## Patterns of Interactional Prosody in Youth with and without Autism

--- An Exploration ---

**Nigel G. Ward, Jonatan M. Contreras, Heike Lehnert-LeHouillier**

University of Texas at El Paso, New Mexico State University

### Motivation
Research on ASD prosody has focused mostly on its emotional and linguistic functions [1]. How does *interactional* prosody differ between youth with ASD and NT peers?

### Analysis Framework
Prosocial constructions [3,4], which relate:
- Form: temporal configurations of multiple features: pitch, intensity, lengthening, reduction, voicing properties, etc.
- Function: aspects of turn taking, speech acts, stance taking, etc.

### Data
Dialogs between adolescents and a confederate, in a picture difference spotting task [2].
- 20 age-matched ASD and NT youth, ages 9 – 15, totaling 155 minutes of dialog

### Methods
1. Automatic analysis to discover the constructions (Principal Component Analysis over 212 features computed across 400K+ samples from each population).
3. Quantitative and qualitative analysis of differences between NT and ASD constructions, in function and form.
4. Additional structured observations to explore differences.

### Results

<table>
<thead>
<tr>
<th><strong>Top 7 NT Constructions’ Functions</strong></th>
<th><strong>Top 7 ASD Constructions’ Functions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 [noise exclusion]</td>
<td>1 holding the floor</td>
</tr>
<tr>
<td>2 holding the floor, etc.</td>
<td>2 contrast or correction</td>
</tr>
<tr>
<td>3 topic transition vs topic keeping</td>
<td>3 topic transition vs topic keeping</td>
</tr>
<tr>
<td>4 marking stress</td>
<td>4 new vs old information</td>
</tr>
<tr>
<td>5 topic-comment vs repair</td>
<td>5 turn end vs turn start</td>
</tr>
<tr>
<td>6 turn yield vs hold</td>
<td>6 disfluent vs planned</td>
</tr>
<tr>
<td>7 marking agreement vs disagreement</td>
<td>7 factual vs emotional</td>
</tr>
</tbody>
</table>

A. As the blue lines suggest, there were no consistent lacks, i.e., no evidence for a specific deficit in any specific function consistently across ASD speakers’ prosody. (contrary to expectation)

### Future Plans
A possible new focus for interventions.
A possible road to better assessment instruments [6].
A new way to analyze data.

### Implications for Clinicians
Interactional prosody can also be impaired. It may be appropriate to focus interventions on these aspects.

### Implications for Research
- A new way to analyze data.
- Additional structured observations to explore differences.
- Develop techniques to accurately model individual prosodic repertoires and differences.

### References

### Contact:
nigel@utep.edu