

## Background

- Verb diversity in childhood predicts adult language and communication outcomes in ASD<sup>1</sup>
- But does ASD often involve difficulty with early verb production?
- Past work measuring verb vocabulary via parent-report checklists shows mixed results<sup>2-4</sup>, but what about verb *use* over time in a naturalistic context?
- This project investigates naturalistic verb production in ASD in two ways:
  1. Overall verb diversity (i.e., verb types)
  2. Use of verbs in subcategories:
    - Action (e.g., eat, run)
    - General all-purpose (GAP; e.g., want, go)<sup>5</sup>
    - Internal state (e.g., think, hope)

## Research Questions

- 1 How does early verb diversity in ASD compare to early verb diversity in typical development?
- 2 What does production within verb subcategories look like in ASD and typical development?

## Methods

- Data from larger longitudinal sample<sup>6</sup>
- ASD: n = 22; TD: n = 22
- Six parent-child play sessions analyzed for each child (V1-V6), each four months apart
  - Groups matched on expressive language at V1
  - ASD mean age at V1 = 31.920 months
  - TD mean age at V1 = 19.991 months
- Videos of parent-child play sessions transcribed and coded using CLAN<sup>7</sup>
- Verbs tagged as action, GAP, or internal state

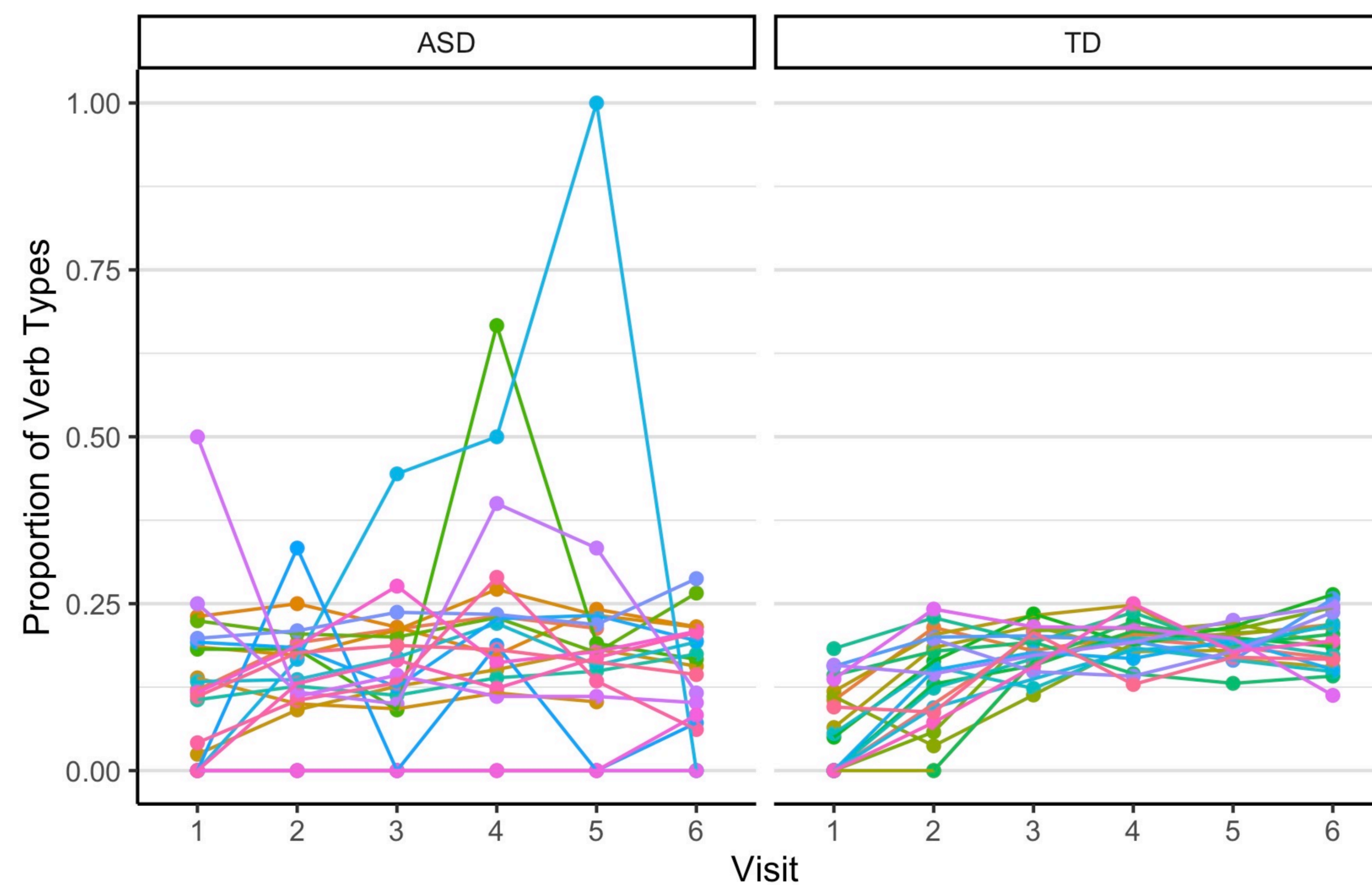
## Results

The ASD group produced a significantly lower proportion of verb types (out of total word types) than the TD group at V6. No significant group differences emerged at V1-5.

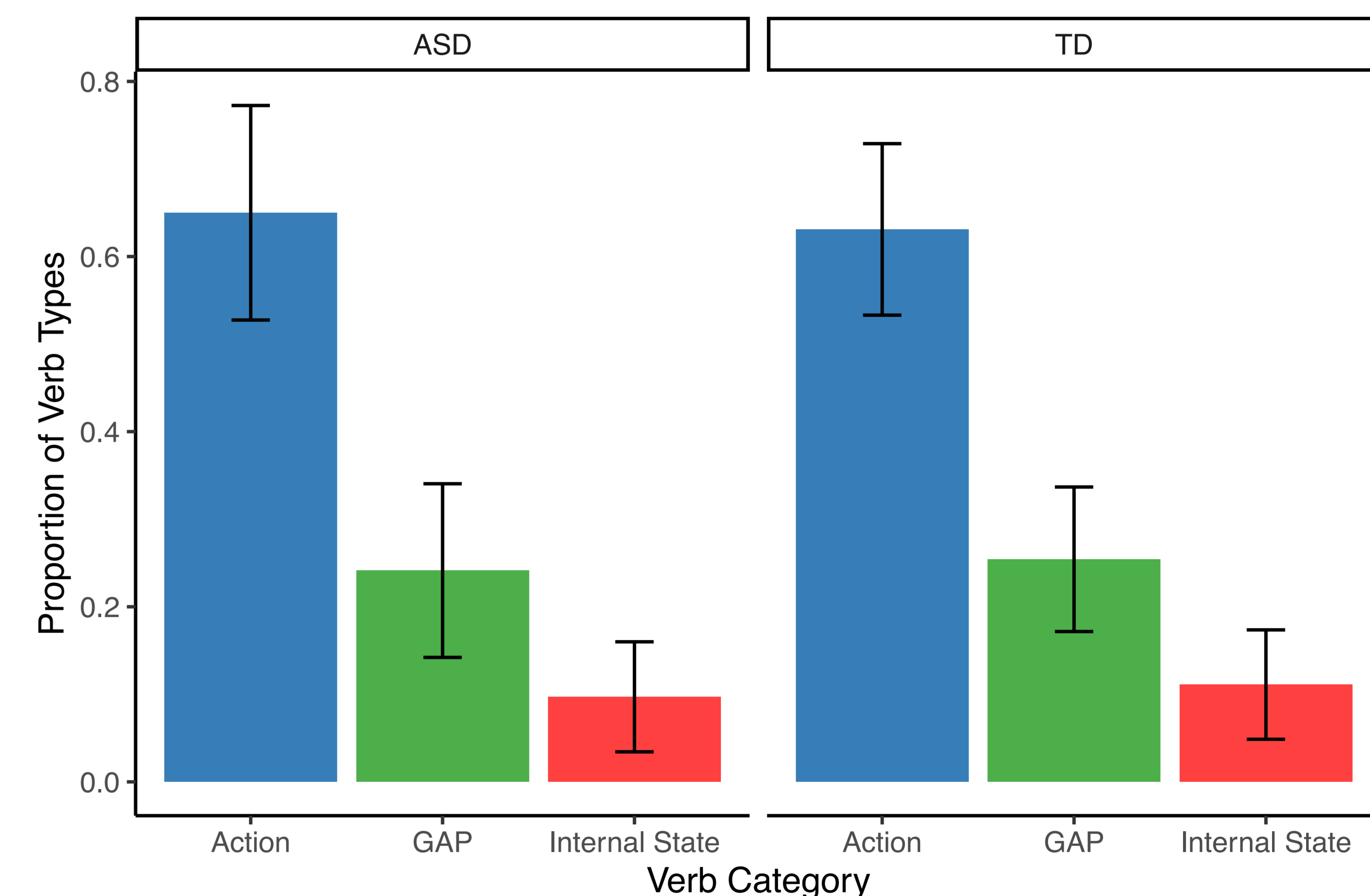
visit	proportion of verb types (out of total word types)		sig. <sup>a</sup>
	ASD mean (SD)	TD mean (SD)	
V1	.125 (.121)	.069 (.066)	.095
V2	.144 (.080)	.136 (.073)	.865
V3	.147 (.104)	.182 (.033)	.094
V4	.220 (.153)	.195 (.031)	.952
V5	.201 (.207)	.189 (.022)	.413
V6	.143 (.086)	.196 (.042)	<b>.050</b>

<sup>a</sup>Used Wilcoxon rank-sum test due to non-normality.

Greater variability exists in proportion of verb types (out of total word types) produced over time in the ASD group than in the TD group.



Across visits, the ASD and TD groups produced comparable proportions of action, GAP, and internal state verb types (out of total verb types).



## Discussion

- Group-level differences in proportion of verb types only emerged at one timepoint (V6)
  - However, the ASD group demonstrated more variable trajectories of verb type proportions over time, reflecting the overall heterogeneity in language in ASD
- Overall, ASD does not seem to involve differences in proportional production of verbs within subcategories (action, GAP, or internal state)
- Future questions: Is verb production more influenced by overall language or ASD diagnosis/characteristics? Does children's verb use within subcategories relate to later language/communication skills? Does verb use vary by play context in ASD and typical development?

## References

1. LeGrand, K. J., Wisman Weil, L., Lord, C., & Luyster, R. J. (2021). Identifying childhood expressive language features that best predict adult language and communication outcome in individuals with autism spectrum disorder. *Journal of Speech, Language, and Hearing Research*, 64, 1997-1991.
2. Ellis Weismer, S., Gernsbacher, M. A., Stronach, S., Krasinski, C., Eernisse, E. R., Venker, C. E., & Sindberg, H. (2010). Lexical and grammatical skills in toddlers on the autism spectrum compared to late talking toddlers. *Journal of Autism and Developmental Disorders*, 41, 1065-1075.
3. Jiménez, E., Haebig, E., & Hills, T. T. (2020). Identifying areas of overlap and distinction in early lexical profiles of children with autism spectrum disorder, late talkers, and typical talkers. *Journal of Autism and Developmental Disorders*. Advance online publication.
4. Rescorla, L., & Safyer, P. (2013). Lexical composition in children with autism spectrum disorder (ASD). *Journal of Child Language*, 40(1), 47-68.
5. Rice, M. L., & Bode, J. V. (1993). GAPS in the verb lexicons of children with specific language impairment. *First Language*, 13(37), 113-131.
6. Naigles, L. R., & Fein, D. (2017). Looking through their eyes: Tracking early language comprehension in ASD. In L. R. Naigles (Ed.), *Innovative investigations of language in autism spectrum disorder* (pp. 49-69). American Psychological Association; Walter de Gruyter GmbH.
7. MacWhinney, B. (2000). *The CHILDES Project: Tools for Analyzing Talk*. 3rd Edition. Mahwah, NJ: Lawrence Erlbaum Associates.

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