Neurodivergence?

Don't wait!

"A stitch in time saves nine"
A timeous recognition saves a life

Presented by
Nicholas (Nick) Davies, PhD, C.Psychol(UK)
Neurodiversity Centre
nickccdavies@gmail.com / nick@neurodiversitycentre.co.za

NEURODIVERSITY CENTRE

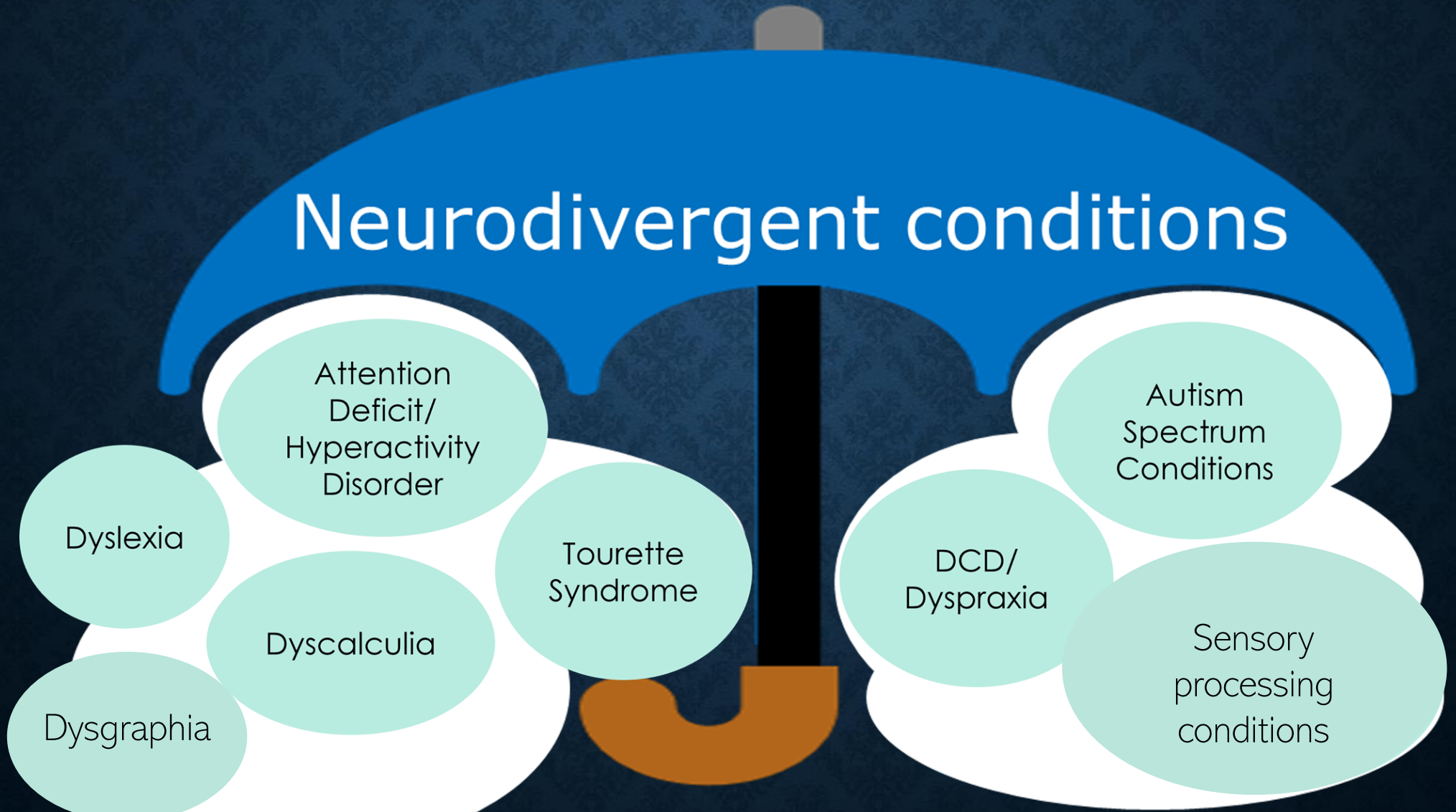
Executive Summary

Neurodevelopmental presentations like autism and ADHD significantly impact a child's cognitive, social, and emotional development. However, early intervention can help mitigate long-term challenges and promote positive outcomes.

Conversely, failure to implement early intervention runs the risk of

- Thwarting self actualization
- Setting the child, parents and family up for failure (“Tyranny of shoulds”)
- Abuse , exploitation and suicide
- Major affective disorders
- Anxiety disorders
- Substance abuse disorders

What do we mean by Neurodivergence?



NEURODIVERSITY CENTRE

Neurodivergence Prevalence

CONDITION	PREVALENCE IN MALES	PREVALENCE IN FEMALES	SOURCE
Autism (ASD)	4,3%	1,14%	Centers for Disease Control and Prevention (CDC, 2023)
ADHD	9,4%	5,6%	National Institute of Mental Health (NIMH), 2023
Specific Learning Disorders (SLD)	5 – 10%	3 – 7%	National Center for Learning Disabilities (NCLD, 2023)
Sensory Processing Disorders (SPD)	5 – 16%	4 – 14%	Sensory Processing Disorder Foundation (SPDF, 2023)
Tic Disorders	1 - 2%	0,5 – 1%	Tourette Association of America (TAA, 2023)
Developmental Coordination Disorder (DCD)	5 - 6%	2 – 3%	American Academy of Pediatrics (AAP, 2022)

NEURODIVERSITY CENTRE

“Comorbidity of multiple NDDs is the norm”[1]

Neurodevelopmental conditions seldom occur in isolation

a) “Single neurodevelopmental condition is the exception rather than the rule”[2]

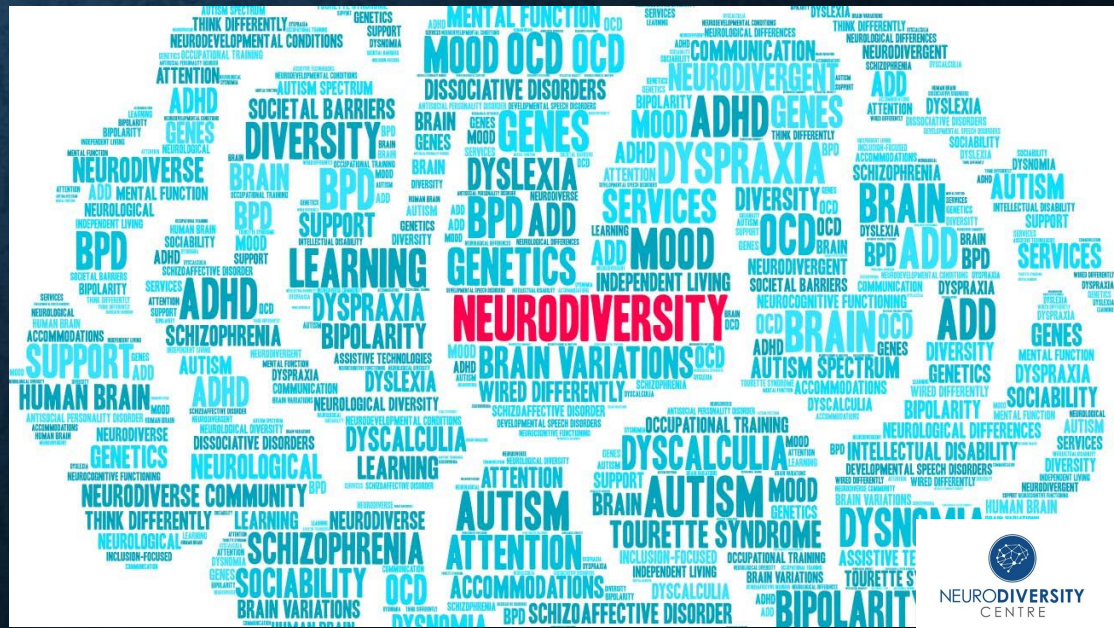
b) ASD, ADHD, Dyslexia…..

c) The 2007 National Survey of Children’s Health (NCSH)[3] found that:

   i. 33% of the children with ADHD had one coexisting condition,

   ii. 16% had two,

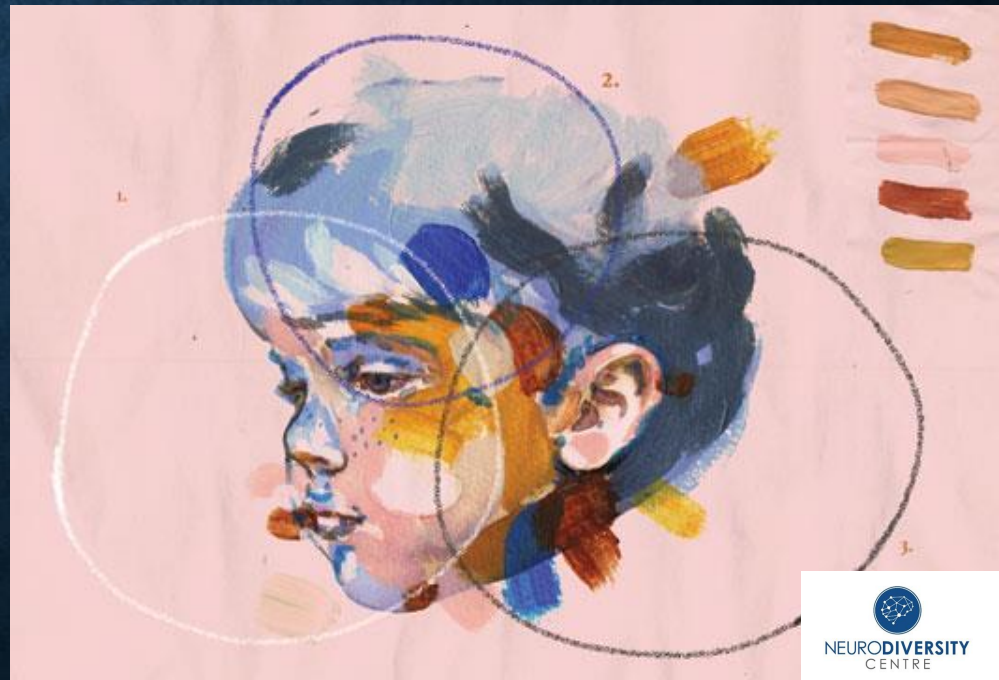
   iii. and 18% had three or more.



1. Francés et al 2022
2. Gillberg, 2010
3. Larson, Kandyce et al. (2011).

Co-occurring Neurodevelopmental Conditions

- 31% to 45% of children with ADHD have a learning disability, and vice versa (DuPaul 2013).
- It is estimated that as many as one-third of those with a LD also have ADHD (NCLD 2014).
- Boys with ADHD have about a 65% risk of having writing disabilities, compared to 16.5% of boys without ADHD, while girls with ADHD have a 57% risk compared to a 9.4% risk for girls without ADHD (Yoshimasu 2011).



NEURODIVERSITY CENTRE

Co-Occurring Psychiatric Conditions

Prevalence rates indicate that between 70% to 95% of children and adolescents with ASD have at least one co-occurring psychiatric disorder
(Mosner et al, 2019)

Common co-occurring psychiatric conditions in individuals with ASD include anxiety disorders, mood disorders, obsessive-compulsive disorder (OCD), and oppositional defiant disorder (ODD)
(Mosner et al, 2019)

Co-occurring psychiatric disorders may
- exacerbate ASD symptoms
- interfere with optimal outcomes for ASD interventions
- and predict worse long-term outcomes in individuals with ASD
(Mosner et al, 2019)

ADHD and Co-Occurring Conditions in Children (Larson et al, 2011)

Co-occurring Condition	Children with ADHD	Children without ADHD
Specific LD	45%	5%
Conduct Disorder	27%	2%
Anxiety	18%	2%
Depression	15%	1%
Language difficulties	12%	3%

Most common co-occurring conditions in ADHD children (Elia et al 2008)

Rank	Condition	Co-occurrence with ADHD
1	Oppositional defiant disorder	41%
2	Dysthymia	22%
3	Generalized anxiety disorder	15%

NEURODIVERSITY CENTRE

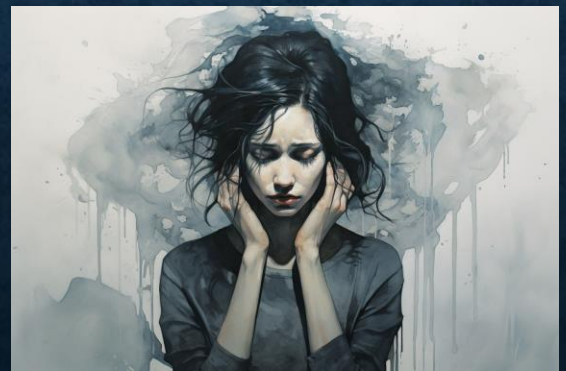
ADHD and Co-Occurring Conditions in Adults (Kessler et al. 2006)

Coexisting Condition	Adults with ADHD	Adults without ADHD
Any mood disorder	**38.3%**	**11.1%**
Major depressive disorder	18.6%	7.8%
Dysthymia (mild, chronic depression)	12.3%	1.9%
Bipolar disorder	19.4%	3.1%

NEURODIVERSITY CENTRE

ADHD and Co-Occurring Conditions in Adults (Kessler et al. 2006)

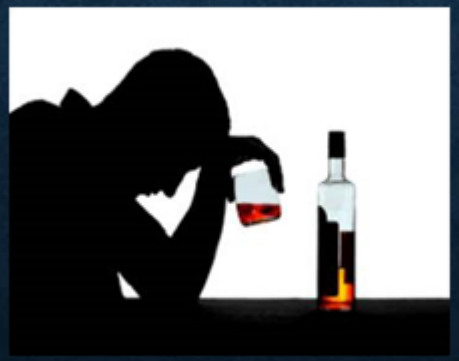
Coexisting Condition	Adults with ADHD	Adults without ADHD
Any anxiety disorder	**47.1%**	**19.5%**
Generalized anxiety disorder	8.0%	2.6%
PTSD	11.9%	3.3%
Panic disorder	8.9%	3.1%
Agoraphobia	4.0%	0.7%
Specific phobia	22.7%	9.5%
Social phobia	29.3%	7.8%
Obsessive-compulsive disorder (OCD)	2.7%	1.3%



NEURODIVERSITY CENTRE

ADHD and Co-Occurring Conditions in Adults (Kessler et al. 2006)

Coexisting Condition	Adults with ADHD	Adults without ADHD
Any substance abuse disorder	**15.2%**	**5.6%**
Alcohol abuse	5.9%	2.4%
Alcohol dependence	5.8%	2.0%
Drug abuse	2.4%	1.4%
Drug dependence	4.4%	0.6%
Intermittent explosive disorder	**19.6%**	**6.1%**



NEURODIVERSITY CENTRE

Impact of missed early recognition of Autism

My Story as a Late Diagnosed Autistic Woman — By Vanessa Hughes

"… a lifetime of feeling 'wrong', different, out of place and as if I was always missing that 'something' that seemed so obvious to others"

"My only regret was not knowing much sooner. Late diagnosis can mean that much"

Abuse, trauma, bullying, gaslighting, exclusion, rejection, missed education and injustice are just some of the negative impacts that come from having neurodivergent brains *and living without the necessary understanding, support* and acceptance in society.

Hughes, (2021)

NEURODIVERSITY CENTRE

Impact of missed early recognition of Autism

"I mean, education would have been different. Schooling would have been different. Just, everything would have been different, you know, and not forced" (Boris)

"I mean I've missed so many milestones in my life. I mean I'm almost 40 now and I'm stuck maybe in my twenties. You know what I mean? I've missed out so much on life" (Luke)

"I cried. And then I felt very frustrated and angry about all the hard work I'd put into psychotherapy, etc. In London, the amount of money I'd spent on, the time I spent on it when clearly, they were barking up the wrong tree with me…but also, I felt very relieved that I'm hopeful, finally somebody has told me, actually, I'm suffering from a condition that I could do nothing about" (Philip)

Ghanouni, & Seaker, (2023)

NEURODIVERSITY CENTRE

Impact of missed early recognition of Autism

"And it's a pity I didn't know at earlier age, and that the adults surrounding me didn't know." (Sophy)

"If I'd had known as a kid, I mean I couldn't even imagine. Like it just would have changed so much." (Lily)

Ghanouni, & Seaker, (2023)

NEURODIVERSITY CENTRE

Missed/misdiagnosis had serious implications for psychological well-being throughout childhood and into adulthood

"I got diagnosed with generalized anxiety and then I went to the psychiatrist for three, four, five years and then he started diagnosing me with OCD and I said, wait a minute, that doesn't fit" (Albert)

I experienced bullying at school, and I also experienced bullying at home from my father and all that made things even more difficult to bear… And I had some suicidal tendencies, and I had some just general frustrations because I couldn't quite understand what was happening inside. I felt isolated and anxious and felt like I couldn't take it anymore." (Philip)

"I think in my coping mechanisms, they have been a cost like alcohol, drugs, sex and women, you know, all these types of things" (Nicholas)

Lupindo et al (2022)

NEURODIVERSITY CENTRE

Impact of missed recognition of ADHD

- Increases risk of
  - Substance abuse (alcohol, drugs)
  - Risky sexual behaviours
  - Motor vehicle accidents
  - Erratic employment history
  - Criminal record
    - Some research says between 25% and 40% of people in prison have ADHD

(Fields, 2024)

Recognizing Early Signs

1. Delayed/Precocious Milestones
2. Atypical communication
3. Atypical behaviours
4. Atypical sensory profile
5. Uneven skill development
6. Neurological indicators

NEURODIVERSITY CENTRE

Recognizing Early Signs - What to Look For?

Delayed/Precocious Milestones

Milestone	What to look for
Gross motor	No Crawling – Bum shuffle ; Clumsy; Uncoordinated; Difficulty riding a bicycle
Fine motor	Buttons, zips, shoe laces, writing, drawing
Language	Atypical pre-verbal language; Pre-verbal to full sentences Precocious
Toileting	Aversion to potty or toilet Highly selective about location
Communication	Echolalia Selective hearing Selective mutism Slow processing speed (Haigh et al 2018) No joint attention

NEURODIVERSITY CENTRE

Recognizing early signs

Atypical behaviours

- Unusually active – "It's jus y thing"
- Watches the washing machine, tumble dryer, fan spin
- Bedtime gymnastics
- Won't wipe own bum - "He'll out of it"
- Repetitive play style – builds a farm every day
- Obsessed with certain pictures, picture books or TV program
- Not easily soothed as a baby
- Keeps to him/herself – "She's ju introvert"
- Atypical anxiety
- Meltdowns / "Tantrums" / Fight/Flight/Freeze/Fawn
- Cognitive rigidity

NEURODIVERSITY CENTRE

Recognizing early signs

Atypical sensory profile

- Fussy eater
- Resists hygiene routines
- Prefers to be naked
- Dislikes nappy changes, clothes changes
- Seeks out or resists certain sounds
- Obsessed/fascinated with certain item, activity or experience

NEURODIVERSITY CENTRE

Recognizing early signs

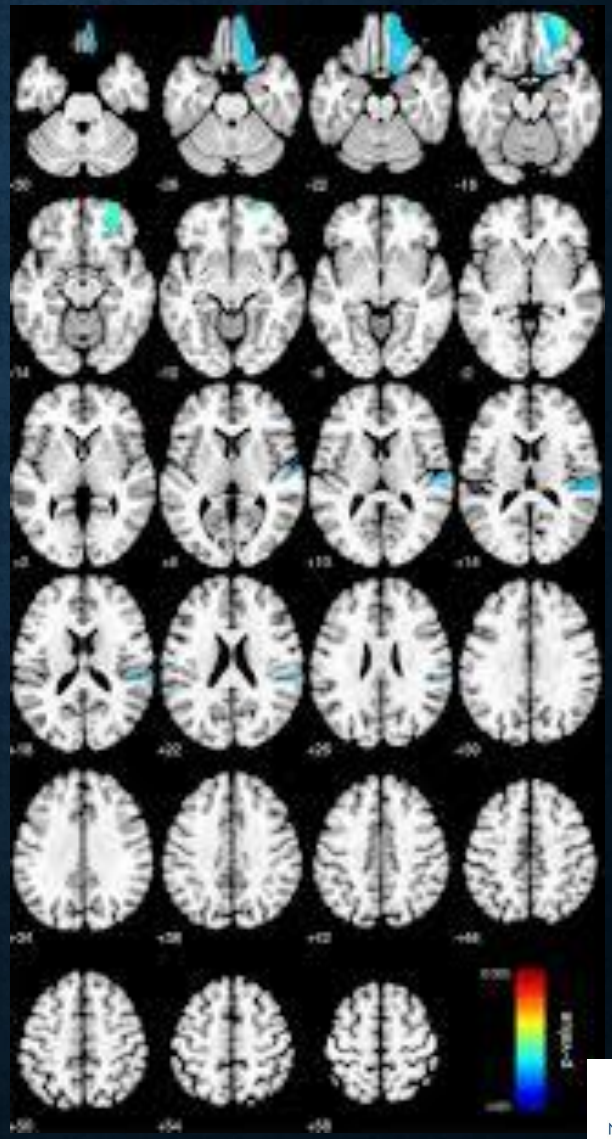
Uneven skill development – "spiky skills profile"

- Strengths in some areas paired with significant weaknesses in others
  - Precocious expressive language & no reading

Recognizing early signs

Neurological indicators

- Atypical sleep pattern (Devnani & Hegte, 2012)
  - Needs to be "driven" to sleep
  - Needs music to fall asleep
  - Won't fall asleep
  - Won't stay asleep
- Reflux/colic/Gut issues (Morton et al, 2023; Taniya et al, 2022)

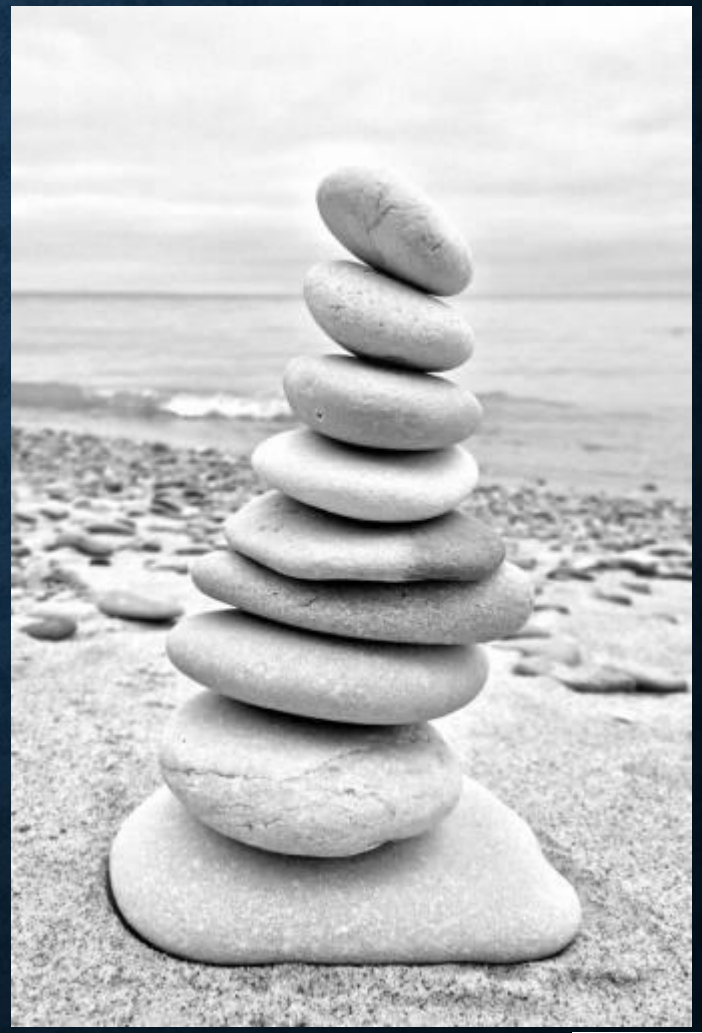


NEURODIVERSITY CENTRE

Short Term Benefits of early recognition

Autism

- Insight into the child's different brain functioning
  - Contextualizes child's behaviour
  - Appropriate expectations and management of emotions and behaviour
  - Reduction of anxiety
    - Anxiety a function of uncertainty
- Child's stress levels down
- Family stress levels down
- Mitigate school failure
- Mitigate erosion of self confidence
- Avoid inappropriate labels
  - Oppositional defiant disorder/Conduct Disorder



NEURODIVERSITY CENTRE

Short Term Benefits of early intervention

ADHD

- Normand et al. (2013) reported significantly poorer friendship quality, more friendship conflict, and less friendship satisfaction for children with ADHD compared to non-ADHD children.
- The Preschool First Step (PFS) program was found to produce significantly higher social skills, and significantly fewer behavior problems across a variety of teacher-and parent-reported measures at post intervention.
- PFS is a targeted intervention for children 3–5 years old with externalizing behavior problems and addresses secondary prevention goals and objectives

NEURODIVERSITY CENTRE

Short Term Benefits of early intervention

ADHD

- Halperin et al (2012)
  - …environmental influences and physical exercise can be used to enhance neural growth and development, which in turn should have an enduring and long-term impact on the trajectory of ADHD
  - The case is made for initiating such an intervention during the preschool years, when the brain is likely to be more "plastic" and perhaps susceptible to lasting modifications, and before complicating factors, such as comorbid psychiatric disorders, academic failure, and poor social and family relationships emerge, making successful treatment more difficult.

CONCLUSION: UNLOCKING POTENTIAL
"A STITCH IN TIME SAVES NINE"

By prioritizing early recognition, identification, and intervention, we can significantly increase the chances of children with neurodevelopmental conditions actualizing their full potential. Early intervention represents a pivotal opportunity to positively influence their developmental trajectories

NEURODIVERSITY CENTRE

References

Devnani, P., Hegde, A. (2015). Autism and sleep disorders. Journal of Paediatric Neurosciences 10(4):p 304-307. DOI: 10.4103/1817-1745.174438

DuPaul, George J. et al. (2013). Comorbidity of LD and ADHD: Implications of DSM-5 for Assessment and Treatment. Journal of Learning Disabilities 46(1):43–51.

Elia, Josephine et al. (2008). ADHD characteristics: I. Concurrent co-morbidity patterns in children & adolescents. Child and Adolescent Psychiatry and Mental Health, 2:15.

Fields, L. (2024). Risks of untreated ADHD. https://www.webmd.com/add-adhd/childhood-adhd/risks-of-untreated-adhd

Francés , L, Quintero J, Fernández A, Ruiz A, Caules J, Fillon G, Hervás A, Soler CV. (2022). Current state of knowledge on the prevalence of neurodevelopmental disorders in childhood according to the DSM-5: a systematic review in accordance with the PRISMA criteria. Child Adolesc Psychiatry Ment Health. 16(1):27. doi: 10.1186/s13034-022-00462-1

Ghanouni, P., Seaker, L. (2023). What does receiving autism diagnosis in adulthood look like? Stakeholders' experiences and inputs. Int J Ment Health Syst 17(16). doi.org/10.1186/s13033-023-00587-6

Gillberg C. (2010). The ESSENCE in child psychiatry: Early Symptomatic Syndromes Eliciting Neurodevelopmental Clinical Examinations. Res Dev Disabil.31(6):1543-51. doi: 10.1016/j.ridd.2010.06.002.

Haigh SM, Walsh JA, Mazefsky CA, Minshew NJ, Eack SM. (2018). Processing Speed is Impaired in Adults with Autism Spectrum Disorder, and Relates to Social Communication Abilities. J Autism Dev Disord. 48(8):2653-2662. doi: 10.1007/s10803-018-3515-z.

Halperin, J., Bédard, A., Curchack-Lichtin, J. (2012). Preventive Interventions for ADHD: A Neurodevelopmental perspective, Neurotherapeutics, 9(3), 531-541, doi.org/10.1007/s13311-012-0123-z.

NEURODIVERSITY CENTRE

References

Hughes, V. (2021). My Story as a Late Diagnosed Autistic Woman. https://medium.com/@AutisticNess/my-story-as-a-late-diagnosed-autistic-woman-by-vanessa-hughes-4786063ef601

Kessler et al. (2006). The Prevalence and Correlates of Adult ADHD in the United States: Results From the National Comorbidity Survey Replication, American Journal of Psychiatry 163(5):71.

Larson, Kandyce et al. (2011). Patterns of Comorbidity, Functioning, and Service Use for US Children With ADHD, 2007. Pediatrics, 127(3):462–470.

Lupindo BM, Maw A, Shabalala N. (2022). Late diagnosis of autism: exploring experiences of males diagnosed with autism in adulthood. Curr Psychol. Aug 3:1-17. doi: 10.1007/s12144-022-03514-z.

Mosner MG, Kinard JL, Shah JS, McWeeny S, Greene RK, Lowery SC, Mazefsky CA, Dichter GS. (2019). Rates of Co-occurring Psychiatric Disorders in Autism Spectrum Disorder Using the Mini International Neuropsychiatric Interview. J Autism Dev Disord. 49(9):3819-3832. doi: 10.1007/s10803-019-04090-1.

Morton, J.T., Jin, DM., Mills, R.H. et al. (2023). Multi-level analysis of the gut–brain axis shows autism spectrum disorder-associated molecular and microbial profiles. Nat Neurosci 26, 1208–1217 doi.org/10.1038/s41593-023-01361-0

National Center for Learning Disabilities (NCLD) (2014). The State of Learning Disabilities: Facts, Trends and Indicators, New York

Normand S, Schneider BH, Lee MD, Maisonneuve MF, Chupetlovska-Anastasova A, Kuehn SM, Robaey P. (2013). Continuities and changes in the friendships of children with and without ADHD: A longitudinal, observational study. Journal of Abnormal Child Psychology. 41:1161–1175. doi: 10.1007

NEURODIVERSITY CENTRE

References

Posserud, M., Solberg, B., Engeland, A., Haavik, J., Klungsøyr, K. (2021). Male to female ratios in autism spectrum disorders by age, intellectual disability and attention-deficit/hyperactivity disorder. Acta Psychiatrica Scandanavica. 144(6), 635-646. doi.org/10.1111/acps.13368

Taniya MA, Chung HJ, Al Mamun A, Alam S, Aziz MA, Emon NU, Islam MM, Hong SS, Podder BR, Ara Mimi A, Aktar Suchi S, Xiao J. (2022). Role of Gut Microbiome in Autism Spectrum Disorder and Its Therapeutic Regulation. Front Cell Infect Microbiol. 12:915701. doi: 10.3389/fcimb.2022.915701

Yoshimasu, Kouichi et al. (September 2011). Written-Language Disorder Among Children With and Without ADHD in a Population-Based Birth Cohort. Pediatrics 128(3):e605–e612.

NEURODIVERSITY CENTRE

Autism: Male to Female Ratio

Group	M : F Ratio
Adults	2,57 : 1
Children	3,67 : 1

Posserud *et al* (2021)

NEURODIVERSITY CENTRE

Gender bias in ADHD Diagnosis/Recognition

- Females with ADHD may be more easily missed in the ADHD diagnostic process and less likely to be prescribed medication unless they have prominent externalising problems (2019)
  https://doi.org/10.1007/s00787-018-1211-3

- Prevalence ratios of boys to girls with ADHD have decreased significantly over time, from about 25:1 to about 3:1 today (2021)
  https://chadd.org/adhd-news/adhd-news-educators/gender-myths-adhd/

- Girls are diagnosed with ADHD at just under half the rate at which boys are diagnosed. This difference in diagnosis rate is made up for in adulthood, where women and men are diagnosed with ADHD at roughly the same rate.
  https://chadd.org/adhd-news/adhd-news-educators/gender-myths-adhd/

NEURODIVERSITY CENTRE