The impact of face masks on autistic adults’ face processing abilities
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Introduction
This study aimed to investigate the impact of face masks on autistic and non-autistic adults face processing abilities, specifically facial emotion and identity recognition.

Previous research:
• Face masks hinder both identity and emotion recognition (Marini et al., 2021).
• Face masks hinder face learning and recognition with autistic participants (Tso, Chui, Hang and Hsiao, 2021).
• Emotion recognition is atypical in autism (Uljarevic and Hamilton, 2013)

Alexithymia has recently been shown to modulate atypical emotion recognition rather than autism (Cook et al, 2013), and has been associated with decreased emotion recognition abilities when obscuring face regions (Maiorana et al., 2022).

This research builds on previous literature that indicates that:
• Emotion recognition is poorer when obscuring parts of the face.
• Autistic individuals have atypical emotion recognition abilities.
• Alexithymia, not autism modulates atypical emotion recognition in autistic individuals.

Hypotheses
1. Wearing face masks will be a predictor of decreased emotion recognition abilities.
2. Autism will predict decreased emotion recognition abilities.
3. Alexithymia may influence emotional recognition abilities.

Method
This study was conducted online with 63 participants (38 non-autistic, and 25 autistic), and were 18 years old or over. Participants completed a facial emotion and identity recognition task replicated from Cook et al. (2013), with the addition of facial stimuli partially obscured by face masks (see figure 1). Participants also completed a demographics questionnaire, the TAS-20 alexithymia scale, and the AQ-28 (abridged autism quotient).

Results
A three-way mixed ANOVA found:
• a significant effect of condition, F(1, 61) = 28.13, p = <.001
• a significant effect of task, F(1, 61) = 24.18, p = <.001
• a significant interaction effect between condition and group, F(1, 61) = 4.29, p = .043
• a significant interaction between condition and task, F(1, 61) = 23.70, p = <.001
• No significant interaction between task and group
• No significant interaction between condition, task, and group
• No significant overall main effect of group.

Overall, these results indicate:
• No main group effect, as masks affected both autistic and non-autistic groups.
• Performance was worse in the mask conditions compared to no-mask conditions.
• Performance was worse in the emotion task compared to the identity task.
• Masks affected the emotion recognition task more than the identity recognition task (see figure 2 for average scores for the tasks and conditions).

As the data was non-normal, non-parametric tests were also conducted. Findings indicate:
• An effect of participant group on mask-no mask difference scores both for the emotion task (H(1) = 5.52, p = .019) and the identity task (H(1) = 4.81, p = .02).
• This indicates that there was a greater effect of masks for the autistic group, in either task.

Regressions were conducted to investigate the impact of alexithymia and autistic traits on face processing. None of the models were significant, for any of the dependent variables, suggesting that neither alexithymia, nor autistic traits significantly predicted facial emotion and identity recognition.

Discussion
The results show:
• both the identity and emotion recognition task were negatively affected by masks, although significantly worse on the emotion recognition task.
• face masks negatively impact facial emotion recognition for both autistic and non-autistic individuals, although this is amplified for the autistic group.

These findings support our first hypothesis, that wearing face masks will be a predictor of decreased emotion recognition abilities.

However, the results from the regression analysis do not support the second and third hypotheses as the regression indicated that neither alexithymia or autistic traits significantly predicated facial emotion and identity recognition.

These findings support previous research, indicating that face masks do disrupt emotion recognition, and that the mouth region plays an important role in emotion recognition and differentiation.

However, the current study does not support research surrounding emotion recognition, autism, and alexithymia. This could be due to:
• the small autistic sample, which may have been insufficient to establish an effect.
• the heterogeneity of autism and alexithymia

Conclusions
Overall, it is interesting that face masks appear to impact emotion recognition for both autistic and non-autistic individuals. Future research could further examine the effect of face masks on face processing for both clinical and non-clinical populations, to ascertain the extent to which masks have an impact.

References

Figure 1. Original stimuli on the left, and the edited version on the right.

Figure 2. Average scores for the emotion and identity task, mask and no mask conditions. Lower scores indicate better performance.

*N = non-autistic sample. *ASC = Autistic spectrum conditions sample.