Intonation Phrasing in Chinese EFL Learners' Read Speech

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Abstract

Intonation phrasing refers to the system of intonation choices that a speaker has when associating complete intonation patterns with a text. The number of patterns and the boundaries may vary and convey different meanings. This study investigates the intonation phrasing patterns in Chinese EFL learners' read speech. The recordings of 45 Chinese students and 8 British native speakers were annotated and analyzed on the computer with PRAAT, and then compared in order to find the non-native like aspects in learners' oral performance. Findings show that learners differ from native speakers in 1) the frequency of boundary markers, and 2) the realization of some tonality constraints. The study has important implications for China's EFL pedagogy as well as for the improvement of rating rubrics for China's oral English tests.

1. Introduction

Intonation phrasing (*tonality* in Halliday's terminology), is the choice a speaker has of the placement of intonation group boundaries in a text. It corresponds with the speaker's perception of the chunks of information. Thus, an intonation group represents a piece of information (Halliday, 1967; Hirst, 1977). The speaker will place the boundaries properly so that his or her communicative purposes can be effectively achieved. Tonality is not completely unconstrained. For a given string of text, there are always positions where intonation group boundaries are likely to occur, and some other positions where they may occur if the speaker wishes. However, there are positions where intonation group boundaries are extremely unlikely to occur. Generally, intonation groups tend to line up with syntactic phrases (Crystal, 1969; Halliday, 1967), but not always with syntactic phrases of a particular sort (Quirk, et al. 1964; Tench, 1990).

According to Cruttenden (1997: 29-34), intonation phrasing would be based on the phonetic cues present at the actual boundary, i.e. *pause*, *anacrusis*, *final syllable lengthening*, and *pitch reset of unaccented syllable* (*declination reset*).

Studies on learners of English as second or foreign language reveal that *pause* is the most important boundary marker (Toivanen, 2003), and intonation groups correspond highly with syntactic structures (Timkova, 2001; Toivanen, 2003; Verdugo, 1994; Wennerstrom, 1994).

Research on Chinese learners of English shows that *pauses* at wrong places occur rather frequently (Pan, 1994; Wang, 2003). The possible reason for this may be L1 transfer, as *pauses* are much more common in spoken Chinese, occurring after almost every syllable (Chao, 1979; Guo, 1979, Wu, 2000), while in any form of Englishspeech, according to Cruttenden (1997), *pauses* occur every twenty words or so.

Previous studies on Chinese EFL learners' intonation phrasing suffers from at least two drawbacks. For one thing, they were typically lack of empirical evidence, with conclusions drawn from teacher observations. What's more, there were not sufficient subjects in these studies. Therefore, a large scale empirical study on Chinese EFL learners' intonation phrasing is necessary.

2. Method

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**							
			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 plenty of syntactic structures, some of which may cause prosodic differences, like *listing*, *relative clause*, and *final reporting phrase*. 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 MP3-H06 at the sample rate of 16000 (16kHz, 16 bit mono PCM).

With reference to 4 major tonality boundary markers mentioned by Cruttenden (1997), 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 Wordsmith Tools 3.0 and PRAAT scripts (developed by Xiong in Chinese Academy of Social Scienc**es).**

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

Table 2 Analyzed sentences in this study

3. Results and Discussion

This study reports findings of intonation phrasing in Chinese EFL learners' read speech in two aspects: frequency of boundary markers and the realization of tonality constraints.

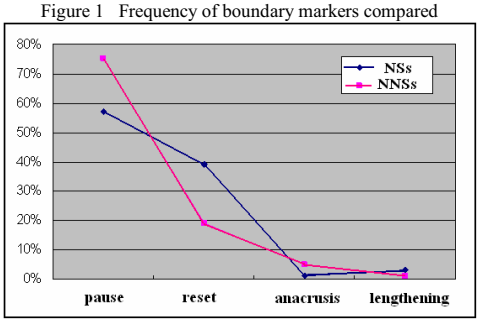
3.1. Boundary markers

As shown in Table 3 and Figure 1, *pause* and *declination rest* are the most frequent boundary markers for both native speakers and non-native speakers; the findings reported here are in agreement with Toivanen's (2003) study on Finnish learners of English. However, some differences between native speakers and learners are also clearly noticeable. It seems that learners rely more on *pause* to mark the boundaries of intonation phrases, while natives rely almost evenly on *pause* and *declination reset*. Figures in the table show that a good majority (75%) of the boundary markers in learners' speech are temporal, with *declination reset* following, occupying only 19%. In native speakers' data, however, temporal markers take up a much lower percentage (57%), while *declination reset* marks the boundaries of intonation phrases in their speech in 39% of the cases (20% higher than that in the non-native data).

Boundary marker	NSs (8 persons)		NNSs (45 persons)	
	case	*percentage*	*case*	*percentage*
pause	40	57%	329	75%
declination reset	28	39%	83	19%
anacrusis	1	1%	22	5%
lengthening	2	3%	5	1%
Total	71	100%	439	100%

Table 3 Frequency distribution of boundary markers

Figure 1 Frequency of boundary markers compared



Pauses are not only more frequent, but they also last longer in learners' speech. Table 4 shows that while native speakers have an average of 5.75 pauses, non-native speakers each pauses 8.244 times. The mean duration of pauses in the native data is only 1.525 milliseconds, while learners' pauses average 2.922 milliseconds. An independent-sample T-test shows there is a statistically significant difference between the native speakers and the learners (t = 3.205, P = .002). Such findings are in agreement with Wang (2003), who also reports that Chinese learners of English pause more often than do native speakers of English.

	NSs	NNSs	*t*	*P*
average frequency (times/person)	5.75	8.244	3.205	**.002**
declination reset (ms/times)	1.525	2.922		

Table 5 Frequency and duration of pauses

Pauses, to some extent, is a way to organize information. Therefore, when a flow of speech is frequently interrupted by long *pauses*, the fluency of the learners' speech will be greatly reduced. Further, frequent pauses would break connected speech into too many fragments, causing sense groups to fall into less intelligible bits. As a result, the intended meaning may not be conveyed to the hearer effectively. Based on the findings reported above, it seems sensible to assume that in spontaneous speech, where learners too often have to manage a struggle between form and meaning with their limited attentional resources, will inevitably punctuate their speech into even smaller fragments with still longer pauses. The result of such a struggle, inevitably, would be flows of speech hardly intelligible to the native ear. Compared with pauses, one of the advantages of using *declination reset* as the boundary marker is that the flows of speech sounds are more likely to be maintained, allowing for rhythmical and musical expression of intended information. One obvious implication for this is that learners need to be made aware of the function that *declination reset* may play in intonation phrasing.

3.2. Constraints in Tonality

Firstly, according to constraints of tonality, *final reporting phrase* tend not to have a separate intonation group (Tench, 1996, p47). Analysis of data collected for this study, however, indicates a sharp difference between native speakers and Chinese learners of English (see Figure 2 and Figure 3).

	NSs		NNSs	
	No	%	No	%
// "What are they?" she asked him at last //	8	100	4	9
// "What are they?" // she asked him at last //	0	0	41	91

Table 5 Tonality in Final Reporting Phrase

In Figure 2, a unanimous pattern could be found in native speakers' *final reporting phrase*. The figure clearly shows that the pitch contours of the direct speech '*what are they*' are all moving up first and then down. This is where the nuclei lie, while the following parts of the contours, the *final reporting phrase*, are no doubt the tails of the intonation patterns. This kind of pattern will draw the hearer's attention to the information focus – the Wh-question.

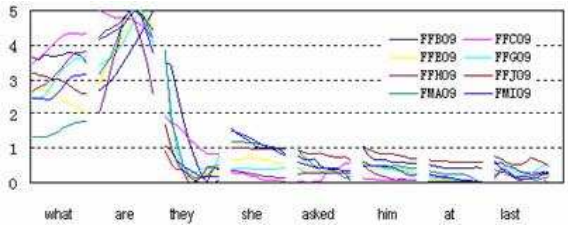
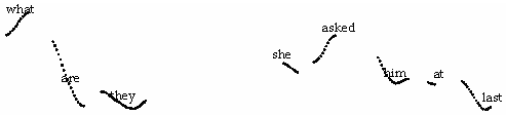


Figure 2 Normalized pitch contour in NSs' final reporting phrase
(Normalization based on 5 scales = Y-coordinate)

In Figure 3, the *final reporting phrase* apparently makes up a separate intonation group. A *pause* between the direct speech and the reporting phrase is clearly indicated. After the pause, a second intonation phrase can be seen, with its nucleus on the verb 'asked'. This kind of intonation pattern will distract the attention of the hearer, who may then be deceived into believing that the speaker is deliberately reminding the hearer of the two information foci, the final reporting phrase as well as the Wh-question. In the actual story, however, there is no need to put the verb 'asked' in such a spotlight.



Fgure 3 Randomly sampled NNSs' pitch contour

Secondly, the general tendency for English intonation phrasing is that one clause consists of one intonation group (Crystal, 1969; Halliday, 1967; Tench, 1996). It is only when a component of the clause becomes long and complex or when the speaker feels a need to emphasize one part of a sentence that components of a clause may be treated as separate intonation groups. In the non-native data in this study, however, learners do not seem to follow this tendency. Table 6 gives some examples.

Tonality	NSs		NNSs	
	No	%	No	%
// John Smith was an American businessman //	2	25	20	44
// John Smith // was an American businessman //	6	75	25	56
// he liked his cottage very much //	4	50	37	82
// he liked his cottage // very much //	4	50	8	18

Table 6 Tonality as a function of emphasis

As illustrated in table 6, more non-native speakers treat the subject in the first sentence ('John Smith') and the adverbial phrase in the second sentence ('very much') as separate intonation groups, while others do not. These patterns of tonality are both acceptable in English, but different ways of tonality are both acceptable in English, but different ways of intonation phrasing may lead the hearer to perceive different things. When 'John Smith' and 'very much' become separate intonation groups, it is generally perceived that the speaker is emphasizing these components. Figures in Table 6 seem to indicate that learners' intonation phrasing is such that they are more likely to split clauses into more intonation groups, causing their speech to be more emphatic. While emphasis is guaranteed when there is a real need to do so, it needs to be used sparingly, as too much emphasis may distract the hearer's attention to things out of the intended focus of information.

Thirdly, difference in intonation phrasing may result in different meanings. For example, an *attributive clause* in the sentence '*He liked his cottage very much, especially his closet* ***where he kept*** *his guns, fishing rods, wine and other things*' may be either finite or non-finite when processed in different ways. In writing, the difference is often marked by a punctuation; in speech such difference is often marked by using either two or three intonation groups. If the attributive clause constitutes a separate group ('…, *especially his closet* || ***where he kept*** *his guns*'), it means '*this is his only closet*'; if, however, the attributive clause is not preceded by a boundary marker and therefore does not constitute a separate group, the sentence may imply that '*this is not his only closet*', and a distinction needs to made between the one in which he kept those contents (see Table 7) and other closet(s) of his. In this study, while all native speakers inserted a boundary marker between '*especially his closet*' and '*where he kept …*', several of the non-native speakers failed to do so. In non-native speech, it seems, many learners, unaware of the role that intonation phrasing may play, mistake fluency as speech rate, and therefore, fail to insert markers between different intonation groups.

One more point in our findings concerns *listing*. In most of the cases, each item in a list of things needs to be treated as a separate intonation group; otherwise, it means different things (O'Connor & Arnold, 1973). In the non-native data, however, several of the learners failed to insert a boundary marker between '*wine*' and '*and other things*' (See Table 7). Such tonality may lead the hearer to take it for granted that 'wine and other things' makes up *one* rather than *two* items in the list. This may give the hearer the impression that 'other things may also be drinks, such as soft drinks or liquor'. The story, however, gives no clue as to whether there were other drinks in the closet, and *wine* is essential to the development of the whole story. Undoubtedly, those learners who flagged 'wine and other things' as one intonation group violated tonality constraints.

Tonality	NSs		NNSs	
	No	%	No	%
// … especially his closet where he kept … //	0	0	8	18
// … especially his closet // where he kept … //	8	100	37	82
// his guns //fishing rods // wine and other things //	0	0	5	11
// his guns //fishing rods // wine // and other things //	8	100	40	89

Table 7 Ambiguous Tonality

4. Summary

Findings in this study indicate that Chinese EFL learners' intonation phrasing can be accused of several problems.

For one thing, they pause too often and too long, resulting in their speech being split into too many less intelligible fragments. Obviously, they rely heavily on temporal means to flag intonation groups. The implication of this for Chinese EFL pedagogy is that learners need to be given explicit instructions concerning the proper use of pauses, and the function that declination reset may play in intonation phrasing.

Findings in this study also indicate Chinese EFL learners do not often follow tonality constraints as native speakers do. Their ways of intonation phrasing seem to be heavily dependent on syntactic structures and punctuations rather than the need to convey the intended information, with the result that their speech becomes less intelligible. Therefore, explicit instructions need to be given to learners, so that they may become more aware of the interrelationship between intonation phrasing and meaning. Further, rating rubrics for EFL speaking may also need to incorporate criteria for intonation phrasing.

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