Japanese consonant quantity contrasts by Hong Kong L2 learners: Preliminary results

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I. Background

- **Syllable structure of Japanese**
  - ✓Singletone vs. geminate contrast **CVCV** vs. **CVC:V**.
  - ✓For example ***kita*** 来た 'came' vs. ***kitta*** 切った 'cut'.
  - ✓Acoustic properties are well documented → great opportunity for L2 research.
  - ✓Singletone vs. geminate closure duration ratio 1:2.8 (Han 1992), or **1:2.4 (Toda 2003)**.
- **Syllable structure of Hong Kong Cantonese**
  - ✓Maximally **CVC** (Yip 1993).
  - ✓Codas can be glides, nasals, or **unreleased stops** →
    → Effectively a geminate in a **CVC.CV** sequence.
  - ✓For example ***tsi:tso:*** 知咗 'I knew' vs. ***tsittso:*** 唧咗 'I squeezed'.
- **Maddieson's (1985) typology**
  - ✓All languages show shorter vowel duration in syllables closed by a geminate, except Japanese.
  - ✓Vowels 11% longer before and 9% shorter after a geminate (Han 1994), replicated in Idemaru & Guion (2008).

All languages			Japanese		
V1	Gem	V2	V1	Gem	V2
Shorter			Longer		Shorter

- **Research questions**
  - ✓Whether Hong Kong learners of Japanese (beginner and advanced) can make the **CVCV** vs. **CVC:V** distinction reliably;
  - ✓How speech rate affects learners' production of **CVCV** vs. **CVC:V**;
  - ✓Whether the learner groups conform to the Maddieson typology or behave like the native speakers in terms of the duration of V1.

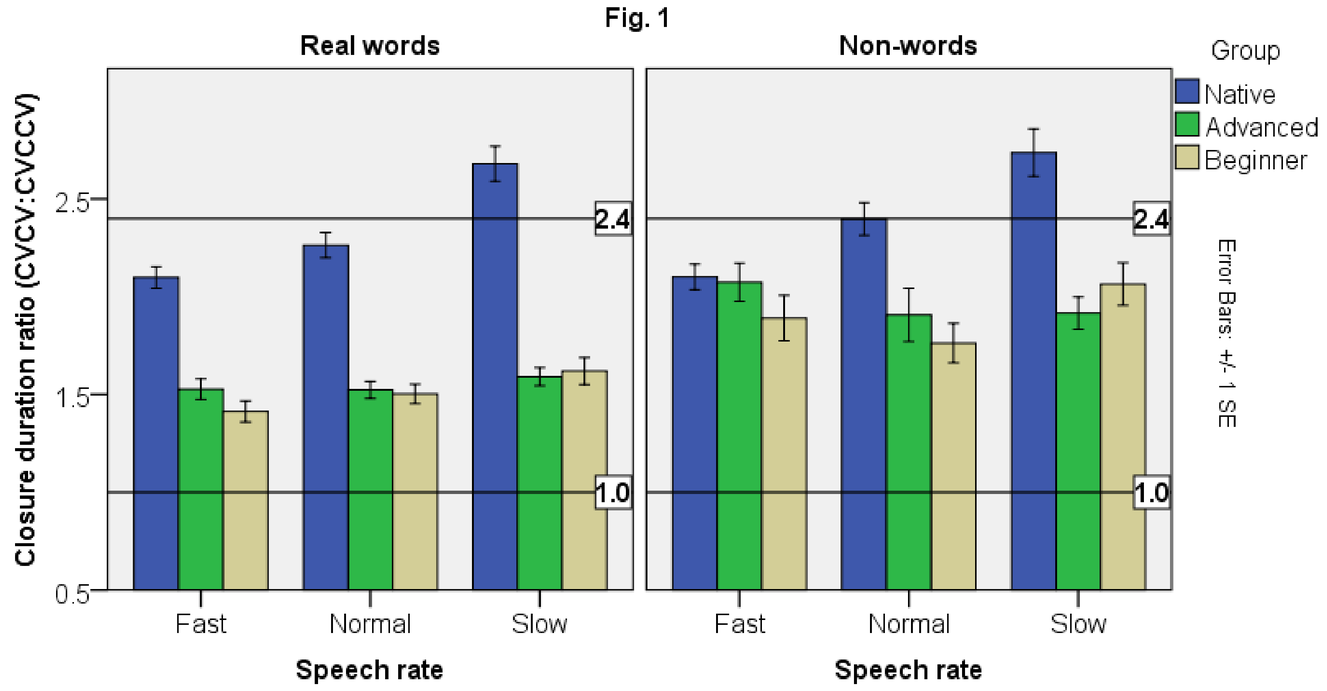
II. Methodology

- **Production experiment**
  - ✓Beginners (N=8): 1st year BA Japanese at CUHK
  - ✓Advanced (N=8): 4th year BA Japanese at CUHK, having spent a year in Japan
  - ✓Native (N=5): Native Japanese speakers having lived in Hong Kong for less than half a year.
- **Stimuli**
  - ✓Carrier *Kore-wa ___ desu* これは_____です 'This is ___'.
  - ✓Set 1 (real words): 9 target words×2 quantity×3 speed× 3 repetitions = 162 utterances
  - ✓Set 2 (non-words): 2 consonants×3 vowels×2 quantity×3 speed× 3 repetitions = 108 utterances
- **Procedures**
  - ✓Stimuli presented on computer screen in randomised order, one at a time
  - ✓Six blocks, in order:
    Real word (normal)→Real word (slow)→ Real word (fast) →
    Non-word (normal)→Non-word (slow)→Non-word (fast)

III. Results

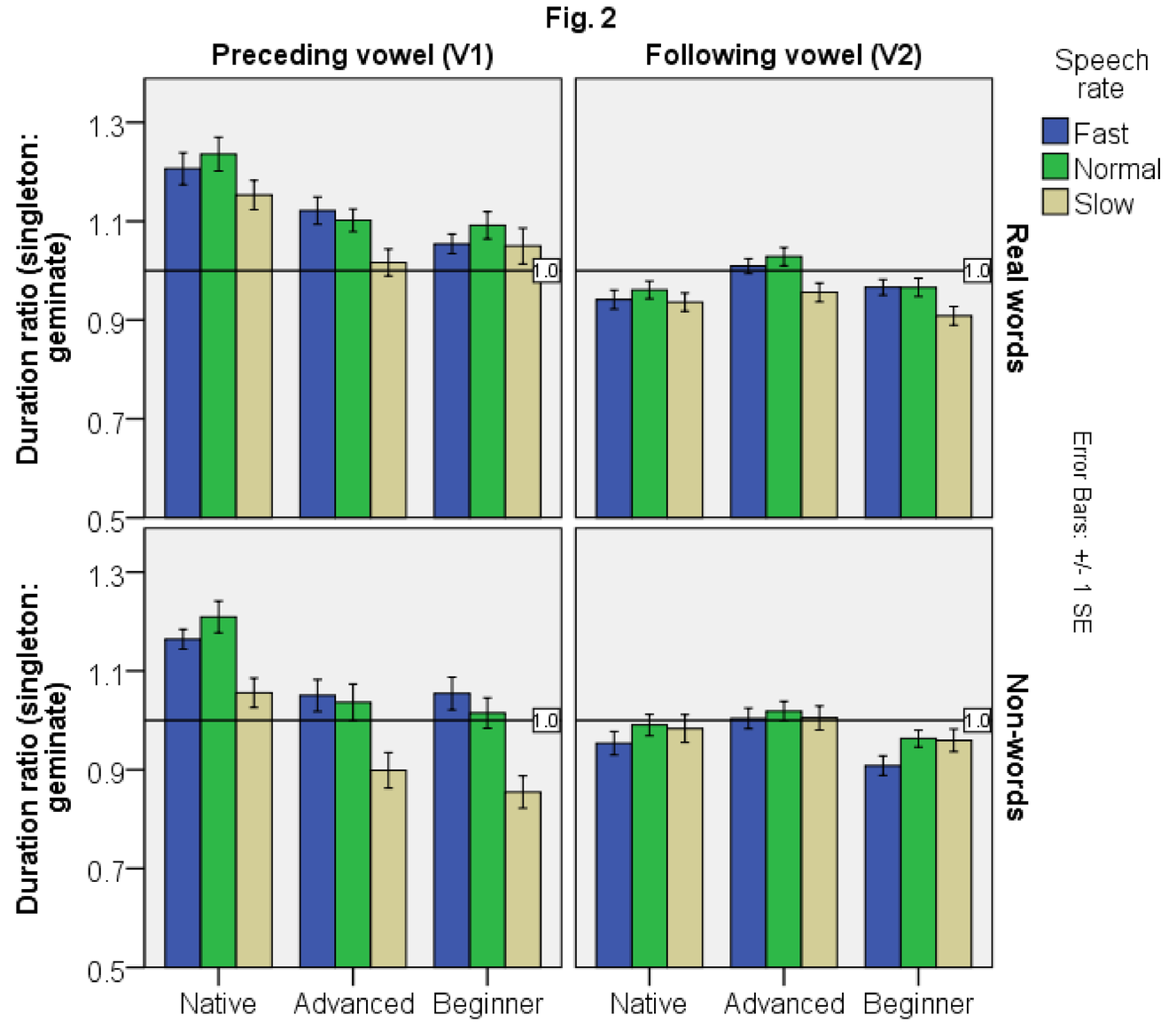
- **Closure duration ratio (singleton:geminate)**
  - ✓Han (1992)→1:2.8 and Toda (2003) →1:2.4
  - ✓One-way ANOVA shows significant main effects of **Speaker Group** $F(2,936) = 113.7$ $p<0.001$ and **Speech Rate** $F(2,936) = 15.9$ $p<0.001$ on **Closure Duration Ratio.**
  - ✓However, according to post-hoc Bonferroni tests, the difference between **Advanced** and **Beginner** was non-significant. (→ see next column)

Fig. 1



- **Duration ratio of surrounding vowels (singleton:geminate)**
  - ✓Han (1994): 11% longer before and 9% shorter after geminate
  - ✓Hirata & Forbes (2007): Replicated
  - ✓Idemaru & Guion (2008): Longer V1, shorter V2
  - ✓One-way ANOVA shows significant main effects of **Speaker Group** $F(2,936) = 32.3$ $p<0.001$ and Speech Rate $F(2,936) = 18.6$ $p<0.001$ on **V1 Duration Ratio**.
  - ✓However, according to post-hoc Bonferroni tests, the difference between Advanced and Beginner was non-significant.

Fig. 2



IV. Conclusions

- **Making quantity distinction**
  - ✓Judging from **closure duration ratio**, all groups are indeed making a clear distinction between singleton vs. geminate.
  - ✓While advanced learners and beginners do not differ significantly, they distinguish singleton vs. geminate in a way different from their native peers.
- **Effect of speech rate**
  - ✓Slow speech enhances contrasts in native speakers, but not in the learners.
- **Maddieson typology**
  - ✓No evidence that the learners conformed to the Maddieson typology.

V. References

- Han, M. S. (1992). "The timing control of geminate and single stop consonant in Japanese: A challenge for nonnative speakers," Phonetica, 49, 102–127.
- Han, M. S. (1994). "Acoustic manifestations of mora timing in Japanese," J. Acoust. Soc. Am., 96, 73–82.
- Hirata, Y., and Forbes, C. (2007). "Vowel-onset interval as a timing unit for singleton/geminate stop distinction in Japanese," Proc. 16th Int. Congr. Phonetic Sci. (ICPhS 2007), Saarbrücken, Germany, 349–354.
- Idemaru, K., and Guion, S. G. (2008). "Acoustic covariants of length contrast in Japanese stops," J. Int. Phon. Assoc., 38, 167–186.
- Maddieson, I. (1985). "Phonetic cues to syllabification," In V. A. Fromkin (Ed.), Phonetic Linguist. Essays Honor Peter Ladefoged, Academic Press, Orlando, FL, pp. 203–221.
- Toda, T. (2003). "外国人学習者の日本語特殊拍の習得 [Acquisition of special morae in Japanese as a second language]," J. Phonetic Soc. Japan [音声研究], 7, 70–83.
- Yip, M. J. W. (1993). "Cantonese loanword phonology and Optimality Theory," J. East Asian Ling., 2, 261–291.