

1. Overview

Problem

What are the primary perceptual cues for nasal Finals in Standard Chinese, especially for native Chinese listeners?

Method

Synthesizing three-formant stimuli in which the second formant (F2) and the third formant (F3) were varied.

Conclusion

Although F3 plays a role in the perception of velar nasal Finals, F2 is the primary perceptual cues for nasal Finals in Standard Chinese.

Impact

Providing a baseline for Japanese students

2. Nasal Finals

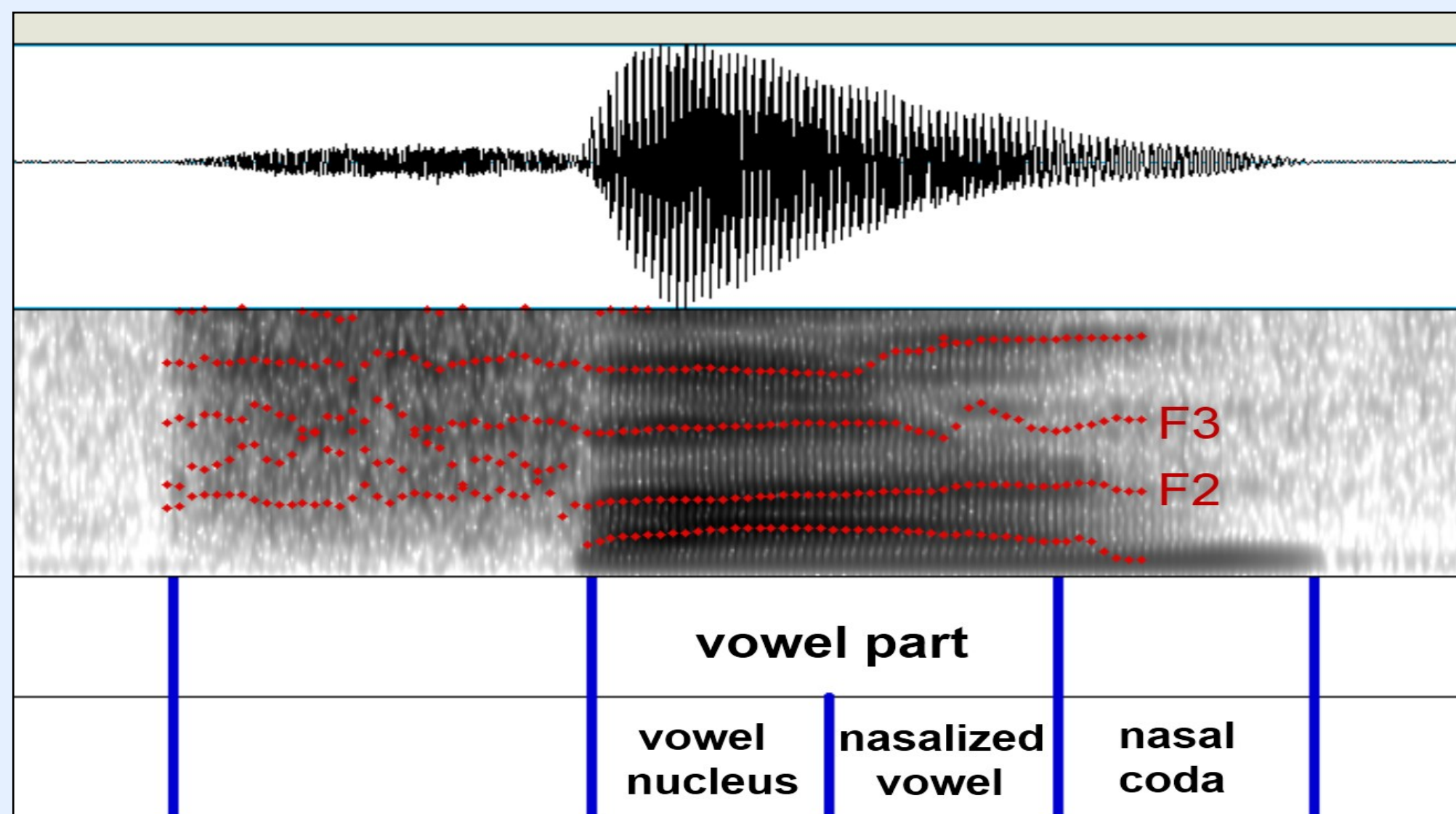


Figure 1. the component of nasal Finals in Standard Chinese

2.1 Perception

. Nasal codas

. only suggest the manner of articulation (H. Wang, 2012)

. Vowel part

. nasalized vowels have a crucial influence on the perception of nasal Finals (Z. Y. Wang, J. S. Zhang, 2014)

. Place-of-articulation information for nasal Finals:

. Nasalized vowel > Vowel nucleus > Nasal coda

(Jinsong Zhang et al. 2013)

2.2 Production

. Nasal codas

. exert an anticipatory effect on the articulation of the vowel part (Z. J. Wu, M. C. Lin, 1989)

. Vowel part

. F2 and F3 in the nasalized vowels have the significant difference

(M. C. Lin, J. Z. Yan, 1994)

2.3 Our question:

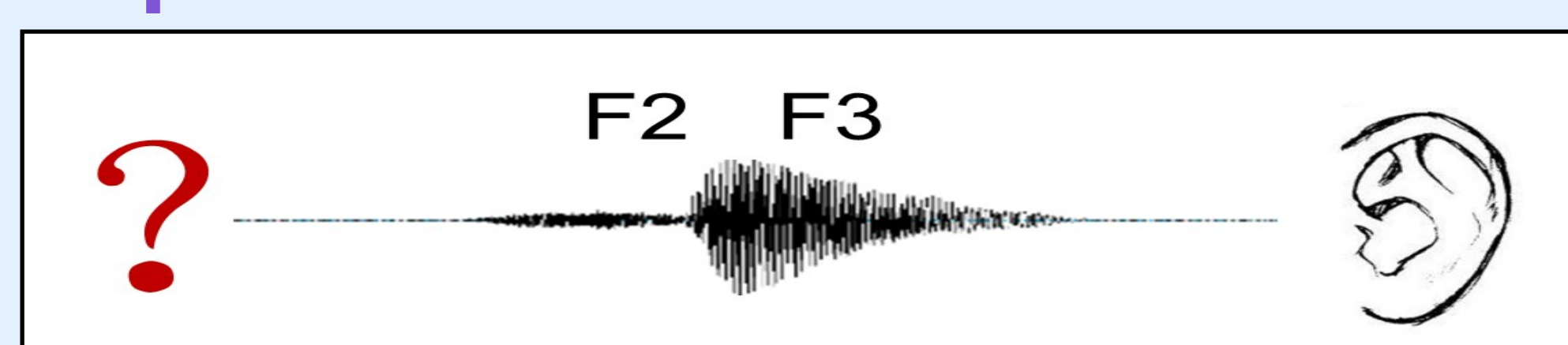


Figure 2. Whether F2 and F3 are the primary cues for nasal Finals

3. Experiment

3.1 Synthesis stimulus

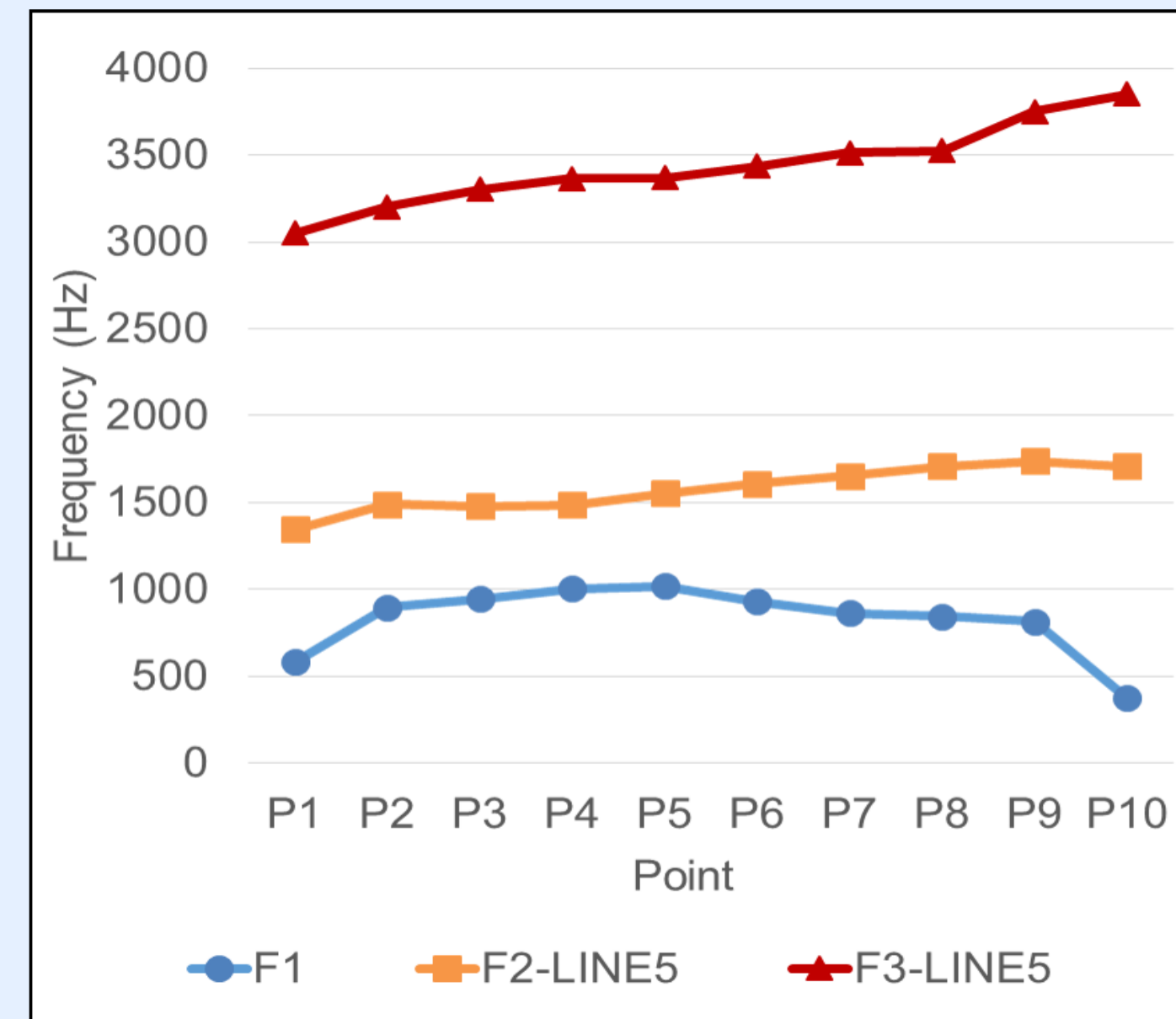


Figure 3. The fifth continuum in the “fan” group in Exp I

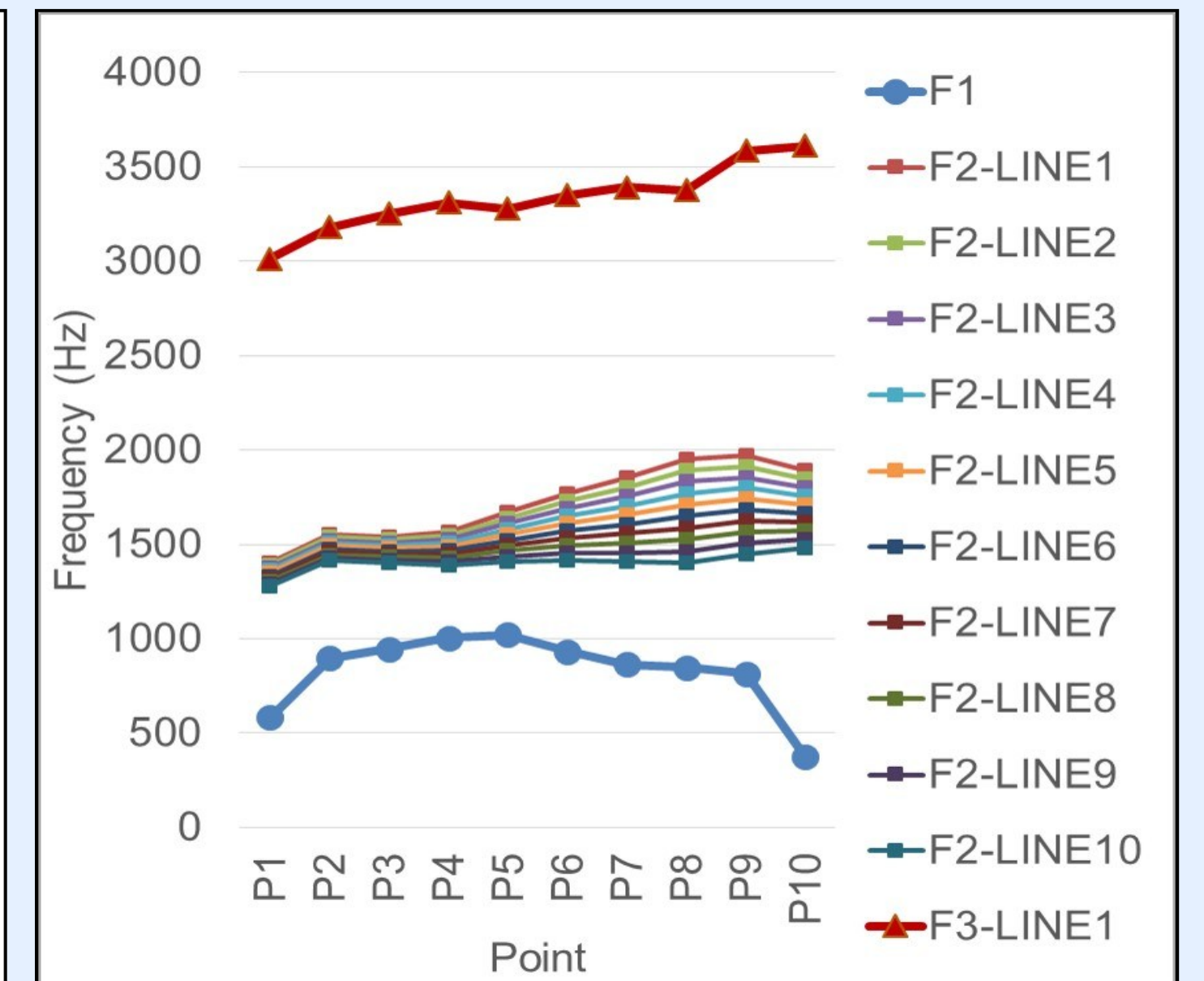


Figure 4. Synthetic continua in the “fan” group in Exp II (F3=LINE1)

3.2 Results

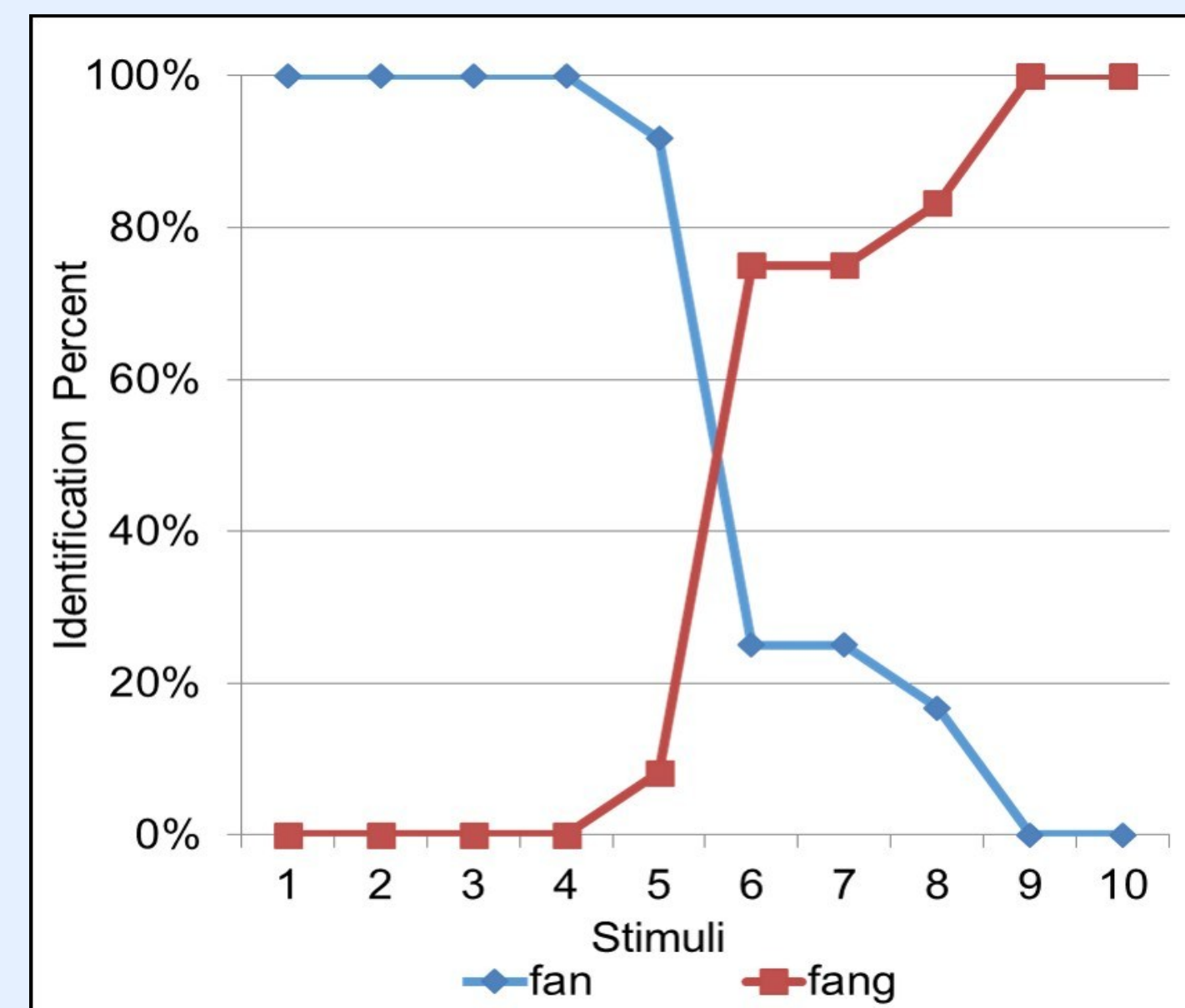


Figure 5. Perceptual results in the “fan” group in Exp I

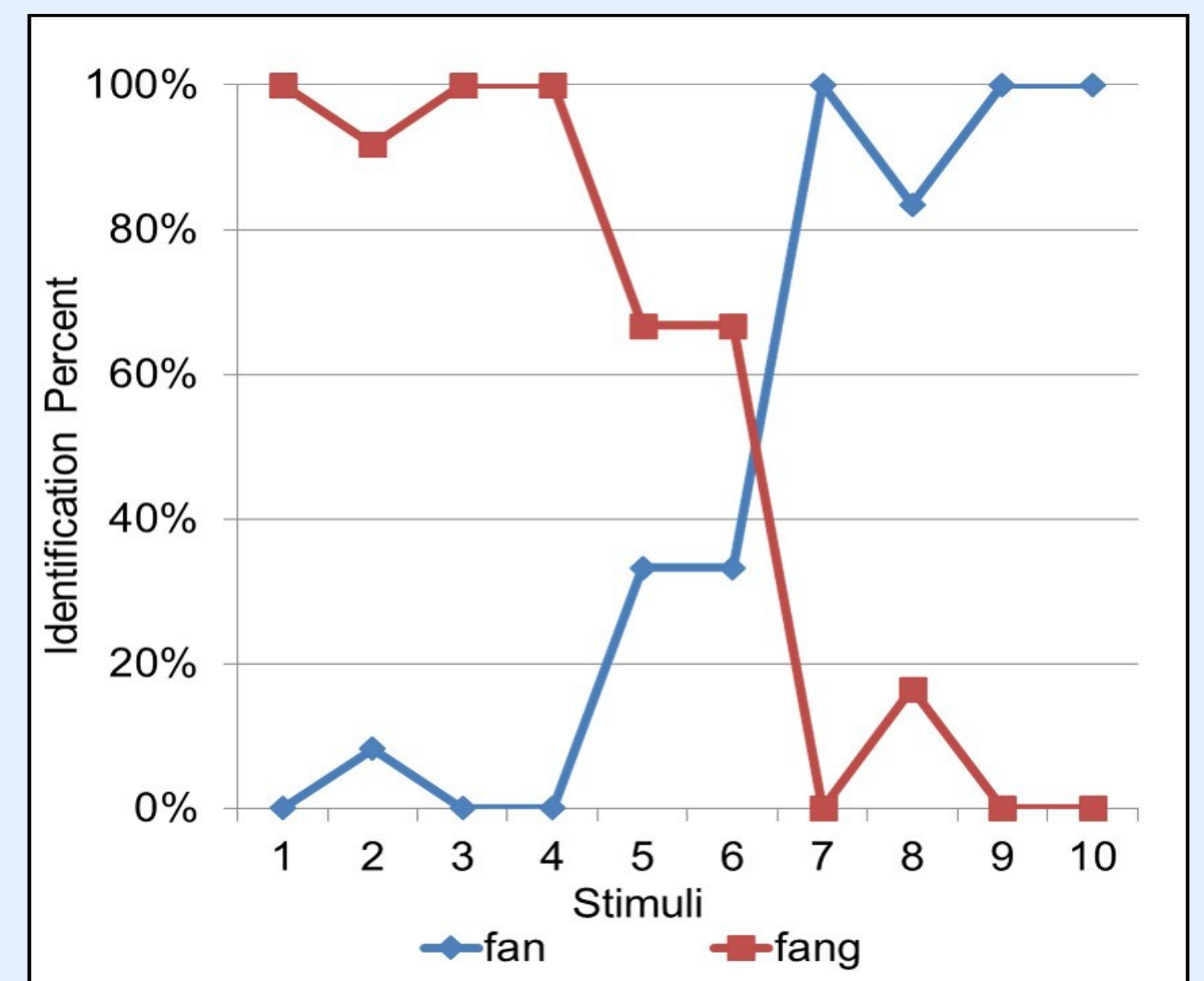


Figure 6. Perceptual results in the “fang” group in Exp I

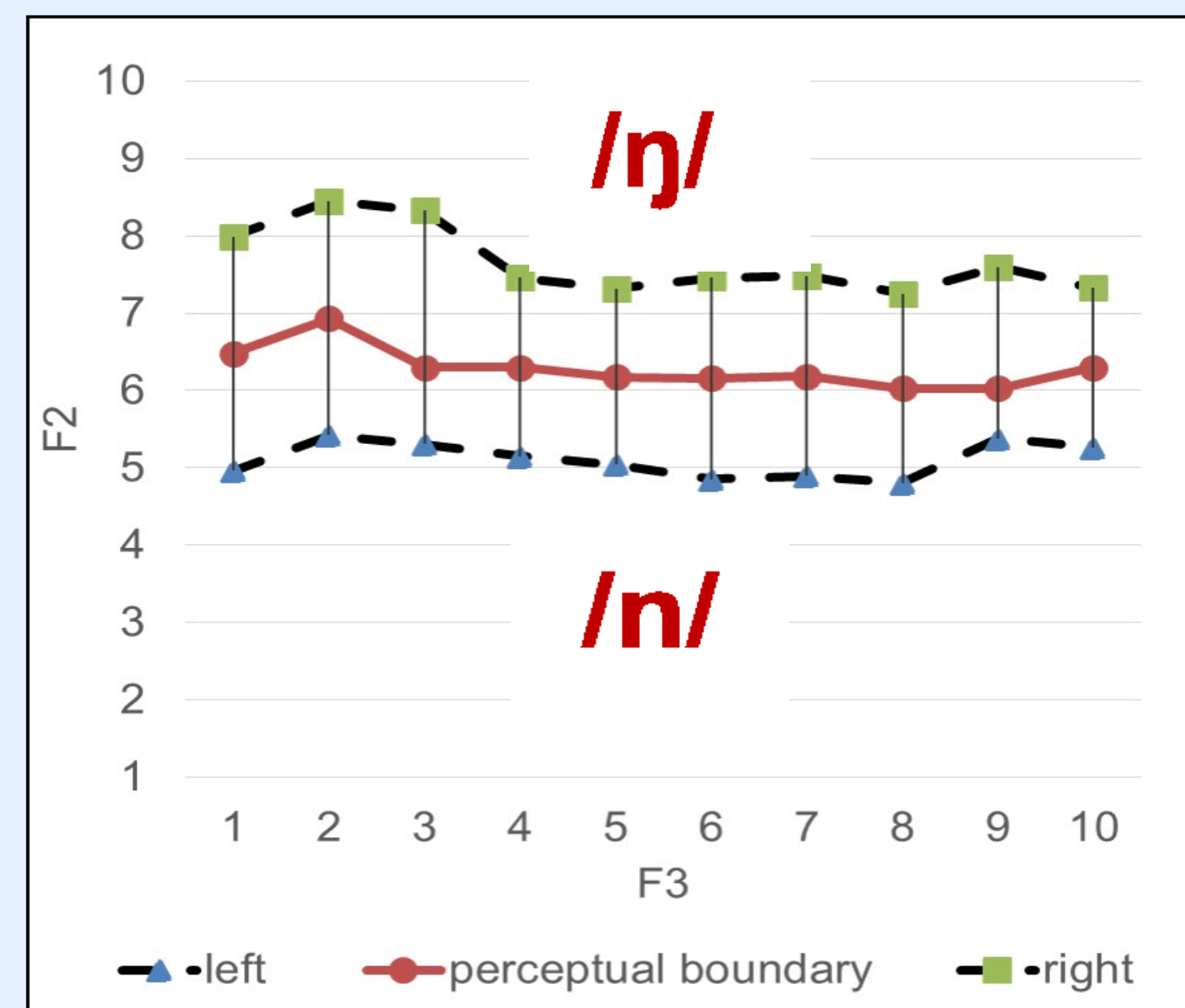


Figure 7. Perceptual model for the “fan” group

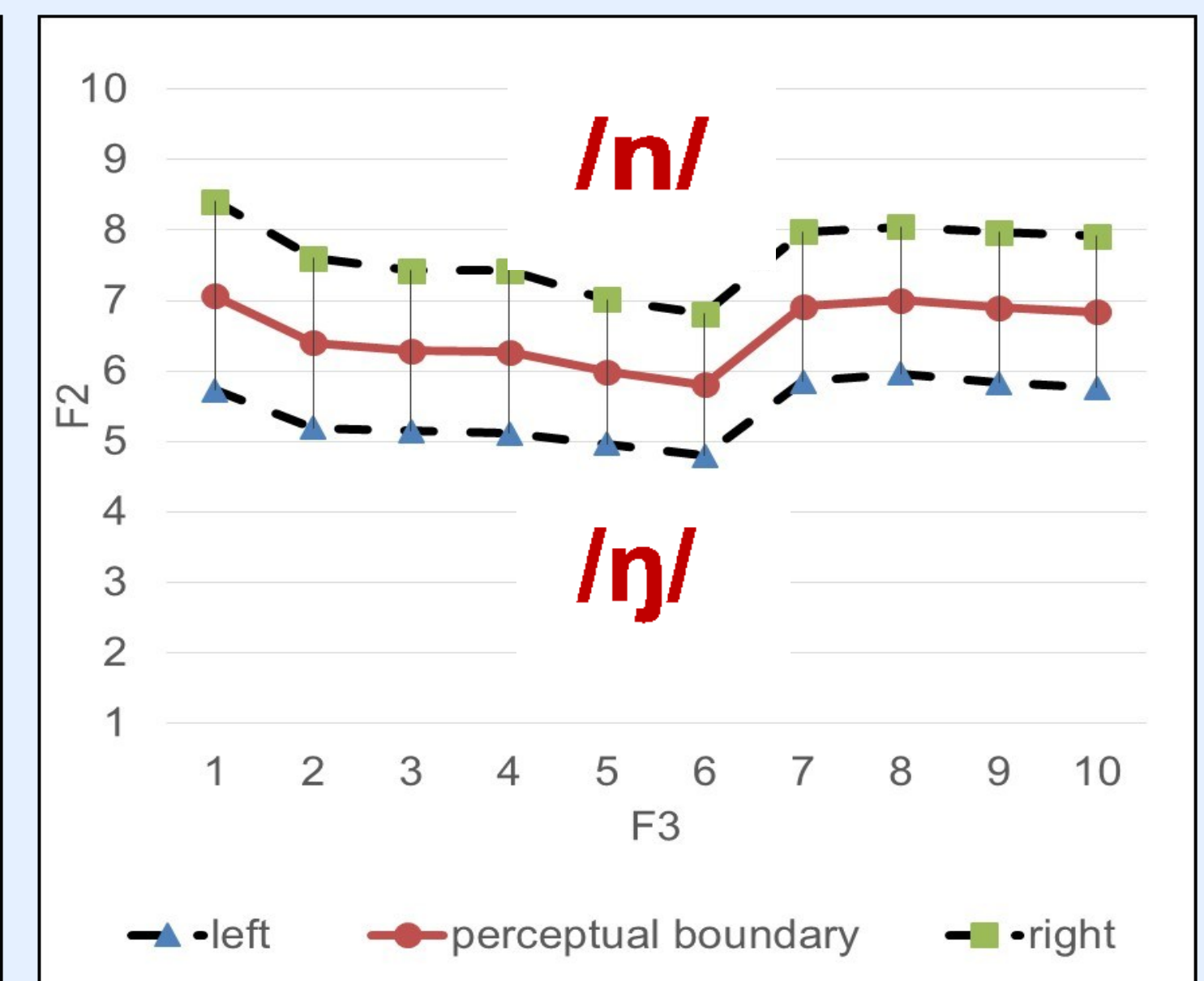


Figure 8. Perceptual model for the “fang” group

4. Conclusions

. Differences between F2 and F3 in the perception of nasal Finals:

. F2 \longrightarrow /n/ & /ŋ/

. F3 \longrightarrow /ŋ/

. F2 is the primary perceptual cues for nasal Finals in Standard Chinese.

✉ liyanpingblcu2014@gmail.com