Children's Differing Patterns of Discourse Marker Use in ASD and Typical Development

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1 Background

Appropriate use of discourse markers (DMs) such as 'and', 'ok', or 'wait', is important for conversational reciprocity. Based on deficits in social communication and interaction being core symptoms of autism spectrum disorder (ASD), we hypothesize atypical use of conversational DMs in ASD. Plausibly because of the effort of annotating conversations, few studies have tested this hypothesis. However, new computational text analysis tools exist that may be adapted for quantitative characterization of DM use in ASD.

2 Objectives

(1) To develop text analysis tools for detecting DMs and for determining whether the examiner asked a question and, if so, whether it is a yes/no (YN) or a WH (e.g., 'who', 'where') question. (2) To apply these tools to transcripts of ADOS conversations involving children with ASD or typical development (TD).

3 Methods

3.1 Participants

Participants were children ages 4-8, 44 with TD and 50 with ASD, age-matched. ASD diagnosis utilized the ADOS revised algorithm (Lord et al., 2002), the Social Communication Questionnaire (Rutter et al., 2003) , and DSM-IV-TR (American Psychiatric Association, 2000; American Psychiatric Association, 2013), based clinical consensus. Also a subset of the ASD group was selected (ASD without language impairment, or ALN group; N=24) with a CELF Core Language Score above 85, VIQ- and NVIQ-matched to the TD group.

3.2 DMs

Algorithms were developed to extract DMs from transcripts, distinguishing between acknowledgments (ACK: 'yes', 'no', 'hmm', 'ok', 'right', 'uhhuh') vs. non-acknowledgement DMs (nACK: 'then', 'but', 'well', 'oh', 'so', 'wait', 'actually').

3.3 Context

Algorithms were developed to determine whether the examiner asked a question (Q), a YN question, a WH question, or not a question (nQ).

3.4 Measure

For each context (Q, YN, WH, or nQ), we calculated the percentage of child turns containing nACK or ACK markers.

4 Results

Results were the same for the TD vs. ASD and TD vs. ALN comparisons and are not discussed separately. The ALN group and the remaining ASD group did not differ on any measures. We specify the following planned contrasts: (Q vs. nQ, WH vs. nQ, YN vs. nQ.) ACK markers. Across contrasts, the TD group used significantly more ACK markers than the ASD group in the Q, WH, and YN contexts ($p<0.01$), with a non-significant trend in the nQ context. A non-significant Group x Context interaction indicated a trend for the TD group to change DM more with context than the ASD group. nACK markers. Across contrasts, only in the nQ context did the TD group show more nACK marker use than the ASD group ($p<0.005$); moreover, the Group x Context interaction was significant ($p<0.001$), again with context having a larger effect for the TD group than for the ASD group.

5 Conclusions

The ASD group used fewer DMs overall than the TD group. In addition, the TD group adjusted its use of nACK markers to context more than the ASD group, showing greater responsiveness to the examinerÕs intentions. The results show also that the group differences are not due to language impairment. We conclude that these results lend support to our hypothesis and that, moreover, patterns of DM usage may provide a convenient and robust ASD-specific behavioral marker.

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