

# Tone Patterns in Chinese EFL Learners' Read Speech

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## Abstract

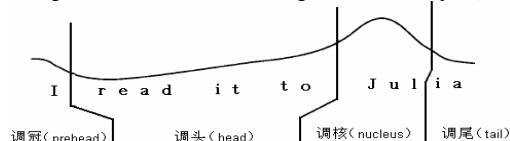
This study employs a method in experimental phonetics to investigate the use of tones in 45 Chinese EFL learners' read speech. The study is based on O'Connor & Arnold's (1973) descriptions of tones of English, and takes the recorded spoken data of 8 English-speaking British university students as the norm for comparison. Findings of the study indicate that, so far as primary tones are concerned, most of the learners know how to use falling and rising tones to a satisfactory extent, but serious problems prevail in their use of level tones. Further, many learners could not express their attitudes and moods by using appropriate secondary tones. As many of the characteristics found in these learners have also been reported to exist in EFL learners of other cultural and ethnic backgrounds, the results of this study seem to confirm the belief that there exists an interlanguage intonation system. This study has important implications for how EFL learners should convey their intended meanings with the proper use of different tones, as well as for the teaching of intonation in L2 pedagogy.

## 1. Introduction

When we talk about English intonation, we mean the pitch patterns of spoken English (O'Connor & Arnold, 1973), i.e. the rise and fall of the pitch of the voice in spoken English (Tench, 1996). Intonation is evitable in speech.

In the studies of tones, O'Connor and Arnold (1973) discriminated various types of pre-heads, heads, and nuclear tones (including tails) (See Figure 1), and were thus able to break down English tones into various tones, which they call Ten Tone Groups; they argue that different tones may help convey different moods and attitudes of the speaker.

Figure 1 Intonation structure of English (Ladd, 1996, p210)



Previous research on EFL learners' intonation patterns has mainly focused on Spanish English (Verdugo 2003; Wennerstrom, 1994), Finnish English (Toivanen 2003), Japanese English (Wennerstrom, 1994), Slovakian English (Timkova 2001), and Thai English (Wennerstrom, 1994). While a few research papers addressing English intonation can be found in China, these papers either try to introduce English intonation (Jiang, 2000; Liang, 1996; Wu, 1997; Zhang, 2000; Zhang & Zhou, 2004; Zhu & Bai, 1994) or to report experience in the teaching of English intonation (Chen, 2002; Dou, 2003; Li & Ma, 2003; Pan, 1994; Zhang, 2001), and

empirical research addressing Chinese EFL learners' intonation objectively with acoustic or phonetic tools has been scarce. This makes the present study especially necessary.

## 2. Method

The purposes of the study are as follows: 1) to describe the tone patterns in Chinese EFL learners' read speech; 2) to search for the similarities and differences in tone patterns between Chinese EFL speakers and native speakers; and 3) to compare the tone patterns of high achievers with those of low achievers in order to find the aspects which interrupt the process of the conveying of meaning.

Subjects in the present study include 45 Chinese learners of English randomly sampled from different educational backgrounds (see Table 1 for details), and 8 British college students (southern English speakers).

	NSs		NNSs							
	M	F	MA		BA		Senior		Junior	
Gender	M	F	M	F	M	F	M	F	M	F
Number	2	6	5	7	5	5	5	6	5	7
Total Number	8		45 (20 males; 25 females)							

Table 1 Subjects in this study

The reading material is a story of 820 words, with varieties of sentence types, e.g. statement (simple, complex, compound), yes-no question, wh-question, command, etc. About average of 6 minutes' speech was recorded for each student. The recording was done in an anechoic chamber for native speakers and a quiet classroom for Chinese students by Cool Edit Pro 2.0 at the sample rate of 16000 (16kHz, 16 bit mono PCM).

With reference to Ten Tone Types suggested by O'Connor & Arnold (1967), the researcher in the present study annotated and analyzed 7 sentences (shown in Table 2) on the computer with PRAAT. Some of the annotated data were cross-checked by some phoneticians at University College London.

The annotated data were extracted with PRAAT scripts (developed by Xiong in Chinese Academy of Social Sciences).

Syntactic Structure	Sentences
Simple Declarative	<i>John Smith was an American businessman.</i>
Complex Declarative	<i>He liked his cottage very much, especially his closet where he kept his guns, fishing rods, wine and other things.</i>
Compound Declarative	<i>'I'm not taking anything out of this bottle, I'm just putting something into it.'</i>
Yes-No Interrogative	<i>'Will they make the man sick?'</i>
Wh-Interrogative	<i>'What are they?' She asked him at last.</i>
Tag Interrogative	<i>'You're not taking a drink at ten in the morning, are you?'</i>
Imperative	<i>'Take this, it'll make you feel better.'</i>

Table 2 Analyzed sentences in this study

### 3. Results and Discussion

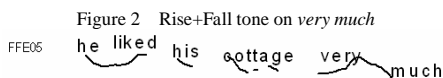
The results indicate that between Chinese EFL learners and native speakers, both similarities and disparities exist in their tone patterns. This study is designed to investigate the incorporation of the three primary tones, i.e. the falling tone, the rising tone and the level tone, and to compare the similarities and differences of tone patterns between EFL learners and native speakers in order to find the patterns that affect the information retrieval.

#### 3.1 Similarities in Tone patterns

In the sentences with a falling tone as a dominant primary tone, the majority of the Chinese EFL learners adopt the same tone patterns as that of the native speakers: 81% in the statements, 60% in the wh-question, 84% in the tag question and 71% in the command.

A tone of falling is by far the most commonly used tone of all. It may be used in declaratives, tag questions, wh-questions, imperatives and exclamations<sup>1</sup> (Tench, 1996, p88). Sentences with falling nuclear tones (low fall, high fall, rise-fall) signal a sense of finality, completion, and certainty of the utterance (Crystal, 1975; O'Connor & Arnold, 1973; Tench, 1996). A speaker, by choosing a falling tone, also indicates to the addressee that the content he delivers is independent information.

High Head + Rise-Fall ("The Jackknife" in O'Connor & Arnold's terminology) in declaratives usually delivers a mood of "intensifying, and enhancing". For instance, in the simple declarative *he liked his cottage very much* (See Figure 2), in which the nucleus tone falls on *very much*, the pitch contour rises up from the word *very* and falls down on *much*. This, hence, conveys the meaning accurately by emphasizing the preference for the *cottage*.



High Fall ("High Drop" in O'Connor & Arnold's terminology) is the most common tone in wh-questions. In the stimulus passage, it is very appropriate to express the wife's earnestness and fright when she saw her husband put the poisonous tablets into the bottle to punish the person who drank whisky on the sly.

Low Fall ("Low Drop" in O'Connor & Arnold's terminology) in an imperative indicates promptness. The speaker, by using this tone, conveys to the addressee that his instruction should be followed (O'Connor & Arnold, 1973, p52). It vividly illustrates the doorman's promptness and determination when he was giving emergency treatment to his narcose lord.

In the sentences with a primary tone of rising, only a minority of the learners adopt the same tone patterns as the native speakers: 29% in the yes-no question (10% of which is high fall, identical to the native speakers' pattern), 38% in the first clause in a co-ordinate sentence (20% of which is low fall, identical to the native speakers' pattern).

<sup>1</sup> Exclamation will not be discussed in the paper, since there are not any such sentences in the stimulus material.

In a closed tone unit, rising tone usually indicates incompleteness or minor information. At the end of a tone unit, rising tone signals enquiry; while level tone indicates continuity and non-finality. The level tone only occurs in a non-final unit of intonation; and it is used as an alternative to the true rise to indicate incomplete information (Tench, 1996, p81).

Low Rise ("Low Bounce" in O'Connor & Arnold's terminology) in a yes-no question may accurately express the wife's earnestness and fear when she saw the poisonous pills in her husband's hands.

Fall-Rise ("The High Dive" in O'Connor & Arnold's terminology) at the end of the first clause in a co-ordinate sentence expresses the anticipation of the following content, which illuminates the integrity of information of the whole sentence.

The results reveal that in the sentences with a falling tone as the primary tone, Chinese learners of English incorporate tone patterns more similar to those of the native speakers and convey more accurate meaning and moods, while in the sentences with a rising or a level as its primary tone, a greater disparity between the native speakers and the learners exists in their use of the tone patterns. Even when they use similar tone patterns, they tend to have more falling tone patterns (in the first clause of declaratives, low fall occupies 20%; in the yes-no questions, high fall 10%).

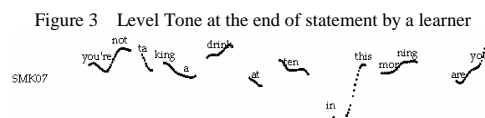
#### 3.2 Differences in Tone patterns

Compared with native speakers, Chinese EFL learners used more varieties of tone patterns. Take declaratives as examples. Falling is the only primary tone used by native speakers, while learners used three primary tones. The following is a summary of the differences in primary and secondary tones between Chinese EFL speakers and native speakers.

##### U Difference in primary tones

Many EFL learners misuse rising and level tones in the sentences with falling as the dominant primary tone: 20% in the statements (2% of which is high rise, and 18% of which is level tone); 18% in the wh-question (11% of which is fall-rise, and 7% of which is level tone); 16% in the tag question (all of which are level tones); 29% in the command (7% of which is low rise, 2% of which is fall-rise, and 20% of which is level tone).

High Head + High Rise ("The High Bounce" in O'Connor & Arnold's terminology) is usually used to show the mood of doubt and query. When applied to the statement *he liked his cottage very much*, the tone type leads to the impression that John doesn't like his cottage so much, which is a contravention of the fact in the story. The Level Tone ("The Terrace" in O'Connor & Arnold's terminology), which indicates incompleteness and continuity, fails to deliver the responding attitude of the sentence (See Figure 3). Among



those learners who used different tone types from the native speakers, 36% were low achievers and 9% were high

achievers. This indicates that there are only minor differences between the native and non-native speakers, and that the level tones used by a large proportion of low achievers at the end of statements probably hinder comprehension.

High Head + Fall-Rise ("The High Dive" in O'Connor & Arnold's terminology) is only used in echo questions, rather than in wh-questions. Among these learners, low achievers make up 1 20% and high achievers a 13%. There is also a significant difference in the types of errors committed by low achievers and high achievers, and the difference lies in the fact that most learners who misused the fall-rise tones were high achievers, and that most learners who misused the level tones were low achievers. Such findings coincide with those of Timkova's (2001) study of Slovak learners, suggesting that some learners' patterns tend to be universal across cultures.

In the declarative part of tag question, level tone is used by 86% of the low achievers and 14% of the high achievers, which suggest that level tone at the end of a statement may intervene the intelligibility of the native hearers.

In the command, among those learners with tone types different from those native speakers, high achievers make up 11% and low achievers make up 25%. A greater difference can be identified between low achievers and high achievers. Most learners who adopt the rising tone are high achievers, indicating that though the rising tone is not the standard tone for imperatives, using the rising tone does not bring about difficulties in understanding. Besides, all those who used the level tone in imperatives were low achievers, suggesting that the level tone is not acceptable in imperatives and thus could seriously hinder comprehension.

In sentence patterns where the rising tone and the level tone are preferable, the major problems with the learners lie in incomplete sentences (first clause in a co-ordinate sentence). It is found that 11% of the learners used the level tone in the yes-no question, and all these learners are low achievers. It is also found that 62% of the learners used either the high-fall (49%) or the high head + rise-fall (13%) tones.

The use of High Fall and Rise-Fall highlights the independence of the tone group and the integrity of the information. The relation and distinction of the contrastive features such as *taking-putting*, *anything-something*, *out of-into* in the statement *I'm not taking anything out of this bottle, I'm just putting something into it* should not be realized by such splitting prosodic means.

#### U Difference in secondary tones

22% of learners used a Low Fall in the wh-question, while the native speakers used a High Fall. The low fall nucleus tone, when used in the wh-questions, indicating seriousness, urgency and strong disapproval (O'Connor & Arnold, 1973, p53), was not appropriate in the text: John was dominant in the family, so his wife could openly express neither complaint nor disapproval to him. She could only indicate her worry and fear in an enquiry tone which virtually caused no effect on the decision of her husband and then tell the others to nip the possible danger in bud.

71% of learners used the High Rise ("The High Bounce" in O'Connor & Arnold's terminology) in the yes-no question, which was different from the Low Rise of the native speakers. The reason may be that the learners had been given the concept of rising tone at the end of a yes-no interrogative at the very beginning of their English learning, however they did not

know how to realize the rising. The high rise, frequently used in echo-questions, expresses an easy and casual mood when used in yes-no questions (O'Connor & Arnold, 1973, p77). Obviously it failed to convey John's wife's worry and fear, hence the high bounce was not appropriately used according to the plot of the text. Further analysis showed that more high achievers used high rise nucleus tones in yes-no question than the low achievers.

The findings reflect the problematic use of the level tones. Level tone at the end of declaratives fails to convey a positive attitude. Instead, it expresses a contrary and uncertain message. Appeared at the end of a continuity sentence type, level tones may break the close relationship of the information units. What's more, the inappropriate uses of the level tones mainly fall on the low achievers, indicating that the misuse of the level tones may be a major factor that influences information delivering. In addition, more mistakes occur in the use of secondary tones. For example, in the yes-no question, the majority learners (90%) used correct primary tone (rising tone), however, among them, 71% of the learners used wrong secondary tone, conveying inappropriate mood.

## 4. Summary

Findings in this study indicate that Chinese EFL learners are characterized by an overuse of falling tones and a misuse of level tones. They seem to be unaware of the relationship between sentence types and tones, especially when it comes to secondary tones, which are important in indicating the speaker's moods and attitudes. In addition to these findings, evidence was found to indicate that the fall and rise of NNSs' tones do not often correspond to the change of context, indicating that learners are less able to convey their moods, attitudes, and involvement by using proper tones.

The study has important implications for China's EFL pedagogy. Explicit instructions need to be given to learners, so that they may become more aware of the interrelationship among tone types, sentence types and the speakers' attitudes and moods.

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