Identifying and Describing Subtypes of Spontaneous Empathic Facial Expression Production in Autistic Adults

Jennifer M. Quinde Zlibut

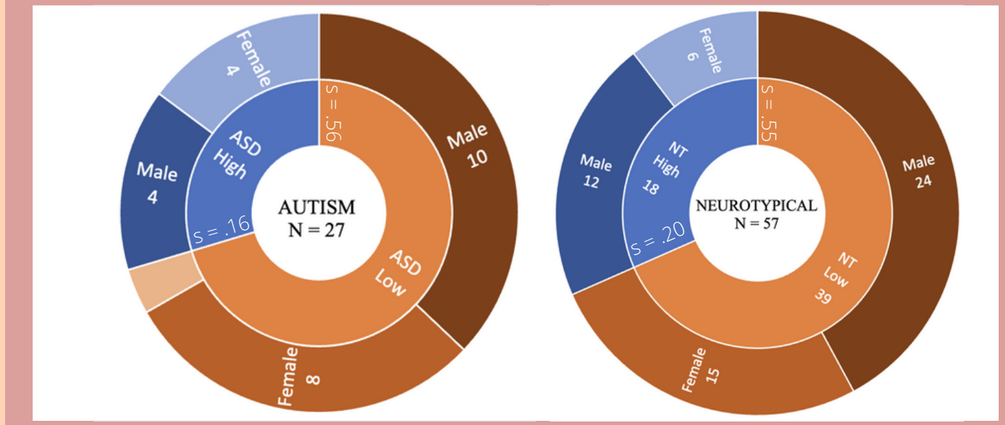
LASR

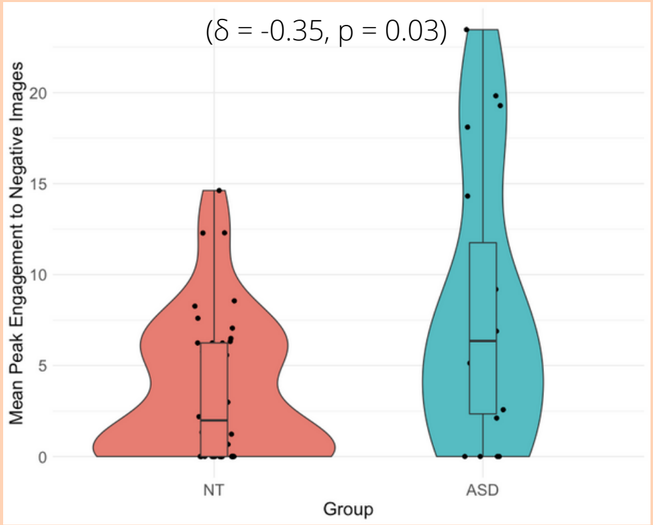
Background

Autism is a neurodevelopmental condition exemplified by difficulties with socio-emotional communication skills. Atypical use of non-verbal cues like the production of emotional facial expressions is central to problems with developing and maintaining healthy social relationships across the lifespan. Autism research on the use of spontaneous facial mimicry, a mechanism used to infer the mental states of our social partners, has been largely inconclusive.

Facial expressions are nuanced and dynamic and it is not clear whether atypical patterns of facial expression production (FEP) metrics in autism reflect this heterogeneity or a true diagnostic difference.

High and Low Expressivity Subtypes Found in NT and ASD Adults





Conclusions

FEP is highly variable in both NT and ASD.

Exclusion of more variable and unstable data points reveals that ASD differs primarily in FEP to negative images.

Differences in temporal dynamics of FEP (peak latency) remain to be explored.

Methods

K-means clustering clustering analysis was applied to explore and identify subtypes of facial expression profiles in autistic and neurotypical adults. Clustering features included mean **peak engagement**, **and valence scores** derived from an automatic facial coding algorithm while participants completed the emotional empathy (EE) survey questions in the Multifaceted Empathy Task (MET).

Emotional empathy surveys involved participants rating how much they related to the emotions depicted on 16-positive and 16-negative emotionally-charged images. Spontaneous facial expressions produced while completing the MET were recorded and analyzed for overall engagement and emotional congruence to positive and negative images (for a total of 4 cluster features).