

Interaction of First and Second Language in Speech Accommodation: A pilot study of speech accommodation by speakers with different language backgrounds



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Background

- **Speech accommodation:** Speakers unconsciously change their accents to be more similar to their interlocutors in daily communication.
- This phenomenon has been found in spontaneous conversations as well as in laboratory speech (Goldinger, 1998; Shockley et al., 2004; Nilsen, 2007; Babel, 2009).
- Speakers accommodate to various dimensions of speech, including vocal intensity and temporal patterns (Natele, 1975), consonant voicing (Nielsen, 2007), vowel formants (Babel, 2009) and pitch (Babel, 2012).
- Previous studies have shown that accommodation is a selective rather than a fully automatic process, being conditioned by linguistic and social factors.
- E.g.:
Speakers imitated lengthened VOT but not shortened ones (Nielsen, 2008).

Low vowels showed stronger accommodation effect than high vowels (Babel, 2009).

Vowel accommodation was conditioned by the speakers' degree of liking to the model speaker (Babel, 2009).

Research questions

- **Research Questions 1 & 2:**
* Do speakers accommodate to the multiple phonetic cues of one linguistic structure equally or selectively?
* If it is selective, is the selectivity conditioned by perceptual salience and phonological contrast?
➢ Previous studies only focused on speech accommodation in native language.
➢ Bilinguals' two languages interact. Native language influences the perception and production of non-native language (E.g.: Flege, 2003; Best & Tyler, 2007).
- **Research Question 3 & 4:**
* Can speakers accommodate to non-native contrast in L2?
* Does accommodation in L2 have similar patterns as in L1?

Method

- **Target structure:** Mandarin neutral tone (weak stress) E.g.: 东西/təŋ55 ɛi55/ "east and west" versus 东西/təŋ55 ɛi0/ "things"
- **Production of neutral tone**
Syllables with neutral tone acoustically realized as
 - mid-level or low pitch
 - Shorter duration
 - lower intensity
 - vowel reduction (sometimes)
- **Perception of neutral tone**
 - Pitch is the most important perceptual cue (Wang, 2004; Li & Gao, 2014).
- **Experiment:** A shadowing task
Procedure: 1) Pre-task reading 2) Six shadowing tasks 3) Post-task reading
Participants: 6 female Cantonese speakers & 6 female Mandarin speakers
- **Stimuli: 4 (types of words) * 16 (words)**

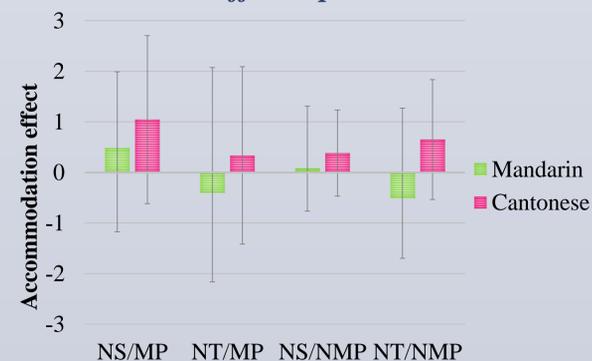
normal/ weak stress minimal pairs		weak stress words without minimal pairs	
Words with normal stress (NS/MP)	Words with neutral tone (NT/MP)	Words with neutral tone (NT/NMP)	Fillers (NS/NMP)
剥离	玻璃	姑娘	衣柜
/bɔ̃ 1 li 2/	/bɔ̃ 1 li 0/	/ku 1 niaŋ 0/	/ji 1 kwei 4/
split	glass	girl	wardrobe

Analysis:

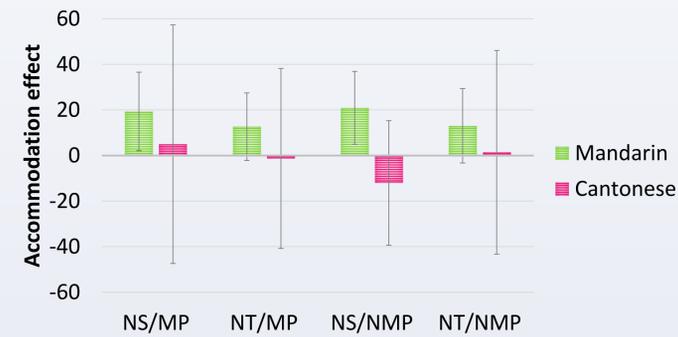
- 1) Accommodation effect = $|f0_{model} - f0_{pretask}| - |f0_{model} - f0_{task}|$
- 2) Ratio = $f0_{syl2} / f0_{syl1}$

Results

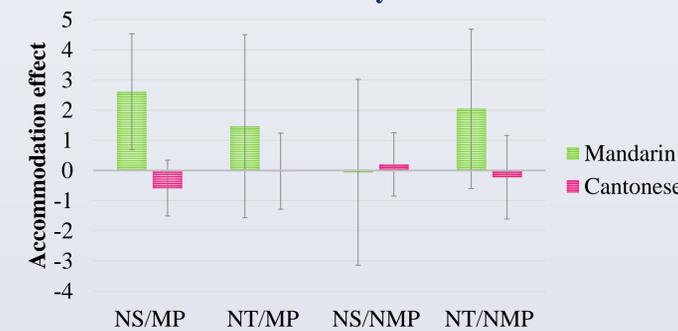
1) Accommodation effect – pitch



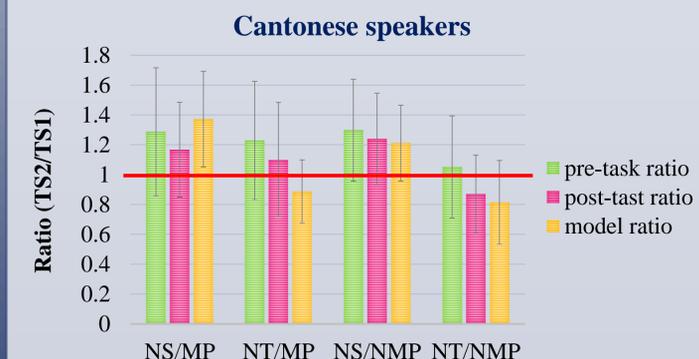
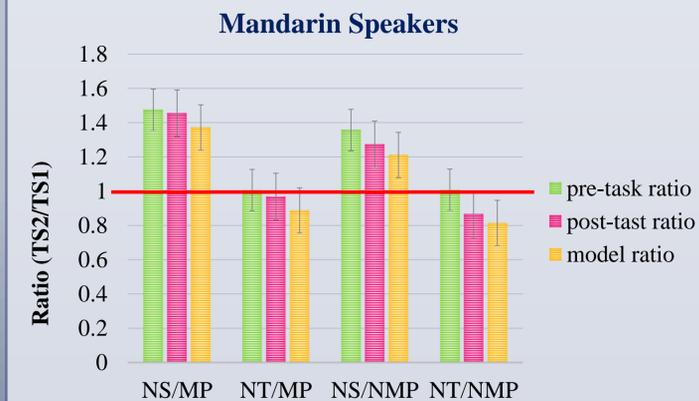
Duration



Intensity



2) Ratio - duration



Cantonese speakers accommodated to the durational contrast in neutral tone words after the exposure.

Discussion & Conclusion

Research Question 1 & 2:

- Native speakers accommodated to duration and intensity in neutral tone words, but not to pitch.
- Accommodation of pitch might endanger the perception of neutral tone.

Research question 3 & 4:

- Cantonese speakers can accommodate to Mandarin neutral tone, but with different patterns.
- Cantonese speakers accommodated more to pitch, while Mandarin speakers accommodated more to duration and intensity.

Possible explanations:

- 1) Cantonese and Mandarin speakers use different perceptual cues in neutral tone perception.
 - Accommodation to pitch might not interfere with neutral tone perception for Cantonese speakers.
- 2) Perceptual sensitivity influences production.
 - Cantonese speakers are more sensitive to subtle pitch differences because Cantonese contrasts three level tones.
 - Mandarin speakers and Cantonese speakers differ in their sensitivity to various acoustic cues, hence accommodating to different cues in production.
 - It suggests that early exposure to language might shape listeners' attentional network which interferes with non-native speech perception and production, which is consistent with Attention to Dimension theory (A2D) (Francis & Nusbaum, 2002) and Native language magnet theory (NLM) (Kuhl et al., 2008).

Selected Reference

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