Dissociation Between Linguistic and Nonlinguistic Statistical Learning in Children with Autism

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• Children with autism spectrum disorder (ASD) exhibit highly variable language abilities (Kjelgaard & Tager-Flusberg, 2001; Norbury, Griffiths & Nation, 2010; McIntyre et al., 2017).

• Yet, mixed findings have been reported regarding the existence of SL deficits in autism.

• Three methodological limitations in prior work limit our understanding of SL in autism:
  1. The use of a single SL task
  2. The assumption of developmental invariance
  3. The use of only offline learning measures.

Research Question:
- Do children with autism show atypical SL across domains and modalities?

RESULTS

THE GOALS

• The use of a single SL task
• The assumption of developmental invariance
• The use of only offline learning measures.

Analysis 1. Do children with autism show atypical SL across domains and modalities?

SL Reaction Time Slope

Analysis 2. Do the specific weaknesses in Linguistic SL differ across development?

Analysis 3. The Relationship between Language and SL

SUMMARY

• Children with autism showed specific weaknesses in linguistic SL.

• There is a potentially exacerbating difficulty in linguistic SL in older children compared to younger children with autism, which may be explained by:
  • A reciprocal relationship between language experiences and statistical learning.
  • There is a parallel impact of autism on linguistic SL that is separate from the interplay between language skills and linguistic SL.

Characteristics TDTADSD Group Difference

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<thead>
<tr>
<th>Characteristics</th>
<th>TD</th>
<th>ASD</th>
<th>Group Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Sample</td>
<td>50</td>
<td>55</td>
<td>!2 = 14.62, p &lt; 0.001</td>
</tr>
<tr>
<td>Mean Age (SD)</td>
<td>8.63 (1.89)</td>
<td>8.28 (1.20)</td>
<td>!2 = 1.12, p = 0.27</td>
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<tr>
<td>Mean QIC (SD)</td>
<td>3.89 (2.00)</td>
<td>15.38 (5.95)</td>
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<tr>
<td>Mean RBS-R (SD)</td>
<td>32.69 (22.61)</td>
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<tr>
<td>Maternal age, yr</td>
<td>20 ± 3.4</td>
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Sentence recall raw scores showed a lack of correlation with nonlinguistic SL composite scores.

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