From 'Um' to Words: The Role of Disfluency Interactions in Shaping Early Language Development

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1. Background

Disfluencies (e.g., fillers, pauses, retracing, and repetition) are common in speech and reflect moments of increased cognitive effort (e.g., [Arnold et al., 2007, Nafissi and Ramezanee, 2017])

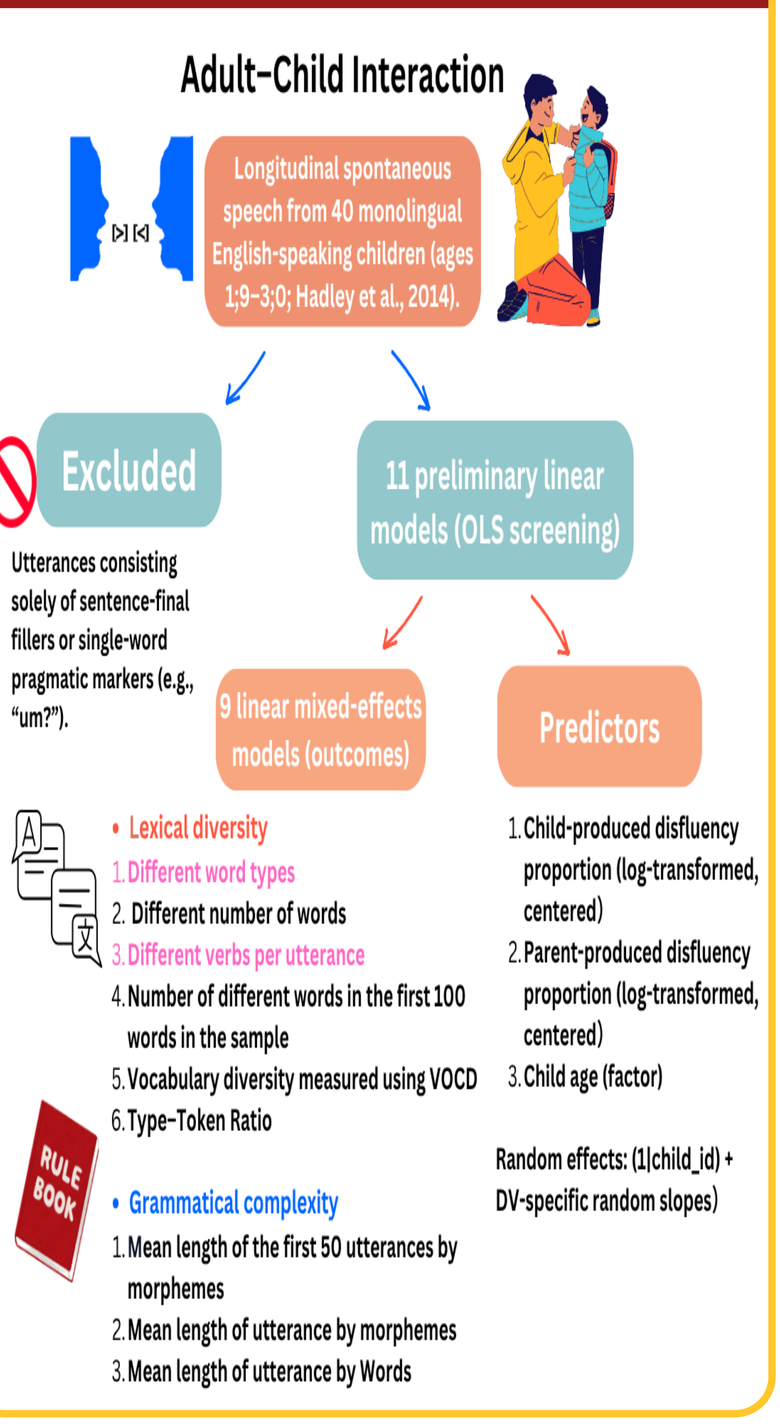
- In **children**, disfluencies often coincide with periods of rapid lexical growth and grammatical development, suggesting a developmental role in language acquisition, which may provide children with additional processing time to plan and execute more sophisticated linguistic constructions (e.g., [Fichman and Altman, 2024]).
- In **adults**, disfluencies occur before complex structures, pointing to a role in managing cognitive resources during language production (e.g., [Fox Tree, 1995]).

2. Hypotheses

We investigate the following hypotheses:

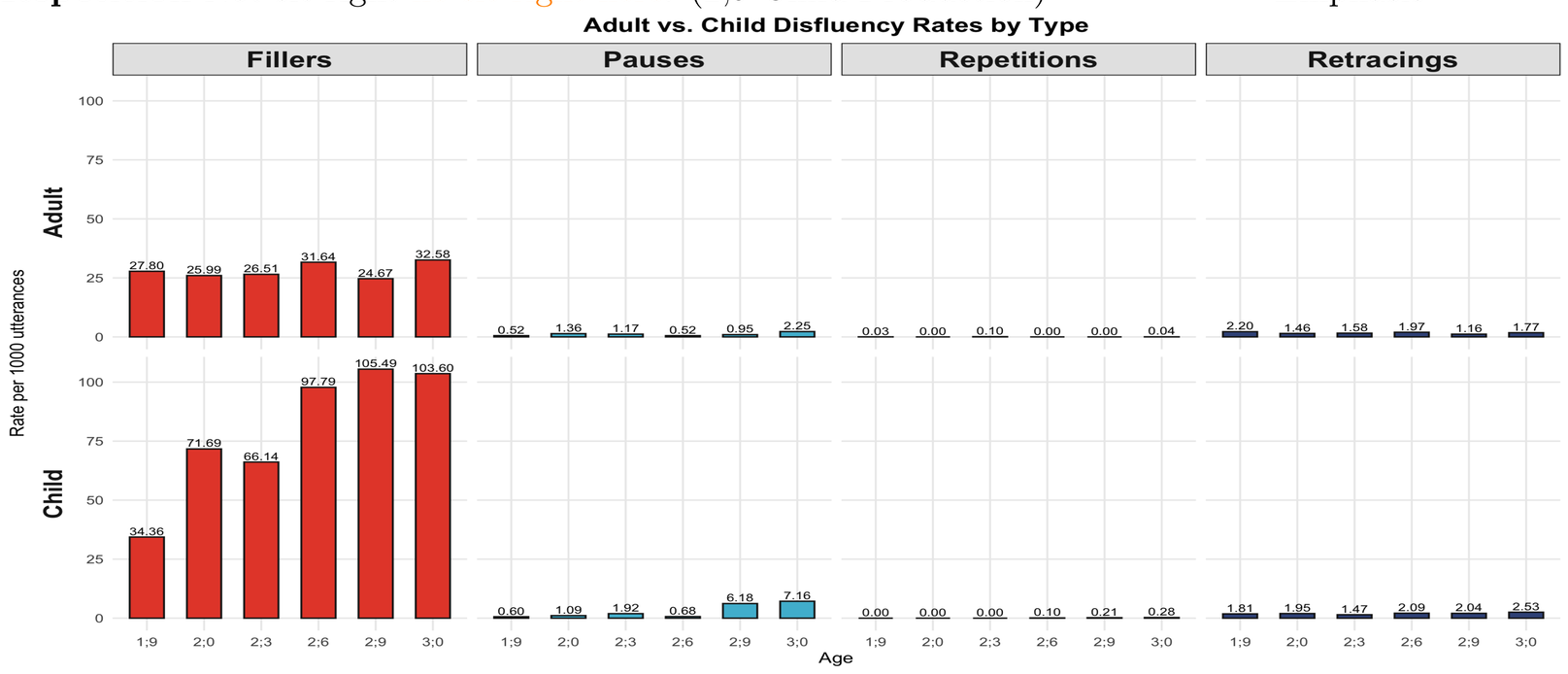
1. The rate of disfluencies has a positive effect on measures of vocabulary growth
2. There is a difference between the production of different types of disfluency among adults and children.

3. Dataset and Modeling



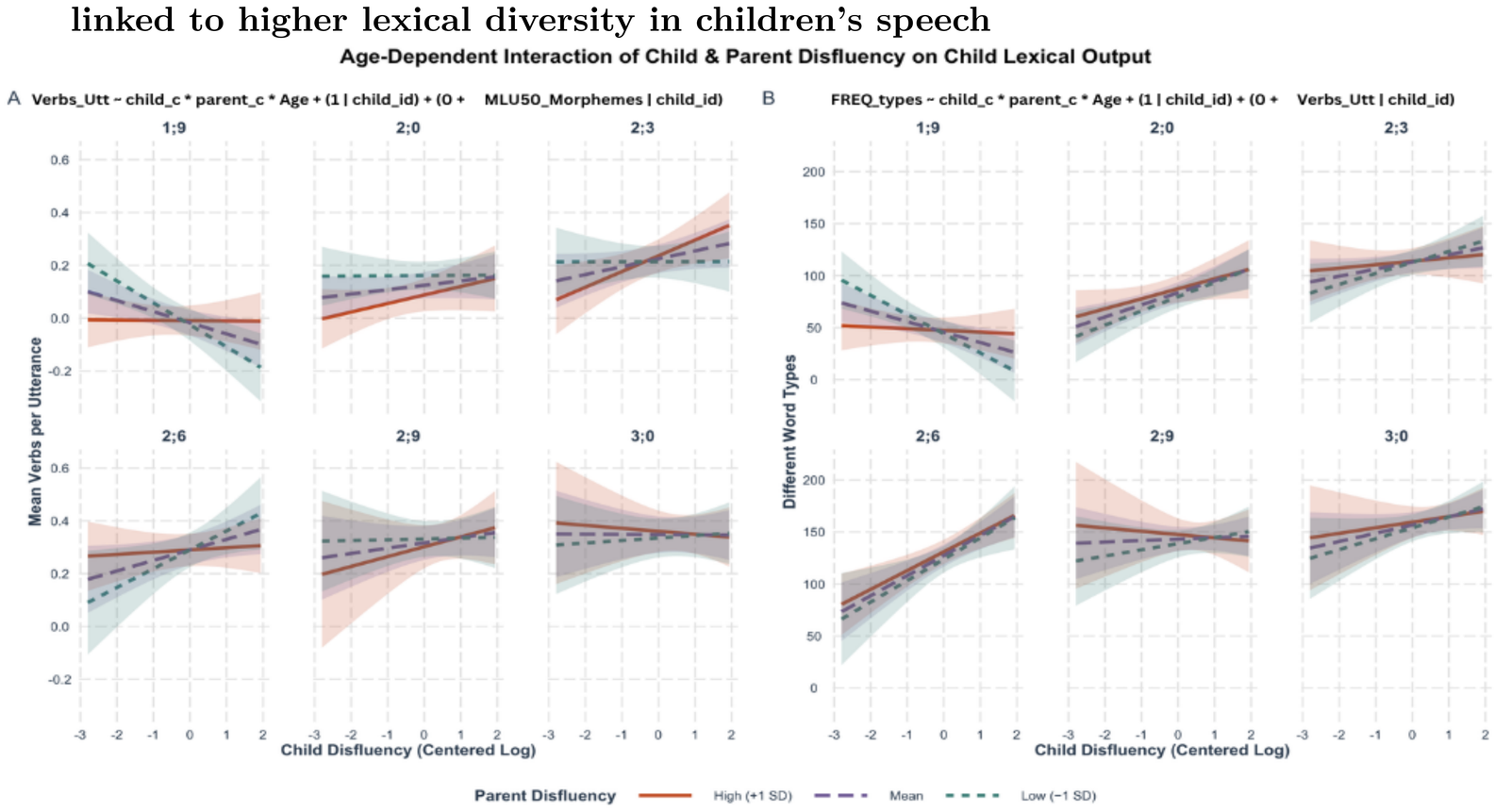
4. Different Types of Disfluencies in Natural Discourse

Type	Example from Corpus	Purpose
Filler	That's a soda uh pops. (1;9 Child Production)	Reformulation
Pause	I sit down (pause) here! (1;9 Child Production)	Speech Planning
Retracing	Cake cupcake. (2;6 Child Production)	Self-Correction
Repetition	Not sit right no sit right here. (2;9 Child Production)	Emphasis



5. Results

- The **verbs per utterance** model showed significant effects of: Child disfluency (β =0.16, p<0.05), Parent disfluency (β=0.17, p<0.05), the interaction between child disfluency and parent disfluency (β=0.06, p<0.01) ⇒ **disfluencies from both children and parents are associated with greater verb use in children's speech**
- The **word types** model revealed a significant effect of: Parent disfluency (β = 33.76, p < 0.05), a marginal effect of child disfluency (β = 32.18, p = 0.06), the interaction between child disfluency and parent disfluency (β = 11.49, p < 0.05) ⇒ **greater parental disfluency is linked to higher lexical diversity in children's speech**



- **Individual Differences**: some children mirror parental disfluency, while others are decoupled or even show the opposite trend.

6. Conclusion

- Disfluencies play a dynamic role in early language development, and rather than being mere markers of production difficulty, disfluencies co-occur with advanced lexical use, potentially reflecting or supporting developmental processes.
- Interactions between parent and child disfluency suggest that children's language production is shaped not only by their own planning demands but also by caregiver input.

7. Acknowledgments

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