

Background

- ASD is characterized by atypical language.
- Previous work has looked at low-level linguistic features in a restricted context.
- Little research focuses on high-level discourse patterns of adults with ASD.

Objectives

- Confirm previous findings about low-level lexical and syntactic characteristics of language in high-functioning young adults with ASD.
- Explore differences in high-level discourse patterns of young adults with and without ASD.

Data

- Young adult males, aged 20-25.
- ASD participants (n=3) were matched with TD participants (n=3) on age, GPA, and major.
- Conversation elicited using a cooperative game paradigm in which the participant engaged in a dialog with a partner towards task completion.
- Transcripts of dialogs were recorded, then annotated using Speech Processing Linguistic Analysis Tool (SPLAT).

SPLAT

- Python library developed to aid in annotating and analyzing speech transcripts.
- Easy to use, open source, actively maintained.
- <https://github.com/meyersbs/SPLAT>

Linguistic Features Analyzed

Syntactic Complexity

$$\text{Idea Density} = \frac{\text{Number of Prepositions}}{\text{Number of Words}}$$

Words per Utterance

$$\text{Content Density} = \frac{\text{Number of Open Class Words}}{\text{Number of Closed Class Words}}$$

Yngve & Frazier Scores

Disfluencies

Nasal (um, hm)

UM, WE ARE GOING TO UM, PRESENT, HM...

Non-Nasal (uh, ah, er)

THAT WAS UH, WHAT WAS HIS NAME...

Silent Pauses

I THINK {SL} I THINK WE ARE PRESENTING...

Repetitions

ARE YOU, ARE YOU GOING TO PRESENT...

Breaks

I BELIE- I THINK WE ARE GOING TO PRESENT...

Dialog Acts

Acknowledgment

OH ALRIGHT

Action-Request

{SL} OK PUSH THE BLOCK ON TO THE RAMP

Action-Suggest

I'D SAY START OUT BY MOVING PAST AND JUMPING OVER...

Answer-Neutral

{SL} OK

Answer-No

{SL} UM NO I HAVEN'T

Answer-Yes

YEAH

Apology

OH SORRY SORRY

Clarification-Request

{SL} WAS I SUPPOSED TO KEEP MY HEAD STILL

Filler

{SL} OK SO

Info-Request

IS IT POSSIBLE FOR ANY OF THESE LEVELS TO...

Inform

I'M GONNA JUMP UP HERE {SL} AND I'M GONNA PRESS...

Other

{SL} AND

Thanks

ALRIGHT THANK YOU

Results

- No differences discovered in syntactic complexity features.
- Disfluencies
 - **Nasal:** TD > ASD (p < 0.05).
 - **Non-Nasal:** ASD > TD (p < 0.01).
- Dialog Acts
 - **Acknowledgment:** TD > ASD (p < 0.05).
 - **Action-Request:** TD > ASD (p < 0.05).
 - **Action-Suggest:** ASD > TD (p < 0.05).

Discussion

- Low-level lexical and syntactic features that distinguish ASD from TD in children may not be distinctive in young adults.
- Discourse analysis focusing on more complex pragmatic features shows promise for distinguishing the two groups.
- This work supports previous findings about the persistence of pragmatic differences in ASD.

Future Work

- Comparison with adolescents with ASD.
- Analysis of speech features associated with specific discourse patterns and dialog acts.
- Comparison of cooperative task with other discourse scenarios (e.g. tutoring, picture discussion, website walkthroughs).

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