Why do individuals with Asperger's Syndrome have difficulty recognising the emotions of others?

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Abstract

Humans have a well-developed ability to recognise the emotions of others on the basis of their facial expressions. However this skill does not appear to be intuitive for some populations, such as people with Asperger's Syndrome. The aim of this thesis was to understand why individuals with Asperger's Syndrome have difficulties recognising emotions on the basis of facial expressions and more broadly, how this may relate to their difficulties with social interaction.

Three factors that have the potential to explain impaired emotional recognition among individuals with Asperger's Syndrome were investigated: (i) avoidance of eye contact when scanning the facial expressions of others; (ii) problems using meta-cognitive skills (such as using confidence as a guide to the accuracy of decisions); and (iii) problems using cognitive processes when interpreting the facial expressions of unfamiliar people.

In Studies 1 and 2, the first two factors were investigated using an emotion recognition task developed and validated specifically for use in these studies. Both studies compared the emotion recognition performance of individuals with Asperger's Syndrome to individuals without Asperger's Syndrome. In Study 1, I found that there was no difference in the way individuals with Asperger's Syndrome scanned key regions of facial expressions. However, they were less able to accurately recognise both basic and complex emotions from facial expressions as compared to individuals without Asperger's Syndrome. As no difference was found in the way the two groups scanned facial expressions, the ability of the two groups to use meta-cognitive skills when making emotion recognition decisions was examined in Study 2. It was found that individuals with Asperger's Syndrome were able to use confidence as a guide to the accuracy of their

decisions similarly to individuals without Asperger's Syndrome. However, individuals with Asperger's Syndrome had more difficulty using this information to "filter" their responses (i.e., identifying which of their decisions were accurate versus which were inaccurate).

In Study 3, the extent to which individuals with Asperger's Syndrome have a specific problem with unfamiliar faces was investigated. Specifically, whether they had a problem generalising emotion recognition skills to recognise emotions from the facial expressions of unfamiliar people rather than a more general problem using emotion recognition skills (i.e., regardless of the familiarity of a face). Emotion recognition tasks were created for each participant, one displaying photographs of a familiar person's facial expressions, and one displaying photographs of an unfamiliar person's facial expressions. It was found that there was no difference in the accuracy with which individuals with Asperger's Syndrome where able to recognise emotions from familiar versus unfamiliar faces. Furthermore, there were no differences in the ability of individuals with Asperger's Syndrome to use meta-cognitive skills to make emotion recognition decisions in response to familiar versus unfamiliar faces.

Finally, in Study 4, I investigated the relationships between (a) emotion recognition skills and social skills, and (b) Theory of Mind (ToM), meta-cognitive skills and social skills. The key finding from this study was that ToM and meta-cognitive skills independently contributed to social skills, while emotion recognition skills did not. This finding is limited due to low power to detect significant relationships within each group, however the findings suggest that a focus on improving both meta-cognitive and ToM skills in order to improve the social skills of individuals with Asperger's Syndrome is a promising avenue for further research.

Declaration

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

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Declaration of Ethics Approval

All studies presented in this thesis received ethics approval for the Flinders University Social and Behavioural Research Ethics Committee. Approval numbers are as follows:

- Study 1: 4296; Study 2: 4719; Study 3 and 4: 4838

Peer-reviewed Publications Arising from this Thesis

Sawyer, A., Williamson, P., & Young, R. (2011). Can gaze avoidance explain why individuals with Asperger's Syndrome can't recognise emotions from facial expressions? *Journal of Autism and Developmental Disorders*. Advance online publication. doi: 10.1007/s10803-011-1283-0

Conference Presentations Arising from this Thesis

Sawyer, A., Young, R., & Williamson, P. (2009, August). *Understanding the eyes: Face processing and emotion recognition in Autism Spectrum Disorders.* Poster session presented at the meeting of the Asia Pacific Autism Conference, Sydney, Australia.

Sawyer, A., Williamson, P., Young, R., & Sawyer, M. (2010, October). *Can gaze avoidance explain why young people with Asperger's Syndrome have difficulty recognising emotions from faces?* Poster session presented at the meeting of the American Academy of Child and Adolescent Psychiatry, New York.

Sawyer, A., Young, R., & Williamson, P. (2011, September). *Meta-cognitive processes in emotion recognition: Are they different for adults with Asperger's Syndrome.* Paper presented at the meeting of the Asia Pacific Autism Conference, Perth, Australia.

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