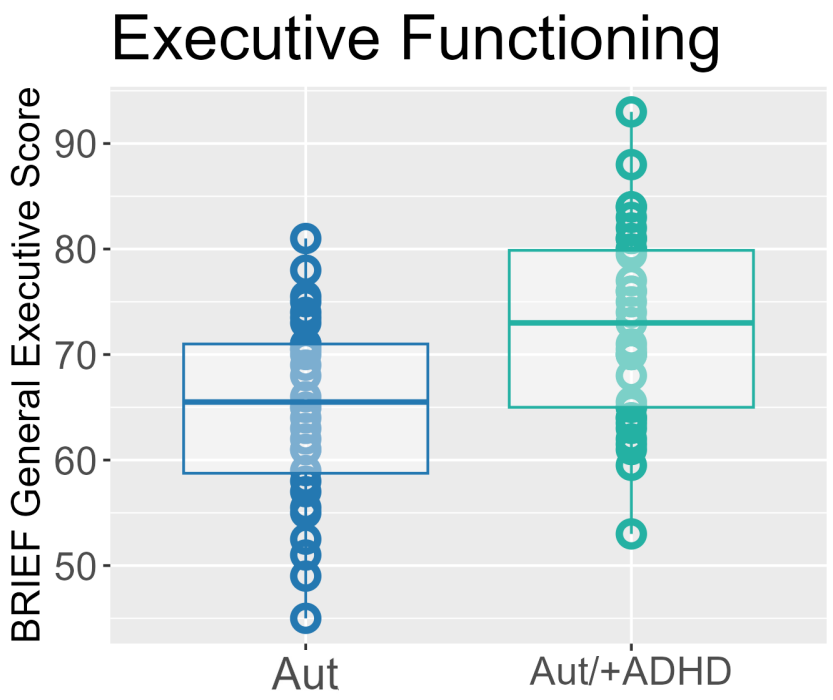
Internalizing Behaviors (CBCL)



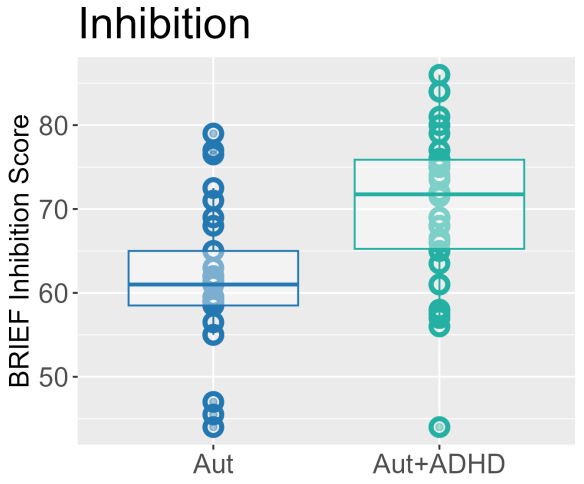
Sleep patterns (CSHQ)

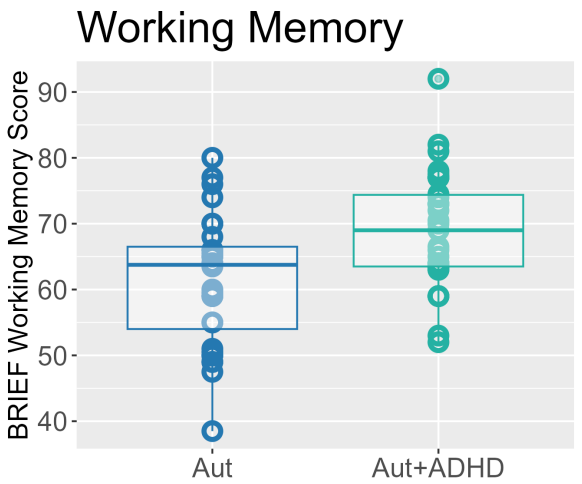
Autistic youth with ADHD showed increased difficulties with executive functions.

Large increase in difficulties with global executive functioning, p <.001, d = -0.86.



Large increase in difficulties with inhibition (p < .001, d = -1.05) and working memory (p < .001, d = -0.88).



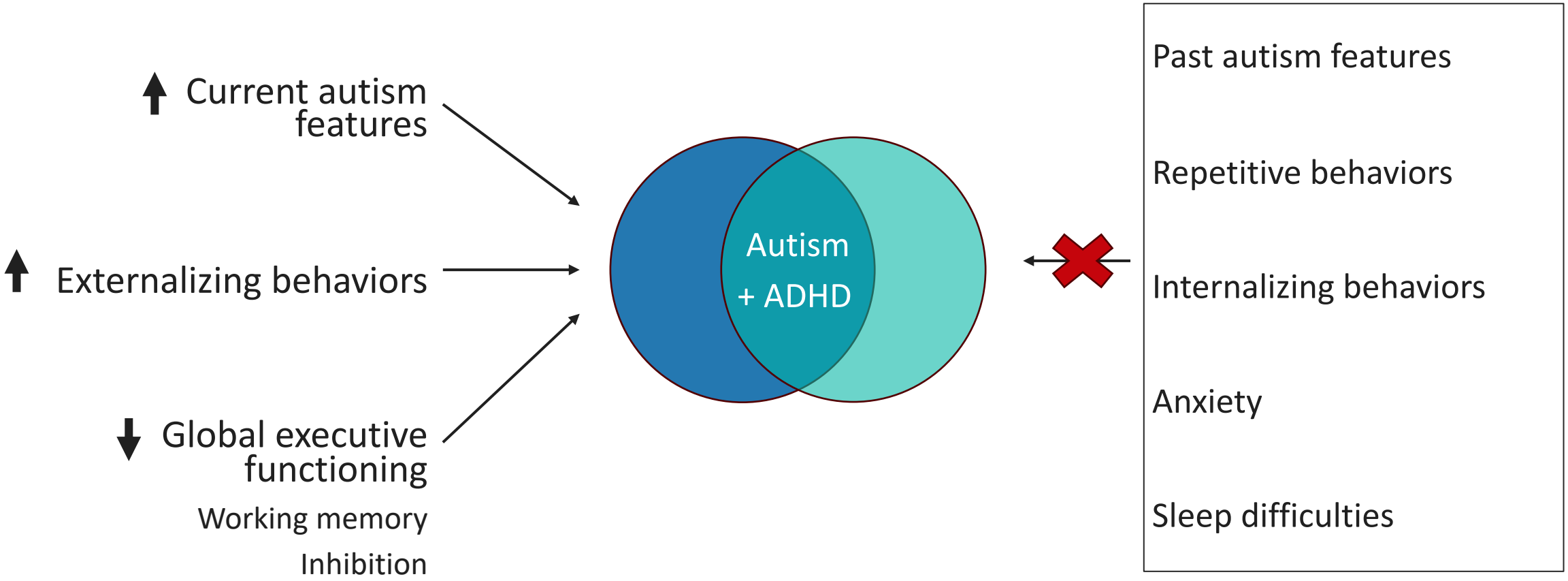


Medium increase in difficulties with: Initiation, planning/organizing, and organization of materials

No differences in: Emotional control, shifting, self-monitoring, and task-monitoring

Higher BRIEF scores = lower executive function

In summary, at time point one:



Conclusions

Some aspects of autism features, such as **social responsiveness**, may be more prevalent in autistic youth with ADHD, and these **differences may not appear until the age of four to seven years-old.**

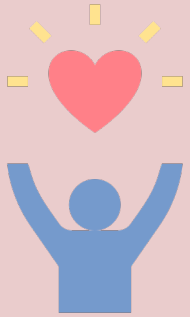
Early executive functioning and externalizing behavior challenges in autistic youth with ADHD **can inform earlier ADHD co-diagnosis** and help OT practitioners provide **more supports** for working memory and inhibition earlier on.

Anxiety symptoms and sleep difficulties may not emerge until later in development and may not serve as early differentiators of an ADHD diagnosis.

Avni et al., 2018; Carta et al., 2020; Dellapiazza et al., 2021; Lecavalier et al., 2019; Martinez-Cayuelas et al., 2024; Petti et al., 2023

Implications & Future Directions

Precise intervention targeting inhibition, working memory, and externalizing behavior may best support autistic youth with co-occurring ADHD



Early intervention for these behaviors is critical for minimizing the potential developmental impact of the group differences observed at this age

Longitudinal research and early intervention can help us understand how these features develop over time and how early intervention shapes later trajectories

Thank you!

Our Team

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