Background

- Individuals with autism spectrum disorder (ASD) exhibit varying levels of social communication difficulties, impacting both their language and gesture skills.
- Prior research indicates that decreased attention to faces when viewing social interactions correlates with lower social and language abilities in ASD.

Objective

- To investigate relationships among linguistic and gestural abilities with looking patterns to videos of social interactions with and without spoken language.

Methods

ABC-CT Study Details

- Methodologically rigorous, multi-site evaluation of potential biomarkers in a large sample of children with and without ASD.
- Longitudinal study evaluating children across 6 months, including clinical assessment, eye-tracking (EEG), and eye-tracking (ET).

Inclusion/Exclusion Criteria

- ASD Group: Age 6-11; met criteria for ASD based onADOS-2, ADI-R, and DSM-5; IQ 80-150; stable medication for 8 weeks; no sensory/motor impairments, epilepsy, or genetic/neurodevelopmental conditions.
- Typically Developing (TD) Group: Age 6-11; IQ 80-150; stable medication for 8 weeks; no sibling with ASD; no sensory/motor impairments, epilepsy, or genetic/neurodevelopmental conditions; no clinically significant scores on the Child and Adolescent Symptom Inventory, 9th Edition (CAASI-9).

Participant Demographics

<table>
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<tr>
<th>n (Female)</th>
<th>Age (SD)</th>
<th>IQ (SD)</th>
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<tbody>
<tr>
<td>ASD</td>
<td>161 (36)</td>
<td>87.1 (1.62)</td>
</tr>
<tr>
<td>TD</td>
<td>246 (64)</td>
<td>87.3 (1.77)</td>
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</table>

**Diagnostic groups did not differ on age but were significantly different on sex (F(1,223)=8.514, p<0.01) and IQ (F(1,223)=52.746, p<0.001).**

Measure

- Vineland Adaptive Behavior Scales, 3rd Edition: Clinician-administered caregiver interview used to assess adaptive behavior functioning, including communication.
- Expressive vocabulary.
- Receptive v-score.
- Gesture Codes

ET Acquisition

- Binocular eye-tracking data were collected at 500 Hz using SR EyeLink 1000 Plus.
- EyeLink 6000 was used for eye-tracking (EEG), and eye-tracking (ET).

Results

Speech and Attention to Faces Compared to Activity

- Across both paradigms, children with ASD looked significantly less to faces compared to activity TD children (F(1,223)=7.625, p<0.006).
- Children with ASD looked significantly less to faces compared to activity during videos with speech (F(1,223)=33.931, p<0.001).
- In the TD group, there was no significant difference in looking time to faces compared to activity between speech and non-speech videos.

**Log (%, looking to faces)/seconds**

Results of the ABC-CT Tier Interim Analysis

- Increased looking time to faces during videos with speech compared to videos without speech.

Discussion

- In children with ASD, higher Vineland-3 receptive language scores significantly correlated with greater looking time to faces during the videos with speech (r(161)=0.203, p=0.010).
- In TD children, higher Vineland-3 receptive language scores significantly correlated with greater looking time to faces during the videos with speech (r(63)=0.269, p=0.033).

References


Funding sources: NIH/U19 MH108206 (McPartland)