

1. Introduction

Adult Heritage Speakers (HS)

- Similar to L1 speakers → grammatical properties not sensitive to input frequencies [1]
- Similar to L2 speakers → some majority language transference [1]
- Distinct → accent and suprasegmentals [2]

Fricatives of interest in Japanese [3, 4]

- [ç] occurs before [i]
- [ɸ] occurs before [ɯ] or [a iɯɛɔ]*
- [h] elsewhere
- English has /h/ (contrastively) and [ç] before high vowels

Research Goal

- Investigate how HS produce [ç] & [ɸ], especially if different from English analogues

2. Materials and methods

Participants

29 Collected

- 2 HS, 2 L1 Speakers & 2 L2 Speakers annotated (6M, 36.67 years old)

Data

- 152 words embedded within a carrier phrase
- Fricative Type: [ç] & [ɸ]
- Position Type: Initial & Medial
- Word Type: Loan & Non-Loan

Analysis

- Data was collected using a Zoom H4essential recorder
- Environment and fricative were manually annotated in Praat; Fricatives' Center of Gravity [5] were extracted using a Praat script
- Linear mixed effects model:
 - Interactions: speaker type x word type & speaker type x fricative type

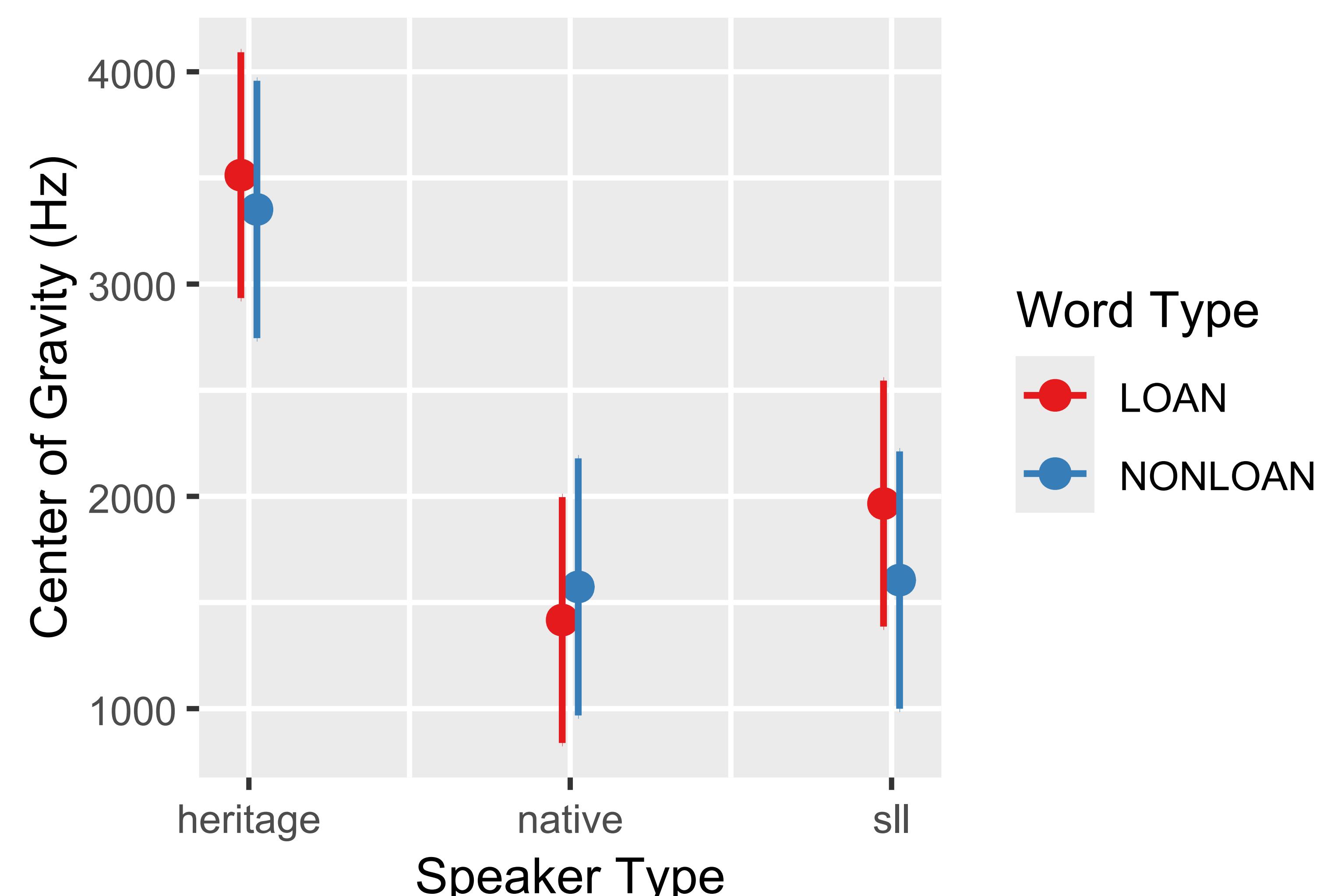


Fig 1. Predicted Values of Center of Gravity for Speaker and Word Type

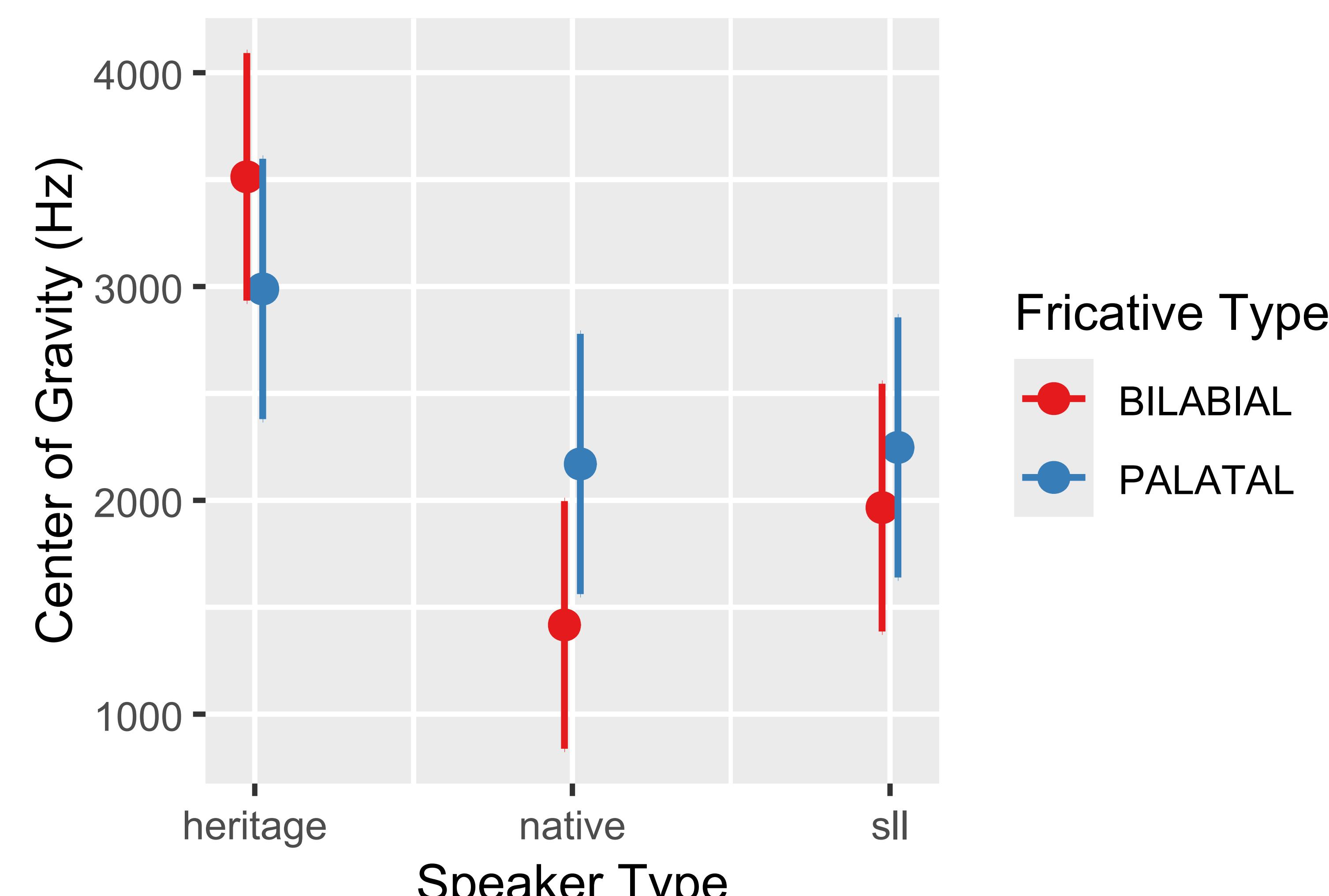


Fig 2. Predicted Values of Center of Gravity for Speaker and Fricative Type

3. Results

Table 1. Summary Table of Significant Effects in the Linear Mixed Effects Model for Center of Gravity

	Estimate	SE	df	t value	Pr(> t)
(Intercept)	3512.95	295.02	3.33	11.91	<0.001
Speaker: Native	-2095.70	414.01	3.23	-5.06	<0.05
Speaker: SLL	-1547.03	414.12	3.23	-3.74	<0.05
Fric: Palatal	-524.30	133.51	635.96	-3.93	<0.001
Pos: Medial	-372.27	81.01	149.64	-4.6	<0.001
Native x Palatal	1277.13	178.96	739.15	7.14	<0.001
SLL x Palatal	805.83	178.94	736.66	4.50	<0.001

- Post-hoc pairwise: no SE for SLL & Fricative

4. Discussion and Conclusion

- Heritage speakers appear to be distinct from L1 and L2 speakers (Fig 1, Fig 2)
- There might be majority language influence (Fig 1)
- L2 seems more similar to L1 than HS (Fig 1, Fig 2)
- Bilabials are lower for L1 & L2 but not HS (Fig 2)

Limitations

- Did not include female participants
- Not all data collected was annotated

Future Directions

- Include more diversified annotated data
- Compare within fricative-type with environments
- Analyze variables such as other spectral measurements, social factors, speakers' demographics, etc.

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References:

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