

ADHD, ASC & Asperger's

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Conference*

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Disclosure / Conflict of Interests...

- Grant funding from Research Councils and Institutions.
- Co-Director of MyChild Services Ltd. [*SEND, Education*]
 - Provide psychological (educational) assessments to families and Locum Educational Psychologist services to Local Authorities and Multi-Academy Trusts. *No DX.*



Outline

- Why we should consider ADHD and Autism in the same breath.
- The relationship between ADHD and Autism.
- Past and present research.
- Some projects we have been involved with.
- Implications for applied practice.

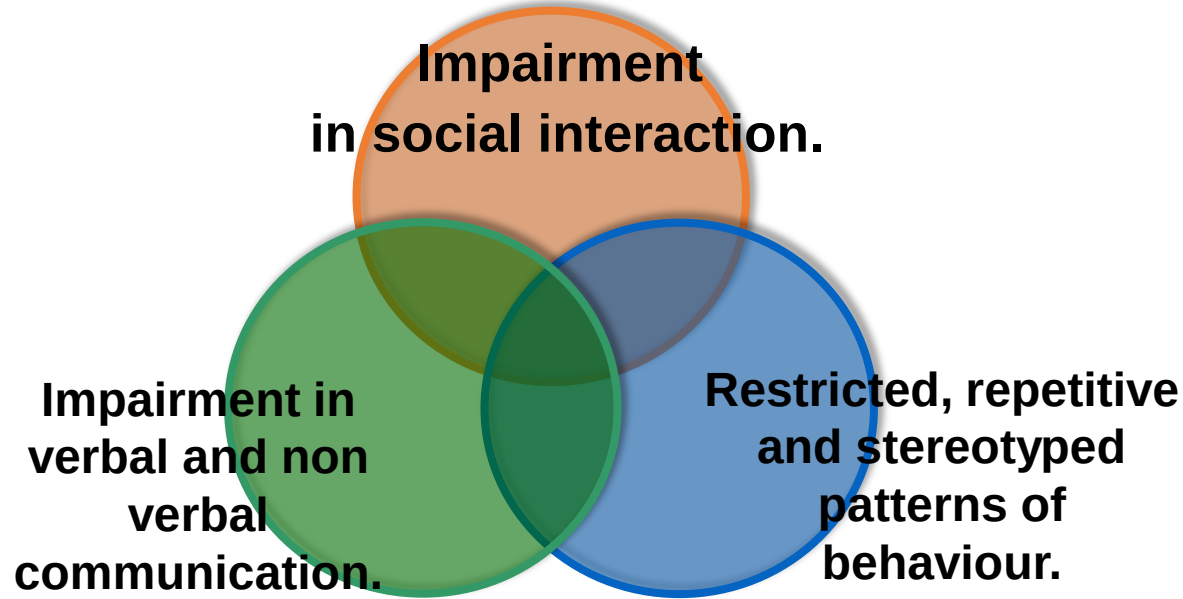


ADHD is characterized by developmentally inappropriate **inattention**, **impulsiveness**, and/or **hyperactivity** that remain relatively persistent over time and result in impairment across multiple domains of life activities.

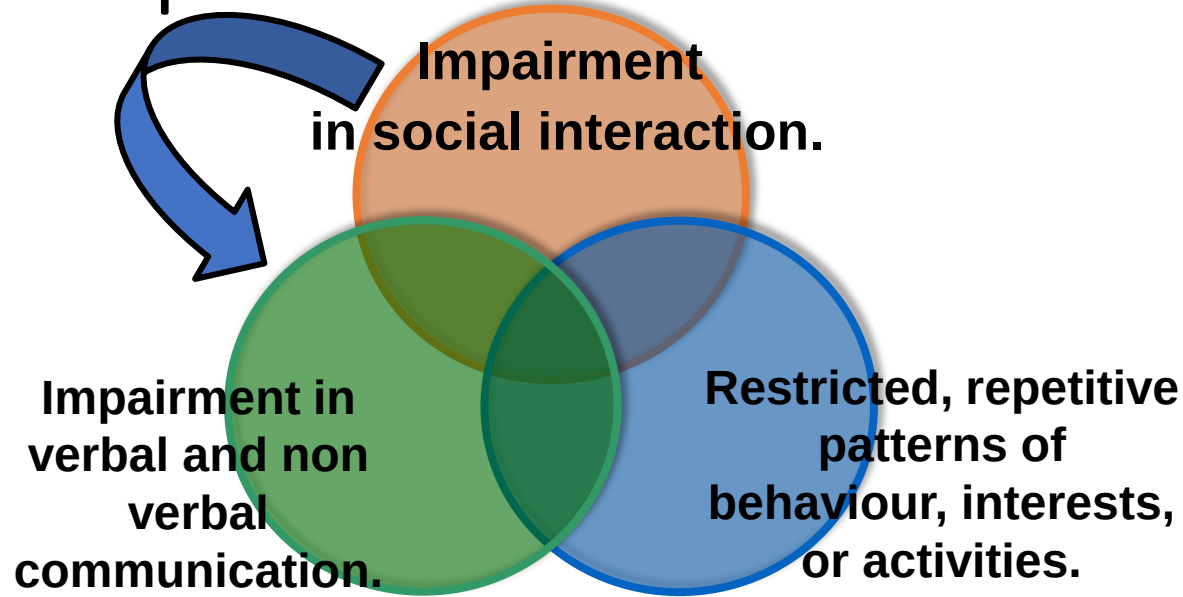
Autism is characterized by persistent deficits in **social interaction** and **communication** (e.g., poor social-emotional reciprocity, deficits in nonverbal communication, deficits in developing relationships) as well as **restricted, repetitive patterns of behaviour, interests, or activities**.



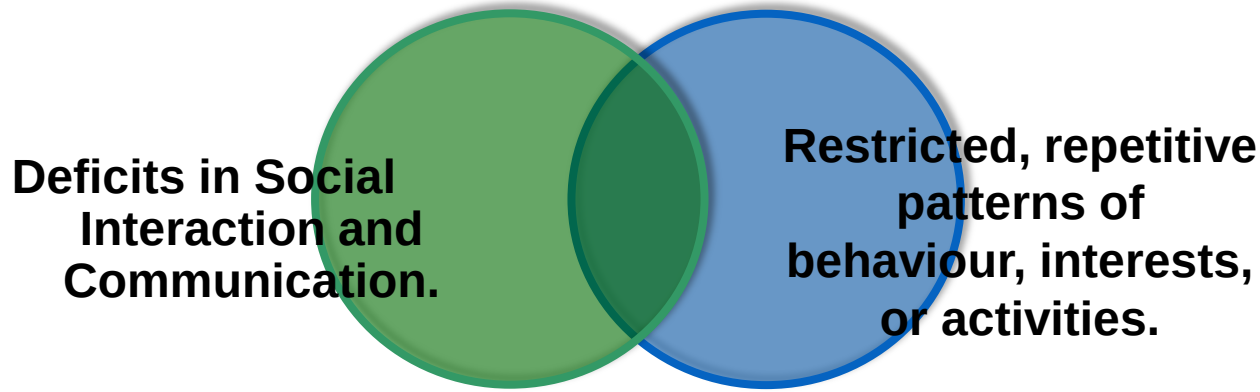
The 'Triad of Impairment' in *Autistic Disorder* under DSM-IV.



However, the 'Triad' is now a 'Dyad' in Autism Spectrum Disorder under DSM-5



However, the 'Triad' is now a 'Dyad' in Autism Spectrum Disorder under DSM-5



New 'domains' of Autism under DSM-5 – each *with 3 levels of severity.*

Level 1 – *“requiring support.”*

Level 2 – *“requiring substantial support.”*

Level 3 – *“requiring very substantial support.”*

ADHD & Autism

- ADHD and Autism are two of the most common neurodevelopmental disorders, with a high degree of co-occurrence.
- Until DSM-5 dual diagnosis was not possible. A frequent practice was calling the symptoms of hyperactivity and inattention in autism **'ADHD-like'** rather than ADHD.
- Over the last few decades, the debate on the limits between the two disorders has continued.
- A commonality between the conditions is maintaining (relevant) **focus**.



Comorbidity of ADHD and Autism -1

- Both conditions **co-occur with a high frequency**, with 20–50% of children with ADHD meeting criteria for Autism and 30-80% of children with Autism meeting the criteria for ADHD (Rommelse, Franke, Geurts, Hartman, & Buitelaar, 2010).
- In a large study, 30% of children with high-functioning autism met diagnostic criteria for ADHD and of these, an additional 25% exhibited elevated ADHD symptoms (Leyfer et al., 2006).
- In another exploratory study, over half of a sample of 83 children with Autism fulfilled the full diagnostic criteria for ADHD (Sinzig, Walter, & Doepfner, 2009).



Comorbidity of ADHD and Autism - 2

- A review of 33 studies showed evidence that the prevalence of symptoms of ADHD in children with Autism was 33-37% (Berenguer-Forner, Miranda-Casas, Pastor-Cerezuela, & Roselló-Miranda, 2015).
- A study of **17,000 children** concluded that children with autism **rarely show hyperactivity alone but often have co-occurring impulsivity and inattention** (Ronald, Larsson, Anckarsäter, & Lichtenstein, 2014).
 - **82%** of the **boys** and 95 % of the **girls** with autism showed impairments on at least one of the ADHD domains (inattention, hyperactivity, impulsivity).
 - **42%** of the **boys** and 62% of the **girls** with Autism showed impairments on at least two ADHD symptom domains.
 - This suggests that **most children with Autism (particularly girls) suffer from co-occurring ADHD symptoms in some form.**



Neurological Differences in ADHD and Autism

- Several structural and functional imaging studies have **compared** brain characteristics in adolescents with autism and ADHD **but no consistent pattern has emerged** (Brieber et al., 2007; Christakou et al., 2013).
- Brain structure **differences** have been shown **between** people with ADHD and autism (Dougherty, Evans, Myers, Moore, & Michael, 2016).
 - **Increased** total brain volume (than controls) in people with autism.
 - **Decreased** total brain volume in people with ADHD.
 - Both had lower volume in the corpus callosum and cerebellum (structural MRI).
- **Neuroimaging** techniques, in the long run, may help identify neurobiological markers to assist clinical diagnosis and treatment.



Shared Genetic Risk Factors



- **Neuroimaging** and **anatomical** studies have also shown **similarities** between the two disorders.
- Given the size of the overlap, researchers are beginning to rethink the relationship between the two conditions and to look for **common biological roots**.
- **Genetic studies** suggest the two conditions share genetic risk factors (Lionel et al., 2011).
 - See Dr Jonna Martin's talk yesterday on '***What can Genetics tell us about ADHD?***'
- The data collected agree on a **genetic overlap between ADHD and autism**, which is influenced by common molecular mechanisms that affect the two disorders at the same time (Artigas-Pallarés, 2013).



Social Difficulties across ADHD and Autism

- The most prevalent autistic traits seen in children with ADHD are **social and communication difficulties** (Miranda-Casas, Baixauli-Fortea, Colomer-Diago, & Roselló-Miranda, 2013).
- The social difficulties are often reported in children with ADHD.
- These difficulties are typically **interpreted** as resulting from ADHD symptoms rather than reflecting the qualitative impairments in social-communicative functioning characteristic of Autism.

Impairments in Literacy in ADHD and Autism

- Children with **Reading Disorder** often show early evidence of combined childhood disorders including ADHD and Autism (Hendren, Haft, Black, White, & Hoeft, 2018).
- **Reading comprehension** problems of children with attention difficulties are related to poor word reading and that listening comprehension is particularly vulnerable in children at risk of ADHD (Cain & Bignell, 2014).
- Children with poor attention and elevated levels of hyperactivity are associated with **pragmatic language weaknesses** (Bignell & Cain, 2007).



Changing Symptom Co-occurrence over the Lifespan

- The literature on the co-occurrence is strongly biased by a focus on **childhood**.
- A review of studies across lifespan **on core and related symptoms of ADHD** and autism (Hartman, Geurts, Franke, Buitelaar, & Rommelse, 2016) showed that symptoms **peak during adolescence** (when social adaptation and EF skills matter most), and **are lower in early childhood and old age**.
- Likewise, a review of the literature was conducted on children with autism and ADHD (Visser, Rommelse, Greven, & Buitelaar, 2016).
 - The co-occurrence of autism and ADHD increases with **age, severity of symptoms** and **lower IQ**.
 - **Attention problems form a 'linking pin' between early Autism and ADHD.**

Additive Effects of ADHD and Autism

- There is evidence from review studies of an **additive effect** of having the clinical profile of ADHD plus Autism.
- In a review (Murray, 2010) people with **co-occurring Autism and ADHD** symptoms were found to be more severely impaired than those with a single condition.
 - Problems were seen in **social interaction**, everyday **skills for successful living**, and **executive control**.
- The overlapping of Autism + ADHD gains some of the deficits from both disorders and has **implications for the evaluation and design of effective treatments**.





Taking ADHD and Autism to the Public

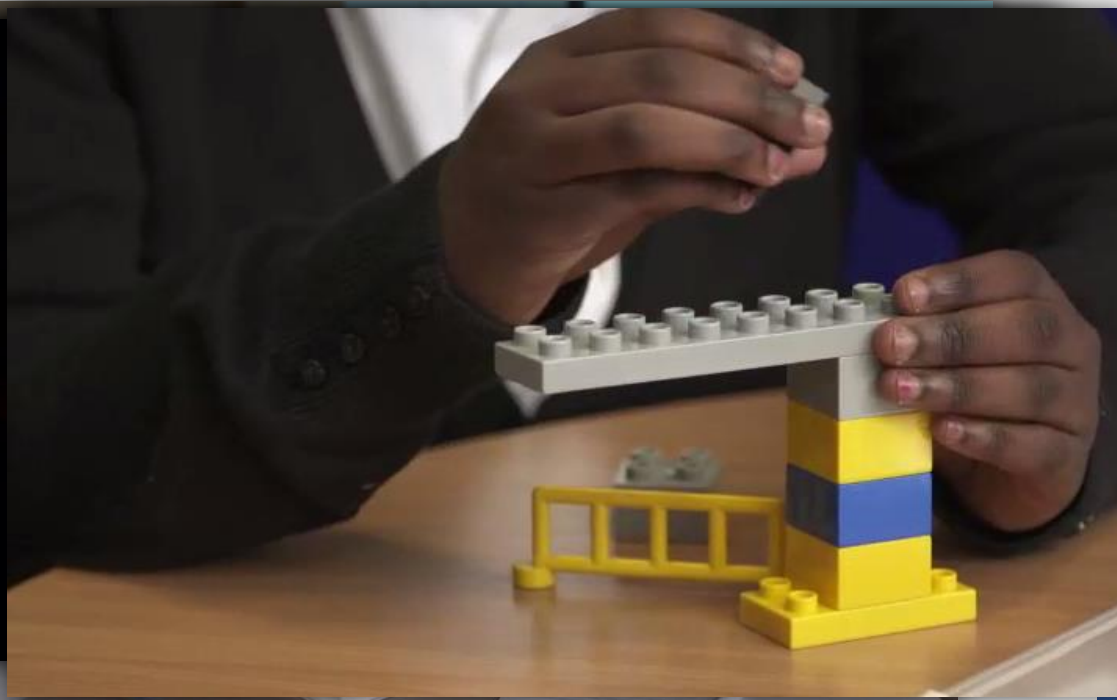


Massive Open Online Course (MOOC).

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‘Understanding Autism, Asperger’s & ADHD’

- Expanding evidence-based academic knowledge to the public.
- Over **25,000 people** have taken the course since 2016 (18% completion).
- Endorsed by ***The ADHD Foundation***.
- Informed by stakeholders.
- Over 500 people registered to watch the live webinar.
- Videos, Interviews, Forum, Assessment, Quiz, Self-assessment, Digital Badges, Certificate of Completion.



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Taking ADHD and Autism to the Public



"I have an adult son diagnosed with Opposition Disorder and wanted to learn more about Neuro-Diverse conditions."

"My son is on the autistic spectrum. I had studied Autism before but was surprised how much more I learned, especially about it."

"Being a teacher of teens I see an number of interesting traits I would say I wanted to know whether this was accurate, since there seemed to be a wide range of behaviours exhibited under that label."

"My son has recently been diagnosed with Autism and I wanted to learn more about Neuro-Diverse conditions."

course.

▶ Unit 6 Treatment

Taking ADHD and Autism to the Public



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Autism Profiling Tool

PhD Student Alexandra Karousi

Supervised by Dr Simon Bignell, Dr Chris Barnes, Dr Sigrid Lipka

- An Individualised Autism (*and comorbidities*) Profiler.
- An **evidence-based reporting tool** that will bring together **multiple sources of data** about the child's unique characteristics and their specific relationship to the clinical markers of **autism and comorbidities**.
- To bridge the gap between clinical descriptions and the child's unique characteristics, strengths and weaknesses.
 - *How do parents understand their child with autism?*
 - *What data is available and how is it used?*
 - *Theoretical and statistical considerations of assessment 'data'.*
- For **parents, educationalists and healthcare professionals**.
- Ultimately to inform highly **individualised intervention strategies**.



Looking Forward...

- An important research goal is to thoroughly **map these characteristics** across multiple sources in the individual.
- Despite increased interest in **co-occurring ADHD and autism**, relatively little research has been devoted to treatment considerations (Davis & Kollins, 2012).
- Treatment development will benefit from an enhanced understanding of the phenomenon of co-occurring ADHD and autism.
- Crucial to follow the latest **NICE guidance** for each condition.
- Understanding of ADHD, Autism and their overlap would benefit from an increased focus on **cross-disorder comparisons** in well-powered samples and longitudinal cohorts.

Summary

- ADHD and autism are both highly heritable neurodevelopmental conditions of brain development with some **similar** and some **distinct** characteristics.
- While there is a growing research literature on this association, more studies are needed of **when to intervene** and of the early and long-term benefits of **comprehensive intervention**.
- Many individuals with autism have **undiagnosed** ADHD, and vice versa (but slightly less).
- Some researchers have suggested that **Autism and ADHD are one overarching disorder with a range of subtypes**, each having a distinct time of onset, mix of traits and progression (van der Meer et al., 2012).



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Book Release

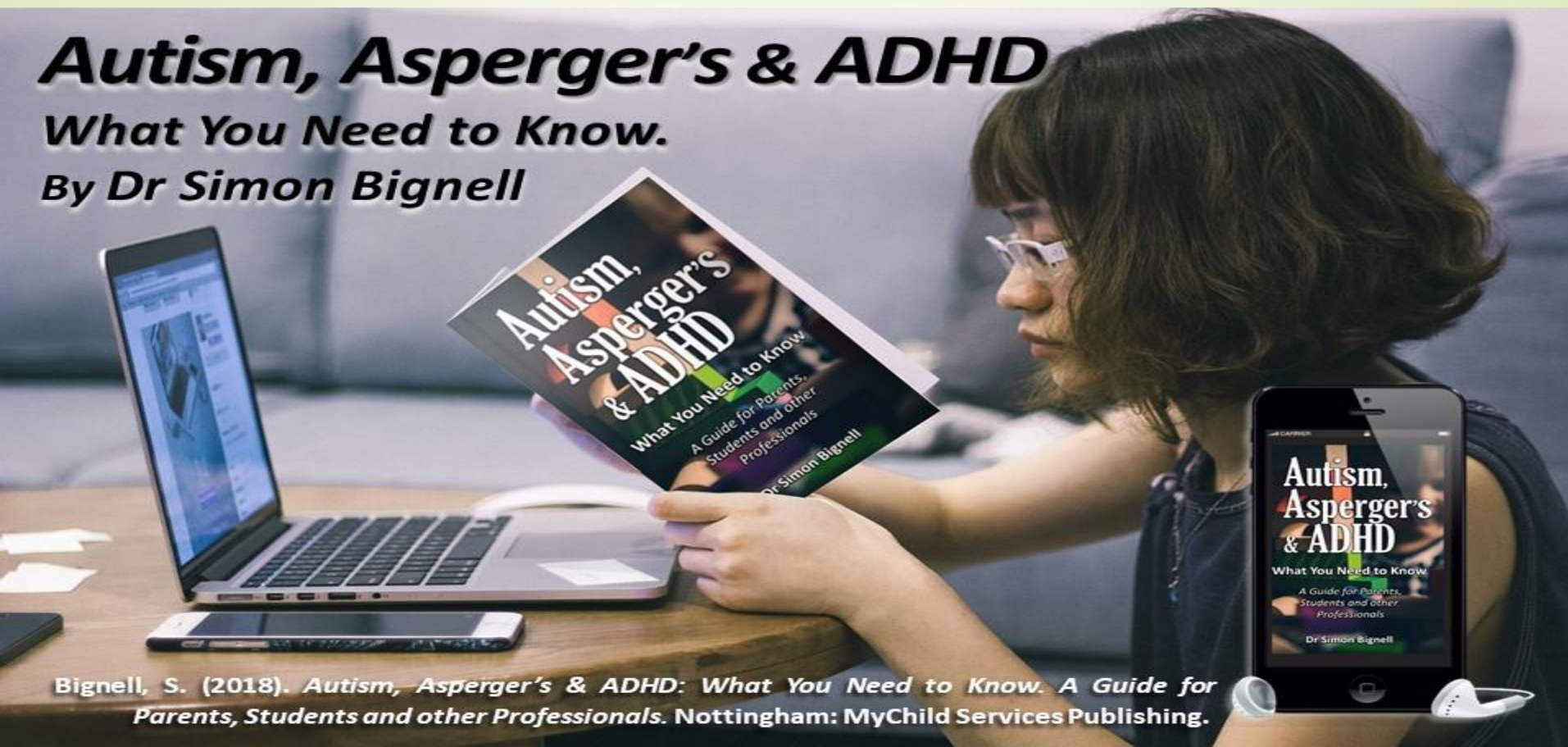
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Autism, Asperger's & ADHD

What You Need to Know.

By Dr Simon Bignell



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