A PROSODIC STUDY OF THE "INVERTED SENTENCE" IN BEIJING MANDARIN

A Thesis

Presented in Partial Fulfillment of the Requirement for
the Degree of Master of Arts in the
Graduate School of The Ohio State University

By
Junko K. Davis, B.A.

**

The Ohio State University
2004

Master's Examination Committee:
Marjorie K.M. Chan, Advisor
Mary E. Beckman

Approved by

Advisor
Department of East Asian Languages and Literatures
ABSTRACT

This thesis investigates the prosody and interpretation of the so-called “inverted sentence” in the Beijing Mandarin Chinese. The “inverted sentence” is a phenomenon in which elements of a sentence are post-posed to the sentence final position, as in “suān bu suān, pǔtāo?” (Are grapes sour?), where the subject, pǔtāo (grape), is post-posed. The non-inverted order would be “pǔtāo sūan bu sūan?”

One study of the inverted sentence has used an analogy of terrain to describe the prosody of the structure, likening it to a high plateau followed by low land. Studies that have included prosodic descriptions of the structure generally seem to be in accordance with this analogy. Meanwhile, the function of the inverted sentence is often discussed in relation to focus. The “high plateau and low land” analogy seems to correspond to “expanded pitch range” and “reduced pitch range.” Given the prosodic marking of focus in Mandarin – with pitch range expansion followed by pitch range
reduction – this particular prosodic pattern has already been marking the main phrase of the inverted sentence as being in focus regardless of whether the post-posed part is marked as out of focus.

An experimental study was conducted to investigate the prosody of inverted sentences in which the information status of the post-posed constituent ("new" and "old" with respect to discourse information) was manipulated. The data from this study suggest that the general prosodic pattern that is associated with the inverted sentence is as described in the previous literature; namely, that the pitch range of the post-posed constituent is reduced. However, this was not the only pattern that surfaced in my data. There were some variations in the manipulation of the pitch range of the post-posed constituent. Moreover, the different degrees of pitch range reduction may be interpreted to suggest that pitch range manipulation is used to differentiate information status in Mandarin.

In addition, some earlier studies discuss whether a pause before the post-posed constituent is inherent in the inverted sentence. My data indicate that a pause is not inherent, although a prosodic break, aside from a pause, may be at work.
ACKNOWLEDGMENTS

I would like to express my sincere gratitude to my advisor, Professor Marjorie K. M. Chan for her guidance, advice and warm encouragement throughout this study. I have benefited tremendously from her teaching and also from her profound knowledge of Chinese linguistics. This thesis would not have existed without her persistent support.

I have been honored to have as the other member of my thesis committee, Professor Mary E. Beckman, who patiently guided me and gave me insightful comments and suggestions. I am also grateful for her letting me use the laboratory of the Linguistics Department and also introducing me to an excellent “assistant.”

I also would like to extend my appreciation to Professor Craige Roberts, who generously provided relevant references on focus to me.

In addition, wish to thank Professor Chen Ruilin, Professor Tan and Ran Xu who kindly offered their time to be consultants.

Special thanks go to my friends and colleagues, Bumyong Choi, Eunjong Kong, Fangfang Li, Hana Kang, Helena Riha, Jing Yan, Lei Xu, Ok Joo Lee, Ted Han, Tsan Huang, Yan Yang and the members of Phonies for stimulating discussions and feedback.
The experiment would not have been completed without great help and suggestions from Jing Yan, Ok Joo Lee, Yunxin Zhang, and Eunjong Kong.

I also want to thank my family members, my husband, Walter Davis, in particular, for his sense of humor (that does not necessarily work), encouragement, and endless support.
VITA

March 1997 .............................................. B.A., Chinese Language
Kobe City University of Foreign Studies
Kobe, Japan

March 2000 .............................................. M.A., Chinese Linguistics
Kobe City University of Foreign Studies
Kobe, Japan

September 2002 – June 2004 ...................... Graduate Teaching Associate, Department
of East Asian Languages and Literatures,
The Ohio State University, Columbus

FIELDS OF STUDY

Major Field: East Asian Languages and Literatures

Chinese Phonetics and Phonology
TABLE OF CONTENTS

Page

Abstract...........................................................................................................................ii

Acknowledgments...........................................................................................................iv

Vita.................................................................................................................................vi

List of Tables..................................................................................................................x

List of Figures................................................................................................................xi

List of Abbreviations....................................................................................................xvi

Chapters:

1. Introduction................................................................................................................1
   1.1 Definition...............................................................................................................2
   1.2 Focus and question-answer congruence...............................................................4
   1.3 Lexical tones and prosodic marking of focus in Mandarin Chinese....................7
       1.3.1 Lexical tone and its notation.................................................................7
       1.3.2 Prosodic marking of focus in Mandarin...............................................8
   1.4 Aims of this study...............................................................................................17

2. Literature Review.....................................................................................................19
   2.1 Terminology........................................................................................................19
       2.1.1 Left-dislocation....................................................................................20
       2.1.2 Right-dislocation..............................................................................21
       2.1.3 Postposition.........................................................................................24
       2.1.4 Transposition or Yiwei....................................................................25
       2.1.5 Inverted Sentence.............................................................................27
       2.1.6 “Inverted sentence” and its scope covered in the study.....................28
2.2 Pragmatics oriented terms ......................................................... 28
  2.2.1 Afterthought ................................................................. 28
  2.2.2 Thematization .............................................................. 29
  2.2.3 Repair ................................................................. 30
2.3 Prosody of “inverted sentence” ................................................. 31
2.4 Research questions and strategy ............................................... 35

3. Methodology ........................................................................... 38
  3.1 Target utterances ............................................................... 39
  3.2 The speakers ................................................................. 47
  3.3 Recording Procedure .......................................................... 50
  3.4 Measurement ................................................................. 52
    3.4.1 F0 measurement .......................................................... 52
    3.4.2 Measurement points .................................................... 57
      3.4.2.1 Measurement points – Set A ..................................... 58
      3.4.2.2 Measurement points – Set B ..................................... 60
      3.4.2.3 Measurement points – Set C ..................................... 62
      3.4.2.4 Measurement points – Set D ..................................... 66
      3.4.2.5 Measurement points – Set E ..................................... 68
      3.4.2.6 Measurement points – Set F ..................................... 70
      3.4.2.7 Measurement points – Set G ..................................... 74
      3.4.2.8 Measurement points – Set H ..................................... 75

4. Results and General Discussion ................................................. 77
  4.1 Results ............................................................................. 78
    4.1.1 Pitch range comparison ................................................. 78
      4.1.1.1 Pitch range of the post-posed phrase ......................... 78
      4.1.1.2 F0 comparison between the main phrase and the post-posed phrase .............................................. 85
      4.1.1.3 Top line comparison .............................................. 88
    4.1.2 Interpretation of the F0 contours ................................... 91
    4.1.3 Pause or prosodic break ............................................. 100
4.2 General Discussion.........................................................................................108

5. Conclusion....................................................................................................114

Appendices.......................................................................................................118
A. The script.....................................................................................................118
B. English translations for the dialogues.........................................................126
C. F0 values.......................................................................................................134

Bibliography......................................................................................................139
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1. Lexical tones and notations in Mandarin</td>
<td>8</td>
</tr>
<tr>
<td>3.1. The speakers’ background information</td>
<td>47</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure  Page

1.1. A broad focused utterance, zuótiān Lí Míng mǎi le dǐng hēisè de màozi. (Yesterday Li Ming bought a black hat.) ................................................................. 10

1.2. A narrow focused utterance, ZUÓTIĀN Lí Míng mǎi le yì dǐng hēisè de màozi. (YESTERDAY Li Ming bought a black hat.) ......................................................... 11

1.3. A narrow focused utterance, zuótiān LĪ MĪNG mǎi le yì dǐng hēisè de màozi. (Yesterday LI MING bought a black hat.) ........................................................................ 11

1.4. A narrow focused utterance, Zuótiān Lí Míng mǎi le yì dǐng HĒISĒ DE MÀOZI. (Yesterday Li Ming bought a BLACK HAT.) ........................................ 12

1.5. The same utterance, Zuótiān Lí Míng MĀI LE YIDING HĒISĒ DE MÀOZI (Yesterday Li Ming BOUGHT A HAT.), in which the entire VP is focused. ........................................................................... 14

1.6. Overlaid pitch contours of the broad focused utterance (plain line) and the utterance with a narrow focus on the VP (gray line) .................................................... 14

1.7. A non-inverted utterance, LĪ xiānshēng bāshíliù le (Mr. Li became eighty-six years old.) ........................................................................................................ 16

1.8. An inverted utterance, Bāshíliù le, LĪ xiānshēng. (Mr. Li became eighty-six years old.) ........................................................................................................ 16

3.1. The labeling for Set E1 “Tā xuéguò le, Rìyǔ.” (He has studied Japanese.) [Subject A] ............................................................................................................. 54

xi
3.2. The labeling for Set A1 “Mǎi le yìngwò, Ní Yíng.” (Ni Ying bought a hard sleeper ticket.) [Subject A] .................................................................55

3.3. The labeling for Set A1 “Mǎi le yìngwò, Ní Yíng.” (Ni Ying bought a hard sleeper ticket.) [Subject B] .................................................................56

3.4. The labeling for Set B2 “Huí shuō Riyū, Liào Róng.” (Liao Rong can speak Japanese.) [Subject A] .................................................................57

3.5. The labeling for A1 “Mǎile yìngwò, Ní Yíng.” (Ni Ying bought a hard sleeper ticket.) [Subject C] .................................................................59

3.6. The labeling for A2 “Mǎile yìngwò, Ní Yíng.” (Ni Ying bought a hard sleeper ticket.) [Subject D] .................................................................59

3.7. The labeling for B1 “Huí shuō Riyū, Liào Róng.” (Liao Rong can speak Japanese.) [Subject A] .................................................................61

3.8. The labeling for B2 “Huí shuō Riyū, Liào Róng.” (Liao Rong can speak Japanese.) [Subject B] .................................................................62

3.9. The labeling for C1 “Zài Riběn hěn shòu huānyíng, Yōulíng gōngzhǔ.” (Princess Mononoke is very popular in Japan.) [Subject A] .................................................................64

3.10. The labeling for C1 “Zài Riběn hěn shòu huānyíng, Yōulíng gōngzhǔ.” (Princess Mononoke is very popular in Japan.) [Subject A] .................................................................65

3.11. The labeling for C2 “Zài Riběn hěn shòu huānyíng, Yōulíng gōngzhǔ.” (Princess Mononoke is very popular in Japan.) [Subject A] .................................................................65

3.12. The labeling for D1 “Yǒu nǎilào, wǒ de bāo lǐmiàn.” (There is some cheese in my bag.) [Subject A] .................................................................67
3.13. The labeling for D1 “Yǒu nǎilào, wǒ de bāo lǐmiàn.” (There is some cheese in my bag.) [Subject C]........................................................................................................68

3.14. The labeling for E1 “Tā xuéguò le, Riyū.” (He has studied Japanese.) [Subject D] .............................................................................................................................................69

3.15. The labeling for E2 “Tā xuéguò le, Riyū.” (He has studied Japanese.) [Subject A] .............................................................................................................................................70

3.16. The labeling for F1 “Yǐjīng chī le, níngméngtáng.” (I have already had lemon candies.) [Subject C].............................................................................................................................................72

3.17. The labeling for F1 “Yǐjīng chī le, níngméngtáng.” (I have already had lemon candies.) [Subject A].............................................................................................................................................72

3.18. The labeling for F4 “Yǐjīng chī le ma, níngméngtáng?” (Have you already had the lemon candies?) [Subject C].............................................................................................................................................73

3.19. The labeling for G1 “Tā yǐjīng kàn le, Rénmín ribào.” (He has already looked at The People’s Daily.) [Subject A].............................................................................................................................................74

3.20. The labeling for H1 “Tā mǎi le, yīfū hé màozi.” (He has bought some clothes and hats.) [Subject B].............................................................................................................................................75

4.1. Schematized normal pitch range of the post-posed phrase.............................................................................................................................................79

4.2. Schematized extremely reduced pitch range of the post-posed phrase.............................................................................................................................................79

4.3. The histogram of the distribution of the pitch range of the post-posed phrase for all sets.............................................................................................................................................80

xiii
4.4. The histograms of the distribution of the pitch range of the post-posed phrase for all the sets.........................................................................................................................82

4.5. The histograms of the distribution of the pitch range of the post-posed phrase for all sets [Subject vs. object].........................................................................................................................84

4.6. The histograms of the distribution of the pitch range of the post-posed phrase for all sets [Declarative vs. interrogative].........................................................................................................................84

4.7. The histograms of the distribution of the pitch range difference between the main phrase and the post-posed phrase for all the sets.........................................................................................................................87

4.8. The histograms of the distribution of the top line difference between the main phrase and the post-posed phrase for all the sets.........................................................................................................................90

4.9. The histograms of the distribution of the interpretation of the pitch range of the post-posed phrase.........................................................................................................................93

4.10. The histograms of the distribution of the interpretation of the pitch range ratio between the main phrase and the post-posed phrase........................................................................................................94

4.11. The histograms of the distribution of the interpretation of the topline ratio between the main phrase and the post-posed phrase........................................................................................................95

4.12. Agreed new Yǒu nàilàō, wǒ de bāo lǐmian (There is some cheese in my bag) by Subject A..................................................................................................................................................96

4.13. Agreed old Mǎi le yǐngwù, Nǐ Yīng (Ni Ying bought a hard sleeper ticket) by Subject A..................................................................................................................................................97

4.14. Unsure/disagreed Tǎ xué guò le ma, Riyū? (Has he studied Japanese?) by Subject A..................................................................................................................................................98
4.15. The pitch contour of the utterance in Set C1 "Zài Rìběn hěn shòu huānyìng, Yǒulíng gōngzhǔ." (Princess Mononoke is very popular in Japan.) by Subject A........102

4.16. The pitch contour of the utterance in Set C1 "Zài Rìběn hěn shòu huānyìng, Yǒulíng gōngzhǔ." (Princess Mononoke is very popular in Japan.) by Subject A........102

4.17. The pitch contour of the utterance in Set B1 "Hùì shuō Riyü, Liào Róng." (Liao Rong can speak Japanese.) by Subject D.........................................................103

4.18. The pitch contour of the utterance in Set D4 "Yǒu nàilào, wǒ de bāo lǐmiàn." (There is some cheese in my bag.) by Subject B.................................................................104

4.19. The pitch contour of the utterance in Set H2 "Tā mǎi le, yīfu hé màozi." (She has bought some clothes and hats.) by Subject A...............................................................106

4.20. The pitch contour of the utterance in Set H2 "Tā mǎi le, yīfu hé màozi." (She has bought some clothes and hats.) by Subject A...............................................................106

4.21. The pitch contour of the utterance in Set H1 "Tā mǎi le, yīfu hé màozi." (He has bought some clothes and hats.) by Subject A...............................................................107
LIST OF ABBREVIATIONS

CL  Classifier
GEN  Genitive
NP   Noun Phrase
PL   Plural
PRT  Particle
NP   Verb Phrase
CHAPTER 1

INTRODUCTION

The purpose of this thesis is to investigate the prosody of the "inverted sentence" in Mandarin Chinese, with particular focus on Beijing Mandarin. Previous studies have discussed the inverted sentence from either a syntax-oriented point of view (Lu 1980, Meng 1982, Packard 1986) or from that of pragmatics (Bourgerie 1998, Hu 1989, Hu 1996, Guo 1999, Tai and Hu 1991), but there has not, to the best of my knowledge, been a study specifically devoted to the prosody of the "inverted sentence."

Chapter 1 defines the phenomenon and introduces aspects of prosody and of information structure that are relevant to the present thesis. First, the definition of the phenomenon is presented. In subsequent sections, focus and the prosodic marking of focus in Mandarin are discussed. Lexical tone and its notation are also briefly introduced. At the end of the chapter, the aims of this study are addressed.
1.1 Definition

The phenomenon that is the focus of this study gets its name from a transformational characterization: some elements of a sentence are moved to the final position; that is, the elements are "post-posed" or "right-dislocated". This phenomenon occurs in informal Mandarin Chinese and appears to be especially prevalent in spontaneous speech in Beijing Mandarin. The phenomenon often functions to partition the sentence into a focused rheme and a post-focus theme element (Chao 1968, Hu 1989, Hu 1996, Lu 1980, Packard 1986, Tai and Hu 1991).\(^1\) As is indicated by most of the existing terminology that depicts this phenomenon, previous studies presuppose the non-inverted order as the basis of the inverted sentence (Bourgerie 1998, Chao 1968, Guo 1999, Lu 1980, Hu 1996, Tai and Hu 1991).\(^2\) Judging from the examples given in these studies, post-posed elements can be noun phrases, verb phrases, modal auxiliaries, adverbs, vocatives or more complex structures, such as "subject + verb," leaving the object behind, and so forth. However, the range of movable constituents seems to differ from study to study.

---

\(^1\) I use "informal" instead of "spoken," following Tai and Hu (1991). As they point out, this phenomenon is not as prevalent in formal speaking styles, such as those used in lectures and news reports.

\(^2\) It is "straight order" in Chao (1968).
The following are examples of “inverted sentences” which all studies seem to agree upon as examples of this phenomenon, i.e. subject post-posing. (1a) and (2a) are in the normal order, and (1b) and (2b) are inverted versions of (1a) and (2a) respectively.

(1a)  
\[ Nǐ \ jìnláí \ ba. \]  
you enter PRT\textsuperscript{4}  
Come in.

(1b)  
\[ jínláí \ ba, nǐ. \]  
enter PRT you  
Come in.

(2a)  
\[ Nǐ \ gēge \ lái \ le \ ma? \]  
you elder brother come PRT PRT  
Did your elder brother come?

(2b)  
\[ lái \ le \ ma, nǐ \ gēge? \]  
come PRT PRT you elder brother  
Did your elder brother come?

---

\textsuperscript{3} I use simplified Chinese characters for this study.

\textsuperscript{4} For these abbreviations, such as PRT, see the List of Abbreviations.

\textsuperscript{5} The orthography of the “inverted sentence” has been rendered differently. For this study I use the most conventional style, namely, a comma between the main clause and the post-posed phrase. However, a comma between two phrases does not necessarily indicate a pause. This will be further discussed in Chapter 2. Sentence (1b) is from Chao (1968:69), and (2b) is from Lu (1980:28).
As we see here, the subjects are moved to the final position in the inverted examples in (1b) and (2b). All previous studies of this phenomenon agree that the inverted sentence is very prevalent in spoken Mandarin and in Beijing Mandarin in particular. However, these studies do not always agree with respect to their approach to the topic, with the result that there is some confusion in the field. In fact, this confusion is well reflected in the terminology. There are several syntax-oriented terms and pragmatics-oriented terms that seemingly describe the same phenomenon. If we take a closer look at these terms, we start to discover that there are discrepancies in the descriptions of the phenomenon, even among the scholars who use the same term to refer to it. In the literature review in Chapter 2, I will further discuss the issue of terminology in relation to the scope and approaches of previous scholars' studies.

1.2 Focus and question-answer congruence

Some studies (Lu 1980; Packard 1986; Tai and Hu 1991; Zhu 1991) seem to consider the major function of the inverted sentence to be that of partitioning the sentence into a focused component and a post-focus component (e.g., into rheme and theme). Focus here is used as a pragmatic notion that marks a certain constituent as playing a
particular role in the information structure of a discourse. However, there seems to be more than one notion of “focus” if we look into the vast literature on this topic. The notion of “focus” that I use in this study is that the focused part answers the question under discussion (Roberts 1996), and the focus is prosodically marked. In other words, prosodic prominence, for instance, pitch accent in English, is assigned to the focused constituent in the sentence. Further, the prosodic marking of focus often tells us what the current question under discussion is, and it allows us to recover the question that is answered by the utterance, even if we do not have full access to the entire context in which the sentence is uttered.

The English examples in (3) show that the focused constituent is an answer that should be appropriate to the constituent that is being queried in a question. In the examples in (3), capitalization indicates an element that is prosodically marked. Example (3a) below is the only felicitous question-answer pair that maintains question-answer congruence. The pairs become infelicitous if they violate question-answer congruence, as in (3b) and (3c). The constituents in upper case denote the prosodic

6 “Information structure” here refers to the way that information is organized in the discourse based on the relevance to the question under discussion (Roberts 1996). “Information status,” on the other hand, is used to refer to the distinction between the notions of “new” and “old.”

7 For example, in the English ToBI system (Beckman and Hirschberg 1994), pitch peaks in pitch contours are the acoustic correlates of the alignment of the H* pitch accent, and pitch troughs are of the alignment of the L* pitch accent.
prominence where the nuclear pitch accent is assigned. These prosodically marked constituents are also described as “narrow focused,” as opposed to “broad focused.” A structure that is “broad focused” answers the question, “what happened?” The domain of focus is not specified.

(3a)  A: Who ate chocolate?  
      B: JOHN ate chocolate.

(3b)* A: Who ate chocolate?  
      B: John ATE chocolate.

(3c)* A: Who ate chocolate?  
      B: John ate CHOCOLATE.

What makes (3a) felicitous, and not (3b) and (3c), is that the focus-marked constituent is new information that answers the question (posed by A). The focus marked constituents in (3b) and (3c), on the other hand, repeat information that is already given by the question.
1.3 Lexical Tones and prosodic marking of focus in Mandarin Chinese

1.3.1 Lexical tone and its notation

Mandarin Chinese has four lexical tones. These tones are high-level (Tone 1), high-rising (Tone 2), low-dipping (Tone 3), and high-falling (Tone 4). There are also inherently toneless syllables, which are described as being the "neutral tone" (Tone 0). Chao (1968:25) described the four tones using a numeral scale that divides a speaker's pitch range into five levels: 1 low, 2 half-low, 3 middle, 4 half-high, and 5 high. Tonal contours are denoted by numbers that mark the starting point and the ending point, as well as a turning point if there is one, such as in the low-dipping variant of Tone 3, [214]. However, Tone 3 is usually assigned the tone value of [21] and is described as "low falling," unless it is in citation form or it occurs at the utterance final position (Chao 1968, Chan 1989, Jin 1996, Peng et al. in press). Also, Tone 3 has a sandhi form that merges with Tone 2, if another Tone 3 follows. Table 1 illustrates the tone system using a minimally-contrasting set of morphemes as examples. The third column lists the notations for the four lexical tones in Mandarin, and the fourth column lists the tonal targets that are used in this study.

---

8 Chan (1989) discusses older sources that have treated Tone 3 as "low," for example, Hartman (1944), Hockett (1947), Woo (1969), etc.

9 Conditions for third tone sandhi can be quite complex. See, for example, Wang (2003).
<table>
<thead>
<tr>
<th>Tone</th>
<th>Description</th>
<th>Numeric notation</th>
<th>Tonal target</th>
<th>Example</th>
<th>Pinyin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone 1</td>
<td>High level</td>
<td>55</td>
<td>H</td>
<td>ma55 ‘mother’ 妈</td>
<td>mā</td>
</tr>
<tr>
<td>Tone 2</td>
<td>High rising</td>
<td>35</td>
<td>LH</td>
<td>ma35 ‘hemp’ 麻</td>
<td>má</td>
</tr>
<tr>
<td>Tone 3</td>
<td>Low falling</td>
<td>21</td>
<td>L</td>
<td>ma21 ‘horse’ 马</td>
<td>mǎ</td>
</tr>
<tr>
<td>Sandhi</td>
<td>High rising</td>
<td>35</td>
<td>LH</td>
<td>ma35 zhang21 ‘a hoof’ 马掌</td>
<td>mǎ</td>
</tr>
<tr>
<td>form of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tone 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tone 4</td>
<td>High falling</td>
<td>51</td>
<td>HL</td>
<td>ma51 ‘to scold’ 骂</td>
<td>mā</td>
</tr>
<tr>
<td>Neutral</td>
<td></td>
<td></td>
<td></td>
<td>ma <em>(a question particle)</em> 嗎</td>
<td>ma</td>
</tr>
<tr>
<td>tone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1.1. Lexical tones and notations in Mandarin

1.3.2 Prosodic marking of focus in Mandarin

Fundamental frequency (F0) is a primary acoustic cue for lexical tones in Mandarin. However, F0 is not merely used to mark lexical tones but is also used for other functions, such as focus marking. Focus is marked prosodically in English, as discussed in section 1.2, and focus is also marked prosodically in Mandarin. Among the prosodic parameters, F0 seems to be one of the important for indicating focus in Mandarin, in that one way to put prosodic prominence on a constituent in Mandarin is to expand the pitch range (Jin 1996, Shih 1988). Shih describes the interaction of lexical
tone specification with this pitch range expansion, writing that a "high target become much higher, while low targets remain at the same level or are slightly lower." (Shih 1988: 93) Jin (1996) and Zhu (1999) also discovered that the top line reduction of the post-focal element's fundamental frequency is crucial to the realization of prosodic prominence. Jin further indicates that when the sentence final constituent is narrow focused, the sentence sounds not much different from a broadly focused case, since there is nothing to suppress afterwards. Figures 1.1 through 1.4 show examples of a broad focused utterance and some narrow focused utterances.\footnote{In order to elicit the utterances, I briefly described the context as follows: Li Ming is your friend. He went shopping yesterday and bought a black hat. When you are in a classroom and talking to some friends about Li Ming, a friend comes into the room. To catch up on some information, the friend asks some questions, such as "What did Li Ming buy yesterday?" and "When did Li Ming buy a black hat?" I played the friend's role and asked the questions.} Focused constituents are indicated with uppercase letters both in the pinyin transcription of the Mandarin and in the English gloss.
Figure 1.1. A broad focused utterance, \textit{zuōtiān Lǐ Míng mǎi le dīng hēisè de màozi}.\textsuperscript{11} (Yesterday Li Ming bought a black hat.)

\textsuperscript{11} The numeral “yī (one)” is omitted, but the corresponding part of the utterance still means “a hat.”
Figure 1.2. A narrow focused utterance, ZUÓTIÂN Lí Míng mǎi le yì dīng hēisè de màozi. (YESTERDAY Li Ming bought a black hat.)

Figure 1.3. A narrow focused utterance, zuótiān Lí MíNG mǎi le yì dīng hēisè de màozi. (Yesterday LI MING bought a black hat.)
Figure 1.4. A narrow focused utterance, *Zuótiān Lǐ Míng mǎi le yì dīng HĒISÈ DE MÀOZĪ.* (Yesterday Li Ming bought a BLACK HAT.)

Figure 1.1 shows the pitch contour of the broad focused utterance “*Zuótiān Lǐ Míng mǎi le dīng hēisè de màozī*” 昨天李明买了顶黑色的帽子 (Yesterday Li Ming bought a black hat), which can be an answer to the question “What happened?” The pitch contour shows that the top line of the utterance, which is reflected in the syllables that contain high targets, *tian55, ming35, hei55, se51, mao51,* is declining due to the downstep effect triggered by the low targets in *Li21, mai21, ding21, se51.*

\[\text{\scriptsize 12} \text{ I use Chao’s numeric scale instead of Pinyin with diacritics in order to show the tone target more clearly.}\]
downstep is a F0 lowering effect caused by L targets (LH in Tone 2, L of Tone 3, HL in Tone 4), and Tone 3’s lowering effect is larger than the lowering effects of Tone 2 and Tone 4 (Shih 1988, 2000; Shih and Sproat 1996).

Figures 1.2, 1.3 and 1.4 provide examples of utterances that contain narrow focus. The narrow focused constituent differs in each case. As pointed out by Jin (1996), Shih (1988), and Zhu (1999), the pitch range of the word or phrase that follows the prosodic focus is very compressed in Figures 1.2 and 1.3. Figure 1.4, however, cannot show such an effect, since the focal constituent is at the final position; thus, there is nothing to compress. Nonetheless, one can still see that the top line of the focal constituent in Figure 1.4 is expanded, even though the parsing of the focus pattern is not as clear as in the other examples.

If the focal point is set on the entire VP, the difference between the broad focused utterance and the narrow focused utterance becomes very ambiguous. Figure 1.5 shows the pitch contour of an example in which the entire VP is narrow focused, and Figure 1.6 shows the overlaid pitch contours of Figures 1.1 and 1.5.
Figure 1.5. The same utterance, *Zuótiān Lǐ Míng Mǎi Yīdìng Hēisè de Màozi* (Yesterday Li Ming BOUGHT A HAT.), in which the entire VP is focused.

Figure 1.6. Overlaid pitch contours of the broad focused utterance (plain line) and the utterance with a narrow focus on the VP (gray line).
I played the utterances shown in Figures 1.1, 1.2, 1.3 and 1.5 to two native speakers of Mandarin and asked them to recover the question under discussion.\textsuperscript{13} They both successfully recovered the questions for the utterances in Figures 1.2 and 1.3, although one of them recovered the same question for the utterances in Figures 1.1 and 1.5. The recovered question was "What happened?" This indicates that the utterance in Figure 1.5 was interpreted as broad focus.

Figures 1.7 and 1.8 show the example pitch contours that pertain to the focal point of this study. Both of the utterances can be used as an answer to the question "How old is Mr. Li?"\textsuperscript{14} Figure 1.7 shows the normal word order utterance, \textit{Li xiansheng bashi le} (Mr. Li is eighty-six now), and Figure 1.8 shows the inverted utterance \textit{Bashi le, Li xiansheng} (Mr. Li became eighty-six years old.) In Figure 1.8 a pitch range reduction follows the constituent with the larger F0 range, whereas nothing follows the constituent with the larger F0 range in Figure 1.7.

\textsuperscript{13} The cause for not playing the utterance in Figure 1.4 was a technical problem.

\textsuperscript{14} "Li xiansheng bashi le?" (Mr. Li is eighty-what years old?) is another possible question under discussion, since the pitch range liu (six) is expanded.
Figure 1.7. A non-inverted utterance, Li xiānshēng bāshíliù le (Mr. Li became eighty-six years old.)

Figure 1.8. An inverted utterance, Bāshíliù le, Li xiānshēng. (Mr. Li became eighty-six years old.)
A striking difference between Figures 1.7 and 1.8 is that Figure 1.8 exhibits a pattern similar to that seen in Figures 1.2 and 1.3, in which a pitch range expansion is followed by a pitch range reduction. Lu (1980) compares the prosodic characteristics of the inverted sentence to a "high-plateau and low land." Guo (1999) also describes one of the major characteristics of the prosody of the post-posed part as "in low pitch." Does the pattern in Figure 1.8 correspond to what these scholars have in mind? If this prosodic pattern of "high-plateau and low land" is the general case for an inverted sentence, it is basically the pattern of prosodic marking of focus in Mandarin.

1.4 Aims of this study

Although some previous descriptions of inverted sentences have hinted at certain aspects of their typical prosodic pattern, there is so far no study devoted to the systematic examination of it. Thus, the main aim of this study is to conduct an experimental study to investigate the prosody of the "inverted sentence."

The goal of this study is to explore two kinds of questions. The first is phonetic. What is the pattern of the prosody of the inverted sentence? Are all inverted sentences alike, or is more than one pattern possible? Also, is there a pause inherent in this construction, as some scholars have described? The other kind of question is pragmatic: if the information status of the post-posed phrase of an inverted sentence is manipulated
so that the post-posed constituent is also a part of the answer to the question under
discussion in one case and not in the other, how does this affect the prosodic pattern of
the inverted sentence? Moreover, if more than one prosodic pattern is associated with
the post-posed constituent, how are these patterns interpreted by listeners? These are
the questions that will be addressed in the thesis.

The remainder of this thesis is organized as follows. Chapter two is a literature
review of previous studies of the inverted sentence in Mandarin Chinese. Chapter 3
outlines the methodology used in the experiment, while Chapter 4 presents the results of
the experiment and a general discussion of findings. Chapter 5 offers some conclusions.
CHAPTER 2

LITERATURE REVIEW

In this chapter, previous studies of the "inverted sentence" are reviewed. I will discuss the terms that are used to depict the phenomenon and also clarify the scope of each term. Furthermore, the prosodic characteristics that are suggested in previous studies are discussed in the following section. At the end of the chapter, the research questions and the strategy for conducting the study are addressed.

2.1 Terminology

Quite a variety of terms has been utilized in previous studies that have dealt with the phenomenon of the inverted sentence (Bourgerie 1998; Chao 1968; Guo 1999; Hu 1989, Hu 1995; Lu 1980; Meng 1982; Packard 1986; Tai and Hu 1991). This phenomenon seems not to be recognized as a homogeneous phenomenon: the "reversed" syntactic form exhibits more complication than appears at first glance. There are several syntax-oriented terms and also pragmatics-oriented terms that
seemingly describe the same phenomenon. If we take a closer look at these terms, we start to discover that there are discrepancies in the descriptions of the phenomenon even among the scholars who use the same term to refer to it.

2.1.1 Left-dislocation

The “left-dislocation” view is presented by Packard, who claims that the entire, or partial, movement of the predicate to the initial position is “to provide focus for new information” (1986: 8). He distinguishes “left-dislocation” from “right-dislocation” and states that “right-dislocation” is a product of “afterthought,” in which the right-dislocated part presents additional information that is “usually old, or ‘given’ information” (1986: 1). He also states that the elements that can be dislocated not only are subjects, as Chao (1968) characterized, but also can be objects, adverbials, and so forth (1986: 3). The examples of Chinese left-dislocations that Packard (1986) presents are shown in (1) and (2):

(1) Guān shàng ba, chūānghu. 关上吧，窗户.
    close up PRT window
    Close the window.¹

---

¹ The particle ba is used to make a suggestion or assumption. Packard’s (1986) gloss for ba is “suggestive particle,” but his translation is imperative. I think a better translation might be “Why don’t you close the window?”
(2) Lái duō nián le ba, Běijīng. 来多年了吧，北京.
come many year PRT PRT Beijing
So you’ve been in Beijing a number of years.²

Although Packard distinguishes “left-dislocation” from “right-dislocation,” his examples seem to be either “left-dislocation” or “right-dislocation” in his terms. It seems to me that his “left-dislocation” is similar to “rhematization, in which the left-dislocated initial phrase is a rhyme of the sentence.” His “right-dislocation,” on the other hand, is similar to “thematization,” in which the right-dislocated, post-posed phrase is a theme. If so, then is his “left-dislocation” essentially the same thing as “right-dislocation,” with perhaps only the viewpoint having shifted?

2.1.2 Right-dislocation

Guo (1999) employs the term “right-dislocation,” and he defines it as “an established grammatical device in Mandarin Chinese, (which) has developed an emphatic function to place special focus on the position that marks it as presupposed due to the information structure” (1999: 1105).³ Although he also notes that right-dislocations in

---

² Although I have made a few changes, such as changing “Peking” into “Beijing,” the translation here is based on what is provided by Packard (1986), where he uses “so” at the beginning of the English translation to express the information status of the topic. In other words, the addition of “so” at the sentence initial position indicates that the information that the hearer has been in Beijing for several years before is not brand new to the speaker.

³ The term “focus” here in the quote from Guo (1999) is different from the term “focus” used in this study.
Mandarin are not limited to NPs but include some other constructions, he restricts the “right-dislocation” in his study to pronouns and NPs in order to make it comparable to right-dislocations in other languages.\(^4\) Furthermore, he uses the term, “right-dislocation,” in reference to the phenomenon covered in previous studies where other syntactic terms were used. However, the scope of his “right-dislocation” is broader than that of the other studies that deal with zero anaphoric cases. According to him, there are three types of the morphosyntactic forms of “right-dislocation” that correspond to varying degrees of focus—zero anaphoric, elaboration, and reduplication.\(^5\) The “zero anaphoric” case is the main focus of the present study. “Zero anaphoric” refers to the case wherein the post-posed noun phrase has no coreferent in the sentence. “Elaboration” involves addition of more information to the coreferent that appears earlier in the main clause. “Reduplication” refers to the case wherein the right-dislocated part is identical with the coreferent that appears earlier in the main clause. The following are examples of these three categories, with examples from Guo (1999:1111), where the right-dislocated phrase is highlighted in bold, as in the article.

\(^4\) He used spontaneous speech collected from three seven-year-olds (one girl and two boys) while they were involved in such activities as building with Legos.

\(^5\) Note that this categorization is also found in Meng (1982).
(3) Zero Anaphoric

Dōu zài nàr ne, wǒ nèi ge? 都在哪儿呢，我那个?
all at where PRT I that CL
Where is it, that one of mine?6

(4) Elaboration

Zhè bù shì zuò cāo, zhèi yīnyuè. 这不是做操，这音乐。
this not be do exercise this music
This is not for doing exercise, this music.

(5) Reduplication

Zhèi jiǎndāo zěnmé liǎng bàn le, zhèi jiǎndāo? 这剪刀怎么两半了，这剪刀?
this scissors how-come two half PRT this scissors
How come this pair of scissors is broken, this pair of scissors?

The other studies, such as Hu (1995) and Tai and Hu (1991), specifically exclude these
latter two cases from their definition of the phenomenon, which they refer to as “inverted
sentences.” Interestingly, they call the cases in (4) and (5) “right-dislocation.”7

6 The English translations for these example sentences are from Guo (1999: 1111). The insertion of the
adverbial “dōu” (all) can contradict the post-posed singular subject “wǒ nèige” (that one of mine), since we
do not have the full context in which this utterance was produced in the dialogue. However, considering
the translation that is given by the author, who knows the context, “dōu” may be used to produce an
emphatic effect rather than meaning “all.”

7 Tai and Hu (1991) employ the term “inverted sentence” to describe the “zero-anaphoric” cases which are
the phenomenon under study here, and they distinguish it from other phenomena that they categorize as
involving “right-dislocation.”
2.1.3 Postposition

This term is used by Bourgerie (1998). His claim is that “the sentence-final slot is grammaticalized for modality,” as is the post-posing, which fills the sentence-final slot. He also seems to be using this term as an equivalent of the other terms that describe the phenomenon. He seems to have employed this particular term to highlight the post-posing of elements to the end of the sentence. He does not specifically distinguish his term from others.
2.1.4 Transposition or Yiwei 易位

The transposition, or yiwei 易位, view is presented by Lu (1980), who explicitly defines his “transposed sentence” in terms of the following four points: 8

A. In a transposed sentence the sentential stress must be on the pre-posed part, and the post-posed part must not be stressed. 9
B. The semantic focus of the sentence must be on the pre-posed part, and the post-posed part can never be such a focus.
C. The transposed parts can be restored to the original position without affecting the original meaning of the sentence.
D. A sentence final particle can never occur after the post-posed constituent and must immediately follow the post-posed part.

Lu adopts semantic notions and prosodic characteristics to identify what qualifies as “transposition.”

The following example of the “transposed sentence” which appears in his study is a little perplexing.

(6) Wǒ kàn guo, zhè diànyìng. 我看过，这电影。
    I watch pass this movie
    I’ve watched this movie.

8 These are English translations from Lu (1980:28). These translations are from Hu (1989:6). The original is: A. 易位句的语句重音一定在前置部分上，后移部分一定轻读。B. 易位句的意义重心始终在前置部分上，换句话说，后移部分永远不能成为强调的对象。C. 易位句中被倒置的两个成分都可以复位，复位后句子意思不变。D. 句末语气词决不在后移不分之后出现，一定紧跟在前置部分之后。
9 The original term in Chinese for “not stressed” in the translation is 轻读 qīngdu, ‘light reading.’
Lu (1980) claims that the original order of this “transposed sentence” is (7) and that (6) is the “transposed” version of (7).

(7) Zhè diànyǐng wǒ kàn guo. 这电影我看过。
    this movie I watch pass
    This movie, I’ve watched (it).

As is indicated in the English translations as well, it may be more plausible to regard (7) as “transposed” rather than (8).

(8) Wǒ kàn guo zhè diànyǐng. 我看过这电影。
    I watch pass this movie
    I’ve watched this movie.

His argument is that (7) is an answer for question (9):

(9) Zhè diànyǐng nǐ kàn guo ma? 这电影你看过吗?
    this movie you watch pass PRT
    This movie, have you watched (it)?
It is clear that the main criterion for Lu (1980)’s definition of “transposition” pertains to prosody. Meng (1982) also uses the term “transposition,” and his “transposition” (yìwèi) is very similar to Guo’s (1999) “right-dislocation.” Meng’s “transposition” includes both “elaboration” and “reduplication.”

2.1.5 Inverted Sentence

Chao (1968:69) uses the term “inverted sentence” to refer to a sentence in which the normal subject-predicate order is reversed. The sentence can be restored to a normal order without affecting the meaning. He seems to subsume reduplication under “inverted sentence” and introduces an anecdote about his daughter who uttered (10), in which the black cat can be interpreted as being cannibalistic.

(10) hēi māo chī, hēi māo. 黑猫吃, 黑猫.
black cat eat black cat
The black cat eats, the black cat.

The term “inverted sentence,” which is also used by Hu (1986, 1995) and Tai and Hu (1991), seems not to cover exactly the same thing that Chao’s (1968) does. Tai and Hu clearly explain that they have excluded the cases of “elaboration” and “reduplication” to
keep the scope of their study manageable; nonetheless, for them, these cases are "closely related to the class of inverted sentences to be treated in both function and structure" (1991:78).

2.1.6 "Inverted sentence" and its scope covered in the study

In this study the term "inverted sentence" is used to discuss the phenomenon in which elements in a sentence are moved to the sentence-final position. The range of the "inverted sentence" considered in this study covers the elements that are shared by all previous studies, namely, zero anaphoric NP post-posing. The post-posed elements are either the subject or object. Although the term "inverted sentence" is used as in Chao (1968), Hu (1989; 1995), and Tai and Hu (1991), the scope of this study covers neither reduplication cases, as in Chao (1968), nor elements other than noun phrases that function as the subject and object, as in Hu (1989; 1995) and Tai and Hu (1991).

2.2 Pragmatics oriented terms

2.2.1 Afterthought

The "afterthought" view is presented by Chao: "after a minor sentence has been spoken, a subject is supplied as an afterthought" (1968:69). Chen (1984) also presents the "afterthought," or zhujia 追加, account to explain the occurrence of the "inverted
sentence.” He proposes that the post-posed part of the inverted sentence is added to the immediately preceding utterance to clarify or to modify what has just been conveyed, and this happens because of the time constraints in daily speech. Hu (1989, 1995) and Tai and Hu (1991) also regard “afterthought” as one of the functional motivations of the inverted sentence; however, they do not think that this is the only account for the phenomenon but merely one of them. The scholars who consider the “inverted sentence” to be a grammaticalized device that is actively utilized by the speaker—rather than a repair device for erroneous speech—tend to regard this “afterthought” account as fallacious. This is because the occurrence of the “inverted sentence” is too frequent to be just an error (Bourgerie 1998; Guo 1999). In fact, Guo (1999) unequivocally distinguishes “afterthought” from the “inverted sentence.” He employs prosody to define what he considers to be genuine “afterthought” and how it is distinct from cases involving an “inverted sentence.” I will further discuss this issue in section 2.3.

2.2.2 Thematization

Tai and Hu (1991: 83) describe thematization as “to organize the information structure by making a certain constituent of the sentence its theme.” If we change the perspective 180 degrees, this eventually makes Packard’s “left-dislocation” into

10 His term is “right-dislocation” rather than “inverted sentence.”
“rhematization,” as is discussed in 2.1.1. This “rhematization” seems to be the most discussed function in the existing literature on this phenomenon, although it is not the term used by the scholars who consider the “inverted sentence” to be a grammaticalized device.

2.2.3 Repair

Tai and Hu (1991) say that “repair” is also one of the functions of the inverted sentence. The examples provided are as follows, and the repair parts, which are indicated in bold in Tai and Hu (1991), are also highlighted in bold here:

(11a) diyī xuéqī jiāo shíwǔ kuài qián, lián shū, lián shū.  
first term submit fifteen dollar money including book including book  
The first school term needs fifteen dollars, including books, including books.

(12a) shànxuē chéng de shì yì jīn lìng diǎnr.  
last time weigh GEM be one catty (and) little  
Last time the weight was a little more than one catty,  
Yī jīn èr liáng ba, yě jiù.  
One catty two tael PRT only  
It’s perhaps only one catty and two taels.

Although these examples are consistent in terms of their discourse function, which is “repair,” they may be confusing. The reason for this is that the highlighted parts in these
examples are either the main phrase of the inverted sentence or the post-posed part. If I excerpted the inverted sentences from both (11a) and (12a), they would be:

(11b) 第一次跳上火车，连忙。

(12b) 一年二十岁，你看。

As we can see, the underlined parts are the post-posed parts, but the part that is considered the “repair” is not necessarily the post-posed part. In addition, the information status of the post-posed phrases in these two examples seems to differ.

How does this relate to the prosodic pattern of the inverted sentence?

2.3 Prosody of the “inverted sentence”

Although less than one page of Chao (1968:69) was devoted to this phenomenon, it contains a description of the prosody of the inverted sentence. According to him, 1) the predicate is always fully stressed, and 2) the post-posed phrases are always in the neutral tone and said in a hurried tempo. Lu (1980) and Zhu (1999) also describe the prosody of the inverted sentence in more or less the same way: the pre-posed part should be stressed, and the post-posed part should not be stressed. Lu actually cites the impression

___________________________

11 The repeated post-posed part, which seems to have been added for emphasis, is removed in order to make the example compatible with the other examples.
of one of his interviewees that the prosody consists of two contrasting prosodic segments, in which “the main part is like high plateau and the post-posed part is like low land” (1980: 37). The range of the movable constituents in Lu’s study is much broader than Chao’s, but both scholars seem to agree that the pre-posed part has the prosodic prominence while the post-posed part does not. This description of the post-posed part as “not stressed” most likely refers to pitch range reduction there, and this reduction seems to be what is indicated by the analogy of the “low land” in the description by the native Beijing dialect speaker in Lu’s (1980) study. Guo also describes the prosody of the inverted sentence, proposing that the post-posed part receives a typical parenthetical prosodic contour, namely, “fast and low-pitched, with a flat intonation” (1999: 1108).

For the most part, then, there is agreement that the post-posed part is not prominent. Chen’s (1984) description is the single exception. He states that the pragmatic focus falls not only on the pre-posed part but also on the post-posed part: basically, it can fall on either part. Sentence (13) is an example that he lists to show that the focus is on the post-posed constituent. However, this sentence can also be an example of the focus/post-focus organization, depending on what kind of context is behind it when it is uttered.

12 The translation is from Guo (1999), although I have changed “right-dislocation” into “post-posed part.” The original interviewee’s comment in Lu (1980:37) is: “倒装的两部分之间在语音上也确实有一种界限，这种界限如同高山与平地相接一样。”
Suppose this is uttered when a person bumps into a friend, and the friend asks him/her what s/he is going to do tonight. The person answers the question, but Xisi is not where s/he usually goes to watch a movie. S/he may add “at Xisi” as a product of “afterthought” in order to invite the friend, continuing “Would you like to come with me?” This pattern could have prosodic prominence on both phrases, and it is similar to the example of “repair” in Tai and Hu (1991) in (11a). However, this sentence could also be uttered in a situation where the person goes to Xisi every weekend for shopping or eating out, etc. Suppose a friend of the person who knows that the person goes to Xisi every weekend asks the question, “What are you going to do this weekend?” Since the answer to “where” is already presupposed, it would be odd if the post-posed part of the utterance in this context exhibits prosodic prominence.

This pattern, in which the post-posed constituent receives a focus, might be relevant to Lu (1980) and Guo’s (1999) distinction between the inverted sentence and “afterthought appendage.” The post-posed constituent in (13) can be a genuine case of afterthought repair if we assign a clear pause where the comma is: “assign a clear
sentence final intonation to the first part,” and “make no change in the tempo and pitch on the second part” (Guo 1999: 1109). However, it seems that this pattern is treated as the subset concerning “repair” in Tai and Hu (1991).

“Pause” is another issue that appears to play an important role in the prosody of the inverted sentence, and it is often discussed in conjunction with the placement of a comma. If a comma were consistently used to indicate a pause, then the discussion of the pause pertaining to the inverted sentence would not have been so confusing. Although some studies have treated a comma as an equivalent to a pause (Xu 1958; Hu 1981), many other studies disagree with this view and regard it as an indication of a movement of a constituent or change in intonation (Lu 1980; Guo 1999; Tai and Hu 1991). The scholars who regard the prosody of the inverted sentence as the focus/post-focus organization seem to think that there is no pause between the two phrases. Guo (1999:1108) further indicates that “pause is probably nothing but illusion caused by the change of tempo and pitch.” This particular claim brings the notion of “prosodic break” to our attention: there seem to be some kind of break between the two phrases that may not necessarily be manifested as a pause.

---

13 Tai and Hu (1991) also present that the pause associated with the function of “afterthought appendage” is “longer and more conspicuous” than that of “thematization” or “repair.” (1991:91)
The prosodic description provided by previous studies in terms of F0 contour and based on my interpretation – high plateau followed by low land – seems to exhibit striking similarity to the prosodic marking of focus in Mandarin. Further, it seems reasonable to relate “high plateau and low land” to “expanded pitch range” and “reduced pitch range.” If this is the case, considering the important factors for the realization of the prosodic marking of focus in Mandarin, this particular prosodic pattern in fact marks the main phrase of the inverted sentence as being in focus. The prosodic pattern does so regardless of whether the post-posed part is marked as out of focus or not, as can be seen in the discussion of the example inverted sentence (13).

2.4 Research questions and strategy

After exploration of previous studies of the inverted sentence, some questions have emerged. What are the characteristics of the prosody of the inverted sentence? Do all inverted sentences display the prosodic pattern described in Chao (1968) and Lu (1980), in which the pitch range of the post-posed phrase is reduced? Also, is there a pause between the main clause and the post-posed phrase, and is that inherent in the inverted sentence (Xu 1958; Hu 1981)? Or is there, in fact, no pause (Lu 1980; Guo 1999) after the main clause?
Although previous renditions of the prosody of the inverted sentence seem to describe the characteristics of its prosody to a certain degree, no study has been specifically devoted to the examination of the prosodic structure(s) of the inverted sentence. Thus, the present experimental study was designed to examine the prosodic characteristics of the inverted sentence.

First, dialogues that contain inverted sentences were created based on my hypotheses. My hypothesis is that the degree of the pitch range reduction on the post-posed constituent is relevant to the information status of the constituent. Recall the discussion in section 2.3 of the utterance in (13), an example inverted sentence. In order to see the general prosodic pattern of the inverted sentence, two elements in the structure are differentiated: 1) the post-posed constituent (subject vs. object) and 2) the syntactic structure (declarative vs. interrogative). If there is one general prosodic pattern for the inverted sentence, no matter what kind of constituent is post-posed, or what kind of syntactic structure the inverted sentence has, the sentence should share the same prosodic pattern; namely, one in which the pitch range of the post-posed constituent is reduced.

Second, the information status of the post-posed phrase is also differentiated based on my second hypothesis, that the information status of the post-posed phrase is related to the degree of its pitch range reduction. If a post-posed phrase is not a part of an answer to a question under discussion—that is, it contains old information—the pitch range of
the post-posed phrase is most likely reduced. Conversely, if the post-posed phrase is a part of the answer to the question—that is, it contains new information—its pitch range will probably not be reduced. For the differentiation of the information status of the post-posed phrase, the inverted sentences are embedded into dialogues to provide contexts for determining the information status of the post-posed phrase.

With the foundation laid concerning the questions and hypotheses in this thesis, the next chapter will discuss in detail the experiment and the methodology used.
CHAPTER 3

METHODOLOGY

This chapter presents the methodology of the experimental study. The experiment was designed to elicit data for inverted sentences from four native speakers of Beijing Mandarin. The data was collected from four native speakers who were paired to read dialogues together. Presented in section 3.1 are the target utterances, totaling 32, that were embedded into eight sets of dialogues, Sets A through H. Background on the four speakers in the study is given in section 3.2, while section 3.3 outlines the recording procedures. The chapter closes with section 3.4, which discusses the F0 measurements that were made as well as the procedures for determining the measurement points for the target utterances in each set of dialogues.
3.1 Target utterances

There are thirty-two target utterances of inverted sentences to be examined in this study, and each of them is embedded into a dialogue. In order to analyze the prosody of the post-posed part, the post-posed element of the target utterance is designed to consist of more than a single syllable, with the range of the number of syllables of the post-posed element being from two to five. The post-posed elements are all noun phrases, and the post-posed element's grammatical role is that of either subject or object.¹

These thirty-two dialogues can be divided into eight sets—Set A to Set H—and each set consists of four target utterances, numbered 1 through 4.

The difference among these four utterances is consistent for all the sets. In terms of the information structure, Number 1 is a declarative whose post-posed element provides information that is new in the context. Number 2 is also a declarative, but its post-posed element is already given in the preceding context and is, thus, old information. Number 3 is an interrogative whose post-posed element provides information that is new. Finally, Number 4 is also an interrogative, and its post-posed element is old.

¹ There is a certain level of ambiguity about object post-posing in declaratives. However, I included object post-posing in this study due to the fact that some native speakers agree that there is a case of object post-posing.
Hence, with respect to information status, the two odd-numbered target utterances involve new information, while the two even-numbered target utterances involve old information. The notions of new/old for which I controlled in this experiment are discourse new/old (Prince 1992), and the information status is differentiated by the context of a dialogue.²

In terms of the syntactic structure of the target utterances, for each of the eight sets, A through H, utterances 1 and 2 are declaratives, while utterances 3 and 4 are interrogatives, formed via the addition of the question particle ma ən to the declarative to form a yes-no question.

The following summarizes all the differentiations that are included in the target utterances and how they are indicated:

(1)  
(a) Subject vs. Object = Sets A, B, C, D vs. Sets E, F, G H
(b) Declarative vs. Interrogative = Numbers 1, 2 vs. 3, 4
(c) New vs. Old = Odd numbers (1 and 3) vs. even numbers (2 and 4)

² The notion of “new” and “old” that I had in mind while I was creating the scenarios was one that pertains to relevance to the question under discussion. However, the notion for which I eventually controlled seems to be the notion of “discourse new” and “discourse old.” For “discourse new,” the post-posed element is not previously mentioned, whereas for “discourse old,” the post-posed constituent is mentioned immediately before the target inverted sentence is produced.
An actual example of the target sentence for numbers 1 and 2 of the dialogue in Set A is given in (2):

(2) Set A \( \text{Mǎi le yìngwò, Nǐ Yīng.} \) 买了硬卧，倪英.
buy PRT hard-sleeper Ni Ying
Ni Ying purchased a hard-sleeper ticket.

The target sentence for numbers 3 and 4 of the dialogue in Set A is given in (3):

(3) \( \text{Mǎi le yìngwò mā, Nǐ Yīng?} \) 买了硬卧吗，倪英?
buy PRT hard-sleeper PRT Ni Ying
Did Ni Ying get a hard-sleeper?

The following, in (4) through (10), are the target sentences for the remaining seven sets (Set B to Set H). Again, the only structural difference between sentences 1&2 and 3&4 in any set is the insertion of the question particle \( mā \) at the end of the main clause, the first part—or the “pre-posed” part—of the inverted sentence.
Huí shuō Riyū, Liào Róng. 会说日语，廖荣.
can speak Japanese Liao Rong
Liao Rong speaks Japanese.

Huí shuō Riyū ma, Liào Róng. 会说日语吗，廖荣?
can speak Japanese PRT Liao Rong
Can Liao Rong speak Japanese?

Zài Riběn hěn shòu huānyíng, Yōuling gōngzhǔ.
在日本很受欢迎，幽灵公主
at Japan very receive welcome ghost princess
“Princess Mononoke” is very popular in Japan.

Zài Riběn hěn shòu huānyíng ma, Yōuling gōngzhǔ?
在日本很受欢迎吗，幽灵公主?
at Japan very receive welcome PRT ghost princess
Is “Princess Mononoke” very popular in Japan?

Yǒu năilào, wǒ de bāo lǐmiàn. 有奶酪，我的包里面。
have cheese I GEN bag inside
There’s some cheese in my bag.

Yǒu năilăo ma, wǒ de bāo lǐmiàn? 有奶酪吗，我的包里面?
have cheese PRT I GEN bag inside
Is there some cheese in my bag?
(7) Set E

Tā xué guò le, Riyǔ. 他学过了，日语。
he study pass PRT Japanese
He’s studied Japanese.

Tā xué guò le ma, Riyǔ? 他学过了吗，日语？
he study pass PRT PRT Japanese
Has he studied Japanese?

(8) Set F

Yǐjīng chī le, níngménɡ táng. 已经吃了，柠檬糖。
already eat PRT lemon candy
(I’ve already had some lemon candies.3

Yǐjīng chī le ma, níngménɡ tang? 已经吃了吗，柠檬糖？
already eat PRT PRT lemon candy
Have you already had some lemon candies?

3 The subject may be omitted in Chinese, as it is in (8). The missing subject should be “I” (我 wǒ), which is recoverable from the context. However, for clarity, “I” is placed in parentheses in the English translation.
(9) Set G

Tā yǐjīng kàn le, Rénmín ribào. 他已经看了，人民日报.
he already look PRT The People’s Daily
He’s already looked at The People’s Daily.

Tā yǐjīng kàn le ma, Rénmín ribào? 他已经看了吗，人民日报？
he already look PRT PRT The People’s Daily
Has he already looked at The People’s Daily?

(10) Set H

Tā mǎi le, yīfu hé mào zi. 他买了，衣服和帽子.
he buy PRT clothes and hat
He bought clothes and hats.

Tā mǎi le ma, yīfu hé mào zi? 他买了吗，衣服和帽子？
he buy PRT PRT clothes and hat
Did he buy clothes and hats?

The target utterances are designed to contain as many sonorants as possible so that the F0 contours for them exhibit fairly continuous lines. There are several obstruents in the target utterances from time to time, but the juncture point of the “inverted sentence”—that is, the point at which the final syllable of the pre-posed part meets the initial syllable of the post-posed phrase— is consistently an all-sonorant
sequence for all the target utterances. The purpose of making the juncture point a sonorant sequence is mainly to see whether there is a clear pause at the juncture point or not.

The difference between target utterances 1 and 2 is designed to be the same as the one between target utterances 3 and 4, namely, the information status. The post-posed part of utterances 1 and 3 provides new information that is not readily retrievable from the preceding context in the discourse. Conversely, the post-posed part of utterances 2 and 4 is old information that is already salient in the antecedent context; therefore, it should be retrievable to the hearer. To illustrate, the following, given in English, shows the contexts for the four Set A target utterances. The target utterances are underlined.

A1.
(Some people including B and Ni Ying will go to Chengdu together. A is B's friend.)
A: You all bought soft-sleeper tickets, right?
B: 

A: Ni Ying? He's the new face, right? I don't know him.
B: That tall guy who plays basketball.

---

4 This is also the same difference as that which is seen in the example of the inverted sentence (13) in Chapter 2.
5 See Appendix A for the original Chinese dialogues.
A2.
(Some people including B and Ni Ying will go to Chengdu together.)
A: Which ticket did everyone get?
B: Zhang Xin got a soft-sleeper, Ni Ying got a hard-sleeper, Li Qiang got a hard-seat,...
A: What did Ni Ying get?
B: Ni Ying got a hard-sleeper ticket.

A3.
(A went to the train station to get train tickets for some people.)
A: I helped several people buy train tickets today.
B: Did Ni Ying get a hard-sleeper?
A: No, he wasn’t able to get it.

A4.
(A friend of A and B, Ni Ying, is planning to go on a long trip.)
A: This is the first time for Ni Ying to go on a long trip.
B: Did Ni Ying get a hard-sleeper?
A: It seems that he got a soft-seat.
B: Why didn’t he get a hard-sleeper?
A: Because it’s a little cheaper? I’m not sure, either.

The remaining seven sets are organized in the same way as illustrated above.
3.2 The Speakers

There were four subjects for this study: two males and two females. All are from Beijing, China, and all of them are currently studying at The Ohio State University as graduate students. Two of them are my friends, and the other two are my friend's friends. I explained in person the procedure and the length of time (about an hour) for the task to the two who are my friends, and then I asked them if they would be willing to participate in this project. I explained the same thing to the other two subjects by email. Table 3.1 shows the background information of all four subjects.

<table>
<thead>
<tr>
<th></th>
<th>Sex</th>
<th>Year of Birth</th>
<th>Number of years in the U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject A</td>
<td>Male</td>
<td>1978</td>
<td>3</td>
</tr>
<tr>
<td>Subject B</td>
<td>Female</td>
<td>1980</td>
<td>2</td>
</tr>
<tr>
<td>Subject C</td>
<td>Male</td>
<td>1971</td>
<td>7</td>
</tr>
<tr>
<td>Subject D</td>
<td>Female</td>
<td>1980</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 3.1. The speakers' background information

---

6 The experiment plot was submitted to the Office of Research Risks Protection (ORRP), and it was determined that this research falls into one of the categories of exemption established by federal regulation. The assigned protocol number is 2004E0126.

7 The numbers here are approximated. All of them seem to have come to the U.S. in August, so the precise numbers would be the numbers listed minus three months.
Except for Subject D, all of them have spent their entire lives in Beijing before they came to the United States. Subject D attended elementary school in Datong, Shanxi province, from the age of seven to the age of thirteen. Information was also obtained from the subjects on where their parents were from. Both parents of Subjects A and B, as well as Subject D’s father, are from Beijing, while Subject C’s parents and Subject D’s mother are from different areas in China.\textsuperscript{8} However, it seems that none of the subjects themselves speak another major subvariety of Chinese. Also posed to them was what other languages they spoke aside from Chinese, and all of them answered that they spoke only English.

In order to make the two sessions as similar as possible by maintaining the gender balance, one male and one female subject were paired for each of the dialogues. Hence, Subjects A and B read and recorded the dialogues together, and Subjects C and D formed a second pair for the recording.

Observe that Beijing Mandarin speakers have been selected for this study. There are two reasons for this selection. First, the selection minimizes variables that might arise from having speakers of different varieties of Mandarin. Second, the

\textsuperscript{8} Subject C’s parents are from Liaoning and Shanghai, and Subject D’s mother is from Shanxi. Liaoning and Shanxi belong to the Mandarin dialect area, whereas Shanghai belongs to the Wu dialect area. Thus, I thought that Subject C might speak Shanghainese, but this seems not to be the case.
occurrence of the inverted sentence is very frequent in Beijing Mandarin (Hu 1989; Tai and Hu 1991; Hu 1995). In fact, Lu (1980) and Guo (1999), who actively included prosody as a part of the characteristics of the inverted sentence, have used speakers of Beijing Mandarin for their studies. Although the inverted sentence does not seem to be exclusively a Beijing phenomenon (Bourgerie 1998), having Beijing Mandarin speakers as subjects allows this study to be compared with past studies that have discussed the prosody of the inverted sentence.

Concerning the recordings, one also needs to note that one of the characteristics of Beijing Mandarin is its abundance of rhotacization as a result of r-suffixation, or er-hua 儿化. The recordings in this study are no exception. Rhotacization is a phenomenon in which er [r] is added to the final position of a word as a suffix. Rhotacization in Beijing Mandarin has multiple functions according to Chen (1999: 39). For example, it is used for semantic differentiation, as báimiànér 白面儿 (heroin) is opposed to báimiàn 白面 (flour). Beijing Mandarin speakers often add rhotacization even when there is no difference in meaning between the rhotacized and the un-rhotacized, as in the example of huār 花儿 (flower) and huā 花 (flower). Such rhotacization was produced for the target utterance for Set 4 by Subjects A and D, but not by Subjects B and C. The target utterance for Set 4 is:
(10) *Yǒu nǎilào, wǒ de bāo lǐmiàn.*

There is some cheese in my bag.

"Nǎilào" and "bāo" are consistently rhotacized by Subjects A and D, one female and one male. This seems not to have anything to do with the recording ambience, since Subject A was paired with Subject B, and Subject D with Subject C.⁹

### 3.3 Recording Procedures

The task that the speakers were asked to do was to read the dialogues. Two subjects were paired for each session, which yielded two sessions in total. Before the recording, I explained the procedure to the participants and asked them to sign the consent form for participation in the experiment. The recording was conducted in a soundproof booth in Oxley Hall at The Ohio State University with two head-mounted microphones that were directly connected to the computer. The subjects did a rehearsal before the actual recording.¹⁰ The order of the dialogues for the rehearsal was

---

⁹ It seems that Subjects B and D have lived in *hùtòng* 胡同—alleys where old Beijingers live. Subject B lived in a *hùtòng* for three years, and Subject D lived there for nine years. Subject C said that he has never lived in a *hùtòng*. For Subject A, I am not sure.

¹⁰ The script for the rehearsal, whose content was the same as the actual script, was printed on ordinary letterhead paper in size-12 font.
randomized. After the rehearsal I distributed the first dialogue. The order of the
dialogues for the actual recording was also randomized, but differently from the rehearsal.

Each dialogue was printed in a relatively large font (size 20) on 5 x 8 index cards that
were presented to the subjects one-by-one by the experimenter. Each subject was
looking at his or her own script each time. Lines for each subject were color-coded; the
lines for each reader were printed in black, and the lines that were not for the reader were
printed in gray. The subjects read through the thirty-two dialogues and then switched
roles. They were asked to repeat this sequence of alternating roles twice. At the end of
the recording, each subject received a seven-dollar gift certificate from the experimenter.

Each subject produced sixty-four utterances; thus, the total number of the
utterances became 256. These utterances were directly digitized and saved as wave
files with CoolEdit 2000. Sampling size for the recording was 16 bit, and the sampling
rate was set at 22050 Hz.

---

11 Another friend helped me by being in charge of recording outside of the booth while I was distributing
the dialogues inside.

12 \( (8 \text{ sets } \times 4 \text{ target utterances}) \times 4 \text{ subjects} \times 2 = 256 \text{ utterances.} \)
3.4 Measurement

The prosodic analysis for the recordings was made possible using by a freely-downloadable speech analysis program, Praat (version 4.2.07), which is run on a Mac OSX computer.¹³ The target utterances in the recordings were extracted from the dialogues and segmented into syllables based on visual inspection of the spectrogram and waveform and on listening to various intervals until good segmentation points could be identified. The syllables were labeled following the conventions for the romanization tier in the Mandarin ToBI system (Peng et al., in press), where each syllable is labeled in pinyin for segments with the lexical tone given in Chao's tone number notation, as shown in Table 1.1 in Chapter 1.

3.4.1 F0 measurement

In order to examine the prosodic pattern of the inverted sentence, three things are examined: the pitch range of the post-posed constituent, the top line ratio of the "main phrase" and the post-posed phrase, and the pitch range ratio of the main phrase of the inverted sentence and the post-posed phrase. "Main phrase" is used here to refer to the portion of the target utterance that is placed at the sentence initial position due to the

¹³ Praat is a free program that is downloadable from the following website: <http://www.praat.org>. The program is available for Mac, Windows, Linux, and other operating systems.
post-posing of the constituent that could originally have been placed before it. In short, “main phrase” consists of the constituents before the comma in the target sentence, and “post-posed phrase” is a constituent after a comma.

The pitch range is measured based on the F0 value obtained from the high and low target syllables in the target utterances. A measurement point for a low target in the main phrase is extracted from the minimum F0 of Tone 2 (LH), Tone 4 (HL) or from Tone 3 (L) that is not affected by segmental perturbation and creaky voice. A measurement point for a high target is taken from the stable part of Tone 1 (H) or from the maximum F0 of Tone 2 (LH) or Tone 4 (HL) that is not affected by downstep, or by pitch range reduction following pitch range expansion on a focused constituent.

Measurement points for the post-posed phrase were also chosen based on the same principle. In the event that a neutral tone follows the target syllable and the tonal target seems to appear in the neutral tone syllable, then the measurement point is selected from the neutral tone syllable, as in Figure 3.1. As shown in the figure, low and high targets for both phrases are marked in a separate tier below the romanization tier. H indicates the marking of the high target, and L that of the low target.
Figure 3.1. The labeling for Set E1 “Tā xuéguò le, Riyǔ.” (He has studied Japanese.) [Subject A]

If a segmental perturbation is observed, the affected part is not chosen as a measurement point; rather, the relatively stable part is selected instead. For the target utterance in Set A (Māi le yīngwò, Nǐ Yīng), for instance, the F0 value of the low target syllable in the post-posed constituent is taken from the syllable ní, and that of the high target is taken from the syllable yīng. The measurement points for each utterance are presented later, in the next section (section 3.4.2).
Further illustrations are presented in Figures 3.2 and 3.3, which show the labelings of the target utterance for Set A1 as produced by Subject A and Subject B respectively. Observe in Figures 3.2 and 3.2, that the pitch range is very reduced, with the result that it is difficult to see the F0 maximum and minimum points. In such cases, I zoom in on that portion and select the lowest and highest F0 points.

Figure 3.2. The labeling for SetA1 “Māi le yíngwò, Ní Yíng.” (Ni Ying bought a hard sleeper ticket.) [Subject A]
Figure 3.3. The labeling for Set A1 "Mǎi le yīngwò, Nǐ Yīng." (Ni Ying bought a hard sleeper ticket.) [Subject B]

Sometimes it is not possible to make a F0 measurement on the low target syllable due to creakiness on that syllable. In cases in which the creaky voice occurs at the planned measurement point, measurement is taken at the last point before the start of the creak. Figure 3.4 shows an example of this phenomenon. The selected measurement point for the low target of the post-posed phrase for this utterance (Huí shuō Riyù, Liào Róng.) is the minimum F0 point of the second syllable of the post-posed constituent, namely, róng. However, due to the creaky voice, Praat cannot track the F0 value at the measurement point; therefore, the last point before the creakiness is measured instead, as shown in Figure 3.4.
Figure 3.4. The labeling for Set B2 “Hù shùō Rìyǔ, Liào Róng.” (Liao Rong can speak Japanese.) [Subject A]

The F0 values were then extracted from those measurement points marked in the tier. This was done using a Praat script that calculated F0 using an autocorrelation analysis and then extracted the F0 values corresponding to the labeled L and H points.

3.4.2 Measurement points

This section provides the measurement points for each set. They are shown with an example figure of the actual pitch contour for a sample utterance. The tonal targets for each syllable are indicated beneath the target utterance, and the chosen targets for the measurement in the post-posed constituent are highlighted in bold lettering. Low
targets (L) and high targets (H) are marked with the numeral "1" or "2" according to their presence in the main phrase (1) or the post-posed phrase (2). For example, a high target in the main phrase is marked as H1, and a high target in a post-posed phrase is marked H2. In the following subsections, a sampling of the labeling is shown in the figures that accompany the sample utterances.

3.4.2.1 Measurement points – Set A

<table>
<thead>
<tr>
<th>Set A</th>
<th>Mai le ying wo (ma),</th>
<th>Ni Ying.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonal target</td>
<td>L HL HL</td>
<td>LH H</td>
</tr>
<tr>
<td>L1</td>
<td>H1</td>
<td>L2 H2</td>
</tr>
</tbody>
</table>

The measurement points for Set A were all relatively stable, as shown in Figure 3.5. There is one exception, and this can be seen in Figure 3.6, where there is a suspicious rise at the final position of that target utterance. The utterance has a high target syllable at the final position, and creaky voice is not observed; nonetheless, the measurement point is selected at the position shown in Figure 3.6, based on aural perception. In subsequent cases as well, if there is any contour that obviously contradicts what is heard, the measurement is adjusted accordingly.
Figure 3.5. The labeling for A1 “Māile yingwò, Ní Yīng.” (Ni Ying bought a hard sleeper ticket.) [Subject C]

Figure 3.6. The labeling for A2“Māile yingwò, Ní Yīng.” (Ni Ying bought a hard sleeper ticket.) [Subject D]
3.4.2.2 Measurement points – Set B

<table>
<thead>
<tr>
<th>Set B</th>
<th>Hui shuō</th>
<th>Riyū (ma)</th>
<th>Liào Róng</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonal target</td>
<td>HL H</td>
<td>HL</td>
<td>HL LH</td>
</tr>
<tr>
<td></td>
<td>H1 L1</td>
<td>H2 L2</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3.7 shows an example of the target utterance in this set. H1 was chosen from the first syllable hui and not the second syllable shuō or the third syllable ri, because there is an utterance by Subject A in which hui is narrow focused. Due to the narrow focus on hui, the pitch range of shuō and ri was reduced. Again, the measurement points were chosen from the syllables that were not affected by pitch range reduction following the pitch range expansion, downstep, segmental perturbation, and creakiness.
Figure 3.7. The labeling for B1 "Hùi shuō Riyū, Liào Róng." (Liao Rong can speak Japanese.) [Subject A]

In some cases in Set B, the low target in róng was produced in creaky voice; thus, the last point before the creak was measured. However, there is one case, shown in Figure 3.8, where the entire post-posed constituent became creaky, and there is, as a result, no measurable high target. This utterance is discarded and not used in this study.
Figure 3.8. The labeling for B2 “Huì shuō Riyū, Liào Róng.” (Liao Rong can speak Japanese.) [Subject B]

3.4.2.3 Measurement points – Set C

Set C  
Zài Rì běn  hěn shòu huānyíng (ma), Yōu lǐng gōngzhū.\textsuperscript{14}
Tonal target  
\begin{tabular}{ccccccc}
HL & HL & LH & L & HL & H & LH & H & L
\end{tabular}

\begin{tabular}{c}
H1 & L1 & H2 & L2
\end{tabular}

Since the last syllable, zhū, almost always becomes creaky, the point before the creak starts was measured instead. Figure 3.9 shows an example of the pitch contour of the target utterance for Set C. There are two irregular cases, both of which are produced

\textsuperscript{14} The third syllable, běn’s target, is described as LH here due to Tone 3 sandhi rule.
by Subject A. The first case is shown in Figure 3.10, in which some hesitation noise was added, although it was not in the script. The second case is shown in Figure 3.11, where a sentence-final particle $a$ is added, although it was not on the script either. However, these were not eliminated from the analysis, since neither the hesitation noise nor the added particle affects the status of the inverted sentence.

Observe that L2 was not chosen from the second syllable of the post-posed phrase $ling$. This is due to the tone sequence of this particular constituent. The post-posed constituent of the target utterance for Set C is $Yōulinggōngzhū$ (Princess Mononoke): Tone 2 sandhi rule (Chao 1968) applies to this sequence. According to Chao (1968:27), in a three-syllable sequence, ABC, if A is Tone 1 or Tone 2, B is Tone 2, and C is in any tone except the neutral tone, B changes into Tone 1 in speech at conversational speed. As a result, the second syllable of the post-posed phrase for this dialogue set, $ling$, became Tone 1; consequently, this surface Tone 1 (H) syllable is no longer a candidate for the low target measurement point. Further, this Tone 1 sandhi eventually makes a three Tone 1 syllable sequence. Unless subject to the effect of the pitch range reduction, the third high target of this tone sandhi span usually has the highest F0 value in the productions recorded in this study. As a result, H2 was chosen from this
third high target, namely, gōng. Note also that gōng seems to exhibit a clearer
difference in pitch height, depending on whether the pitch range is reduced or not, as in
Figures 3.10 and 3.11.

Figure 3.9. The labeling for C1 "Zài Riběn hěn shòu huānyíng, Yōuling gōngzhū." (Princess Mononoke is very popular in Japan.) [Subject A]\(^\text{15}\)

\(^{15}\)Tone sandhi for běn is indicated in the parenthesis in the romanization tier in the labeling.
Figure 3.10. The labeling for C1 “Zài Rìběn hěn shòu huānyíng, Yōuling gōngzhǔ.” *(Princess Mononoke is very popular in Japan.*) [Subject A]

Figure 3.11. The labeling for C2 “Zài Rìběn hěn shòu huānyíng, Yōuling gōngzhǔ.” *(Princess Mononoke is very popular in Japan.*) [Subject A]
3.4.2.4 Measurement points – Set D

SetD: Yǒu nǎilào (ma), wǒ de bāo lìmiàn.\textsuperscript{16}

Tonal target: LH L HL L H L HL L1 H1 L2 H2

Since all the subjects are Beijing Mandarin speakers, some of them rhotacized some syllables, as shown in Figure 3.12, where both nǎilào (cheese) and bāo (bag) are rhotacized. However, not all of the subjects produced the syllables the same way, as demonstrated in Figure 3.13, where no rhotacization is observed. As this difference is not considered to affect the analysis, both rhotacized and non-rhotacized cases are analyzed in this study.

\textsuperscript{16} The first syllable, yǒu’s target, is described as LH due to the tone sandhi rule.
Figure 3.12. The labeling for D1 “Yǒu nǎilào, wǒ de bāo lǐmiàn.” (There is some cheese in my bag.) [Subject A]
Figure 3.13. The labeling for D1 D1 “Yǒu nǎilào, wǒ de bāo lǐmiàn.” (There is some cheese in my bag.) [Subject C]

3.4.2.5 Measurement points – Set E

Set E Tā xué guò le (ma), Ri yǔ.
Tonal target H LH HL HL L
H1 L1 H2 L2

17 Tone sandhi for yǒu is indicated in parentheses in the labeling on the romanization tier. In Figure 3.13, the suspicious acute peaks on the second and third syllables of the post-posed phrase, de and bāo, are due to the segmental perturbation.
In several cases, the second syllable, yū, became creaky. For these cases the last point before the creak was measured, as shown in Figure 3.15. L1 was chosen from the third syllable of the main phrase, guò, and not from the second syllable, xué, because there is a case that can be seen in Figure 3.15 where xué became creaky. To be consistent across the target utterances in Set E, guò is selected for L1.

Figure 3.14. The labeling for E1 “Tā xuéguò le, Riyū.” (He has studied Japanese.) [Subject D]
Figure 3.15. The labeling for E2 “Tà xuéguò le, Riyū.” (He has studied Japanese.) [Subject A]

3.4.2.6 Measurement points – Set F

<table>
<thead>
<tr>
<th>Set F</th>
<th>Yìjīng chǐ le (ma), nìngméng tāng.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonal target</td>
<td>L H H</td>
</tr>
<tr>
<td></td>
<td>L1  H1</td>
</tr>
</tbody>
</table>

As in the case of Set C, the tone sequence for the post-posed phrase in this dialogue set also exhibits the case of Tone 2 sandhi. The second syllable of the post-posed phrase, ménɡ, appears to have changed into Tone 1; thus, H2 was assigned to the surface high tone on ménɡ. Figure 3.16 shows a typical example of this utterance. For
the target utterances in dialogues F1 and F2, Subject A consistently added a particle a (or ma) at the final position of the post-posed constituent, as shown in Figure 3.17. There is also a case produced by Subject C where a slip of the tongue is observed, as shown in Figure 3.18. He said yíng instead of níng at the initial point of the post-posed constituent, and then he immediately corrected it. However, these are also considered not to affect the utterance’s invertedness; therefore, this case was included in the analysis in this study.\(^\text{18}\)

---

\(^{18}\) According to Lu’s (1980) definition of the inverted sentence, addition of the sentence final particle to the post-posed phrase makes the sentence not inverted any longer. Figure 3.17 would, based on that definition, constitute such a case. However, these utterances were produced by a subject who was reading the same script as the other subjects, who produced the utterances properly. There is an example of the inverted sentence in Běijīng tàyú cídīān (Dictionary of the Beijing vernacular) by Xu (1990) that includes a case in which a sentence final particle is added to the post-posed phrase (1990:11). The example is “Shàngbān na! Nín na!” (You’re going to work!) It is described as sentence inversion, which is one of the phenomena seen in Beijing vernacular. Xu mentions the section about the inverted sentence in Chao (1968) and states that Chao’s inverted sentence is basically the same thing as the sentence inversion that Xu has described. Interestingly, he does not use a comma between the main phrase and the post-posed phrase of the inverted sentence but uses exclamation marks for both phrases instead. Xu (1990) lists four examples of inverted sentences; three of them are cases of the subject post-posing, and one is a case of post-posing the prepositional phrase. For some reason, Xu consistently places exclamation marks at the end of the post-posed phrase for the subject postpositions, but he uses a period for the postposition of the prepositional phrase. Does the difference in punctuation reflect the prosodic difference or is it merely coincidence?
Figure 3.16. The labeling for F1 “Yǐjīng chī le, níngménɡtánɡ.” (I have already had lemon candies.) [Subject C]

Figure 3.17. The labeling for F1 “Yǐjīng chī le, níngménɡtánɡ.” (I have already had lemon candies.) [Subject A]
Figure 3.18. The labeling for F4 “Yījīng chī le ma, níngménɡtánɡ?” (Have you already had the lemon candies?) [Subject C]
3.4.2.7 Measurement points – Set G

Set G

<table>
<thead>
<tr>
<th>Tonal target</th>
<th>Ta</th>
<th>yi'jing</th>
<th>kan</th>
<th>le (ma)</th>
<th>Renmin</th>
<th>ribao</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H</td>
<td>L</td>
<td>H</td>
<td>HL</td>
<td>LH</td>
<td>HL</td>
</tr>
<tr>
<td>L1</td>
<td>H1</td>
<td>L1</td>
<td>H1</td>
<td></td>
<td>L2</td>
<td>H2</td>
</tr>
</tbody>
</table>

Figure 3.19 shows the measurement points for the target utterances in this set.

Figure 3.19. The labeling for G1 “Ta yi'jing kan le, Renmin ribao.” (He has already looked at The People’s Daily.) [Subject A]
3.4.2.8 Measurement points – Set H

Set H  
Tā mǎi le (ma), yī fu hé mào zi.

Tonal target  
H L  
H1 L1  
H LH HL  
L2 H2

Figure 3.20 shows the measurement points for the target utterances in this set.

Figure 3.20. The labeling for H1 “Tā mǎi le, yī fu hé mào zi.” (He has bought some clothes and hats.) [Subject B]
To summarize, the measurement point for the high target was set at the part of the syllables that is not affected by pitch range reduction, downstep, and segmental perturbation. The measurement point for the low target was set at the part of the syllables that is not creaky. If there is not an alternative low target aside from the affected target, the part immediately before the creakiness starts was chosen.

The original number of utterances was 256, but one utterance in Set B was discarded due to the creaky voice, as discussed in section 3.4.2.2. As a result, the total number of analyzed utterances is 255.
CHAPTER 4

RESULTS AND GENERAL DISCUSSION

In this chapter, three elements of the collected data are measured and plotted into histograms to reveal general patterns. These patterns are analyzed with respect to the information status of the post-posed phrase. The three elements considered are 1) the pitch range of the post-posed phrase, 2) the pitch range comparison between the main phrase of the inverted sentence and the post-posed phrase, and 3) the top line comparison between the main phrase of the inverted sentence and the post-posed phrase.

Interpretations of the prosodic patterns and the issue of the existence of a pause between the main phrase and the post-posed phrase of the inverted sentence are also discussed.

Chapter 4 consists of two main parts. Section 4.1 presents the results with respect to pitch range comparison, interpretation of the F0 contours, and a pause. The second part, section 4.2, discusses the results.
4.1 The Results

4.1.1 Pitch range comparison

4.1.1.1 Pitch range of the post-posed phrase

For the analysis of the pitch range of the post-posed phrase, the obtained low target measurement is divided by the corresponding high measurement. If the pitch range is totally compressed, the calculated value should be 1. The formula is:

\[(1) \quad R_2 = \frac{H_2}{L_2}\]

If the value obtained from this formula (R2) is 1, \(H_2 - L_2 = 0\), as schematized in Figures 4.1 and 4.2. If the post-posed phrase of the inverted sentence has a normal pitch range, it would be as in Figure 4.1. However, if the pitch range is completely reduced to the degree in which \(H_2\) and \(L_2\) essentially have the same value; for instance, if the measurement point for both \(H_2\) and \(L_2\) is 120 Hz, then \(R_2\) (\(H_2/L_2\)) is 1 and the pitch range is zero: \(H_2(120)/L_2(120) = 1\), and \(H_2 - L_2 = 0\).
Figure 4.1. Schematized normal pitch range of the post-posed phrase

Figure 4.2. Schematized extremely reduced pitch range of the post-posed phrase

The larger the number for the R value, the wider the pitch range, and vice versa for the narrower pitch range. For instance, the measurements for the utterance in Figure 3.2 in Chapter 3 are 112 Hz for the high target and 109 Hz for the low target. The pitch range then is 112 - 109 = 3 (Hz), and the obtained number from the formula is 112/109 = 1.028. Those obtained numbers were then plotted and displayed in a histogram to see the overall
distribution of measured ranges. This is illustrated in Figure 4.3. The X axis shows the obtained values for the pitch range, and the Y axis shows the frequency of occurrences.

![Histogram of pitch range distribution](image)

**Figure 4.3.** The histogram of the distribution of the pitch range of the post-posed phrase for all sets

Although the distribution range is wide in the results in this study, most cases are concentrated around 1.1, which means the pitch range is extremely reduced. This is consistent across the subjects. The results suggest that the pitch range reduction, or pitch range compression, is the general prosodic pattern for this construction.
Next is to see whether there is any distribution pattern difference if the information structure of the utterance differs. Again, the concept of new/old that I controlled for in the experiment is discourse new/old. Figure 4.4 shows the histograms of the pitch range distributions for the different information statuses for all the sets. Each histogram shows the distributions for a different subject.
Figure 4.4. The histograms of the distribution of the pitch range of the post-posed phrase for all the sets.
The information status seemed not to have affected the general pattern of the overall pitch range distributions. The most frequent pattern for all cases is still the very reduced pitch range. The histograms for Subjects A and D—Subject A's in particular—demonstrate that the distribution of the new information is slightly shifted rightwards, which is indicative of having a wider pitch range. Overall, however, the notions of new and old that were tested in this production test do not seem to have resulted in a clear dichotomy, as I expected, with new skewed further on the right of the histogram, and old further on the left.

Do the differentiation of the element of the post-posed constituent (subject vs. object) and sentence type (declarative vs. interrogative) affect the distribution of the pitch range of the post-posed phrase? Figures 4.5 and 4.6 show the histograms of the distribution of the pitch range of the post-posed phrase for all sets. In terms of the element of the post-posed constituent, object post-posings seem to have more variations. In terms of the syntactic structure, declaratives seem to have more variations. However, all patterns were still concentrated around 1.1, as shown in Figure 4.3; thus, the prosodic pattern in which the pitch range reduction of the post-posed constituent is reduced is not due to the particular kind of constituent or sentence type.¹

¹ It seems that the ambiguous pattern—the case of declarative object post-posing—tends to exhibit more variations in pitch range. However, the pitch range variation is not exclusive to this pattern, as that occurs to some limited extent for other patterns as well.

83
Figure 4.5. The histograms of the distribution of the pitch range of the post-posed phrase for all sets [Subject vs. object]

Figure 4.6. The histograms of the distribution of the pitch range of the post-posed phrase for all sets [Declarative vs. interrogative]
4.1.1.2 Pitch range comparison between the main phrase and the post-posed phrase

The pitch range of the main phrase and the post-posed phrase is compared in this section. Here the pitch range of the main phrase is calculated in the same way as the pitch range of the post-posed phrase: a high target (H1) is divided by a low target (L1). For instance, in the utterance in Figure 3.2, H1 is 281 Hz and L1 is 123 Hz. The obtained number is 2.285 (281/123 = 2.285), and this is the value for the pitch range of the main phrase. In the section 4.1.1.1, the same number for the post-posed phrase of the utterance in Figure 3.2 is already discussed, which is 1.028 (H2/L2=1.028). I call the number for the main phrase R1 and the number for the post-posed phrase R2. This time R1 (H1/L1) is divided by R2 (H2/L2). The formula is:

\[ (2) \quad X = \frac{R1}{R2} \]

where \( R1 = \frac{H1}{L1} \) and \( R2 = \frac{H2}{L2} \)

The calculated number for the utterance in Figure 3.2 is 2.223. For this case, a value of 1 means that the pitch ranges of the two phrases are the same. At the same time, the smaller the number, the narrower is the pitch range discrepancy. Thus, the obtained number 2.223 means that the discrepancy is quite large. In fact, the actual pitch range difference for this utterance in Hz is (281-123) – (112-109) ≈ 155. Those obtained
numbers were again plotted into a histogram to see the overall distribution of measured pitch range discrepancy between the main phrase and the post-posed phrase in the inverted sentence.

Figure 4.7 shows the distribution for the different information status. Each histogram shows the distributions for a different subject. The X axis shows the obtained number from the formula in (2), and the Y axis is the frequency of occurrences.
Figure 4.7. The histograms of the distribution of the pitch range difference between the main phrase and the post-posed phrase for all the sets.
The histograms in Figure 4.7 shows a distribution of the pitch range of the post-posed phrase that is similar to what is displayed in Figure 4.4. That is, despite differences in information status, the post-posed phrases do not show any sharp contrasts in distribution pattern between those two types of information status. While the overall distribution across the target utterances does not differ drastically, the peak of the new information for Subject D is, nonetheless, shifted leftwards, which indicates that the main phrase and the post-posed phrase have a similar pitch range, rather than much greater pitch range reduction on the post-posed phrase.

4.1.1.3 Top line comparison

Shih (1988) claims that pitch range expansion does not push the top line and the bottom line equally but that it raises the top line, whereas the bottom line remains the same or becomes lower very slightly. In this section, the top line of the pitch range of the main phrase and the post-posed phrase are compared. This time the high target of the post-posed phrase (H1) is divided by the high target of the main phrase (H2). A value of 1 means the top line of the two phrases are the same. Moreover, the smaller the number, the smaller the top line discrepancy, and vice versa for the greater discrepancy.
Figure 4.8 shows the histograms of the distribution of the top line difference between the main phrase and the post-posed phrase. The top line comparison also does not show any sharp contrasts in distribution pattern between those two types of information status. In the histogram for new information for Subject D, the overall distribution shifts to the left; however, the peak for the new information remains to the right of the peak for the old information.
Figure 4.8. The histograms of the distribution of the top line difference between the main phrase and the post-posed phrase for all the sets
4.1.2 Interpretation of the F0 contours

It became clear that the general prosodic pattern for the inverted sentence is similar to the terrain analogy mentioned in Lu (1980): the main phrase is a high plateau, and the post-posed phrase is the low land. Although there is a subtle difference in the distribution patterns of the two information statuses seen in Figures 4.6, 4.7, and 4.8, a clear dichotomy was not observed from the production tests. However, the distribution range seems quite wide, since there are some variations in the data, such as the locale of the high and low targets in the clauses, the kinds of tones that the targets are taken from, as well as two different sentence types – declarative and interrogative.²

The observations lead to the next question: how does the amount of the pitch range reduction affect the interpretation of the inverted sentence? Does a larger pitch range difference between the main phrase and the post-posed phrase mean something distinct from a smaller pitch range difference?

I consulted with two native speakers of Chinese about the interpretation of the pitch range reduction. Subject A and Subject D’s recordings were played to them individually, and they matched the played target utterances and the contexts. The two dialogue sets that have the same target sentence structure but contrast in terms of the

---

² Since the ma-particle question form in the target utterances probably has less downturn, it is likely that the difference in sentence type has also contributed to the wide distribution range. (Lee 2000; Shen 1999).
information status were shown to the consultants each time before the recording was played. I played all four utterances from these two dialogue sets consecutively twice after they read the script. Then, the consultants were asked to match the dialogue set to the utterance that they heard. I told them that these utterances might not be divided evenly; for example, there might be three utterances for one dialogue set, or a dialogue set might not have any appropriate, matching utterances. The reason for selecting Subject A and Subject D's data is that their data exhibit some differences between the new and old information sets. The total number of played utterances was 128 (64 for Subject A and 64 for Subject D).

Interestingly, there are only several cases wherein both listeners consistently matched the utterances as either new or old and, more importantly, said that assignment to new or old could not be reversed, or the other way around. The rest of the target utterances were either conflicting with opposite responses, or could be matched for either context.

Figures 4.9, 4.10, and 4.11 show the distribution pattern of the interpretation of the inverted sentence based on three things: 1) the pitch range of the post-posed phrase, 2) the pitch range ratio between the main phrase and the post-posed phrase, and 3) the top line ratio between the main phrase and the post-posed phrase.
Figure 4.9. The histograms of the distribution of the interpretation of the pitch range of the post-posed phrase
Figure 4.10. The histograms of the distribution of the interpretation of the pitch range ratio between the main phrase and the post-posed phrase
Figure 4.11. The histograms of the distribution of the interpretation of the top line ratio between the main phrase and the post-posed phrase.
There are three patterns in the histogram; agreed new, unsure/disagreed, and agreed old. Agreed new is the one that is consistently matched to the dialogue that contains the inverted sentence whose post-posed phrase is providing new information.

Figure 4.12 shows an example of the agreed new utterance.

![Waveform](image)

*Figure 4.12. Agreed new *You nǎilào, wǒ de bāo lǐmiàn* (There is some cheese in my bag.) by Subject A*

Agreed old, on the other hand, is the one that is consistently matched to the dialogue that contains the inverted sentence whose post-posed phrase is providing old information. Figure 4.13 is an example of the utterance of agreed old.
Figure 4.13. Agreed old Māi le yīngwò, Nǐ Yīng (Ni Ying bought a hard sleeper ticket.) by Subject A

It turned out that the two listeners deemed a large portion of the entire utterances possible either way, or there were disagreements between these two listeners.

Figure 4.14 is an example of the unsure or disagreed case.
Figure 4.14. Unsure/disagreed: Tā xué guò le ma, Riıyū? (Has he studied Japanese?) by Subject A

Unlike the production test results, the notions of new and old here exhibit a certain degree of dichotomy. Information status and pitch range seem to have correlations. There is, however, a suspicious case in Subject A’s results in which the agreed new shows up at the leftmost place in Figure 4.9 and rightmost place in Figures 4.10 and 4.11, which seems to be a realm of the old information. This case is, in fact, the utterance shown in Figure 3.2 in Chapter 3. There, the pitch range difference is quite large, although the post-posed phrase should be providing new information that has not yet been mentioned in the context. The dialogue is Set A1, presented below:
A1.
(Some people including B and Ni Ying will go to Chengdu together. A is B's friend.)
A: You all bought soft-sleeper tickets, right?
B: Ni Ying got a hard-sleeper ticket. (Māi le yingwò, Nǐ Yíng.)
A: Ni Ying? He's the new face, right? I don't know him.
B: That tall guy who plays basketball.

It was found that the main phrase provides a crucial cue for the dialogue set A1; namely, yìng (hard) is narrow focused. The utterance immediately preceding the target utterance is the assumption by the other speaker that "everyone bought a soft sleeper ticket." The target utterance was interpreted as a correction to this preceding utterance—"Ni Ying got a HARD sleeper ticket." "Ni Ying" in this context was designed to be new information. However, the listeners said that perhaps Ni Ying was assumed to be one of the people who was well known to the speaker; moreover, the speaker guessed that he should be familiar to the listener. Incidentally, this explains why the majority of the target utterances have a post-posed phrase that was produced in a reduced pitch range but can be interpreted as either new or old information.
4.1.3 Pause or prosodic break

The discussions of the existence of a pause at the juncture point of the inverted sentence are diverse. As seen in Chapter 2, some scholars say that there is a pause that results in a placement of comma in writing (Xu 1958; Hu 1981). Conversely, some scholars claim that there is no pause and that a comma in writing does not indicate a presence of a pause but merely indicates either the inversion of the sentence or the change of tempo and pitch (Lu 1980; Guo 1999; Tai and Hu 1991). One of the main purposes of this study is to see whether the inverted sentence has a pause between the main phrase and the post-posed phrase. In order to avoid a break in the pitch contour in the pitch-tracking as a result of voiceless segments, sonorants are consistently used at the juncture point. However, a printed script was used to collect the data, and hence the orthography became a huge concern. I could have gotten rid of all the punctuation, but I used the conventional method that places a comma at the juncture point of the inverted sentence. There were two reasons for doing so. One was to demarcate the sentence inversion consistently, especially for the object declarative case, whose movement can be very ambiguous without the comma. The second reason was to avoid confusion among the speakers. It would be odd to remove the punctuation just from the target utterances. Also, if I had removed all punctuation from the entire script, the experiment would have
taken longer than about an hour, as was the case for both actual recording sessions. My concern was that a comma usually indicates an existence of a pause, and in general we try to pause when there is a comma.

It turned out, however, that out of 255 utterances there are only fourteen cases where a contour break is observed. None of the subjects consistently produced a pause for all of the utterances. Thus, a comma did not become a hindrance to examining the pause issue for the inverted sentence after all.

Moreover, it seems that there is no correlation between the occurrence of a pause and information status. For example, Figures 4.15 and 4.16 display two different productions of the same utterance by one speaker. Figure 4.15 was produced in the first recording, and Figure 4.16 in the second recording. In Figure 4.15, the pause is indicated by the break in both the F0 contour and the waveform.
Figure 4.15. The pitch contour of the utterance in Set C1 “Zài Riběn hěn shòu huānyíng, Yōulíng gōngzhū.” (Princess Mononoke is very popular in Japan.) by Subject A

Figure 4.16. The pitch contour of the utterance in Set C1 “Zài Riběn hěn shòu huānyíng, Yōulíng gōngzhū.” (Princess Mononoke is very popular in Japan.) by Subject A
If a creaky voice occurs and chops the contour at the juncture point of the two phrases, as in Figure 4.17, the juncture point is also analyzed as having a break.

![Graph showing pitch contour]

Figure 4.17. The pitch contour of the utterance in Set B1 “Huì shuò Riyū, Liào Róng.” (Liao Rong can speak Japanese.) by Subject D

In the cases where there is a break at the juncture point, the break is very short for most cases. There are only three cases where a relatively long pause is observed; in those cases, the pause lasted more than 0.1 second. I also played the utterances that contain a longer pause to the people whom I consulted for the dialogue and utterance-
matching task to see the interpretation of the F0 contours that was presented in section 4.1.2. They matched the cases with a longer pause to the contexts with new information.

Figure 4.18. The pitch contour of the utterance in Set D4 “Yǒu nǎilào, wǒ de bāo lǐmiàn.” (There is some cheese in my bag.) by Subject B

It seems that the previous claim that there is no pause at the juncture point of the inverted sentence is generally correct as far as the above results are concerned. However, there are several cases which make me suspect that the pause issue is not as straightforward as it appears to be.
Figure 4.19 shows a clear example from Set H that has a pause between the two phrases. The pause (silence), which approximately lasts slightly over 0.1 second, is indicated as <SIL> in the romanization tier. My question then is: what about the case in Figure 4.20? There is no obvious pause or clear break in the F0 contour, but the last syllable of the first phrase is clearly lengthened. Moreover, it looks as if it is under a boundary tone effect.\(^3\) This becomes more salient if we compare Figure 4.20 to Figure 4.21, in which the neutral tone syllable le exhibits a tonal interpolation between the preceding low target of māi and the following high target of yī. I assume that there is a bigger prosodic break after le in Figure 4.20 than in Figure 4.21, although the break is not accompanied by a clear pause.

---

\(^3\) Boundary tone refers to pragmatic tones at the end of an utterance, which is distinct from lexical tones. For discussions of boundary tones in Mandarin, see Peng et al. (in press) and Lee (2000).
Figure 4.19. The pitch contour of the utterance in Set H2 “Tā mǎi le, yīfu hé màozi.” (She has bought some clothes and hats.) by Subject A

Figure 4.20. The pitch contour of the utterance in Set H2 “Tā mǎi le, yīfu hé màozi.” (She has bought some clothes and hats.) by Subject A
Figure 4.21. The pitch contour of the utterance in Set H1 "Tā mǎi le, yīfu hé màozi." (He has bought some clothes and hats.) by Subject A

From the discussion above, the issue concerning a pause in the inverted sentence is not merely about a pause. A more systematic discussion of breaks, rather than just looking at a “pause,” is needed for a fuller understanding of the pause issue in the inverted sentence.
4.2 General discussion

The results obtained from this experimental study show that the prosodic pattern that is associated with the inverted sentence is as described in several previous studies (Chao 1968; Lu 1980; Guo 1999; Zhu 1999), namely, that the pitch range of the post-posed phrase of the inverted sentence is reduced. However, the claims of the previous studies needed to be elaborated slightly. A salient characteristic of the prosody of the inverted sentence is that the pitch range of the post-posed constituent is reduced, and there is a relatively big pitch range discrepancy between the main phrase and the post-posed phrase. I assume Chao's "neutral tone," Lu and Zhu's "stressless," and Guo's "low-pitch" all refer to the pitch range reduction. However, the existence of the exceptional cases also suggests that the relationship between the prosodic structure and the syntactic structure is not fixed but rather mediated by pragmatics. This may explain why Guo's (1999) conclusion about the function of the inverted sentence and Chen (1984) and Tai and Hu's (1991) differ. Guo uses the prosodic pattern to define what the inverted sentence is, whereas Chen (1984) and Tai and Hu (1991) do not. Thus, the scope of the functions that the inverted sentence covers may have become much wider in their study than in Guo's. Moreover, Tai and Hu's variety of constituents in the post-posed
position is much greater than that of Guo's. It is, therefore, necessary to expand the range of study in future investigation to see what happens to the prosodic patterns when constituents aside from NPs are post-posed.

As for the meaning of the prosodic patterns, this study suggests that the amount of pitch range reduction is related to the interpretation of the information status of the post-posed phrase. The reduced pitch range of the post-posed phrase means that the information provided is old, whereas if the post-posed phrase has normal pitch range or expanded pitch range, it means that the phrase is providing new information. It seems that Chen (1984) and Tai and Hu (1991) included the latter case also as a part of the inverted sentence.

The relationship between the pitch range of the post-posed phrase and its interpretation can also be explained by Roberts' (1996) notions of question-under-discussion and question-answer congruence. The utterances whose post-posed constituent has slightly expanded pitch range sound extremely odd when they are matched with contexts in which the post-posed constituent is providing old information. The reason for this is that the utterance with its post-posed constituent having normal or slightly expanded pitch range seems to presuppose a sequence of questions under discussion, whereas there is only one question that can be recovered from the inverted
sentence with reduced pitch range. For instance, an utterance that is surely categorized as one in which the post-posed phrase provides new information is the one for Set D1 by Subject A. The context is given in (3).

(3) (B is reading a book in a room.)  
    (A comes into the room from outside.)  
    A: I'm a little hungry.  
    B: There's some cheese in my bag. [Yōu nǎilào, wǒ de bāo lǐmiàn.]  
    A: Which one is your bag?

In (3), Subject A expanded the pitch range of "wǒ de bāo lǐmiàn (in my bag)," and this eventually leads to a sequence of questions under discussion at the time:  
1) "Is there anything to eat?" which is implied by A's previous utterance "I'm a little hungry."  
2) "Where is it?" The context for the old information distorts the order of question under discussion as seen below.

(4) (B is reading a book in a room.)  
    (A comes into the room from outside.)  
    A: I'm a little hungry.  
    B: My bag is over there.  
    A: Yeah?  
    B: There's some cheese in my bag. [Yōu nǎilào, wǒ de bāo lǐmiàn.]  

110
Unlike the context in (3), B first answers the second question "Where is it?" which was a little puzzling for A. Then B answers the first question, "Is there anything to eat?" For the second context, the question "Where is it?" is already answered; therefore, this question is already off from the stack of questions under discussion. Thus, it is odd to match the utterance with expanded pitch range to the post-posed phrase that is answering the question "where is it?" which is already off the stack: it essentially violates the question-answer congruence. For this reason, the utterances with normal or expanded pitch range on the post-posed constituent cannot be matched with the context in which the information of the post-posed constituent is no longer in the stack of questions under discussion.

Why did the pitch range reduction occur so exclusively, despite the fact that half of the context sets can be suitable for non-reduced pitch range as well? As pointed out in previous studies (Jin 1996), in Mandarin if the last constituent of the utterance is narrow focused, the focus is harder to be realized than one on the constituent that comes earlier in the utterance. This occurs because not only the pitch range expansion, but also the pitch-range compression, plays a very important role in the realization of the focus (Jin 1996; Xu 1999). Going back to the sentence to inform the hearer of Mr. Li’s age that was discussed in Chapter 1, the recoverable question for the non-inverted sentence in
Figure 1.7 would be either "how old is who?" or "how old is Mr. Li?" However, in the inverted sentence in Figure 1.8, the pitch range of the post-posed constituent, *Li xiānshēng*, is reduced; thus, the sentence recovers the question "how old is Mr. Li?" but nothing else. This is the pattern that was produced most frequently in this experimental study as well, where the pitch range of the post-posed phrase is considerably reduced in comparison to the main phrase. This is basically the pattern of prosodic marking of focus in Mandarin. This may suggest that the inverted sentence in general is realized as a device to move a constituent to the final position to allow the constituent that is usually harder to be focused in non-inverted order to be focused more efficiently, as schematized as in (5) and (6). Therefore, it is harder to post-pose a constituent and have it be produced with prosodic prominence.
Focus on the constituent 2 is ambiguous

Focus on the constituent 2 is salient

The results from this study also show that there is not necessarily a pause between the main phrase and the post-posed phrase. In fact, there is no clear pause observed for most cases in this study, despite the fact that a comma was always placed at the juncture point. On the other hand, it is quite possible that the pause mentioned in previous studies was not necessarily a real pause, but some kind of a virtual pause, as discussed and illustrated in section 4.1.3. It seems to be necessary to examine the prosodic grouping in order to discuss the pause issue involved in the discussion on the prosody of the inverted sentence.
CHAPTER 5

CONCLUSION

This study aimed to investigate the prosody of the inverted sentence and its interpretation. The pitch range of the post-posed phrase, the relative pitch range of the main phrase and the post-posed phrase, and the relative top line of the pitch range of the main phrase and the post-posed phrase were discussed. Even though the relationship between this syntactic structure and the prosody is not fixed, but is mediated by pragmatics, the results suggest that the pitch range of the post-posed phrase of the inverted sentence in general is considerably reduced, and is, moreover, much narrower than that of the main phrase. Previous renditions of the prosody of the inverted sentence by Chao (1968), Guo (1999), Lu (1980) and Zhu (1999) seem to have described what has been discovered here, but the terms they used were not as precise. Instead of using “neutral tone,” “stressless,” or “low-pitch,” which can be misleading in some cases, I suggest that “reduced pitch range” is a better term to depict the character of the prosody of the post-posed phrase of the inverted sentence.
What this finding reveals is that the general prosodic pattern of the inverted sentence is the same as the prosodic marking of focus in Mandarin. This may suggest that the inverted sentence in general is realized as a device to move a constituent to the final position to allow the constituent that is usually harder to be focused in non-inverted order to be focused efficiently.

Although the most prevalent prosodic pattern that was aligned with the inverted sentence was that the pitch range of the post-posed phrase is reduced, it was not the only pattern aligned with this structure. Interpretation of the amount of pitch range reduction indicates that the wider pitch range is used for new information or for a part of an answer to the current question under discussion, whereas the reduced pitch range means that the information conveyed is old or no longer a part of the question under discussion. This suggests that the pitch range manipulation is used to differentiate information status in Mandarin.

Prosody has its own grammatical system, and that of Mandarin is no exception. Thus, by using prosodic characteristic as a means to define a syntactic structure, some functions that the structure may have can be eliminated. One of the reasons for the analysis difference between Tai and Hu (1991) and Guo (1999) on the functions of the inverted sentence may relate to this. Guo’s analysis of the function of the inverted sentence is limited to the prosodic pattern that most frequently occurred in this study,
namely, one in which the pitch range of the post-posed constituent is reduced. Thus, Guo eventually excluded other possible patterns, for instance one in which the post-posed constituent is a part of an answer to the question under discussion.

The existence of a pause between the main phrase and the post-posed phrase is also investigated in this study. Although the data for the analysis were collected from read speech, which did not involve planning on the part of the speakers, it was found that a pause between the phrases is not inherent in this structure. Furthermore, a pause was not produced for the majority of the cases in this experimental study in spite of the fact that a comma that usually stimulates the occurrence of a pause was consistently placed in the script. However, there is evidence to show that there is some prosodic break at play aside from a pause, which might be related to what some previous studies have described as a pause.

Speech rate is another aspect that is mentioned in the previous studies, which will be investigated in a future study.

This thesis investigated the phenomenon of the inverted sentence in Mandarin Chinese from a prosodic perspective using controlled, recorded data for an acoustic study of the phenomenon. As a result, the different approach adopted here yielded further
understanding of the phenomenon of the inverted sentence. For a more comprehensive understanding of the inverted sentence, future acoustic research is needed on the prosody of the inverted sentence using spontaneous speech.
APPENDIX A

THE SCRIPT

All the dialogues are presented in order here. For the actual recordings, the order of the dialogues is randomized. The target utterance in a dialogue is underlined and accompanied by Pinyin romanization.

Set A
A1.
(B and Yaoming a couple of people go to Chengdu. A is B's friend.)
A: 大家坐软卧吧?
B: 买了硬卧，倪英, Mǎi le yìngwò, Ní Yīng.
A: 倪英, 是新来的吧，我不认识。
B: 那个个儿很高, 打篮球的那个。

A2.
(B and Yaoming a couple of people go to Chengdu.)
A: 这次大家都买什么票?
B: 张欣买了软卧, 倪英买了硬卧, 李强买了硬座,
A: 倪英买了什么票?
B: 买了硬卧，倪英. Mǎi le yìngwò, Ní Yīng.

A3.
(A go to the station to get several tickets. )
A: 我今天帮好几个人买了车票了。
B: 买了硬卧吗，倪英? Mǎi le yìngwò ma, Ní Yīng?
A: 没买到。
A4.
(A和B共同的朋友倪英打算去长途旅游)
A: 这是倪英第一次坐火车去长途旅行。
B: 买了硬卧吗，倪英？Mǎi le yǐngwò ma, Nǐ Yīng?
A: 好像买了软座。
B: 为什么不买硬卧呢，他?
A: 因为稍微便宜一点？我也不知道。

Set B

B1.
A: 我们工作人员中有没有会说外语的?
B: 会说日语，廖荣。Huì shuō Riyǔ, Liào Róng.
A: 是那个美工吗?
B: 对，日语说得不错，他。

B2.
A: 新来的那个人，叫什么来着，
    梁，不对，廖荣，他好像会说什么外语....
B: 会说日语，廖荣。Huì shuō Riyǔ, Liào Róng.
A: 说得好不好？
B: 我也不知道，没听他说过。

B3.
A: 新来的那一批人好像都是外语系的，有的会说英语，有的会说法语，
B: 会说日语吗，廖荣？Huì shuō Riyǔ ma, Liào Róng?
A: 廖荣是带眼镜的那个吗?
B: 对。
A: 他说得非常好。

B4.
A: 我前几天听廖荣跟日本人聊天呢。
B: 会说日语吗，廖荣？Huì shuō Riyǔ ma, Liào Róng?
A: 听起来是，反正我听不懂。
B: 不会吧，上次我跟他一起去日本饭店的时候他连菜名都不能说。
Set C

C1.
A: 日本人自己也喜欢宫崎骏的动画片吧？
B: 日本很受欢迎，幽灵公主。Zài Riběn hěn shòu huānyǐng, Yōulíng gōngzhǔ.
A: 据说是他最好的作品之一，这部片子。

C2.
(A 和 B 在上一门讲文化的课)
(A 在考虑写动画片的报告)
A: 幽灵公主应该算是大众片还是艺术片？
B: 应该算是大众片吧。
A: 为什么呀？
B: 日本很受欢迎，幽灵公主。Zài Riběn hěn shòu huānyǐng, Yōulíng gōngzhǔ.

C3.
A: 我在日本的时候看了好多动画片。
B: 那你对日本的动画片一定很有研究了。
A: 谈不上，谈不上。
B: 日本很受欢迎吗，幽灵公主？Zài Riběn hěn shòu huānyǐng ma, Yōulíng gōngzhǔ?
A: 很受欢迎啊，你呢，喜欢吗？
B: 我不太喜欢。

C4.
A: 我昨天看了幽灵公主。
B: 日本很受欢迎吗，幽灵公主？Zài Riběn hěn shòu huānyǐng ma, Yōulíng gōngzhǔ?
A: 这个....反正我的日本朋友们都很喜欢。
B: 那大概挺受欢迎的。

Set D

D1.
(B 在房间里看书)
(A 从外面进来)
A: 我有点饿了。
B: 有奶酪，我的包里面。Yōu nǎilào, wǒ de bāo lǐmiàn.
A: 你的包是哪个呀？
(B 指着蓝色的包)
B: 那个蓝色的包，你看，在那儿。
D2.
(B 在房间里看书)
(A 从外面进来)
A: 我有点饿了。
B: 我的包在那儿。
A: 哦,
B: 有奶酪，我的包里面。Yǒu nǎilào, wǒ de bāo lǐmiàn.

D3.
(A 和 B 在做法国菜，B 知道怎么做，A 在旁观。)
A: 还要放什么吗?
B: 有奶酪吗，我的包里面？Yǒu nǎilào ma, wǒ de bāo lǐmiàn?
A: 你的包是哪个，什么颜色的？
B: 红色的的那个。
(A 走到红色的包，然后拿着包)
A: 你说这个？
B: 对，有吗？
(A 拿出一个圆的东西)
A: 是这个吗，你说的是？

D4.
(A 和 B 在做法国菜)
A: 你帮我看一下我带了什么来。
   (A 用头指着某一方向)
   我的包在那儿。
(B 打开 A 的包)
B: 有牛肉，洋葱，青椒，豆芽，
A: 有奶酪吗，我的包里面？Yǒu nǎilào ma, wǒ de bāo lǐmiàn?
B: 好像没有。
   (B 拿出一个圆的物体)
   这是什么呀，这圆的东西？
A: 那就是奶酪。
Set E
E1.
(A 和 B 在讨论他们认识的一个人念博士的时候要做什么)
A: 念博士还得再学一门东亚语言
B: 他学过日语。Tā xuéguò le, Riyǔ.
A: 啊，什么时候学的，他？
B: 去年夏天好像参加了一个斯坦福办的培训班。

E2.
(A 和 B 准备为朋友过生日搞一些活动)
A: 我们用日语来谈吧，免得他听到了。他听不懂吧？
B: 他学过日语。Tā xuéguò le, Riyǔ.
A: 什么，什么时候学的，他？我还真不知道。
B: 去年夏天好像参加了一个培训班。

E3.
(杨成是 A 和 B 的朋友)
( "情书" 是一部很有名的日本电影)
A: 杨成是个电影迷。
B: 是吧，昨天他还问我有没有原版的"情书"。
A: 他学过日语？Tā xuéguò le ma, Riyǔ?
B: 我没问他，不过看电影还是原版的比较有意思

E4.
(杨成是 A 和 B 的朋友)
A: 在东亚系念博士还得学日语
B: 杨成好像正在念东亚系的博士
A: 他学过日语？Tā xuéguò le ma, Riyǔ?
B: 好像学过一些吧。

Set F
F1.
A: 感冒的时候应该多吃一点维他命，C 多的东西。
B: 已经吃了，柠檬糖。Yǐjīng chī le, níngméngtáng.
A: 柠檬糖，酸的要命的那个吗？
B: 我觉得挺好吃的，不怎么酸。
F2.
(张荣是 A 和 B 的朋友。)
A: 张荣带来的柠檬糖，特别好吃。
    我从来没吃过那么好吃的柠檬糖。你吃了吗？
B: 已经吃了，柠檬糖。Yījīng chī le, níngménɡtánɡ.
A: 哦，好吃吧？
B: 我觉得不怎么好吃啊。

F3.
(A 和 B 的朋友杜明从家乡带来了很多小吃)
A: 杜明这次带了很多小吃回来。
B: 已经吃了吗，柠檬糖？Yījīng chī le ma, níngménɡtánɡ？
A: 哦，酸的要命的那个吗？
B: 对。
A: 我才吃了一口就吐出来了，太酸了。

F4.
(杜明是 A 和 B 的朋友)
A: 杜明给了我很多柠檬糖，说对治感冒很有效。
B: 已经吃了吗，柠檬糖？Yījīng chī le ma, níngménɡtánɡ？
A: 还没呢，但我带来了几个，你要尝尝吗？
B: 好吃吗，那个？噢，对，你还没吃。

Set G

G1.
(A 和 B 的朋友要写关于中国报纸的报告)
A: 他应该找图书馆的报纸来看看。
B: 他已经看了，人民日报，Tā yījīnɡ kàn le, Rénmín ribào.
A: 有那么多报纸，光看人民日报怎么行呢？
B: 但也不可能把所有的报纸都看完吧？
A: 至少也得看两三种吧，我想。
G2.
(A 和 B 都认识的一个美国朋友想做关于党的方针的研究。)
A: 做这样的研究，他应该看看官方的报纸，比如说《人民日报》。
B: 他已经看了，《人民日报》。Tā yǐjīng kàn le, Rénmín rìbào.
A: 他觉得怎么样？
B: 好像好多都看不懂。

G3.
(杨威，A 和 B 是室友。)
(前一天《人民日报》上有跟杨威的家乡有关的消息。)
A: 杨威今天起得很早，真少见。
B: 他已经看了吗，《人民日报》？Tā yǐjīng kàn le ma, Rénmín rìbào？
A: 《人民日报》，你有吗？
B: 有，我昨天晚上从办公室拿回来的。

G4.
(A 和 B 都认识的一个朋友想做关于党的方针的研究。)
A: 以前我跟他说，做这样的研究应该看看《人民日报》。
B: 他已经看了吗，《人民日报》？Tā yǐjīng kàn le ma, Rénmín rìbào？
A: 好像还没有。
B: 你跟他再说一次吧，我觉得。

Set H

H1.
(杜明是 A 和 B 的朋友)
A: 听说今天你跟杜明逛街去了。
B: 对，很热闹，你也应该去。
A: 杜明他平时那么节省，我猜他什么都没有买，是不是？
B: 他买了，衣服和帽子。Tā mǎi le, yīfu hé màozi.
A: 多少钱？
B: 当然很便宜啦。
H2.
A: 街口那家百货商店的衣服和帽子都在打折。
B: 你还不赶快告诉你姐姐。
A: 她买了，衣服和帽子。 Tā mǎi le, yīfu hé màozi.
B: 已经买了？
A: 都买了。

H3.
(高风是 A 和 B 的朋友。)
(A 和 B 说高风去留学的事情的几天以后。A 已经陪高风去逛街。)
A: 高风昨天去逛街了。
B: 他买了吗，衣服和帽子？Tā mǎi le ma, yīfu hé màozi?
A: 他想买，可是没看见合适的。

H4.
(高风是 A 和 B 的朋友。)
(高风今年底要到加拿大留学。)
A: 加拿大冬天特别冷。
    他得多带些衣服和帽子去。
B: 他买了吗，衣服和帽子？Tā mǎi le ma, yīfu hé màozi?
A: 他叫我明天陪他去买。
APPENDIX B

ENGLISH TRANSLATIONS FOR THE DIALOGUES

English translations for the dialogues are all listed here. The corresponding part of the target utterance is underlined.

Set A

A1.
(Some people including B and Ni Ying will go to Chengdu together. A is B’s friend.)
A: You all bought soft-sleeper tickets, right?
B: Ni Ying got a hard-sleeper ticket.
A: Ni Ying? He's the new face, right? I don't know him.
B: That tall guy who plays basketball.

A2.
(Some people including B and Ni Ying will go to Chengdu together.)
A: Which ticket did everyone get?
B: Ziang Xin got a soft-sleeper, Ni Ying got a hard-sleeper, Li Qiang got a hard-seat,...
A: What did Ni Ying get?
B: Ni Ying got a hard-sleeper ticket.

A3.
(A went to the train station to get train tickets for some people.)
A: I helped several people buy train tickets today.
B: Did Ni Ying get a hard-sleeper ticket?
A: No, he wasn’t able to get it.

126
A4.
(A friend of A and B, Ni Ying, is planning to go on a long trip.)
A: This is the first time for Ni Ying to go on a long trip.
B: Did Ni Ying get a hard-sleeper ticket?
A: It seems that he got a soft-seat.
B: Why didn’t he get a hard-sleeper?
A: Because it’s a little cheaper? I’m not sure, either.

Set B
B1.
A: Is there anyone on our staff who can speak a foreign language?
B: Liao Rong speaks Japanese.
A: Is he the art designer?
B: Yea. His Japanese is quite good.

B2.
A: The new face...what’s his name? Liang...no, Liao Rong. He seems to be able to speak a foreign language.
B: Liao Rong speaks Japanese.
A: How is his Japanese?
B: I don’t know, either. I haven’t heard him speak it yet.

B3.
A: All of those new faces seem to be from foreign language departments. Some speak English, some speak French....
B: Can Liao Rong speak Japanese?
A: Is Liao Rong the one who wears glasses?
B: Yeah.
A: His Japanese is very good.
B4.
(Liao Rong is a friend of A and B.)
A: I heard Liao Rong talking to a Japanese person a couple of days ago.
B: Can Liao Rong speak Japanese?
A: Sounded like it. Well, I don’t understand Japanese anyway.
B: It shouldn’t be the case. He wasn’t even able to read the menus in Japanese when we went to a Japanese restaurant last time.

Set C
C1.
A: Japanese people, they also like Hayao Miyazaki’s animation, right?
B: Princess Mononoke is very popular in Japan.
A: I’ve heard that’s one of his best.

C2.
(A and B have been taking a culture course.)
(A is thinking about writing a paper on animation.)
A: Is Princess Mononoke a popular film or an artistic film?
B: It should be a popular film.
A: Why is that?
B: Princess Mononoke is very popular in Japan.

C3.
A: I watched so much animation while I was in Japan.
B: Then you should know quite a bit about Japanese animation.
A: No, no, it’s not like that.
B: Is Princess Mononoke popular in Japan?
A: It’s very popular there. What about you? Do you like it?
B: No, I don’t like it so much.

C4.
A: I watched Princess Mononoke yesterday.
B: Is Princess Mononoke popular in Japan?
A: Well…at least all of my Japanese friends like it.
B: Then it should be very popular.
Set D
D1.

(B is reading a book in a room.)
(A comes into the room from outside.)
A: I'm a little hungry.
B: There's some cheese in my bag.
A: Which one is your bag?
(B points to a blue bag.)
B: That blue bag. Look. There.

D2.

(B is reading a book in a room.)
(A comes into the room from outside.)
A: I'm a little hungry.
B: My bag is over there.
A: Yeah?
B: There's some cheese in my bag.

D3.

(A and B are making French food.)
(B knows how to cook, while A is just looking.)
A: Do you have to add anything more?
B: Is there some cheese in my bag?
A: Which one is your bag? What color is it?
B: That red one.
(A walks to a red bag.)
(A picks up the bag.)
A: You mean this?
B: Yea. Is there any?
(A takes out one round object.)
A: Is this the one you mean?
D4.
(A and B are cooking.)
A: Can you help me look at what I brought?
   (A points in one direction with his head.)
   My bag is over there.
(B opens A's bag.)
B: You've got beef, onions, peppers, bean sprouts....
A: Is there some cheese in my bag?
B: It doesn't seem so.
   (B takes out one round object.)
   What's this round thing?
A: That's cheese.

Set E
E1.
(A and B are discussing what a person whom they know has to do when he works on his Ph.D.)
A: In order to do his Ph.D., he has to learn another East Asian language.
B: He has studied Japanese.
A: Really? When did he study it?
B: He seems to have participated in a summer language program run by Stanford.

E2.
(A and B are planning to do some activities for their friend's birthday.)
A: Why don't we use Japanese to talk about this so that he doesn't understand?
B: He has studied Japanese.
A: What? When did he study it? I really didn't know that.
B: It seems that he participated in a program last summer.

E3.
(Yang Wei is a friend of A and B.)
("Love Letter" is a famous Japanese movie.)
A: Yang Wei is a movie fan.
B: Isn't he? He even asked me yesterday if I had the original version of "Love Letter."
A: Has he studied Japanese?
B: I haven't asked, but it's more interesting to watch movies in their original versions.
E4.
(Yang Wei is a friend of A and B.)
A: In order to work on a Ph.D. in the East Asian department, you have to learn Japanese.
B: Yang Wei seems to be working on his Ph.D. in the East Asian department.
A: Has he studied Japanese?
B: It seems that he has studied it a little.

Set F
F1.
A: When you have a cold, you have to eat more things that contain a lot of Vitamin C.
B: I’ve already had some lemon candies.
A: Lemon candies…do they contain a lot of Vitamin C?
B: Yeah. That’s why they’re very sour.

F2.
(Zhang Rong is A and B’s friend.)
A: The lemon candies that Zhang Rong brought are very good. I haven’t had such good lemon candies before. Have you had some yet?
B: I’ve already had some lemon candies.
A: Oh. Weren’t they good?
B: I didn’t think that they were good.

F3.
(A friend of A and B, Du Ming, brought a lot of goodies from his hometown.)
A: Du Ming brought so many goodies back this time.
B: Have you had some lemon candies?
A: Oh, that super sour kind?
B: Yea.

F4.
(Du Ming is A and B’s friend.)
A: Du Ming gave me a lot of lemon candies. He says that they are good for a cold.
B: Have you had some lemon candies?
A: I haven’t had any yet, but I brought some. Do you want to try some?
B: Are they good? Oh. Right. You haven’t had any yet.
Set G

G1.
(A friend of A and B has to write a paper about Chinese newspapers.)
A: He has to look for some newspapers at the library.
B: He's already looked at *The People's Daily*.
A: There are so many kinds of papers. He shouldn't just look at *The People's Daily*, right?
B: But it's impossible to look at everything, right?
A: He should at least look at a few, I think.

G2.
(An American friend whom A and B know wants to do a research on the Party's policies.)
A: If he wants to do research like this, he should look at some official newspapers, for instance, *The People's Daily*.
B: He's already looked at *The People's Daily*.
A: What did he think about it?
B: It seems that he doesn't quite understand most of it.

G3.
(Yang Wei, A and B are sharing an apartment.)
(There was a report about Yang Wei's hometown in the paper the day before.)
A: Yang Wei is up very early this morning. It's very rare.
B: Has he already looked at *The People's Daily*?
A: *The People's Daily*? Do you have it?
B: I brought one back from my office yesterday.

G4.
(A friend whom A and B know wants to do research on the Party's policies.)
A: I've told him before that he has to look at *The People's Daily* if he wants to do research like this.
B: Has he already looked at *The People's Daily*?
A: Apparently not.
B: You should tell him again, I think.
Set \( H \)

**H1.**
(Du Ming is A and B’s friend.)
A: I heard that you and Du Ming went for a stroll.
B: Yea. It was great. You should go, too.
A: Du Ming is usually very frugal. I think he didn’t buy anything, did he?
B: **He bought some clothes and hats.**
A: How much were they?
B: Well, of course they were inexpensive.

**H2.**
A: The clothes and hats at the shop at the corner of the street are on sale.
B: Shouldn’t you tell your older sister right now?
A: **She’s already got some clothes and hats.**
B: She’s already got them?
A: Yea.

**H3.**
(Gao Feng is a friend of A and B.)
(Gao Feng is going to study in Canada at the end of this year.)
A: The winter in Canada is very cold. He should bring a lot of clothes and hats with him.
B: **Has he already bought some clothes and hats?**
A: He asked me to go with him to buy some tomorrow.

**H4.**
(Gao Feng is a friend of A and B.)
(It is a few days after A and B talked about Gao Feng’s studying abroad.)
(A has already gone for a stroll with Gao Feng.)
A: Gao Feng went for a stroll yesterday.
B: **Has he already bought some clothes and hats?**
A: He wanted to, but we didn’t see anything good.
APPENDIX C

F0 VALUES

Extracted F0 values that are used for the analysis are listed below. H1 and L1 in the first row are the high target and the low target of the main phrase of the inverted sentence respectively. H2 and L2 correspond to the high target and the low target of the post-posed phrase. The dialogue set is indicated on the left.
<table>
<thead>
<tr>
<th></th>
<th>H1</th>
<th>L1</th>
<th>H2</th>
<th>L2</th>
<th></th>
<th>H1</th>
<th>L1</th>
<th>H2</th>
<th>L2</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>281</td>
<td>123</td>
<td>112</td>
<td>109</td>
<td>E1</td>
<td>168</td>
<td>118</td>
<td>208</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>249</td>
<td>120</td>
<td>117</td>
<td>108</td>
<td></td>
<td>188</td>
<td>112</td>
<td>203</td>
<td>101</td>
</tr>
<tr>
<td>A2</td>
<td>183</td>
<td>105</td>
<td>116</td>
<td>104</td>
<td>E2</td>
<td>172</td>
<td>125</td>
<td>129</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>191</td>
<td>106</td>
<td>103</td>
<td>103</td>
<td></td>
<td>178</td>
<td>117</td>
<td>122</td>
<td>98</td>
</tr>
<tr>
<td>A3</td>
<td>228</td>
<td>123</td>
<td>119</td>
<td>117</td>
<td>E3</td>
<td>191</td>
<td>127</td>
<td>134</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>198</td>
<td>118</td>
<td>121</td>
<td>108</td>
<td></td>
<td>206</td>
<td>151</td>
<td>153</td>
<td>117</td>
</tr>
<tr>
<td>A4</td>
<td>185</td>
<td>117</td>
<td>108</td>
<td>107</td>
<td>E4</td>
<td>168</td>
<td>129</td>
<td>144</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>212</td>
<td>123</td>
<td>122</td>
<td>115</td>
<td></td>
<td>171</td>
<td>132</td>
<td>135</td>
<td>109</td>
</tr>
<tr>
<td>B1</td>
<td>158</td>
<td>97</td>
<td>116</td>
<td>100</td>
<td>F1</td>
<td>186</td>
<td>112</td>
<td>164</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>169</td>
<td>95</td>
<td>113</td>
<td>96</td>
<td></td>
<td>214</td>
<td>115</td>
<td>170</td>
<td>115</td>
</tr>
<tr>
<td>B2</td>
<td>146</td>
<td>103</td>
<td>114</td>
<td>101</td>
<td>F2</td>
<td>211</td>
<td>130</td>
<td>177</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>153</td>
<td>97</td>
<td>117</td>
<td>102</td>
<td></td>
<td>215</td>
<td>116</td>
<td>169</td>
<td>111</td>
</tr>
<tr>
<td>B3</td>
<td>171</td>
<td>112</td>
<td>114</td>
<td>101</td>
<td>F3</td>
<td>190</td>
<td>130</td>
<td>138</td>
<td>131</td>
</tr>
<tr>
<td></td>
<td>173</td>
<td>114</td>
<td>115</td>
<td>99</td>
<td></td>
<td>191</td>
<td>131</td>
<td>140</td>
<td>130</td>
</tr>
<tr>
<td>B4</td>
<td>185</td>
<td>123</td>
<td>122</td>
<td>106</td>
<td>F4</td>
<td>196</td>
<td>129</td>
<td>127</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>185</td>
<td>107</td>
<td>115</td>
<td>100</td>
<td></td>
<td>205</td>
<td>121</td>
<td>134</td>
<td>124</td>
</tr>
<tr>
<td>C1</td>
<td>185</td>
<td>121</td>
<td>149</td>
<td>142</td>
<td>G1</td>
<td>232</td>
<td>155</td>
<td>192</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>212</td>
<td>121</td>
<td>129</td>
<td>125</td>
<td></td>
<td>186</td>
<td>133</td>
<td>157</td>
<td>111</td>
</tr>
<tr>
<td>C2</td>
<td>230</td>
<td>127</td>
<td>110</td>
<td>112</td>
<td>G2</td>
<td>235</td>
<td>130</td>
<td>174</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>188</td>
<td>131</td>
<td>110</td>
<td>110</td>
<td></td>
<td>212</td>
<td>126</td>
<td>109</td>
<td>105</td>
</tr>
<tr>
<td>C3</td>
<td>168</td>
<td>128</td>
<td>116</td>
<td>110</td>
<td>G3</td>
<td>219</td>
<td>118</td>
<td>165</td>
<td>129</td>
</tr>
<tr>
<td></td>
<td>202</td>
<td>138</td>
<td>109</td>
<td>109</td>
<td></td>
<td>207</td>
<td>147</td>
<td>150</td>
<td>119</td>
</tr>
<tr>
<td>C4</td>
<td>179</td>
<td>133</td>
<td>115</td>
<td>119</td>
<td>G4</td>
<td>180</td>
<td>145</td>
<td>118</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>178</td>
<td>134</td>
<td>114</td>
<td>116</td>
<td></td>
<td>200</td>
<td>163</td>
<td>136</td>
<td>133</td>
</tr>
<tr>
<td>D1</td>
<td>139</td>
<td>107</td>
<td>147</td>
<td>104</td>
<td>H1</td>
<td>187</td>
<td>101</td>
<td>220</td>
<td>156</td>
</tr>
<tr>
<td></td>
<td>150</td>
<td>110</td>
<td>109</td>
<td>111</td>
<td></td>
<td>162</td>
<td>107</td>
<td>144</td>
<td>119</td>
</tr>
<tr>
<td>D2</td>
<td>149</td>
<td>104</td>
<td>111</td>
<td>111</td>
<td>H2</td>
<td>206</td>
<td>100</td>
<td>147</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td>141</td>
<td>106</td>
<td>114</td>
<td>116</td>
<td></td>
<td>178</td>
<td>104</td>
<td>137</td>
<td>124</td>
</tr>
<tr>
<td>D3</td>
<td>180</td>
<td>106</td>
<td>190</td>
<td>107</td>
<td>H3</td>
<td>187</td>
<td>114</td>
<td>145</td>
<td>124</td>
</tr>
<tr>
<td></td>
<td>163</td>
<td>108</td>
<td>114</td>
<td>107</td>
<td></td>
<td>182</td>
<td>110</td>
<td>132</td>
<td>114</td>
</tr>
<tr>
<td>D4</td>
<td>151</td>
<td>106</td>
<td>122</td>
<td>103</td>
<td>H4</td>
<td>180</td>
<td>104</td>
<td>126</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>159</td>
<td>103</td>
<td>112</td>
<td>109</td>
<td></td>
<td>186</td>
<td>114</td>
<td>119</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>H1</td>
<td>L1</td>
<td>H2</td>
<td>L2</td>
<td></td>
<td>H1</td>
<td>L1</td>
<td>H2</td>
<td>L2</td>
</tr>
<tr>
<td>---</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>---</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>A1</td>
<td>326</td>
<td>190</td>
<td>167</td>
<td>165</td>
<td>E1</td>
<td>287</td>
<td>183</td>
<td>176</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>353</td>
<td>186</td>
<td>164</td>
<td>163</td>
<td></td>
<td>326</td>
<td>191</td>
<td>181</td>
<td>160</td>
</tr>
<tr>
<td>A2</td>
<td>275</td>
<td>184</td>
<td>150</td>
<td>147</td>
<td>E2</td>
<td>352</td>
<td>201</td>
<td>185</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>277</td>
<td>178</td>
<td>169</td>
<td>178</td>
<td></td>
<td>302</td>
<td>201</td>
<td>197</td>
<td>187</td>
</tr>
<tr>
<td>A3</td>
<td>323</td>
<td>198</td>
<td>177</td>
<td>181</td>
<td>E3</td>
<td>278</td>
<td>266</td>
<td>197</td>
<td>155</td>
</tr>
<tr>
<td></td>
<td>285</td>
<td>192</td>
<td>190</td>
<td>187</td>
<td></td>
<td>316</td>
<td>253</td>
<td>180</td>
<td>169</td>
</tr>
<tr>
<td>A4</td>
<td>282</td>
<td>190</td>
<td>171</td>
<td>170</td>
<td>E4</td>
<td>293</td>
<td>227</td>
<td>190</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>297</td>
<td>195</td>
<td>184</td>
<td>186</td>
<td></td>
<td>312</td>
<td>248</td>
<td>190</td>
<td>179</td>
</tr>
<tr>
<td>B1</td>
<td>315</td>
<td>177</td>
<td>175</td>
<td>161</td>
<td>F1</td>
<td>333</td>
<td>197</td>
<td>183</td>
<td>187</td>
</tr>
<tr>
<td></td>
<td>322</td>
<td>198</td>
<td>174</td>
<td>164</td>
<td></td>
<td>335</td>
<td>194</td>
<td>178</td>
<td>185</td>
</tr>
<tr>
<td>B2</td>
<td>261</td>
<td>177</td>
<td>180</td>
<td>169</td>
<td>F2</td>
<td>302</td>
<td>190</td>
<td>175</td>
<td>182</td>
</tr>
<tr>
<td></td>
<td>298</td>
<td>211</td>
<td>?</td>
<td>?</td>
<td></td>
<td>298</td>
<td>187</td>
<td>179</td>
<td>182</td>
</tr>
<tr>
<td>B3</td>
<td>278</td>
<td>194</td>
<td>173</td>
<td>159</td>
<td>F3</td>
<td>282</td>
<td>204</td>
<td>198</td>
<td>194</td>
</tr>
<tr>
<td></td>
<td>301</td>
<td>209</td>
<td>180</td>
<td>161</td>
<td></td>
<td>322</td>
<td>204</td>
<td>218</td>
<td>213</td>
</tr>
<tr>
<td>B4</td>
<td>339</td>
<td>226</td>
<td>191</td>
<td>167</td>
<td>F4</td>
<td>285</td>
<td>206</td>
<td>192</td>
<td>187</td>
</tr>
<tr>
<td></td>
<td>351</td>
<td>242</td>
<td>201</td>
<td>178</td>
<td></td>
<td>301</td>
<td>198</td>
<td>221</td>
<td>223</td>
</tr>
<tr>
<td>C1</td>
<td>256</td>
<td>220</td>
<td>188</td>
<td>165</td>
<td>G1</td>
<td>345</td>
<td>225</td>
<td>172</td>
<td>172</td>
</tr>
<tr>
<td></td>
<td>309</td>
<td>248</td>
<td>195</td>
<td>192</td>
<td></td>
<td>294</td>
<td>207</td>
<td>182</td>
<td>180</td>
</tr>
<tr>
<td>C2</td>
<td>343</td>
<td>272</td>
<td>155</td>
<td>153</td>
<td>G2</td>
<td>325</td>
<td>245</td>
<td>168</td>
<td>173</td>
</tr>
<tr>
<td></td>
<td>318</td>
<td>259</td>
<td>177</td>
<td>182</td>
<td></td>
<td>307</td>
<td>199</td>
<td>166</td>
<td>172</td>
</tr>
<tr>
<td>C3</td>
<td>306</td>
<td>254</td>
<td>174</td>
<td>170</td>
<td>G3</td>
<td>304</td>
<td>227</td>
<td>192</td>
<td>198</td>
</tr>
<tr>
<td></td>
<td>305</td>
<td>247</td>
<td>182</td>
<td>179</td>
<td></td>
<td>292</td>
<td>208</td>
<td>188</td>
<td>179</td>
</tr>
<tr>
<td>C4</td>
<td>289</td>
<td>241</td>
<td>186</td>
<td>189</td>
<td>G4</td>
<td>334</td>
<td>226</td>
<td>171</td>
<td>165</td>
</tr>
<tr>
<td></td>
<td>287</td>
<td>239</td>
<td>170</td>
<td>166</td>
<td></td>
<td>320</td>
<td>228</td>
<td>213</td>
<td>212</td>
</tr>
<tr>
<td>D1</td>
<td>247</td>
<td>205</td>
<td>200</td>
<td>180</td>
<td>H1</td>
<td>342</td>
<td>174</td>
<td>273</td>
<td>228</td>
</tr>
<tr>
<td></td>
<td>262</td>
<td>194</td>
<td>189</td>
<td>189</td>
<td></td>
<td>364</td>
<td>179</td>
<td>193</td>
<td>194</td>
</tr>
<tr>
<td>D2</td>
<td>241</td>
<td>194</td>
<td>179</td>
<td>170</td>
<td>H2</td>
<td>302</td>
<td>184</td>
<td>172</td>
<td>177</td>
</tr>
<tr>
<td></td>
<td>247</td>
<td>187</td>
<td>232</td>
<td>187</td>
<td></td>
<td>288</td>
<td>173</td>
<td>181</td>
<td>179</td>
</tr>
<tr>
<td>D3</td>
<td>260</td>
<td>224</td>
<td>183</td>
<td>176</td>
<td>H3</td>
<td>325</td>
<td>184</td>
<td>201</td>
<td>207</td>
</tr>
<tr>
<td></td>
<td>267</td>
<td>224</td>
<td>193</td>
<td>189</td>
<td></td>
<td>324</td>
<td>189</td>
<td>228</td>
<td>219</td>
</tr>
<tr>
<td>D4</td>
<td>281</td>
<td>214</td>
<td>185</td>
<td>186</td>
<td>H4</td>
<td>314</td>
<td>155</td>
<td>172</td>
<td>189</td>
</tr>
<tr>
<td></td>
<td>273</td>
<td>218</td>
<td>193</td>
<td>188</td>
<td></td>
<td>306</td>
<td>164</td>
<td>174</td>
<td>184</td>
</tr>
</tbody>
</table>

136
<table>
<thead>
<tr>
<th>Subject C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>H1</strong></td>
</tr>
<tr>
<td>A1 179 128 125 130</td>
</tr>
<tr>
<td>178    138 125 129</td>
</tr>
<tr>
<td>A2 168 127 133 122</td>
</tr>
<tr>
<td>174    128 135 129</td>
</tr>
<tr>
<td>A3 183 137 136 128</td>
</tr>
<tr>
<td>185    133 133 131</td>
</tr>
<tr>
<td>A4 174 135 131 132</td>
</tr>
<tr>
<td>183    129 128 131</td>
</tr>
<tr>
<td>B1 170 123 129 120</td>
</tr>
<tr>
<td>170    124 128 116</td>
</tr>
<tr>
<td>B2 171 123 134 118</td>
</tr>
<tr>
<td>184    125 129 116</td>
</tr>
<tr>
<td>B3 179 128 132 114</td>
</tr>
<tr>
<td>181    130 134 119</td>
</tr>
<tr>
<td>B4 197 125 137 116</td>
</tr>
<tr>
<td>218    126 139 118</td>
</tr>
<tr>
<td>C1 172 149 128 126</td>
</tr>
<tr>
<td>174    153 129 125</td>
</tr>
<tr>
<td>C2 178 156 126 121</td>
</tr>
<tr>
<td>172    150 135 126</td>
</tr>
<tr>
<td>C3 170 157 135 134</td>
</tr>
<tr>
<td>172    166 133 132</td>
</tr>
<tr>
<td>C4 180 147 128 129</td>
</tr>
<tr>
<td>176    156 129 130</td>
</tr>
<tr>
<td>D1 166 133 133 127</td>
</tr>
<tr>
<td>163    133 147 130</td>
</tr>
<tr>
<td>D2 160 131 140 128</td>
</tr>
<tr>
<td>152    131 146 129</td>
</tr>
<tr>
<td>D3 179 132 140 135</td>
</tr>
<tr>
<td>166    124 137 127</td>
</tr>
<tr>
<td>D4 184 129 138 135</td>
</tr>
<tr>
<td>161    125 134 127</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>A1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>A2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>A3</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>A4</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>B1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>B2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>B3</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>B4</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>C1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>C2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>C3</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>C4</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>D1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>D2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>D3</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>D4</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>


Beckman, Mary E. and Julia Hirschberg. 1994. "The ToBI Annotation Conventions." Downloadable manuscript. Ohio State University. [http://www.ling.ohio-state.edu/~tobi/ame_tobi/annotation_conventions.html]


143


