Objective Language Feature Analysis in Children with Neurodevelopmental Disorders during Autism Assessment

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Motivation
➢ ASD Prevalence in American children : 1 in 68
➢ Marked by delayed and impaired language production and use : echolalia, neologism, etc.
➢ To come up with objective linguistic measures describing behavioral characteristics
➢ Aid language-specific assessment and overall diagnosis

Background
➢ Linguistic norms : Continuous affect measures extracted from transcriptions (eg : Sentiment analysis)
➢ Extension beyond emotion norms and scalability to large corpus explored in recent times
➢ ADOS : Semi-structured, module-specific ASD assessment tool
➢ Different categorical codes combined into ASD severity score

Dataset Demographics

<table>
<thead>
<tr>
<th>Norm-Severity Correlates</th>
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<tbody>
<tr>
<td>Norm</td>
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<tr>
<td>Concreteness (F1)</td>
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<td>Valence (F1)</td>
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<tr>
<td>Gender Ladenness (F1)</td>
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<tr>
<td>Affect (F2)</td>
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Table 1 : Correlation analysis (p<0.05). Only selected norms presented here. Complete experiments reported in paper.

Discussion
➢ Significant classification accuracy with MaxEnt. No significant increase with lexical norms
➢ Psychologist’s affect influenced by child’s diagnosis
➢ Selected frequent N-grams of different diagnostic groups:

Future Work
➢ Automate lexical analysis using ASR decoded hypothesis/lattices
➢ Integrate audio/video modality in the classification setup

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Fig 1 : Demographic information. ‘Emotions’ and ‘Social Difficulties & Annoyance’ Tasks from Module 3 of ADOS are selected for this work.

Fig 2 : Overview of the classifier system. Best estimate clinical diagnosis used as ground truth.

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