Comparing emotional expressions using eyes or mouths: a perceptual advantage in autism?

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While autistic individuals are able to process many types of visual information at a level commensurate with their age, studies have shown that they have difficulty interpreting facial expressions. One reason could be that autistics suffer from weak central coherence, i.e. a failure to integrate parts of information into globally coherent wholes [Frith, 1989 *Autism: Explaining the Enigma* (Oxford: Blackwell); Frith and Happé, 1994 *Cognition* 50 115 - 132]. To test this hypothesis we presented autistic and age-, sex- and IQ-matched normal children with pairs of facial images of the same sex but different identities. Their task was to decide whether the faces showed a similar expression (experiment 1), or whether either solely the eyes (experiment 2) or the mouths (experiment 3) displayed the same emotion while ignoring the rest of the face. The second stimulus in each pair was digitally altered in half of the trials so that the expression of the target feature was incongruent with the expression of the rest of the face, e.g. happy eyes within the context of an angry face. Although autistics were expected to show relatively greater difficulty comparing whole facial expressions, we proposed that they should be better than normal children when judging the similarity of single expressive features and that they should be less adversely affected by incongruent face contexts.

Overall accuracy did not differ between the autistic and control children, either when full facial displays were compared (exp 1) or the eyes (exp 2) or mouths (exp 3) alone were judged. However, reaction times in experiments 2 and 3 differed significantly: autistics were significantly faster than controls in judging the similarity of the emotional expression of eyes as well as mouths. This result indicates that autistics were better able to concentrate on a single feature within the faces; the finding also suggests that our autistic group was not perturbed by having to compare facial expressions (albeit an emotional expression of just single feature). Contrary to expectations, incongruent facial contexts were equally problematic for both the autistics and controls, causing increased error rates and response times.

Our results suggest we may have to reconsider the remit of weak central-coherence theory as an explanation of impoverished facial expression perception. We discuss this new finding in terms of theories of emotion-deficit disorders and current evidence on atypical visual-information processing in autism.