

ACOUSTIC CHARACTERIZATION OF SINGAPOREAN CHILDREN'S ENGLISH WITH AMERICAN AND BRITISH COUNTERPARTS: A CASE STUDY ON APPROXIMANTS



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Hey, what is this paper about?

Characterizing Singaporean Children's English using acoustic features! Our work is the **first of its kind** to quantify **pronunciation differences** across different English speaker groups (compared to Singapore English) on a **large-scale basis**.

Hold on... English spoken in Singapore?

Yes, check out our other poster if you haven't: **"Large-scale acoustic characterization of mid-low vowels across American, British, and Singaporean children"**
It will give you :
- **Background information on Singapore English**
- **Our findings focusing on mid-low vowels**
Come back whenever you're ready for more here!

A while later ...

I'm ready, tell me more about what **approximants you're looking into here!**

Sure! Check out the **green boxes** on the right for what we found on the **lateral approximant /l/**, and the **purple box** for more on the **rhotic approximant /ɹ/**. And the **discussion!**

That's interesting, any potential future work?

Investigating how Singapore English is also **influenced by Malay and the range of Chinese languages** spoken in Singapore can paint a more comprehensive picture of the complexities of Singapore English; this is a line of on-going research endeavors.

References
[1] L. Peter, J. Keith, A Course in Phonetics, Sixth Edition, Cengage Learning, Inc, 2010.
[2] N. S. Kenneth, Acoustic phonetics, MIT Press, 1998.
[3] J. Keith, S. V. Clayton, S. Stephanie G., Acoustic and auditory phonetics (Third edition), Chichester: Wiley-Blackwell, Hoboken: John Wiley Sons, Incorporated, 2012.
[4] L. Philip, Speech physiology, speech perception, and acoustic phonetics, Cambridge University Press, 1988.
[5] B. Robert, C. Richard, L. Ceil, The Oxford Handbook of Sociolinguistics, Oxford University Press, 2015

1. Lateral approximant – dark /l/

1.1 Failing F1 and F2

Canonical feature of characteristic dark /l/:

Lowering of F1 and F2 formants when transitioning from preceding vowel [3]

❑ F1 difference = Average F1 in dark /l/ - Average F1 in preceding vowel (expect a negative/very small value)

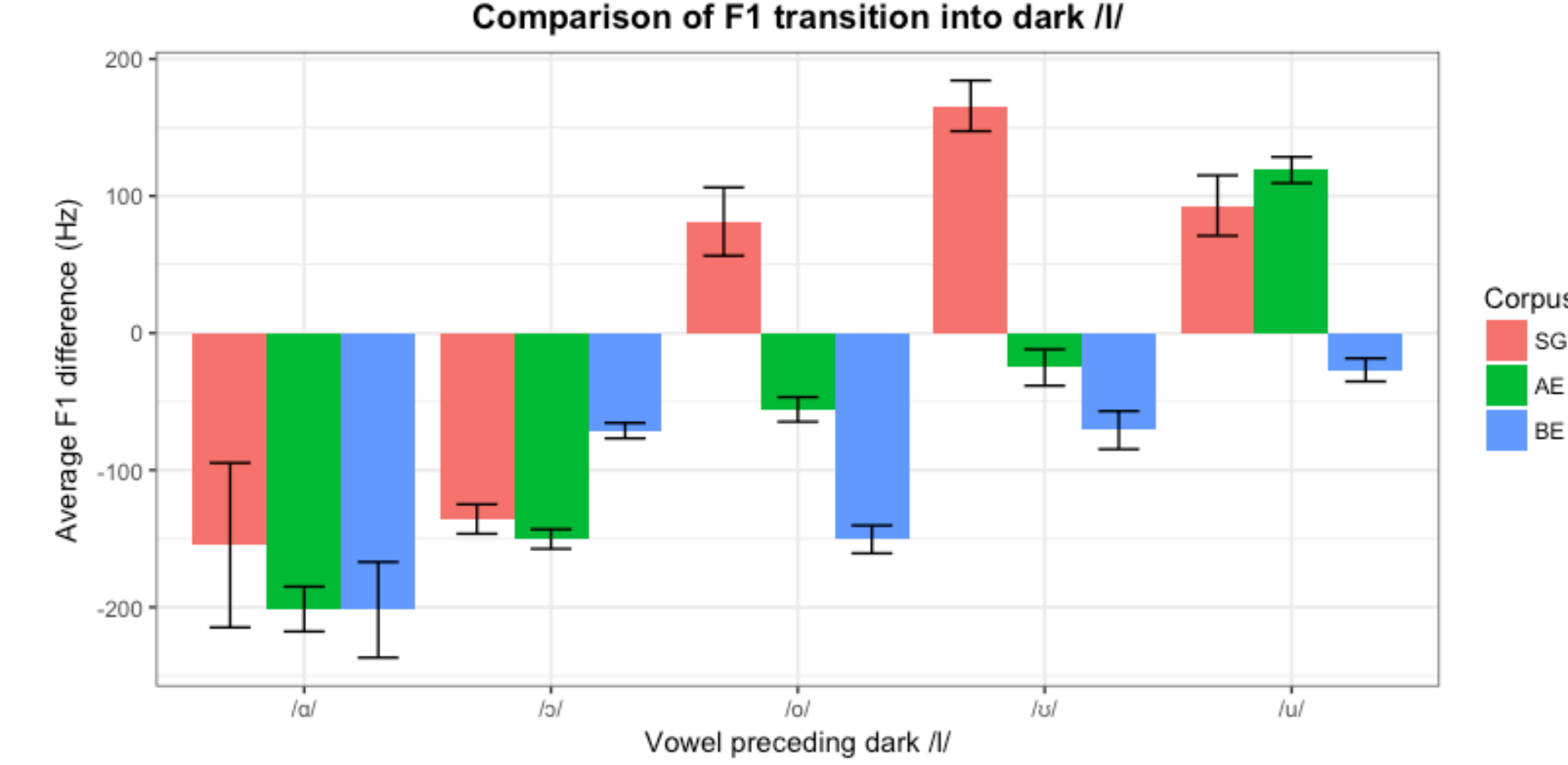


Figure 1: Comparison of F1 transition into dark /l/

❖ SG: least negative F1 difference

❑ F2 difference = Average F2 in dark /l/ - Average F2 in preceding vowel (expect a negative/ very small value)

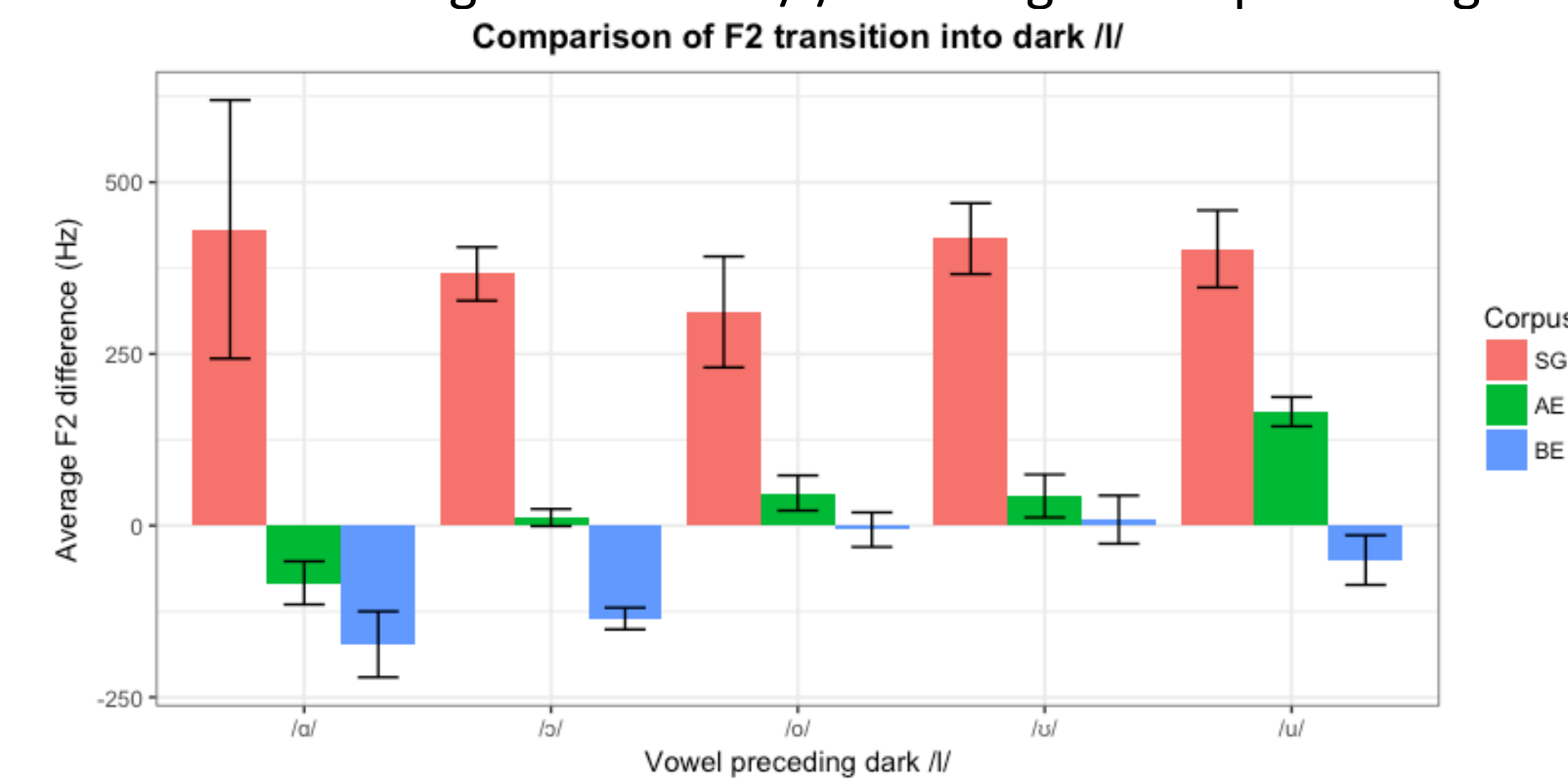


Figure 2: Comparison of F2 transition into dark /l/

❖ SG: least negative F2 difference

1.2 F2 and F3 far apart

Canonical feature of characteristic dark /l/:

Relatively wide gap between F2 and F3 [2,4]

❑ F3 - F2 difference = Average F3 in dark /l/ - Average F2 in dark /l/ (expect a conspicuous gap)

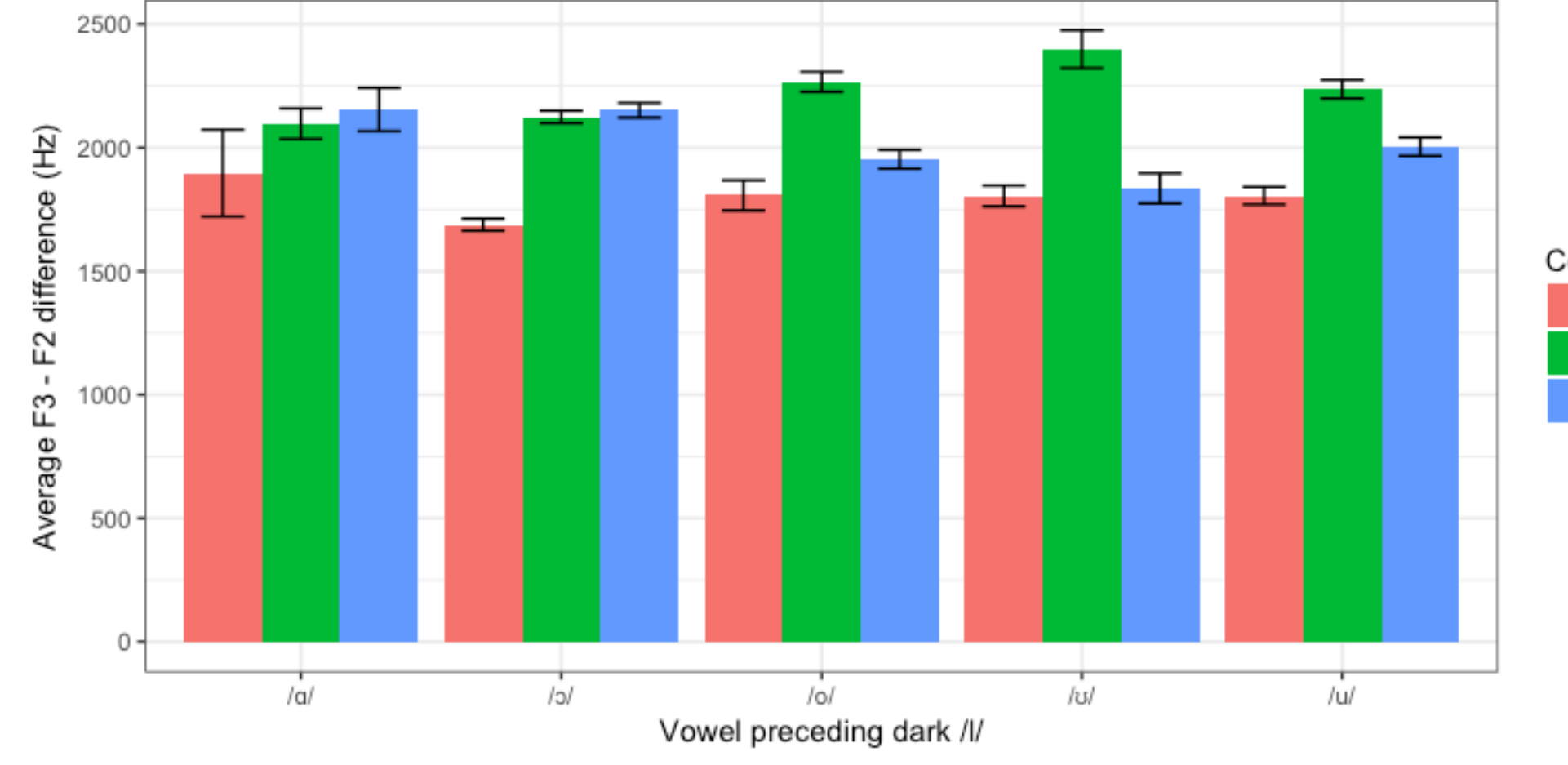


Figure 3: Comparison of F3 - F2 gap in dark /l/

❖ SG: least F3 - F2 difference

1.3 F1 and F2 close together

Canonical feature of characteristic dark /l/:

F1 and F2 values close to each other [5]

❑ F2 - F1 difference = Average F2 in dark /l/ - Average F1 in dark /l/ (expect a very small difference)

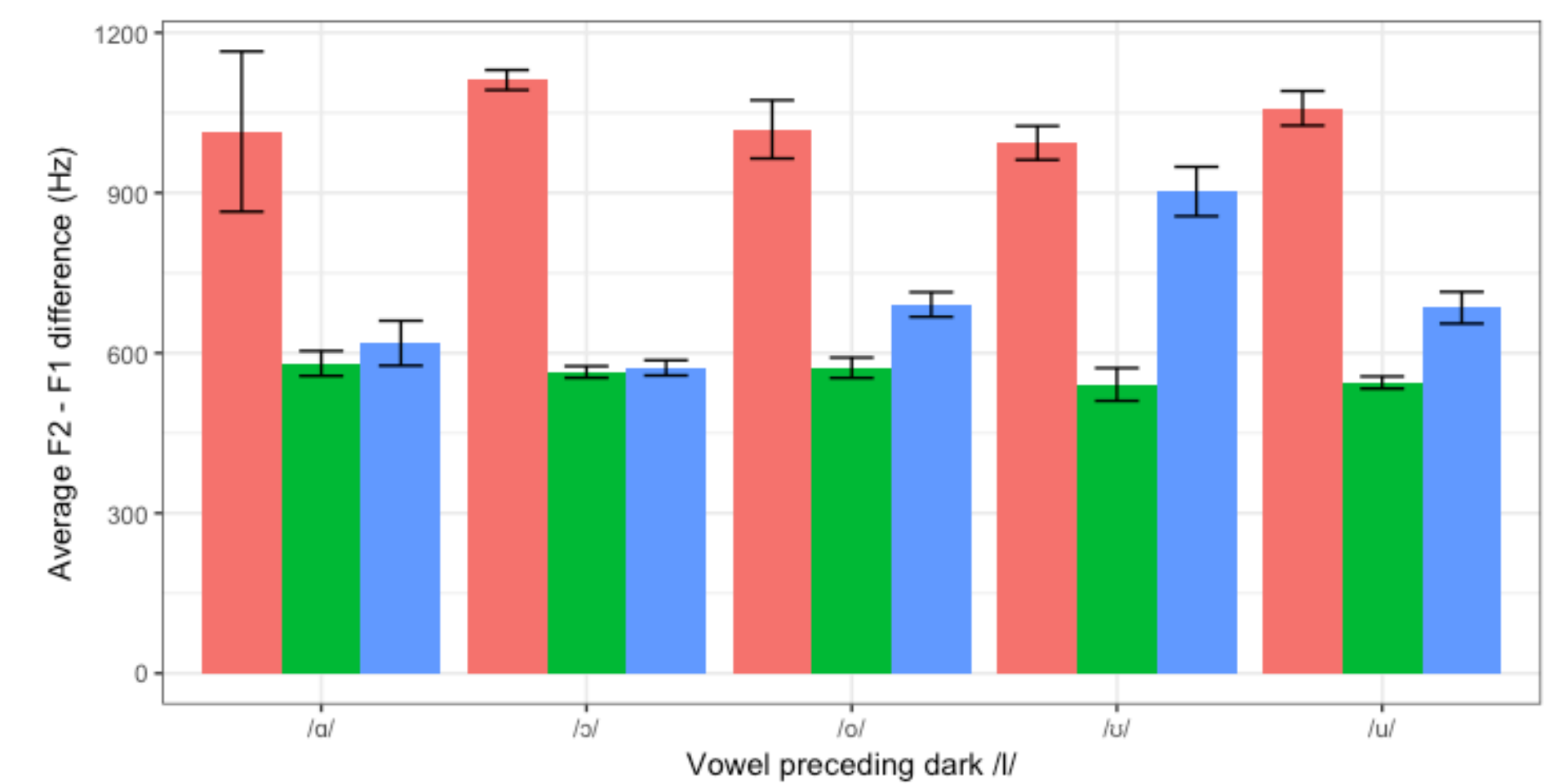


Figure 4: Comparison of F2 - F1 gap in dark /l/

❖ SG: greatest F2 - F1 difference

Sum-up for production of dark /l/: Singaporean children differ from the other two groups

- ❖ extreme articulatory change differing from a characteristic dark /l/
- ❖ altered into a very different sound or considered to be deleted

2. Rhotic approximant – syllable-final /ɹ/

2.1 Very low F3

Canonical feature of /ɹ/:

Lowering of the third formant [1]

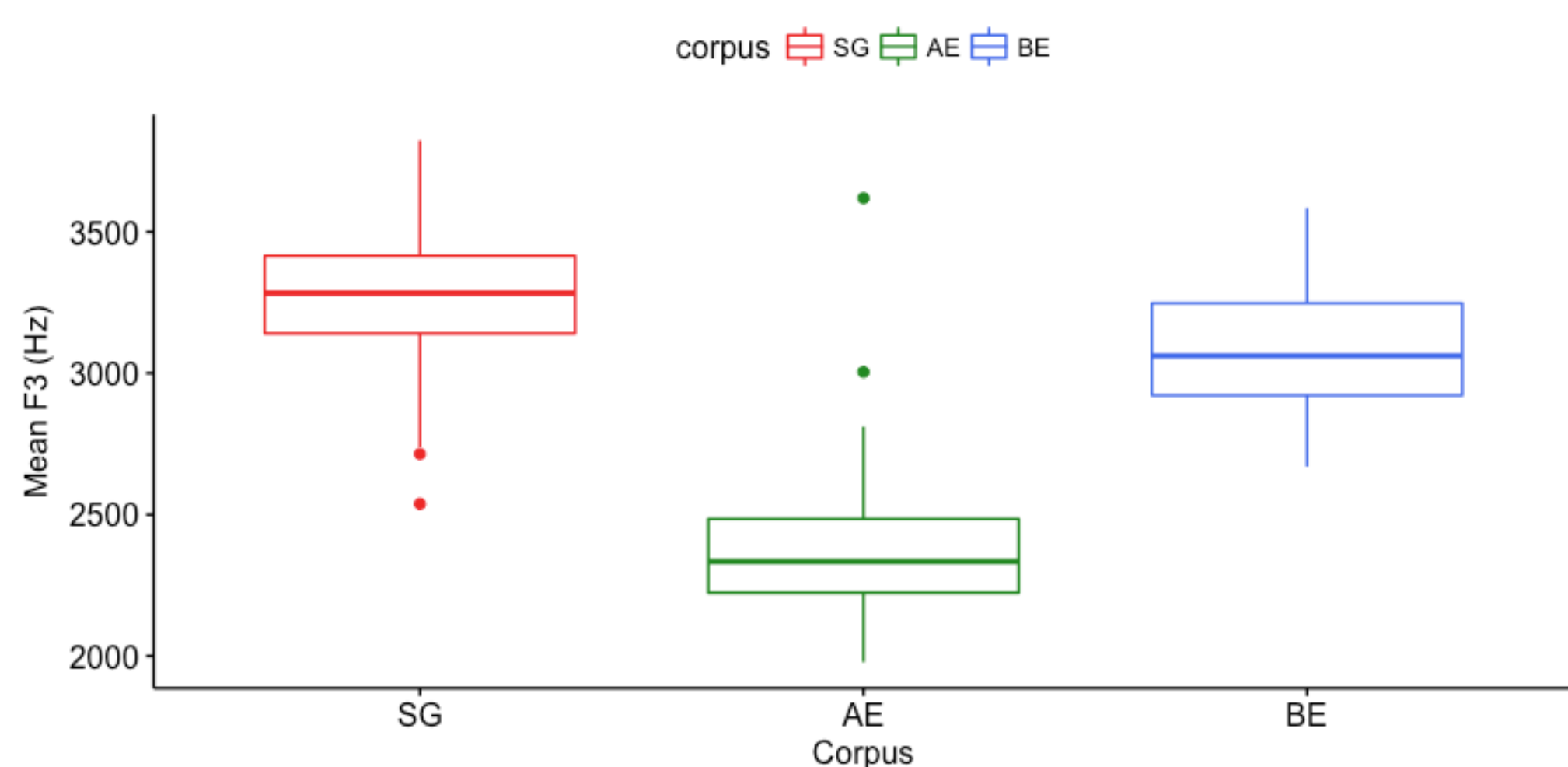


Figure 5: Comparison of mean F3 in syllable-final /ɹ/

❖ SG & BE: higher F3 than AE

Sum-up for production of syllable-final /ɹ/: Singaporean and British children are similar

- ❖ do not lower their F3 values nearly as much as American children
- ❖ lack rhoticity in their production

3. DISCUSSION

- ❑ Singapore English: similar to British pronunciation in terms of a lack of rhoticity
- ❑ Pronunciation for dark /l/ distinct from other two groups
- ❑ Traits beyond American and British pronunciation patterns