

# SEX DIFFERENCES IN PRONOUN AND MAZE USAGE IN THE LANGUAGE OF CHILDREN WITH AUTISM SPECTRUM DISORDER

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## BACKGROUND

Research on sex differences in the language of children with Autism Spectrum Disorder (ASD) has been limited. Song et al. (2020) found that “we” pronoun (1<sup>st</sup> person plural pronouns; e.g., “we”, “ours”) and “they” pronoun (3<sup>rd</sup> person plural pronouns; e.g., “they”, “their”) usage differs among ASD and TD girls and boys. In addition, studies have shown that maze (i.e. intervals of disfluent speech) usage rates distinguish ASD and TD children. However, whether these differences are influenced by sex has not been investigated.

## OBJECTIVES

1. Compare usage rates of “we” and “they” pronouns in ASD and TD girls and boys.
2. Compare maze usage in ASD and TD girls and boys.

## METHODS

A total of 140 children, 98 ASD (17 girls) and 42 TD (22 girls), aged 7 to 15 years old, were included. All had full-scale IQ  $\geq 70$ . Analyses were performed on transcribed Autism Diagnostic Observation Schedule (ADOS), Module 3 sessions. Transcription was completed according to modified Systematic Analysis of Language Transcripts (SALT) guidelines by trained transcribers who were blind to the participants’ diagnostic status and intellectual abilities. Four ADOS conversation tasks were analyzed: *Emotions; Social Difficulties and Annoyance; Friends, Relationships, and Marriage; Loneliness*.

We calculated the total number of times each participant said a “we” pronoun, “they” pronoun, and maze. We fit three logistic regression models (Poisson distribution) with total “we”, “they”, or maze as the response variables and the total number of overall tokens as the offset. Each model included age, full-scale IQ, diagnosis, sex, and a diagnosis and sex interaction term. Pairwise Estimated Marginal Means (EMM) were compared post-hoc.

Figure 1. Estimated Marginal Means (EMM) for logistic regression models (Poisson distribution) of “they” and “we” pronoun rates among ASD and TD girls and boys.

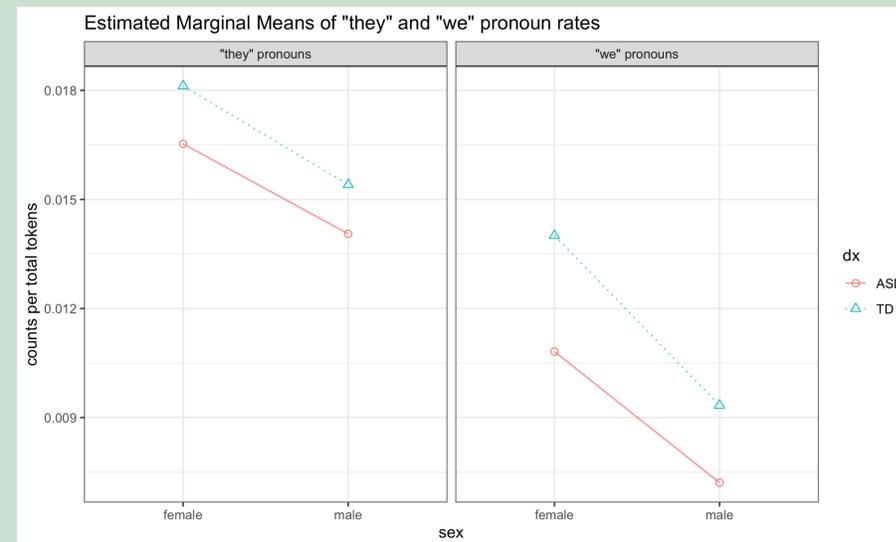
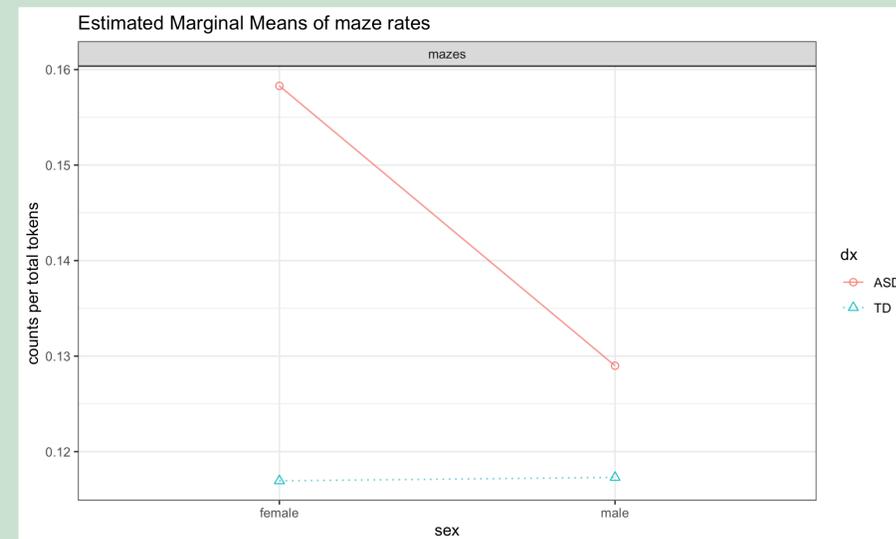


Figure 2. Estimated Marginal Means (EMM) for logistic regression models (Poisson distribution) of “we” and “they” pronoun rates among ASD and TD girls and boys.



## RESULTS

Diagnosis and sex significantly predicted “we” frequency (ASD < TD,  $p < .001$ ; male < female,  $p < .001$ ). There was no significant effect of the diagnosis and sex interaction (see Figure 1). Post-hoc comparisons revealed that ASD girls significantly differed in “we” frequency from TD girls and ASD boys but not from TD boys (TD girls > ASD girls = TD boys > ASD boys,  $p < .0001$ ).

Diagnosis and sex also significantly predicted “they” frequency (ASD < TD,  $p < .05$ ; male < female,  $p < .001$ ). The diagnosis and sex interaction did not have a significant effect (see Figure 1). Post-hoc analyses revealed that ASD boys differed in “they” frequency from ASD girls and TD girls (ASD girls > ASD boys,  $p = .001$ ; TD girls > ASD boys,  $p < .0001$ ).

Lastly, diagnosis and sex significantly predicted maze frequency (ASD > TD,  $p < .001$ ; male < female,  $p < .001$ ). There was a significant effect of the diagnosis and sex interaction ( $p < .001$ ; see Figure 2). Post-hoc analyses revealed that maze frequency significantly differed among all subgroups except for TD girls and boys (ASD girls > ASD boys > TD boys = TD girls,  $p < .0001$ ).

## CONCLUSIONS

Preliminary analyses showed that sex significantly effected “we”, “they”, and maze frequency of ASD and TD participants. Because analyses did not omit instances where “they” pronouns were referring to inanimate objects (e.g., “those shoes”), these results should be interpreted with caution.

## REFERENCES

- Song, A., Cola, M., Plate, S., Petrulla, V., Yankowitz, L., Pandey, J., Schultz, R. T., & Parish-Morris, J. (2020). Natural language markers of social phenotype in girls with autism. *Journal of Child Psychology and Psychiatry*.  
<https://doi.org/10.1111/jcpp.13348>