The perception of tonal clash in interrogative melodies of Tokyo Japanese:
A cross-linguistic perspective

Mayuki Matsui¹, Hyun Kyung Hwang²

¹ National Institute for Japanese Language and Linguistics/ Japan Society for the Promotion of Science
² RIKEN Brain Science Institute

Prosody is in the face of physical-time pressures. For example, pitch contours can be modified in the context (i) where the duration of the tone bearing units (such as syllables and more) are too short due to fast speech rate (e.g., Cho and Flemming 2015 for Seoul Korean), and also, (ii) where tonal events are too dense to manifest themselves. The focus of the present study is the latter case, i.e., the case of so-called tonal clash resolution.

Previous studies have reported that languages resolve tonal clash in language-specific ways. For example, pitch contours can be compressed (e.g., Grønnum 1991 for Danish) or truncated (or, curtailment, Grice 1995 for Palermo Italian) in the tonal clash contexts, and that such contour modification strategies may result in either phonological neutralization or an apparent loss of the contrast. However, most of the previous studies have focused on the contour modification strategies in intonation languages, such as Russian (e.g., Odé 2005), where pitch functions exclusively to convey post-lexical information. In contrast, the present study demonstrates how tonal clash is resolved in the context where lexical pitch accent is potentially clashed with post-lexical boundary tone for the interrogative melody of Tokyo Japanese, where pitch functions to convey both lexical and post-lexical information (Pierrehumbert and Beckman 1988, Kubozono 1993 for review), which has non-trivial implications for the cross-linguistic/typological studies of tonal clash resolution, accent-intonation interaction and neutralization in autosegmental-metrical theory (e.g., Goldsmith 1976, Gussenhoven 2004, Ladd 1996).

In Tokyo Japanese (TJ), it has been widely acknowledged that the contrast between final-accented and non-accented words are either neutralized or reduced, unless a particle follows (e.g., Vance 1995, Sugiyama 2012). Recently, however, Matsui and Hwang (2017) reported that some speakers produced distinct pitch patterns for the contrast even in a denser tonal context involving an interrogative boundary tone. Specifically, final-accented words together with a rising boundary tone (1a) exhibited greater pitch rise than non-accented ones in the same context (1b).

In this study, we examine whether this suspended lexical contrast is perceptually recoverable by listeners in the interrogative melody. Native listeners of TJ performed forced-choice identification task with “reiterant speech” (Warner 1997), where prosodic information was accessible for listeners but segmental information were minimized by substituting the segments with other. Prosodically distinctive renditions of three accent patterns (final-accented, non-accented, and initial-accented) were tested. The results showed that there were no significant differences in listeners’ response for final-accented and non-accented stimuli in the tonal clash context (Fig. 1), while the listeners were correctly classified them in the non-clash context (Fig. 2). This suggests that the subtle acoustic difference in the degree of rising signaled by the speaker does not play a role in the identification of final-accent and non-accent. Taken together, the results support the idea that the lexical accent distinction is perceptually neutralized in the context where final pitch accent is clashed with a rising boundary tone. Our findings for the accent-intonation interaction include that, when lexical prosody clashes with post-lexical prosody, the post-lexical prosody is privileged to be intact.
Examples


\[ \text{H}^* \text{L} \quad \text{LH}\% \]

\[ \text{LH}\% \]

Figures

**Fig. 1:** Overall percentage of each response type divided by stimulus accent type in tonal clash context.

**Fig. 2:** Overall percentage of each response type divided by stimulus accent type in non-clash context.

References


