

Czech learners' production of Mandarin intonation in atonal syllables

Authors: Jan Lorenc, Beijing Language and Culture University

Cao Wen, Beijing Language and Culture University

Abstract ID: 312

Event: Phonetics 2026 Hong Kong

Subject: 7. Intonation

Presenter Name: Jan Lorenc | Cao Wen

Abstract

Mandarin Chinese uses fundamental frequency (F0) to encode both lexical tones and intonation. This dual function poses a learning challenge for speakers of non-tonal languages, in which F0 primarily conveys intonation. The present paper focuses on how Czech learners of Mandarin—speakers of a non-tonal L1—produce Mandarin intonation in the absence of lexical tones, compared with native Mandarin speakers. Specifically, we hypothesize that: (1) In atonal syllables, Czech learners are able to produce a native-like intonation pattern. (2) Czech learners' production mirrors the F0 contours of their native Czech declarative and interrogative utterances.

To answer these questions, we conducted a production experiment in which ten lower-intermediate Czech learners of Mandarin and ten native Mandarin speakers produced the atonal particle 哦 (*o*) in declarative and interrogative contexts. Each participant produced 5 declarative and 5 interrogative monosyllabic utterances embedded in short dialogues. The same group of learners also produced a comparable set of 5 declarative and 5 interrogative Czech monosyllabic utterances. L2 intonational accuracy of Mandarin utterances was assessed via perceptual judgments of sentence type (declarative vs. interrogative) from four independent native listeners. F0 contours were modeled using GAMMs.

Results show that in atonal syllables, Czech learners can produce declarative and interrogative utterances with F0 contours that closely match those of native speakers. However, variability in the production of the interjection 哦—specifically, incomplete lexical acquisition of the particle—led to non-target F0 contours in about 30% of interrogative tokens, which native listeners consequently perceived as declarative. Consistent with Hypothesis 2, the F0 contours of Czech learners' L1 monosyllabic utterances closely resembled those of native Mandarin productions.

Our first hypothesis was confirmed: Czech learners can readily produce Mandarin intonation in atonal contexts, with F0 contours very similar to those of native speakers. Given that Mandarin intonation is otherwise challenging for this population when produced on tonal syllables, this finding indicates that lexical tones are a primary barrier to mastering Mandarin intonation for learners from non-tonal-language backgrounds. Our second hypothesis was also confirmed: Czech learners produce F0 contours that are highly similar to those of their declarative and interrogative counterparts in Czech. This finding suggests positive L1 transfer in L2 intonation production of Mandarin in an atonal context. Together, these findings demonstrate that L1 transfer facilitates L2 intonation acquisition when tonal interference is absent, isolating lexical tone as the primary barrier. From a pedagogical perspective, interjections such as 哦 should be taught explicitly as atonal items, both to clarify their prosodic status and to alleviate the cognitive demands of tonal acquisition.