

Introduction

- Bilingualism research has primarily focused on the perception and processing of individual sounds, segmental contrasts, or word learning [1].
- There is substantially less research that has investigated how word-level properties impact L2 auditory processing.

Research Question

- The present study examines how auditory lexical processing differs between monolingual and bilingual listeners with different language backgrounds.

Method

Listeners

- 1009 listeners
 - 739 female, 270 male
 - Age range 16 to 29 (M = 19.99, SD = 2.14)
 - 440 monolinguals, 569 bilinguals

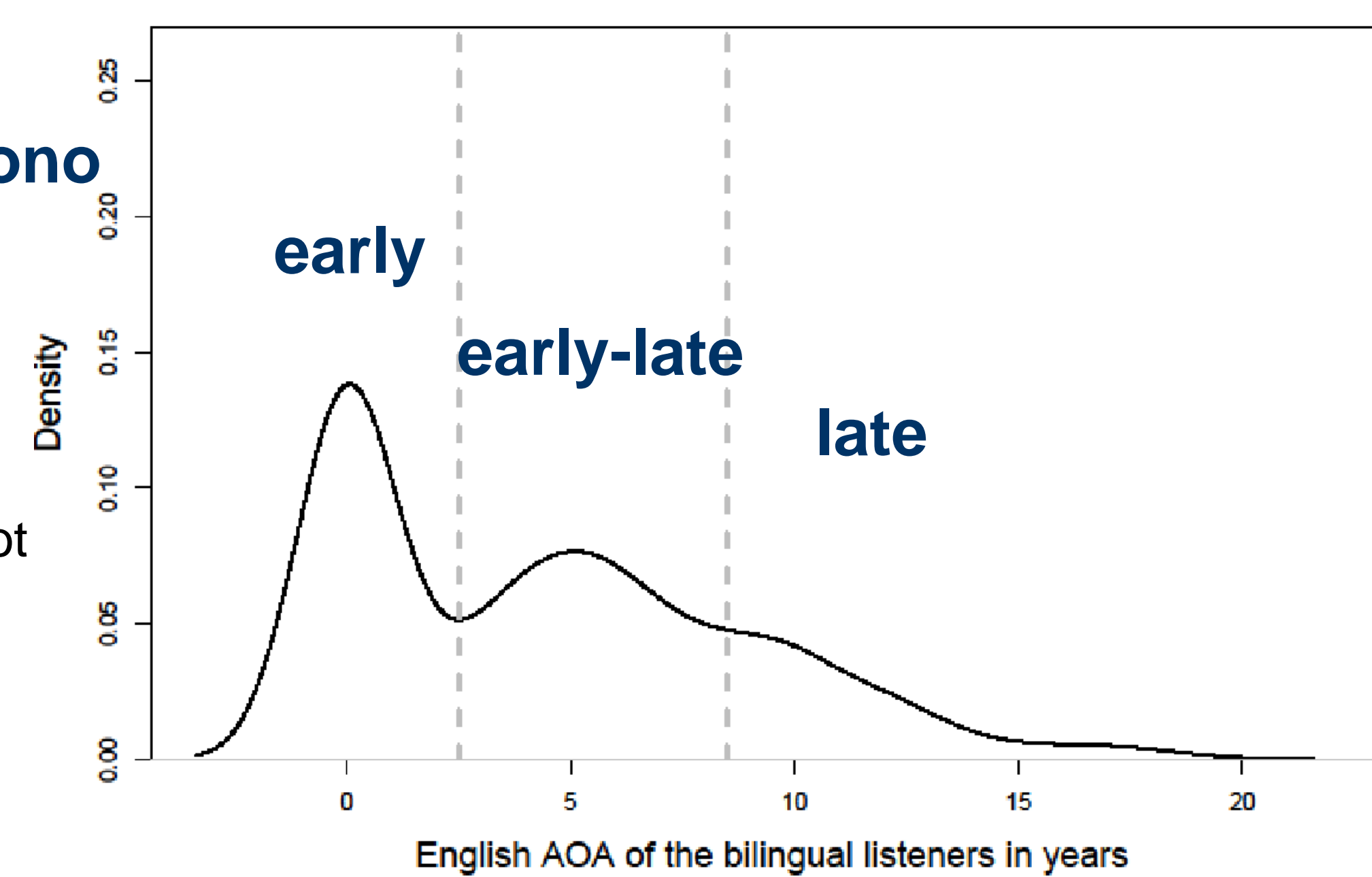


Figure 1. Density plot of age of acquisition

Stimuli

- 26,800 words and 9,600 pseudowords recorded by one male speaker of Western Canadian English (MALD, [2])
- 800 items per list (400 words + 400 pseudowords)

Procedure

- Auditory lexical decision task in sound booth
- Participants responded to one list per session (max. 3 sessions per participant)
- Modeled using Generalize Additive Mixed Models [3]

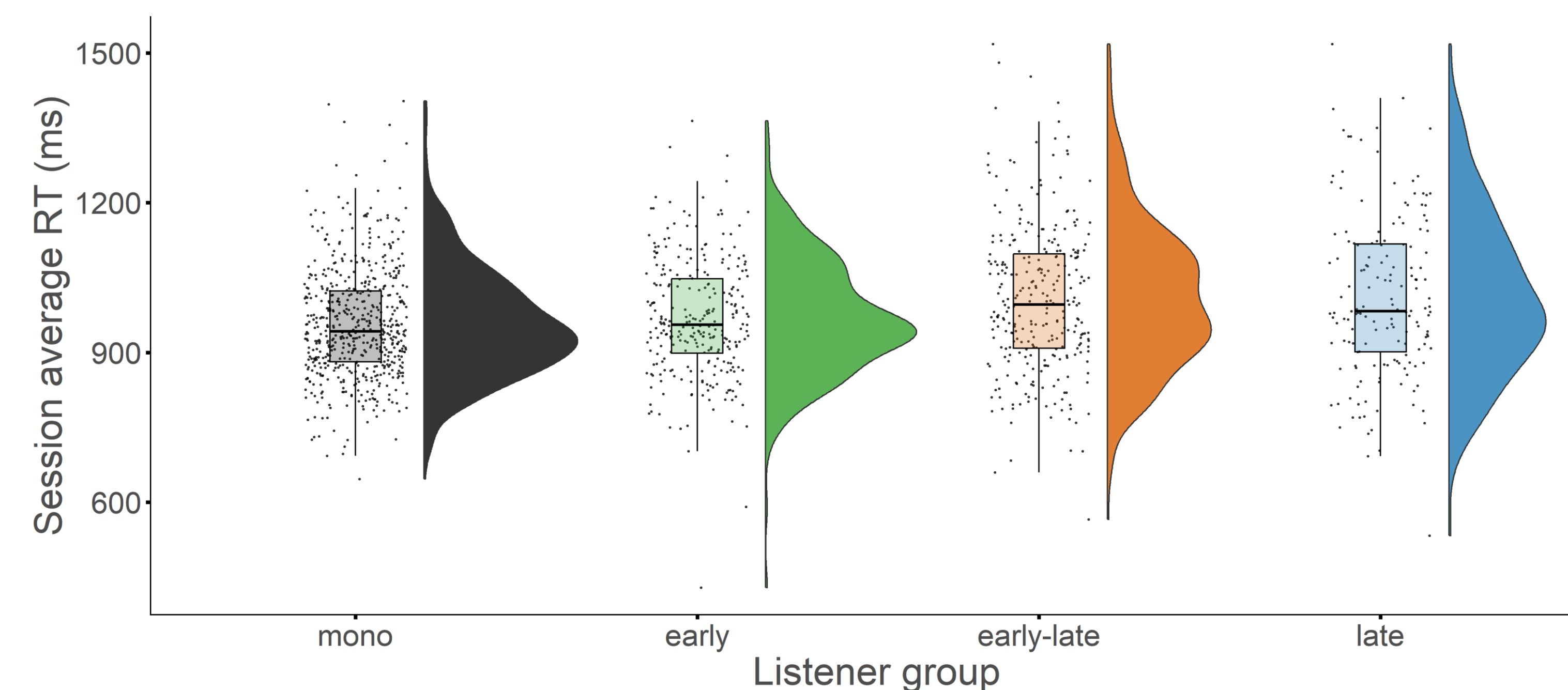


Figure 2. Raincloud plot illustrating the average session RTs per listener group. 'Mono' represents the monolingual listener group, 'early' the early bilinguals, 'early-late' the early-late bilinguals, and 'late' the late bilinguals.

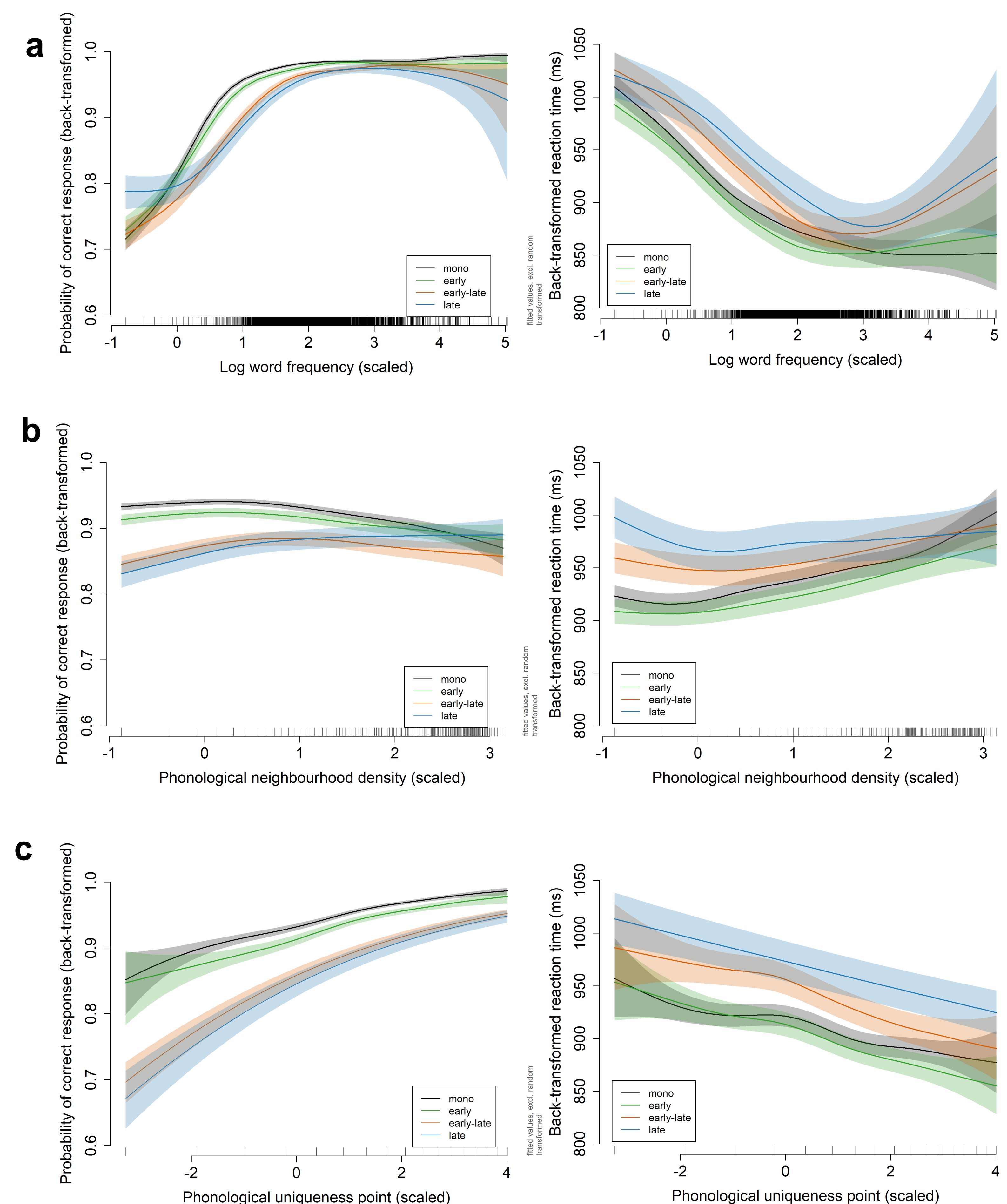


Figure 3. Plots of statistical results for frequency (a), phonological neighborhood density (b), and phonological uniqueness point (c) for accuracy measures on the left and response latency on the right split across listener groups (mono, early, early-late, late).

Results

Significant differences between our four listener groups (**Figure 2**)

Interactions between lexical predictors and speaker groups (**Figure 3**)

- mono and early listeners generally pattern similarly for accuracy and response latency
- Mono tend to be more accurate than early listeners
- Early-late and late generally pattern together
- Figure 3a** higher frequency associated with increased accuracy and faster RT
- Figure 3b** inhibitory effect of ND for mono and early **but not for early-late and late bilinguals**
- Figure 3c** later UP higher accuracy and faster RT, bigger effect for early-late and late in accuracy

Conclusion

- Small differences between our mono and early listeners – but patterns of word perception are the same
- Worth exploring how language experience shapes spoken word recognition
- Should we continue practice of disqualifying early listeners from experiments with lexical predictors?
- Early-late and late bilinguals also pattern similarly but with small significant differences
- Largest AOA differences found for middle-frequency words and words with low neighborhood density
- More nuanced effects already documented, but our marginal effects support claim that AOA effects persist past childhood

REFERENCES:

- Kehoe, M.M. (2023). Cross-language influences in the perception and production of L2 phonetics and phonology in young bilinguals. *Cross-language Influences in Bilingual Processing and Second Language Acquisition*, 16, 18.
- Tucker, B.V., Brenner, D., Danielson, D.K., Kelley, M.C., Nenadić, F., & Sims, M. (2019). The Massive Auditory Lexical Decision (MALD) database. *Behavior Research Methods*, 51(3), 1187–1204.
- Hastie, T.J., & Tibshirani, R.J. (1990). *Generalized Additive Models*. CRC Press.