Introduction

- The acoustic performance of the tones of Mandarin is believed mainly to follow the pattern of f0, which is also the major clue in its tonal perception.
- In practical running speech, the f0 pattern has more or less deviation due to coarticulation. Native speakers neglect those deviations and regard them as the same phoneme. Tone context does have an effect on Mandarin tonal identification.
- Native speakers resort to two clues in tonal perception — pitch variation itself and that of the adjacent tones, i.e., tone contexts. In tonal perception, native Chinese rely more on tone contexts while English speaking learners on the tone itself.

Question

What about Japanese (L1) learners of Chinese (L2)? Do they rely on tone contexts or the tone itself? How do they perceive Chinese tones under different tonal circumstances?

Method

Stimuli and subjects

- 15 samples of Mandarin disyllabic stimuli and subjects

Procedure

- Sounds played by computer automatically.
- Participants fill out questionnaire.
- Each sample played in random arrangement once, with a 4.5 second interval in between.
- A short period of orientation before test, in which they were given 20 samples.

Results

On the T2-T3 continuum

Chinese: the perceptual boundary is distinct and there is a significant tendency of the interaction between tone contexts and the identification of T-2 and T-3 (FT2 (1, 7) = 6.44, p < 0.05; FT3 (1, 7) = 6.10, p < 0.05). To make it more concise, the perceptual boundary between T2 and T3 emerges along the continuum when the test syllable possesses the post position other than the preposition.

In all tone perception is vulnerable to contexts for Japanese as well but consistency is higher among Chinese.

On the T2-T3* continuum

Chinese: there is a significant interaction between tone-identification and tone contours (FT2 (1, 7) = 12.37, p < 0.05; FT2 (1, 7) = 13.51, p < 0.05; FT3 (1, 7) = 14.04, p < 0.05; FT4 (1, 7) = 17.34, p < 0.05), together with a gradient from-easy-to-difficult pattern among Chinese: T3-X+T4> T4+X>T3+X>T2+X>T1+X>T1+T2+T3+T4>X. They perceive the test contours in these three contexts (+T1, +T2, +T4) as T3(*) from the fifth contour; perceive the first three contours as T2 while perceive the fourth to seventh as T1, and identify the eighth to twelfth contours, namely, the low-falling ones as T4.

Japanese: the result is quite similar to that of Chinese, however, the test contexts which have an H tone feature like T1+X and T2+X are difficult for Japanese to perceive as T1 whereas not by Chinese. This suggests that the H tone feature has stronger effects on Japanese students’ perception of T1; there is significant difference between the identification results of Chinese and Japanese on T1+X. Most of Chinese participants take them as T4, while the majority of Japanese take as T3 (*).

Conclusion

- Both Chinese natives and Japanese learners are affected by tone contexts in perceiving Mandarin tones.
- Chinese natives can adopt the phonological rules in depending while identifying tones, but Japanese cannot adopt them in some cases.
- The conventional tone sandhi rules and pitch direction impose a stronger constraint on Chinese participants while Japanese students rely more on acoustic characteristics, especially the pitch height.
- T3 identification is more difficult than T2 for Japanese, especially when it is after the context tone.

References