

## Autism and ADHD

### Is it possible to have both autism and Attention Deficit Hyperactivity Disorder (ADHD)?

The short answer is Yes - but only since 2013.

Previously, the manual used by health professionals when diagnosing conditions such as Autism Spectrum Disorder (ASD) and ADHD, the Diagnostic and Statistical Manual for Mental Disorders (DSM) did not allow for a co-diagnosis of the two conditions. This changed in 2013 with the release of the 5<sup>th</sup> edition of the DSM, and it is now possible to have a diagnosis of co-occurring ASD+ADHD.

For this reason, up to 2013, most research examined autism and ADHD separately. However, in recent years research on the co-occurrence of ASD+ADHD has increased and our understanding of the co-occurrence of autism and ADHD is gradually improving, though it is still limited.

For an individual to be dually diagnosed with autism and ADHD, they must meet the full diagnostic criteria for both conditions, including having clinically significant impairment in functioning which is uniquely contributed to by both conditions.<sup>1</sup> When autism and ADHD co-occur, it can be more difficult to diagnose than when each condition occurs in isolation.<sup>2,3</sup> It appears that the co-occurrence of autism and ADHD tends to complicate early diagnosis, as children with both autism and ADHD are typically diagnosed later than those with one condition only.<sup>4</sup> This research also found that autism in children who also have ADHD is typically identified at a later age, compared to those children with autism only. It is suggested that the symptoms of ADHD could distract parents, teachers and clinicians from considering autism as they attribute their concerns to ADHD.<sup>5</sup>

### How common is co-occurring ASD+ADHD?

Estimates of co-occurring ASD+ADHD vary widely. Generally, it is considered that the majority of individuals with autism also have ADHD symptoms. However, in some studies the proportion of children with autism who also have clinical symptoms of ADHD is reported to be as low as 14% while other studies report it to be up to 85%.<sup>4,7</sup> Similarly, clinically elevated levels of autism symptoms have been noted in 18% to 67% of children with ADHD.<sup>1,8,9</sup>

## What causes autism and ADHD to co-occur in an individual?

Autism and ADHD are both highly heritable conditions. There is strong evidence of an overlap between autism and ADHD in regards to brain function and structure, and genes.<sup>1,10</sup> Several recent large scale genome-wide studies have suggested that autism and ADHD may share the same genetic susceptibility and between 50-70% of the contributing genetic factors in both conditions show overlap, which may explain the frequent co-occurrence of ASD+ADHD.<sup>11</sup> In addition, multiple family studies have shown that family members of individuals with either autism or ADHD frequently display symptoms of the other condition<sup>12</sup>. This supports the hypothesis that autism and ADHD originate from partly similar familial/genetic factors.<sup>10</sup>

A large study conducted in 2016 found that the co-occurrence of autism and ADHD is unlikely to be explained by shared pre-and peri-natal risk factor such as material infections and diseases, suboptimal conditions at birth, parental age, smoking and stress.<sup>13</sup>

## What impact does co-occurring ASD+ADHD have on the everyday life of a person with the dual diagnosis?

All research indicates that individuals with co-occurring ASD+ADHD may face more challenges than those with one condition only.<sup>12,14, 15</sup>

Currently, it is thought that when both conditions occur together, presence of the each condition amplifies the symptoms of the other condition, and this also increases the likelihood of additional conditions, such as disruptive behaviour.<sup>6, 16, 17</sup>

Recent studies have shown that compared with individuals with autism only, those with co-occurring ASD+ADHD may have more difficulties in reading other people's emotions and feelings, and in holding, recalling and manipulating critical periods of information.<sup>8,18</sup> They can also show a higher number of inattentive and hyperactive/impulsive symptoms and more stereotypic and repetitive behaviours.<sup>17,19</sup>

In everyday life, this can result in increased issues in dealing with communication, socialisation, self-help, life skills and independence; and in emotional and behaviour problems such as anger, tantrums, argumentative and defiant behaviour.<sup>19, 20, 21, 22</sup> Some studies have found that sleep problems are more pronounced when autism and ADHD co-occur, compared to when one condition occurs, however, other studies have found there is no difference in sleep problems.<sup>9</sup>

Research also suggests that individuals with co-occurring ASD+ADHD may be at increased risk of developing additional psychological conditions such as anxiety, depression, bipolar disorder, disruptive behaviour and tic disorders.<sup>11, 22</sup>

## What treatment and supports are available for individuals with co-occurring ASD+ADHD?

To date, the treatments targeting co-occurring ASD+ADHD are primarily pharmacological, using traditional ADHD medications.<sup>12</sup>

Research to date shows that for children and adolescents with co-occurring ASD+ADHD, standard ADHD medications appear to be effective in reducing symptoms of hyperactivity and inattention, but these medications typically have smaller effects for these individuals compared to the effects for an individual with ADHD only<sup>6,10</sup>

To date, there is very little research evidence on psychosocial treatments for individuals with co-occurring ASD+ADHD, as this is a relatively new area of study.

One study has shown that more positive outcomes for children with co-occurring ASD+ADHD and no intellectual disability is associated with having supportive parents and receiving intervention at an early age.<sup>23</sup>

Since parenting stress is commonly highest for families with a child with co-occurring ASD+ADHD compared to those with a child with one condition only, it is vital for parents of children with a dual diagnosis of autism and ADHD to seek and receive support for their own role as carers, so as to enable them to best support their child.<sup>6,24</sup>

## References

1. May, T., Sciberras, E., Hiscock, H., & Rinehart, N. (2016). The Comorbid Diagnosis of ASD and ADHD: Clinical and Neuropsychological Perspectives. In *Handbook of Assessment and Diagnosis of Autism Spectrum Disorder* (pp. 259-284). Springer International Publishing.
2. Gargaro, B. A., Rinehart, N. J., Bradshaw, J. L., Tonge, B. J., & Sheppard, D. M. (2011). Autism and ADHD: how far have we come in the comorbidity debate?. *Neuroscience & Biobehavioral Reviews*, 35(5), 1081-1088.
3. Sokolova, E., Oerlemans, A. M., Rommelse, N. N., Groot, P., Hartman, C. A., Glennon, J. C., ... & Buitelaar, J. K. (2017). A causal and mediation analysis of the comorbidity between attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder (ASD). *Journal of Autism and Developmental Disorders*, 47(6), 1595-1604.
4. Stevens, T., Peng, L., & Barnard-Brak, L. (2016). The comorbidity of ADHD in children diagnosed with autism spectrum disorder. *Research in Autism Spectrum Disorders*, 31, 11-18.
5. Miodovnik, A., Harstad, E., Sideridis, G., & Huntingon, N. (2014). Timing of the diagnosis of attention-deficit/hyperactivity disorder and autism spectrum disorder. *Pediatrics*, 136(4), 830-837.
6. Antshel, K. M., Zhang-James, Y., Wagner, K. E., Ledesma, A., & Faraone, S. V. (2016). An update on the comorbidity of ADHD and ASD: A focus on clinical management. *Expert Review of Neurotherapeutics*, 16(3), 279-293.
7. Panagiotidi, M., Overton, P. G., & Stafford, T. (2017). Co-Occurrence of ASD and ADHD Traits in an Adult Population. *Journal of Attention Disorders*, 1087054717720720.

8. Factor, R. S., Ryan, S. M., Farley, J. P., Ollendick, T. H., & Scarpa, A. (2017). Does the Presence of Anxiety and ADHD Symptoms Add to Social Impairment in Children with Autism Spectrum Disorder?. *Journal of Autism and Developmental Disorders*, 47(4), 1122-1134.
9. Green, J. L., Sciberras, E., Anderson, V., Efron, D., & Rinehart, N. (2016). Association between autism symptoms and functioning in children with ADHD. *Archives of Disease in Childhood*, archdischild-2015.
10. Leitner, Y. (2014). The co-occurrence of autism and attention deficit hyperactivity disorder in children—what do we know?. *Frontiers in Human Neuroscience*, 8.
11. Chen, M. H., Wei, H. T., Chen, L. C., Su, T. P., Bai, Y. M., Hsu, J. W., ... & Chen, Y. S. (2015). Autistic spectrum disorder, attention deficit hyperactivity disorder, and psychiatric comorbidities: A nationwide study. *Research in Autism Spectrum Disorders*, 10, 1-6.
12. Davis, N. O., & Kollins, S. H. (2012). Treatment for co-occurring attention deficit/hyperactivity disorder and autism spectrum disorder. *Neurotherapeutics*, 9(3), 518-530.
13. Oerlemans, A. M., Burmanje, M. J., Franke, B., Buitelaar, J. K., Hartman, C. A., & Rommelse, N. N. (2016). Identifying unique versus shared pre-and perinatal risk factors for ASD and ADHD using a simplex-multiplex stratification. *Journal of abnormal child psychology*, 44(5), 923-935.
14. Mannion, A., & Leader, G. (2014). Attention-deficit/hyperactivity disorder (AD/HD) in autism spectrum disorder. *Research in Autism Spectrum Disorders*, 8(4), 432-439.
15. Matson, J. L., Rieske, R. D., & Williams, L. W. (2013). The relationship between autism spectrum disorders and attention-deficit/hyperactivity disorder: an overview. *Research in Developmental Disabilities*, 34(9), 2475-2484.
16. Sikora, D. M., Vora, P., Coury, D. L., & Rosenberg, D. (2012). Attention-deficit/hyperactivity disorder symptoms, adaptive functioning, and quality of life in children with autism spectrum disorder. *Pediatrics*, 130(Suppl. 2), S91–S97.
17. Zablotzky, B., Bramlett, M. D., & Blumberg, S. J. (2017). The Co-Occurrence of Autism Spectrum Disorder in Children With ADHD. *Journal of Attention Disorders*, 1087054717713638.
18. Colombi, C., & Ghaziuddin, M. (2017). Neuropsychological Characteristics of Children with Mixed Autism and ADHD. *Autism Research and Treatment*, 2017.
19. Rao, P. A., & Landa, R. J. (2014). Association between severity of behavioral phenotype and comorbid attention deficit hyperactivity disorder symptoms in children with autism spectrum disorders. *Autism*, 18(3), 272-280.
20. Ashwood, K. L., Tye, C., Azadi, B., Cartwright, S., Asherson, P., & Bolton, P. (2015). Brief report: Adaptive functioning in children with ASD, ADHD and ASD+ ADHD. *Journal of Autism and Developmental Disorders*, 45(7), 2235-2242.
21. Gargaro, B. A., May, T., Tonge, B. J., Sheppard, D. M., Bradshaw, J. L., & Rinehart, N. J. (2014). Using the DBC-P Hyperactivity Index to screen for ADHD in young people with autism and ADHD: A pilot study. *Research in Autism Spectrum Disorders*, 8(9), 1008-1015.
22. Jang, J., Matson, J. L., Williams, L. W., Tureck, K., Goldin, R. L., & Cervantes, P. E. (2013). Rates of comorbid symptoms in children with ASD, ADHD, and comorbid ASD and ADHD. *Research in Developmental Disabilities*, 34(8), 2369-2378
23. Anderson, D. K., Liang, J. W., & Lord, C. (2014). Predicting young adult outcome among more and less cognitively able individuals with autism spectrum disorders. *Journal of Child Psychology and Psychiatry*, 55(5), 485-494.
24. Van Steijn, D. J., Oerlemans, A. M., Van Aken, M. A., Buitelaar, J. K., & Rommelse, N. N. (2014). The reciprocal relationship of ASD, ADHD, depressive symptoms and stress in parents of children with ASD and/or ADHD. *Journal of Autism and Developmental Disorders*, 44(5), 1064-1076.