
Real-time Processing of Social and Mechanical Events in Adults with Asperger Syndrome

Tim Fosker*^{†1}, Victoria Lovett², Clare Crowe¹, Mary-Elaine Mccavert¹, Michael Robinson¹, Diarmid Reay¹, Andrew Bayliss³, and Mary Hanley¹

¹School of Psychology, Queen's University Belfast – United Kingdom

²School of Psychology, Bangor University – United Kingdom

³School of Social Work and Psychology, University of East Anglia – United Kingdom

Abstract

Reduced empathy and social reciprocity that is consistent with a general lack of understanding others' intentions is a core characteristic of Asperger Syndrome (AS). Deficits in a theory of mind (ToM) and a generalized ability to integrate information (weak central coherence, WCC) have been proposed as causal explanations of the social impairments observed in individuals with AS. In real life situations the ability to integrate information as events unfold allows individuals to infer an appropriate response. In social scenarios ToM can be used to identify the most appropriate response, while knowledge of the physical world can be used to anticipate mechanical events. To examine expectancy for observed events in real-time we presented AS and control participants with videos constructed to represent different social or mechanical scenarios while measuring their EEG. Participants judged the final frame of a video sequence as either congruent or incongruent with the preceding scenario. The N400 was studied as an index of the degree to which participants were able to integrate the congruent and incongruent final event of the scenarios. We hypothesized that a deficit in ToM would be reflected by a smaller N400 effect for social scenarios (incongruent-congruent). In contrast a deficit in WCC would be reflected by a smaller N400 effect for social and mechanical events. Preliminary results showed a reduced N400 effect for both mechanical and social events in AS participants compared with controls. These results support a theory of weak central coherence for the online processing of events.

*Speaker

[†]Corresponding author: t.fosker@qub.ac.uk