The effects of prosodic strengthening on alveolar-retroflex contrasts in Beijing and Taiwan Mandarin

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In Mandarin Chinese, there exist three pairs of voiceless alveolar and retroflex sibilants. Literature on Mandarin phonology generally prescribes a distinctive place contrast made in Beijing Mandarin, whereas a neutralization of the two categories is suggested for Taiwan Mandarin. However, some acoustic studies (e.g., Jeng 2006; Li 2009) have recently started to contend that retroflex neutralization in Taiwan Mandarin is not simply “on” or “off”. Many factors have been reported to greatly influence realizations of Mandarin retroflexion, for example, vowel contexts (e.g., Li 2009), prosodic prominence (Chuang & Fon 2010), and sociolinguistic factors like gender (Chuang & Fon 2010) and formality of tasks (Jeng 2006). In view of previous studies that found consonantal voicing contrasts (e.g., Cho & McQueen 2005; Cole et al. 2007) and place of articulation contrasts (e.g., Cole et al. 2007) are enhanced in prosodically prominent conditions, we hypothesize that in prosodically weak conditions, Taiwan Mandarin speakers may not show a strong place contrast, which can be perceived by Beijing Mandarin speakers as a lack of contrast. In strong prosody conditions, however, the place contrast will be enlarged or enhanced in Taiwan Mandarin.

The current study investigated how the alveolar-retroflex contrast is realized in strong (operationalized as under contrastive focus) vs. weak (operationalized as under no contrastive focus) prosodic conditions for Beijing and Taiwan Mandarin speakers. Center of Gravity (COG) was used to measure the spectral distribution of the frication in the alveolar/retroflex sibilants. To ensure sufficient yet natural speech data for analysis, a series of map tasks were used to elicit alveolar-retroflex production. The speech data collection is still in process, but our preliminary results from the pilot study indicate that Taiwan Mandarin speakers’ production exhibited a greater alveolar-retroflex contrast (i.e., larger COG difference) under focus condition, whereas Beijing Mandarin speakers’ production was less subject to this prosodic strengthening effect. This study suggests that the Mandarin alveolar-retroflex contrast is gradient and that realizations of alveolar-retroflex contrasts in response to prosodic strengthening may vary across speakers of different Mandarin dialects.