Paper Title: Perception of Mandarin lexical tones by native speakers of Japanese: A comparison between native and non-native listeners

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Proposed Program Stream: Communication, Language and Education

Abstract
As Asia increases its global influence and relevance to Australia, the Australian government has targeted better understanding of Asian cultures and its languages as a high priority. Likewise, amongst Asian nations, mutual engagement will continue to increase in the 21st century.
Language plays a crucial role in the exchange of goods and ideas. However, learning Asian languages is known to be difficult for speakers of English. In the case of Mandarin, for instance, there are various sources of this learning difficulty, but particularly challenging is the accurate perception/production of lexical tones (Kiriloff, 1969; Lin, 1985). Currently, we know much less about how speakers of languages other than English process and ultimately acquire Asian languages such as Japanese and Mandarin. This study focuses on spoken language processing of one Asian language, Mandarin, a tonal language, by native speakers of another Asian language, Japanese, a pitch-accented language. Our long-term objective is to advance our knowledge on universal vs. language-specific aspects of tone acquisition.

Mandarin differentiates four tones (T1: high level (ā), T2: high rising (á), T3: dipping (ǎ), T4: high falling (à)), of which T2 and T3 are highly confusable to both native and non-native speakers in perception and/or production (Kiriloff, 1969; Li & Thompson, 1977; Lin, 1985; Miracle, 1989; Shen & Lin, 1991).

We presented seven CV syllables (‘ma’, ‘mi’, ‘ba’, ‘bi’, ‘da’, ‘di’, ‘du’ across all four tones) produced by 8 (4 males, 4 females) adult native Mandarin speakers to 11 (5 males, 6 females) adult native speakers of Japanese with no experience with Mandarin. The listeners’ tone discrimination accuracy was assessed in a categorial discrimination test with a four-alternative forced-choice oddity task (336 trials). Both change and no-change (catch) trials were included and A-prime (A’) scores based on the proportion of ‘hits’ and ‘false alarms’ were calculated (Snodgrass et al., 1985). A score of 1.0 indicated perfect discrimination (correct responses to all change and no-change trials), whereas a score of 0.5 or lower indicated a lack of phonetic sensitivity.

The results show the mean A’ scores of Japanese listeners ranged from 0.61 for the T2-T3 contrast to 0.90 for the T3-T4 contrast. These scores are substantially lower than the four native Mandarin listeners’ scores (0.96-0.99), but to varying degrees for the six tone contrasts tested (see Figure 1). Consistent with previous findings, discrimination accuracy was lowest for the T2-T3 contrast across all listeners, in particular, for non-native listeners. Although certain tone contrasts (e.g., T2-T3) may be difficult to perceive regardless of listeners’ L1, possibly due to their acoustic phonetic characteristics, there may be differences in how different contrasts are discriminated according to listeners’ language backgrounds. Data collection is in progress with non-native learners of Mandarin from Australian English and Cantonese (heritage) backgrounds to further address this issue.

Equipment requirements (if any)

Microsoft Powerpoint

Disciplinary Area (e.g. history, political science, literature)
References


Key words

Lexical tones, Mandarin, Cross-language speech perception, Japanese-speaking listeners, spoken language processing

Figure 1: Mean discrimination scores (A') for native Japanese and Mandarin listeners (error bars indicate ± one standard error of the mean).