**Background**

- Over the past six decades, researchers have extensively studied emotion recognition.
- Despite being highly related to (and potentially important for) emotion recognition, it was only recently that researchers began investigating internal representations of emotion.\(^1,2\)
- Despite great progress, research has not yet investigated the extent to which internal representations influence emotion recognition.

**Aims**

- To determine whether those with highly variable and overlapping internal representations of emotion have low scores on an emotion recognition task.

**Participants**

- 45 autistic and 45 non-autistic adults

**Methodology**

- Participants completed two tasks which employed dynamic point light displays of angry, happy and sad facial expressions (PLFs; see Figure 1).

**Task 1: PLF task**

- On each trial, participants viewed a PLF and rated the extent to which the expression looked angry, happy and sad.
- Emotion recognition accuracy was calculated as the correct emotion rating minus the mean of the two incorrect emotion ratings.

**Task 2: Emotion representation task**

- On each trial, participants viewed a PLF and were required to manipulate its speed (by moving a slider) until the PLF moved at the speed of a typical angry, happy or sad expression.
- Variability was calculated as the standard deviation of the speeds attributed to angry, happy and sad PLFs respectively.
- Distance was calculated by subtracting the mean speed attributed to one emotion from the mean speed attributed to another.

**Questionnaires:**

- Autism Quotient (AQ)- Assesses autistic traits
- Toronto Alexithymia Scale (TAS)- Assesses alexithymia

**Results**

**Accuracy ~ Variability + Distance + Variability*Distance + (1 | Subject) + (1 | Gender) + (1 | NVR)**

**Across both groups**

- Accuracy predicted by variability \([F(1,86.55)=7.09, p=.01]\) and distance \([F(1,73.10)=7.06, p = .01]\)

**Non-autistic group**

- Accuracy predicted by variability \([F(1,43.41)=7.44, p<.01]\) and distance \([F(1,40.29)=4.686, p < .05]\)

**Autistic group**

- Accuracy predicted by distance only \([F(1,41.49)=4.06, p = .05]\)

**Figure 2. Graphs showing the relationships between accuracy and variability (left) and accuracy and distance (right). Non-autistic participants are shown in blue, autistic participants are shown in orange.**

**Contribution of AQ and TAS**

- Accuracy, variability and distance not predicted by total AQ or total TAS score across both groups, and in each group respectively (all \(p > .05\))

**Discussion**

- There are two features of internal representations that contribute to emotion recognition: variability of internal representations and distance between different emotion representations (e.g., Angry-Happy).
- Whilst both of these features contribute to non-autistic emotion recognition, only distance contributes to autistic emotion recognition.
- Non-autistic individuals with higher variability, and therefore less precise internal representations, had poorer emotion recognition accuracy.
- Both non-autistic and autistic individuals with smaller distances, and therefore more overlapping emotion representations, had poorer emotion recognition.
- Accuracy, variability and distance were not predicted by the level of autistic traits or alexithymic traits.

**References**