

Taking Emotions at Face Value?

Exploring face processing in anxious children

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Introduction

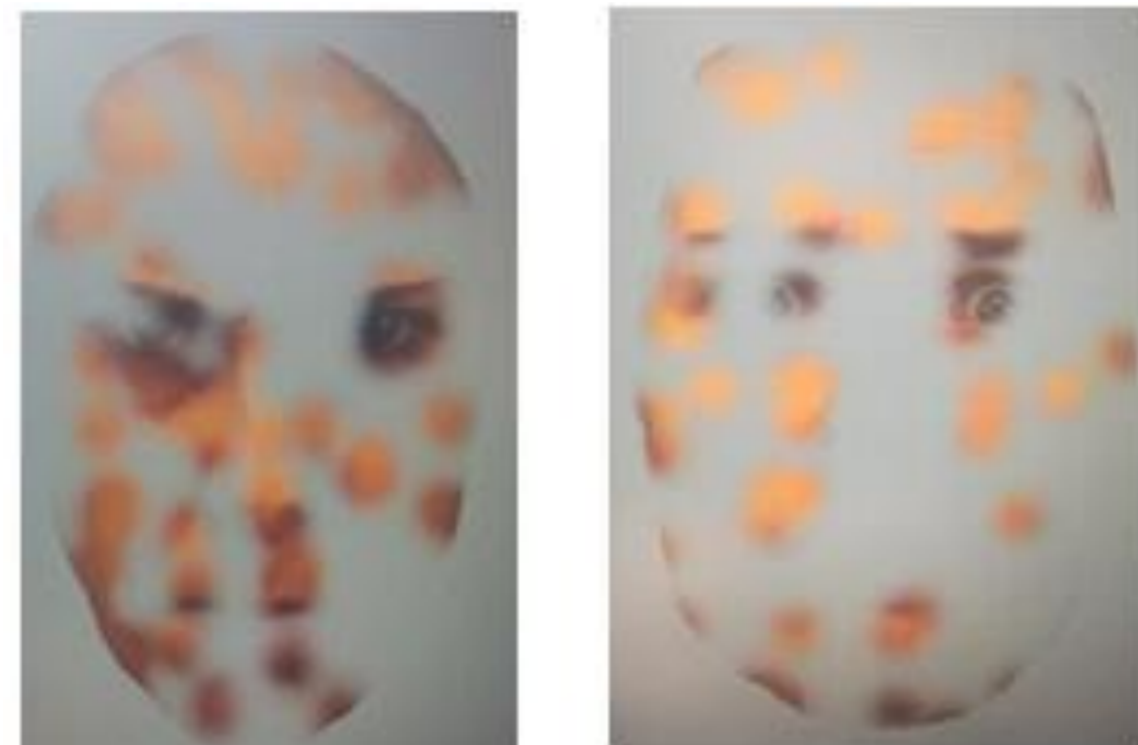
- Social anxiety disorder (SAD) is a common mental health problem, typically emerging during mid childhood. Since facial expressions are a key aspect of social interactions, researchers have sought to discover more about how socially anxious children process faces, in order to inform interventions and treatments.
- However, research so far has produced contradictory results, and most studies have focused on adults. For example, Horley et al. (2004) found that adults with SAD avoided the eye region, whilst Langner et al. (2009) discovered that they did not.
- Age has also been investigated - Ewing et al. (2017) found that children generally become more accurate at identifying facial expressions as they get older, plus older children tend to rely on fewer facial features.
- The present study aimed to build upon and clarify the previous research. Studying children is important due to the young onset age of SAD and due to the developmental differences in facial processing, and to help fill a gap in the literature. There were two research questions. Firstly, does the ability to identify emotional faces vary as a function of social anxiety level and age? Secondly, what facial features do children with SAD use to identify emotional faces?

Hypotheses

- 1) Children with low SAD will be more accurate than children with high SAD at identifying emotional faces.
- 2) Older children will be more accurate than younger children at identifying emotional faces.
- 3) The effects of SAD and age will interact.
- 4) Children with high / low SAD will differ in the facial features used to correctly identify emotional faces.
- 5) Older children will use fewer facial features than younger children to correctly identify emotional faces.

Methods

- 96 children (aged 8-11 years) completed the Bubbles task, but the final sample consisted of 56 children (mean age 122 months, 28 female) due to selecting the most and least socially anxious. 10-11 year olds were classed as 'older' and the 8-9 year olds as 'younger'
- The 'Bubbles' task was created in MatLab, based on the original paradigm by Gosselyn and Schyns (2001). Adult faces (expressing either anger, sadness, disgust or fear) were displayed on a laptop, with only some parts of the face visible. The child had to press a keyboard button to indicate which expression the face was showing.



Examples of the stimuli used in the Bubbles task

- After a practice run, participants completed six blocks of the Bubbles task, with a break half way through (see diagram below). Each block consisted of 36 trials, so 216 trials were completed in total by each participant.

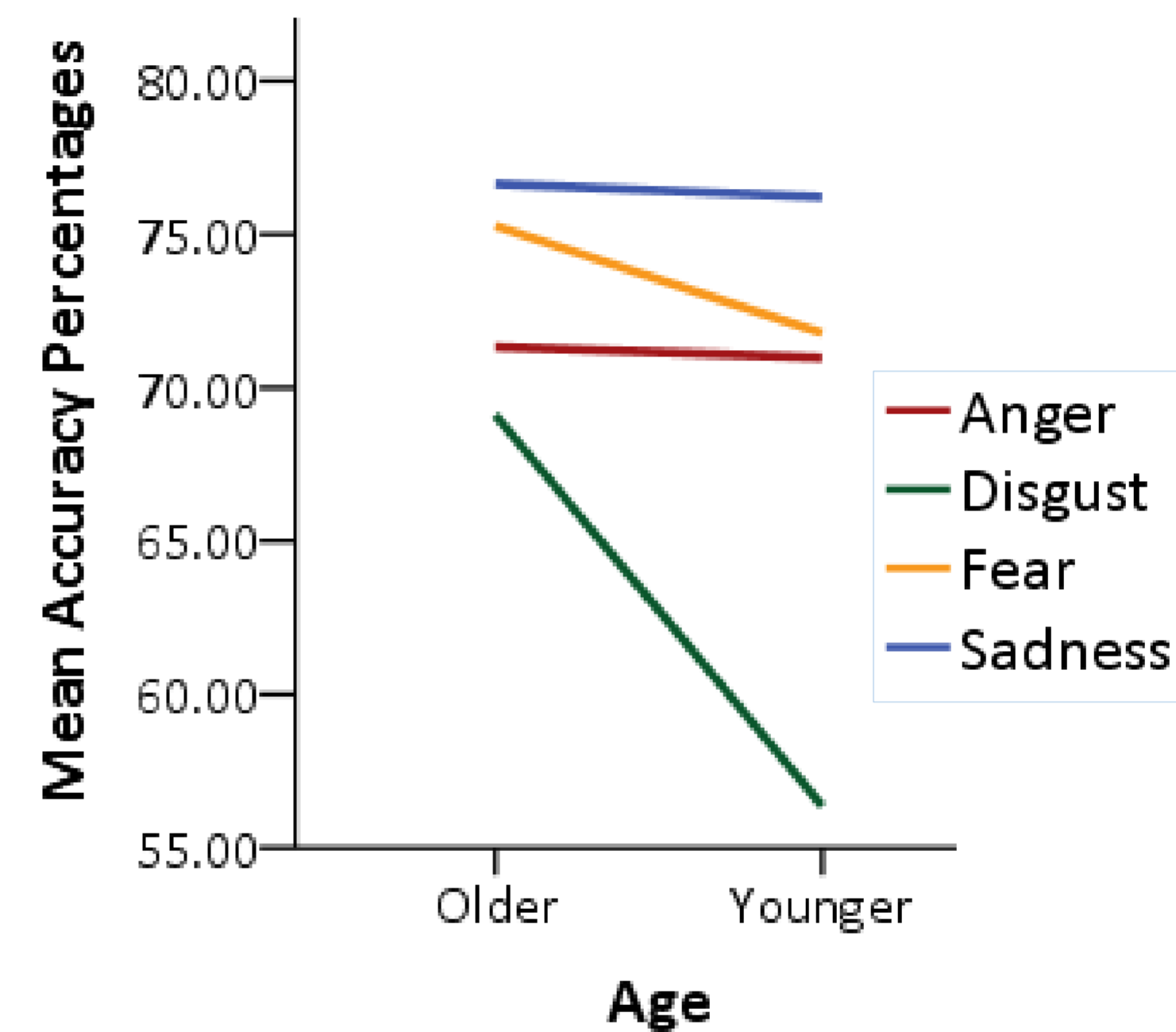


The experimental procedure for the Bubbles task

- The social phobia subscale of the Spence Children's Anxiety Scale (SCAS) parent report was used to split the participants into groups of high and low SAD.
- A mixed design was employed. There were two between-subjects factors (SAD and age) and one within-subjects factor (emotional expression). The dependant measures were accuracy scores from the Bubbles task and the differences in facial features utilised.

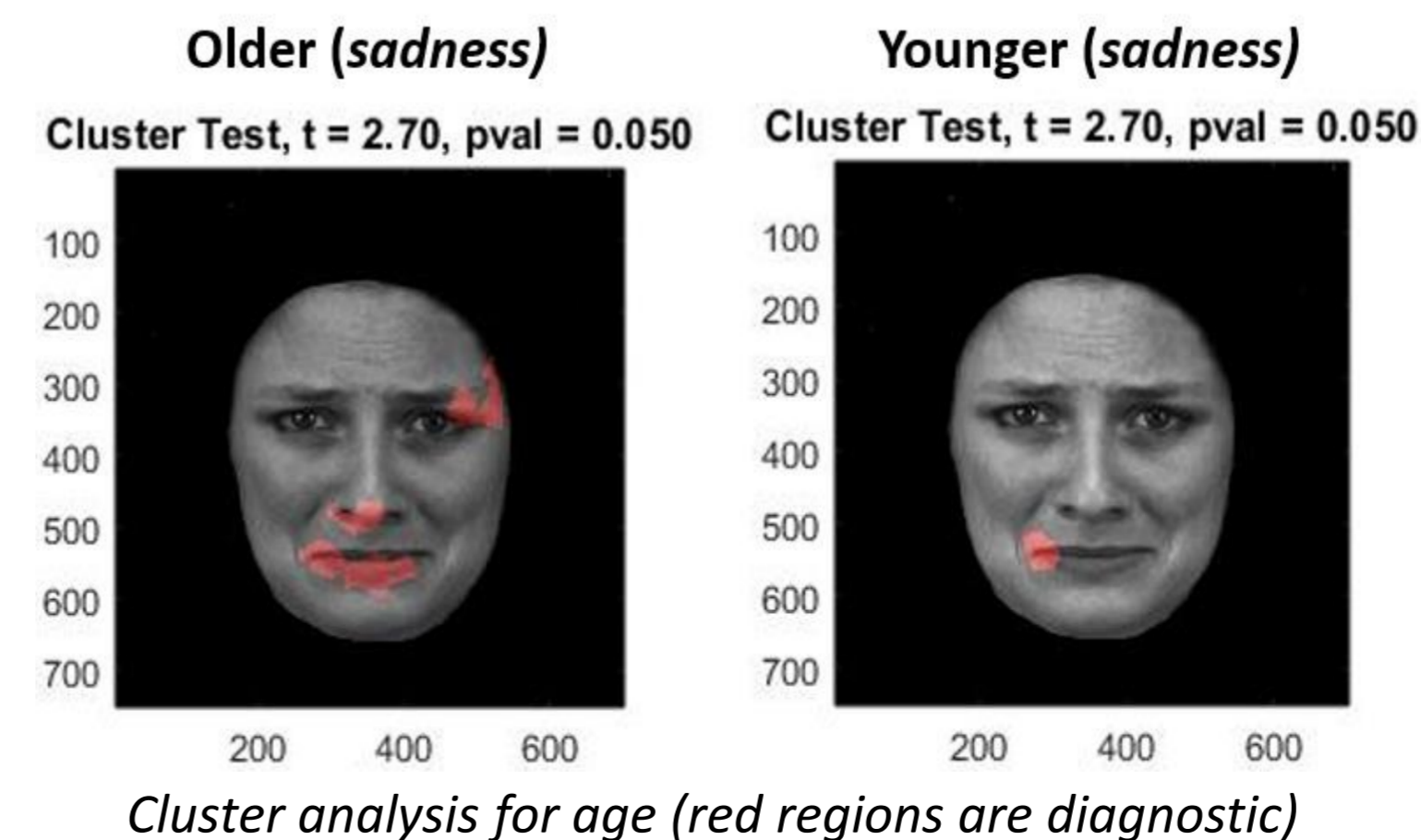
Results

- A mixed ANOVA revealed a significant main effect of emotion, $F(3,156) = 11.15, p < .001$, and a significant main effect of age, $F(1,52) = 4.64, p = .036$. The interaction was also significant, $F(3,156) = 2.70, p = .048$. Post-hoc pairwise comparisons revealed the difference lay in the younger group, whose accuracy scores for disgust were significantly lower. There were no other significant differences.



Graph showing the effect of age on accurate identification of emotional expression

- Cluster analysis revealed various significant diagnostic regions across both SAD and age. Notably, the older group and the high SAD group used more facial features. For instance, the older participants used additional features to identify sadness (see below).



Discussion

- Hypothesis 1 was not supported – there was no significant difference between the high and low SAD groups in terms of accuracy, contradicting much of the previous research. However, hypothesis 2 was supported: the older participants were significantly more accurate, supporting Ewing et al.'s (2017) claim that face processing abilities improve with age. Yet age did not significantly interact with SAD to effect accuracy, so hypothesis 3 was unsupported.
- The SAD groups did use significantly different regions of the face when correctly identifying several expressions, supporting hypothesis 4 – for example, the low SAD group used the eyes significantly more than the high SAD group, which is consistent with Horley et al.'s (2004) study. Contrary to hypothesis 5, older children used more facial features than the younger children to correctly identify the expressions, contrasting with Ewing et al.'s findings.
- Limitations included low ecological validity (as viewing faces on a screen is not reflective of everyday interactions). Future research could attempt to replicate the study with children who have been clinically diagnosed with SAD, and also with younger age groups (like lower primary school).
- In conclusion, this study has contributed to the knowledge of emotional face processing in children, and has potential implications for our understanding and treatment of SAD.

References

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