Girls and women with autism spectrum disorder

What is the issue?

One of the most striking features of autism spectrum disorder (ASD) is the fact that it is diagnosed around four times more often in boys than in girls (Whiteley, et al., 2010). Recently, researchers have started to question whether ASD may in fact be more common amongst females than has previously been thought (Zwaigenbaum, et al., 2012). A number of studies have now been undertaken to investigate the female presentation of ASD and biological brain differences.

The hypotheses

Researchers suggest several reasons for the existing 'gender gap' in autism diagnoses:

1. Diagnostic criteria, concepts and practices have historically been biased towards the 'conventional' (male) presentation of ASD (Dworzynski et al., 2012).

2. Current screening instruments may not be reliable for identifying ASD in females (Andersson, et al., 2013).

3. Females may be better able to adapt to, or compensate for, aspects of ASD symptomatology than are males, sometimes referred to as the *camouflage hypothesis* (Dworzynski et al., 2012).

4. The brains of females with ASD may be anatomically different to the brains of males with ASD. The study suggests that further research is needed to review the diagnostic criteria for assessing females (Lai, 2013).

What does the research say?

One way to examine this issue is to study groups of children with 'ASD-like traits' who present for diagnostic assessment. Specifically, researchers are looking for factors that are unique to girls.

One study attempting to address this question was conducted by Dworzynski et al. (2012), who analysed data from a large population-based sample of children in the UK. Girls and boys aged 10 to 12 years who met diagnostic criteria for ASD were compared with those who failed to meet diagnostic criteria despite scoring highly on the Childhood Autism Spectrum Test (CAST), a validated screening instrument for ASD traits.

The results from this study showed that in the absence of significant intellectual or behavioural problems, girls with ASD-like traits are more likely than boys to evade a

diagnosis of ASD. Dworzynski, et al. (2012) suggests that these results may reflect the different strategies girls use to manage their behavioural traits.

Further research findings are summarised below which attempt to explain the difference in the diagnosed prevalence of ASD between boys and girls:

Qualitative impairments in social interaction
Girls tend to engage in more 'pretend play' than boys, but for girls on the autism spectrum this may involve simply imitating or repeating play or social situations they have previously encountered (Knickmeyer et al., 2008). Girls with ASD also appear more able to demonstrate complex emotions than boys (Head et al., 2012).

Qualitative impairments in communication
Girls with ASD more frequently engage in echolalia than boys and at a young age this may be mistaken as more advanced communication skills (Kirkovski et al., 2012). Echolalia involves the person repeating what was just said to them.

Restricted, repetitive and stereotyped patterns of interests, activities and behaviours
The intense special interests often found in girls with ASD (such as animals, celebrities and fiction franchises) tend to more closely align with the 'mainstream' than the corresponding interests of boys with ASD (Gould & Ashton-Smith, 2011).
Overall, girls may show less repetitive stereotyped behaviour than boys (William et al., 2012).

Secondary manifestations of ASD
Hartley & Sikora (2009) found that girls with ASD exhibited more sleep problems and greater anxiety or depression than boys. It is possible that parents and clinicians may fail to recognise sleep problems, anxiety and depression as underlying signs of ASD.

Evidence for the camouflage hypothesis

Gould & Ashton-Smith (2011) conducted a review of relevant literature to identify some of the ways in which girls and women on the autism spectrum, either intentionally or unconsciously 'mask' their limitations in social understanding, social communication and social imagination, thereby evading a diagnosis of ASD.

Some examples cited in the review include:

- Girls are more able to follow social actions through observation. They may be quicker to apologise and appease when they make a social error, increasing the likelihood of their anomalous behaviour being overlooked or forgotten by others.

- Girls are often more socially aware and socially driven, and so more likely to seek out play and interaction opportunities (whilst often being 'led' by peers rather than initiating activities themselves). They may have one special friend with whom they share an intense, sometimes dependent, relationship.

- As they grow in self-awareness and recognition of their 'differences', girls may take greater pains to avoid drawing attention to themselves, for example by being quiet, well behaved and compliant at school.

Clinical implications

Due to the complex and 'unconventional' presentation of ASD in girls and women, there is a greater chance of them being misdiagnosed with conditions such as language delay, anxiety and eating disorders (Hambrook et al., 2008; Coombs et al., 2011; Head et al., 2012).

Outcomes for women and girls with ASD

Research investigating the experiences of girls and women with ASD is currently limited. More often than not, longitudinal studies follow predominantly male samples and do not contain sufficient numbers of female participants to generate meaningful comparative data.

In a break from this trend, Autism Spectrum Australia (Aspect) conducted a large-scale survey project ("We Belong") that documented the life experiences, aspirations and support needs of 313 adults with Asperger's Disorder and high functioning autism, including 91 women. The findings from this study showed few gender differences. For example, women and men tended to attain comparable educational qualifications, unemployment issues, and have the similar independence and daily life support needs.

There were, however, two notable 'gender gaps' identified in the findings:

1. A higher proportion of women (83%) than men (67%) reported having a mental health condition.
2. Women appeared to be more socially isolated, with only around half (52%) stating that they were happy with their current level of friendships and social activities. In contrast 67% of men reported they were happy with their social life.

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In summary

Although ASD has historically been considered a predominantly 'male' disorder, there is now a growing awareness that the condition manifests itself differently, and in some ways, more subtly in females. The result may be that there are large numbers of girls and women with ASD who have been overlooked or misdiagnosed. Future research is likely to concentrate on developing a more systematic understanding of the female presentation of ASD and raising awareness amongst professionals involved in early identification and diagnosis.

References

Andersson, G., Gillberg, C., & Miniscalco, C. (2013) Pre-school children with suspected autism spectrum disorders: Do girls and boys have the same profiles? *Research in Developmental Disabilities*, 34, 413-422.

Coombs, E., Brosnan, M., Bryant-Waugh, R., & Skevington, S. M. (2011). An investigation into the relationship between eating disorder psychopathology and autistic symptomatology in a non-clinical sample. *British Journal of Clinical Psychology, 50(3)*, 326-338.

Dworzynsky, K., Ronald, A., Bolton, P., & Happe, F. (2012). How different are girls and boys above and below the diagnostic threshold for autism spectrum disorders? *Journal of the American Academy of Child and Adolescent Psychiatry, 51(8)*, 788-797.

Gould, J., & Ashton-Smith, J. (2011). Missed diagnosis or misdiagnosis? Girls and women on the autism spectrum. *Good Autism Practice, 12(1)*, 34-41.

Hambrook, D., Tchanturia, K., Schmidt, U., Russell, T., & Treasure, J. (2008). Empathy, systemizing, and autistic traits in anorexia nervosa: A pilot study. *British Journal of Clinical Psychology, 47(3)*, 335-339.

Hartley, S. L., & Sikora, D. M. (2009). Sex differences in autism spectrum disorder: An examination of developmental functioning, autistic symptoms, and coexisting behavior problems in toddlers. *Journal of Autism and Developmental Disorders, 39(12)*, 1715-1722.

Head, A., McGillivray, J., & Stokes, M. (2012). The female profile of autism: An examination of friendships. Paper presented at the First Scientific Meeting of the Australasian Society for Autism Research (ASfAR), Sydney, 6 December.

Kirkovski, M., Enticott, P., & Fitzgerald, P. (2012). A review of the role of female gender in autism spectrum disorders. Paper presented at the First Scientific Meeting of the Australasian Society for Autism Research (ASfAR), Sydney, 6 December.

Knickmeyer, R. C., Wheelwright, S., & Baron-Cohen, S. B. (2008). Sex-typical play: Masculinization/defeminization in girls with an autism spectrum condition. *Journal of Autism and Developmental Disorders, 38(6)*, 1028-1035.

Lai M-C, Lombardo M, et al., (2013). Biological sex affects the neurobiology of autism. *Brain,* August 8, 2013 DOI:10.1093/brain/awt216. Accessed 12 August 2013.

Mandy, W., Chilvers, R., Chowdhury, U., Salter, G., Seigal, A., & Skuse, D. (2012). Sex differences in autism spectrum disorder: evidence from a large sample of children and adolescents. *Journal of Autism and Developmental Disorders, 42(7)*, 1304-1313.

Whiteley, P., Todd, L., Carr, K., & Shattock, P. (2010). Gender ratios in autism, Asperger syndrome and autism spectrum disorder. *Autism Insights, 2*, 17-24.

Zwaigenbaum, L., Bryson, S., Szatmari, P., Brian, J., Smith, I., Roberts, W., et al. (2012). Sex differences in children with autism spectrum disorder identified in a high-risk infant cohort. *Journal of Autism and Developmental Disorders, 42(12)*, 2585-2596.