MANDARIN CONVERSATION: TURN-TAKING CUES IN EXCHANGE STRUCTURE

Hua-Li Jian[a] & Joyce Wu[b]

[a]Faculty of Engineering, Oslo University College, Norway;
[b]Department of Foreign Languages and Literature, National Cheng Kung University, Taiwan

`Hua-Li.Jian@iu.hio.no`

ABSTRACT

This study addresses turn taking in everyday Mandarin conversation from a phonetic perspective, in particular, suprasegmental analysis. The acoustic data are based on 103 exchanges from two conversations – one structured and one free. The results show that turn final cues are mostly signaled via various falling intonation patterns in Mandarin conversation. Some anomalies exist and these are analyzed herein.

Keywords: conversation, intonation, turn-taking, Mandarin

1. INTRODUCTION

This study addresses turn taking in everyday Mandarin conversation from a phonetic perspective, in particular, suprasegmental analysis. The role of prosody is important both at utterance-level and discourse level. The term "prosody" can be used to refer to the acoustic and phonetic bracketing structure, locations of boundaries, and the choice and distribution of tonal features [8]. This suprasegmental organization has been shown to influence not only duration and fundamental frequency but also coarticulation, devoicing, laryngealization, and allophonic variation.

Moreover, suprasegmental changes such as pitch, pause, loudness, duration, speech rate, or intonation all can influence speech production in different ways and affect their perceptual interpretations to be received by listeners. The analysis based on the discourse level involves an interactive approach to prosodic signs and communicative approach to turn-taking. Thus, prosody also influences the holding and yielding turns in spontaneous speech.

The Initiation Response Feedback (IRF) exchange structures have been applied to both teacher-student interaction and daily conversations to find differences [3]. Our hypothesis is that there are specific prosodic features in Mandarin conversation which can be applied in teaching scenarios to improve learning.

This study focuses on intonation. First, intonation as turn-taking cue is studied and especially the intonation patterns in the final position of Mandarin conversational utterances. Next, exchange structures in two conversations are analyzed to identify how the intonation patterns occur in these exchanges.

2. RELATED WORK

Conversational dialogues show a wide range of turn taking phenomena [2]. Traditionally, turn taking refers to turn switches where speaker B takes over after speaker A relinquishes the floor, overlaps, backchannels and interrupts. However, daily conversations are filled with syntactically incomplete or ill-formed utterances which make it difficult for speakers to decide when to take turns. Thus, researchers have focused on the role of syntactic, prosodic, and semantic/pragmatic factors as turn-taking cues [1]. Emphasis has been placed on prosody in spontaneous speech because understanding of talk relies on context-bound inferences, and that prosody plays a crucial role in discourse-level interpretation [13].

It has been proposed that turn-taking is another aspect of pitch level and speakers can use non-low pitch to continue a speaking turn, even if there is a pause, or at the end of a syntactic unit, such as a clause. Moreover, down-step in pitch is also believed to be a good turn-yielding cue [6]. It is generally agreed that the low fall is a near-universal prosodic characteristic of completion in natural conversation, while intonation contours which do not end in this pattern mark incompleteness.

Exchange is often defined as the basic unit of interaction [3]. Moreover, it has been indicated that an exchange comprises an initiation [9].

3. METHODOLOGY

3.1. Participants and data descriptions

Five native Mandarin Chinese (3 male, 2 female) speakers participated in the study. The data focused on two situations, classmate discussions of house renting and family dialogues between parents and their daughter discussing a trip to Japan.

The first conversation is about house renting, and the utterances are related. The second conversation first begins with a journey to Japan but the speakers often turn their attention to other topics.

3.2. Procedure

The utterances are first digitally recorded and imported into the software package PRAAT. Then, the spectrograms for all intonation categories in conversations were analyzed. Next, the different intonation patterns are compared and statistically analyzed.

4. EXPERIMENT AND RESULTS

4.1. Intonation patterns in turn-final position

According to research conducted on English conversations, there are at least six intonation pattern categories at turn-final positions and we hypothesize that there are a seventh in Mandarin including level, rising, falling, fall-rising, rise-falling, step-falling, and step-rising in Mandarin conversations.

4.1.1. The level pattern

Level intonation patterns describe a constant frequency, which typically signals continuation by the same speaker, and thus turn-holding [7]. In addition, we found that in the repetitions of utterances, participants tend to use level pitch patterns when repeating words.

4.1.2. The rising pattern

The rising pitch patterns at turn-final position are often regarded as incompletion. We found that rising pitch patterns occur both in interrogative utterances and in utterances of surprise or disbelief.

4.1.3. The falling pattern

The falling pitch pattern is a typical turn-final cue at the utterance and in Mandarin the falling patterns also occur at the final positions [5]. In our data, when in the R (response) or F (feedback) within the same exchange structure, the speakers also tend to use the falling pitch pattern.

4.1.4. The rise-falling pattern

The rise-falling intonation pattern is common in Mandarin, especially at the end of utterances. Speakers start with high pitch, then lowers the pitch when ending an utterance. We found that when a speaker uses the rise-falling patterns between the connecting points of words towards the end of sentences, the peak of a rise-fall contour tends to break up (with a pause) prior to the fall, especially if there is a syntactic boundary.

4.1.5. The fall-rising pattern

The fall-rising patterns in our analysis are similar to that of Reed's (2004) rise-to-mid pattern in American English. The fall-rising pattern is also referred to as continuing, or non-final turn-taking cue. Thus, in the exchange structure, this pattern is often found in the I (initiation) stage.

4.1.6. The step-falling pattern

The step-falling pattern is a gliding pitch movement throughout the whole utterance. The glide moves from mid or high to low. For this intonation patterns, we found that speakers slow down utterances. Moreover, it also has the falling pattern at the end of the position, and this will occur more in the R (response) or F (feedback) stages within one exchange structure.

4.1.7. The step-rising pattern

The step-rising pattern is a gliding pitch movement throughout the whole utterance. The glide moves from low to mid or high. According to Reed's patterns (2004) that involve gliding emphasize the terminal high pitch value rather than the rising movement itself. Besides, the rise is typically fast and steep. We also found such step-rising patterns in Mandarin and speakers also tended to speed up. The analysis of conversation 1 reveals that speakers tend to produce a drop to low pitch at the end of utterances.

4.2. Intonation and exchange shift

4.2.1. Analysis of conversation 1

These results (see figure 1) are different from those in [12] who found that participants use high rise

intonation as the turn taking cue in English conversations while they use "continuing" intonation boundaries including low rise, plateau, and partial fall to keep the floor in conversations. In Mandarin, we found that speakers tend to use falling intonation patterns in turn-final positions (see Figure 1). The falling, rise-falling, and step-falling patterns all form a falling pattern of various degrees in the final position. The falling intonation patterns appear to be the most frequent. Furthermore, we found that participants tend to use falling intonation patterns. Of the 35 exchanges in conversation 1, only seven exchanges ended with rising intonation patterns. However, these utterances should possibly have been falling. As an illustration, one of the utterances ends with the second tone (rising) and the entire intonation pattern is thus influenced and the final position turns into a rise. Emotion is also a factor. As seen, when participants have the feeling of surprise they tend to produce a rising intonation pattern at turn-final position.

Figure 1: The percent probability of exchange shift for each intonation category.
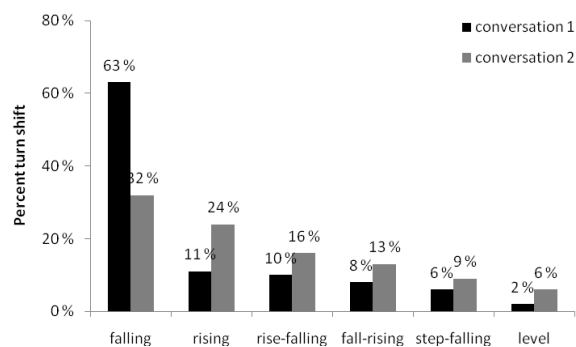
4.2.2. Analysis of conversation 2

Conversation 2 is more complex in terms of pauses and intonation than conversation 1 as it is more chaotic. The analysis of conversation 2 reveals that speakers also tend to use falling intonation patterns at the turn-final positions (see Figure 1). Again, the falling intonation patterns are the most frequent.

Conversion 2 comprises 68 exchanges, of which only eight utterances end with rising intonation. The reasons are similar to those of conversation 1, that is, the interaction between tone and intonation, and the influence of emotions. Moreover, we found that if a speaker initiates an utterance without expecting a response, the initiating utterance tends to have a rising intonation pattern at the turn-final position.

4.2.3. Mandarin conversations: general results

In the two conversations, the participants tend to use falling intonation patterns as turn-taking cue regardless of whether the topic is fixed or not (see Figure 2).

Moreover, of the 103 exchanges in the two conversations, only 15 exchanges ended with rising intonation.

Figure 2: The percent probability of turn shift for each intonation category in two conversations.
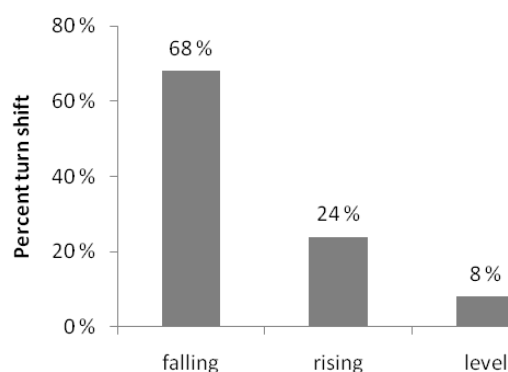
5. DISCUSSION

The results show that intonation patterns are turn-taking cues in Mandarin conversations. Past research suggests that English turn-final intonation only occurs as a low-fall or high rise. Our study suggests that there are at least seven pitch movements.

The flows of two conversations are different. The sentences in the first conversation have very close semantic or pragmatic relationship with the topic, while the second conversation contains several sub-topics. Speakers tend to use falling patterns in turn-final positions in both conversations, but rising patterns at turn-final positions are more used in the second conversation. One reason for this is that the first topic is clear with few questions, surprises, or other initiating statements introducing new topics. Thus, there are fewer IRF exchange structures as there are more turn-final than turn-continuing or turn-holding. In conversation 2, speakers frequently spawn new topics. Thus, there are more IRF exchange structures, with more questions and surprises.

In addition, according to the IRF exchange structure analysis, we may assume that utterances which end exchange structures will all have falling intonation patterns. However, we found exceptions

as seven exchange structures out of 35 in conversation 1 ended in rising intonation, while eight utterances of 68 ended in rising intonation in conversation 2. These anomalies are predominantly caused by interaction of tones in various tonal sequence (including tone sandhi effects), which in turn affects intonation patterns at within-utterance positions as well as turn-final pitch patterns. Moreover, expressions of surprise and disbelief also resulted in rising intonations at the end of the utterance. Further, when a new topic is started or when the speaker talks to himself or herself, not expecting a response, rising intonation patterns also occur.

Our analysis also revealed recurring pitch patterns caused by repetitions, also called "doubles", confirming the results reported in [4].

6. CONCLUSIONS AND FUTURE WORK

The results of this study suggest that intonation patterns in Mandarin conversations are important. IRF exchange structures were used to investigate the distributions of different pitch movements.

These results may be useful for teachers who wish to design efficient language learning programs.

In language teaching, the use of drama or role play can be effective. Conversation practices may be arranged where the teacher may lead or initiate an exchange of information and learners are required to respond with a variety of roles and replies. As the topic is fixed, learners can focus on using words or sentences varying in tones and/or intonation but related to the topic.

This study focuses mainly on the turn-final intonation patterns. Other factors which may influence the dialogues are omitted, such as intensity or speech rate, role of interlocutors and gender. Moreover, the relationship between the participants may also affect the prosodic features. Further, segments at the beginning or within-utterances may also have various functions on turn-taking. Finally, impacts of interactions between prosodic prominence and turn-taking system cannot be ruled out.

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