Impaired sadness recognition is linked to social interaction deficit in autism

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Introduction

- Some studies have shown evidence for an emotion recognition deficit in autism¹,², but there is inconsistency, with some negative findings³,⁴.
- One factor causing inconsistent results may be subject selection – autism spectrum disorders are heterogeneous.
- In addition, many different cues can trigger emotion recognition.
- We investigated the ability of people with autism to use two such cues: movement patterns and facial expressions.

Experiment 1: animations

Procedure

- We designed short (5sec) animations featuring a moving triangle interacting with a circle (see figure 1).
- The triangle was designed to appear angry, happy, sad or scared.
- Participants rated each animation for the presence of emotion: happy, sad, scared, angry.
- Emotion recognition score calculated for each emotion by subtracting rating for “incorrect” emotion from rating for “correct” emotion.
- In a control task, participants judged whether triangle appeared to be animate (or ‘living’) from its pattern of movement.

Results

- Autistic participants were impaired in recognition of sadness from animations (F₁,₁₈ = 7.99, p<0.05; see figure 2).
- However, there was no significant difference between “living” ratings of the two groups (see figure 3).
- Poor sadness recognition performance correlated with severity of reciprocal social interaction (RSI) impairment as measured by the ADOS (r² = 0.51, p<0.05; see figure 4). Living judgement performance did not correlate with RSI impairment.

Experiment 2: faces

Procedure

- 11 autistic participants from experiment 1, and nine of the normal controls.
- Participants viewed greyscale images of facial expressions (see figure 5) and selected appropriate emotion from a choice of words presented alongside.

Results

- Autistic participants were impaired in recognition of sadness (F₁,₁₈ = 8.11, p<0.05; see figure 6).
- There was no significant difference for other emotions.

Conclusion

- This novel animated task can reliably test emotion recognition with low verbal demands.
- Autistic adults show a deficit in sadness recognition, both in terms of motion cues and facial expressions.
- Sadness recognition deficits from motion cues are correlated with impaired reciprocal social interaction skills.
- There is a fundamental deficit in emotion recognition in autism, which can be identified through multimodal assessment.

References