Tones and Tunes in Tianjin Mandarin

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This paper investigates the tunes of statements and intonational yes-no questions in Tianjin Mandarin, a northern dialect of Mandarin. Tianjin Mandarin differs from standard Mandarin in terms of its tones and tone sandhi rules, but is very similar to standard Mandarin in other aspects such as syntax. Tianjin Mandarin has four lexical tones (Shi, 2009), which are roughly symmetrical – L Tone(211) vs. H Tone(455), and LH Tone (113) vs. HL Tone (553).

Two production experiments were conducted to examine the interaction of lexical tones and intonational tunes of monosyllabic utterances (Experiment 1) and longer utterances (Experiment 2) in Tianjin Mandarin. Eight native speakers of Tianjin Mandarin (4 male and 4 female) were recorded. The central goal of this project was to investigate the interaction of intonational tunes (pitch accents and boundary tones) with lexical tones. Would lexical tones override intonational contours? Or would there be a clear separation between intonational tunes and lexical tones? In Experiment 1, three syllables [ma], [mi] and [mau], each with four lexical tones, were tested for declarative tunes and interrogative tunes. In Experiment 2, those monosyllabic words were taken as target words and embedded in two carrier sentences. This was to keep the target words away from both ends of intonational phrases. The two carrier sentences differed in the tone preceding the target words, one being a LH tone while the other, a HL tone. The difference was aimed at investigating the effect of tone sandhi on tunes.

A comprehensive analyses of the data suggest that (i) question intonations do not differ significantly from statements in terms of overall pitch contours or boundary tones and (ii) there are no obvious rising contours for question intonation, suggesting a striking similarity with some African tonal languages (cf. Rialland, 2007). However, there are clear differences in the overall register and individual tonal accents pattern differently in terms of their pitch falls and rises. The details of the analyses (including both temporal aspects and pitch) in *Experiment 1* are as follows: (a). The TBU (Tone Bearing Units) in Tianjin Mandarin is the rhyme. (b). The register is higher in interrogative tunes than in declarative for all tones. (c). The pitch range of the intonational yes-no questions is smaller for tones ending with L, but higher for tones ending with H. This implies that, on the one hand, the Ls in the questions do not fall as sharply as those in the statements; and, on the other hand, the Hs in the questions rise even higher than those in the statements. This finding is consistent with Chang's (1958, quoted in Ladd, 1996, p. 159) study on Chengdu Chinese questions. (d). There are no boundary tones (or a floating boundary tone) for statements and intonational yes-no questions in Tianjin Mandarin. The literature on standard Mandarin has mixed conclusions. For example, Peng et al. (2005) assumes boundary tone, while Yuan, Shih, & Kochanski (2002) assumes none. (e). The rhymes in statements are significantly longer than in intonational yes-no questions, while the onsets remain similar across both types. *Experiment 2* also concluded (a)-(e). The monosyllabic target words, which act as the prominence of the utterances, have the same changes as when they are in isolation. No evidence was found to support the presence of postlexical pitch accents or boundary tones either.

In conclusion, intonational yes-no questions in Tianjin Mandarin differs from statements only in **register**, and **pitch range**, but not in terms of pitch accents and boundary tones. This is very different from non-tonal languages such as English, but the results coincide with many African languages, which make questions by utilising the register and degree of pitch rise and fall (Rialland, 2007). Tianjin Mandarin also has syntactically marked yes-no questions, in which the utterances end with a question particle. This construction maybe a consequence of the fact that intonation alone in a tonal language is not robust enough to facilitate effective communication.

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