**BACKGROUND**

- Autism spectrum disorder (ASD) and neurodevelopmental disorder characterized by social communication challenges and restricted & repetitive behaviors.
- Atypical vocalizations appear to be an early indicator of ASD.
- Toddler's with ASD produce fewer speech sounds than typically developing (TD) toddlers.
- Fine-grained analyses of children with ASD's vocalizations have used phonetic transcription via the International Phonetic Alphabet (IPA).
- IPA utilizes symbols that capture all speech sounds in an audio recording.

**OBJECTIVES**

1. To compare vocalizations produced by children with ASD and TD children across developmental stages.
2. To compare within the ASD sample by analyzing the vocalizations of low- versus middle-verbal children with ASD.

**METHODS**

- 24 participants from a longitudinal study tracking the language abilities of children with ASD and TD children (see Table 1).
- Participants were grouped based on their Mullen Expressive Language raw scores at visit 1.
- Language samples from 30-minute parent-child play sessions during three home visits (V1, V2, & V3), each four months apart, were transcribed via IPA.

**RESULTS**

- When transcribing vocalizations into IPA, we are listening for distinct phonemes.
- We coded for consonant and vowel types (i.e., unique consonants & vowels) and tokens (i.e., total # of consonants & vowels).

**DISCUSSION**

- In conjunction with previous studies, children with ASD produced fewer consonant and vowel types and tokens than their TD peers at three major developmental stages.
- Moreover, low-verbal children produced even fewer consonant and vowel types and tokens than middle-verbal children with ASD.
- These patterns suggest that transcribing via IPA has the ability to capture the heterogenous language profiles within ASD at an early age.
- Future work should:
  - continue to investigate the development of vocalization patterns longitudinally to determine whether children with ASD continue to fall behind their TD peers, and
  - assess other phonetic patterns in vocalizations, such as phoneme elongation.

**Table 1. Demographic information and standardized test scores**

<table>
<thead>
<tr>
<th></th>
<th>Age in months at V1 (M, SD)</th>
<th>Mullen Expressive Language Raw Score (M, SD)</th>
<th>ADOS Total (M, SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-Verbal ASD (n = 8)</td>
<td>34.48 (5.4)</td>
<td>9.88 (1.13)</td>
<td>18 (3.12)</td>
</tr>
<tr>
<td>Middle-Verbal ASD (n = 8)</td>
<td>33.00 (5.4)</td>
<td>15.88 (2.64)</td>
<td>14.25 (2.55)</td>
</tr>
<tr>
<td>TD (n = 8)</td>
<td>19.3 (0.37)</td>
<td>15.25 (1.49)</td>
<td>0.5 (1.07)</td>
</tr>
</tbody>
</table>

**References & Acknowledgements**

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