

F0 ASSIGNMENT

Lexical tone and intonation in Mandarin Chinese

In this lab assignment, you will investigate the interaction of lexical tone and intonation in Mandarin Chinese. In Chinese, there are (at least) two linguistic uses for F0. The first is lexical tone, which permits contrasts between words based on the pattern of pitch. The other is intonation, which, in addition to providing cues to prosodic organization, might distinguish between different semantic interpretations of two phrases based on pitch (e.g., the difference between the statement “Got milk.” and the question “Got milk?”). This means that there might be simultaneous lexical and intonational pitch requirements on a single word and leads to the question of what happens when lexical tone and intonation have conflicting requirements for F0.

To address this question, you will measure the F0 rise or fall (calculated from the $F0_{\max}$ and $F0_{\min}$) of the final word in a set of Mandarin sentences (statement-question minimal pairs). The word of interest will have either an underlying high rising tone (tone 2) or a high falling tone (tone 4). Directions for using Praat to measure F0 are in Handout 12. You will compare the realization of F0 in the two tones and the two sentence types.

The data are 4 statement-question pairs (=8 sentences) for 3 speakers. These data, which are from Jiahong Yuan’s dissertation, and their glosses will be posted on the class website.

	statement – S (fall)	question – Q (rise)
tone 2 - 1 (rise)	rise+fall	rise+rise
tone 4 - ˥ or ˨ (fall)	fall+fall	fall+rise

You should consider the following questions:

- Is Mandarin like English in that F0 is higher at the end of yes/no questions than at the end of statements?
- Are Mandarin lexical tones preserved (i.e., correctly realized) sentence-finally?
- What is the effect of intonation on each of the tones?
- What is the effect of tone on each of the intonation contours?
- Describe the combined effect of lexical tone and intonation when they reinforce one another (i.e., where both require a rise or both require a fall) and when they conflict with one another (i.e., where one requires a rise and the other requires a fall, or vice versa).

Transform each of the first four questions into one or more specific and testable hypotheses, and use t-tests (paired and/or two-sample) to test them. You may use an ANOVA if you prefer. Use these results to discuss the final bullet point.

NB, one way to demonstrate statistically whether a rise or fall has occurred would be to compare F0 at two points, early and late, and see whether they are consistently different (and in what direction).

Your write up, including all measurements, statements of your hypotheses, statistical results, graphs of your results, and a brief discussion of your conclusions, is due 11/17/05. (You will receive a new assignment on 11/15/05.)