

Chinese EFL  
Learners Intonation  
Acquisition

# 中国英语学习者

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语调重音与曲拱  
的语音和音系分析

A Phonetic and Phonological Study

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PROMINENCE  
&  
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CONTOUR<sup>R</sup>

王红梅 著

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## 序 言

王红梅是我指导的第一届博士研究生,于今年5月顺利通过博士论文答辩,现在她又决定把她的博士论文付梓出版。表面看上去,这一切都是那么轻而易举,但事实上所付出的辛苦是外人难以想象的。

我是搞音系学的,王红梅师从于我,上博士后也开始从事音系学研究。外语界很多人都把音系学看作是非常人所能理解的一门学问,但我却不那么认为。音系学难以被人理解和接受,一定程度上是由于许多人对音系学使用的符号和公式不很熟悉,翻开音系学书被大量的符号和公式给蒙住了。加之,我们搞音系学的人在写音系学文章时不能做到深入浅出,反而使用大量令人费解的辞藻,造成这种理解上的困难。其实,我们能否写出让人家看得懂的音系学文章,也一定程度上表明我们写作者是否对音系学已经真的理解了。只有在真的理解的基础上去撰写介绍音系学的文章,这种文章才能让人家读得懂,看得明白。总而言之,音系学貌似难,其实并不难,但掌握它则需要付出努力。王红梅从开始接触音系学,进而撰写音系学的论文,便说明了这一点。

开始学习音系学,确实需要付出努力。三年前,王红梅入南开后便开始听我开设的音系学课。我当时是在天津外院给硕士

生讲授音系学课,天津外院离南开有一定的距离。王红梅跟闫小斌两个人有时搭我的车,有时自己骑车,还有时坐公车前往天津外院去听我的课,与此同时还要完成规定阅读的语言学书目,定时一起讨论包括音系学在内的各种语言学问题,一学期下来,着实地辛苦。王红梅和闫小斌两个人经过一段时间的努力,对音系学有了比较准确的理解,自己逐渐可以独立探讨音系学的问题了。

应该说王红梅确实也非常用功,她自己掏钱利用假期参加了多个语音学和音系学讲习班,了解语音学和音系学理论动态,学习使用各种语音分析软件。所有的这些努力,让她在短短的三年时间内从对音系学不甚了了到能够撰写这么厚的博士论文。经过一番辛勤的努力,最后获得博士学位,这确实可喜可贺。

2008年5月22日,我的博士生导师、北京师范大学外文学院资深教授周流溪先生拨冗来津,主持王红梅、闫小斌两人的博士毕业论文答辩。席间,周公赋诗一首,激励后生:

大音道象没形声,  
幽渺聪聾半欲明。  
欧亚休言隔山水,  
华夷未必异轻清。  
闽吴嬗变<sup>①</sup>平遥域<sup>②</sup>,  
英汉飞沉曲拱程<sup>③</sup>。  
优选论高解玄理,  
马生延客阅新兵。

【注:①嬗变:指连读变调,音拟 sandhi。②闽吴嬗变平遥域:此

句用以概述闫小斌所做的博士论文《汉语方言连读变调域构建中的制约条件交互作用》。③英汉飞沉曲拱程:指王红梅所做的博士论文《中国英语学习者语调凸显与调核曲拱习得的语音和音系研究》。】

马秋武

南开大学外国语学院

2008 年 7 月

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I thank my committee chairman Professor Zhou Liuxi, who is considered as an academic giant in my heart, his patience and insightful assistance are unforgettable in the formation and completion of this dissertation. I would also like to thank all the other committee members for their careful reading of my dissertation and valuable suggestions.

Tremendous thanks are owed to Professor Li Bin, Professor Zhang Wenzhong, Professor Li Yi and Professor Su Lichang at Nankai University for their critical comments and constructive suggestions to my dissertation.

I owe my thanks to my doctor classmates Yan Xiaobin, Yang Ping, Ma Xianghui, Zhai Honghua, Jia Yuan, Hong Wei, Li Yunjing and Wang Peng for their understanding and support in my hard time. Special thanks go to Jia Yuan for her patience and carefulness in the tedious labeling work. My graduate students Meng Xiaojia, Jiang Nan, Li Weixia and Jiang Xue are always supportive and cooperative in the process of the experiment; we have experienced and witnessed all the hardship during the past two years. I thank Professor Jing Ping and his two graduate students from the School of Science at China University of Mining and Technology ( Beijing ) for providing statistical solutions to the present study. Without all their help, such a gigantic project seems impossible to be carried out.

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## 摘 要

二语习得过程中母语迁移现象的研究日益受到语言学界的重视。中国的英语学习者在学习英语过程中,其英语口语表达通常带有一定的中国腔。以往国内语调研究多采用定性研究,研究者凭经验和直觉指出学习者在英语语调习得方面存在的一些问题,缺乏理论依据和实证数据支持,尤其在不同句式句子层面的凸显分布和调核曲拱模式上,国内尚无较为系统、深入的实证研究。

本书以 38 名英语专业学生为研究对象,以 6 名英国伦敦音母语者的语调模式为参照标准,基于 IViE 标注系统得出的数据,采用 AM 理论,详细观察和分析英语母语者与中国学习者(分为高组和低组)在七种不同句式(共计 308 句)的凸显分布和调核曲拱模式上的异同,然后应用优选论对母语者、学习者高组和低组在英语凸显分布方面的不同表现进行阐释,构建并提出凸显制约条件等级体系,研究制约条件降级演算模式(CDA)在英语语调凸显习得中的应用;并为英语调核曲拱模式建立一套有限状态语法以确定调核在调核曲拱结构中的位置。

在朗读实验中,所有受试者均朗读了一篇名为“Cinderella”(灰姑娘)的故事。该故事情节生动,且为大家所熟知,不会导致因理解不同而产生的语调模式差异。研究者按照朗读成绩将学习者分为高低两组以便考察不同水平学习者的语调情况。

通过数据观察和拟合度检验,我们发现学习者在凸显模式上与母语者相比有以下特点:首先,母语者在表达中所凸显的主要是实义词,功能词是否凸显取决于语境、语义的要求,同时母语者语调节奏呈明显的等音长特征;而学习者主要根据句法实施凸显,主语、谓语、宾语是学习者实施凸显的必然成分,功能词在学习者的表达中也可能被凸显;学习者没有考虑等音长、语境等因素在英语凸显分布中的重要作用,因此学习者(尤其是低组的学习者)朗读中的凸显明显多于母语者。其次,学习者跟母语者在短句和结构简单的句子如命令句、陈述疑问句和特殊疑问句上有共同的凸显分布模式,而在长句如陈述句、感叹句、一般疑问句以及实义词较少的句子如附加疑问句中,学习者与母语者有较为明显的差异。由此可以推断:短句(如陈述疑问句和特殊疑问句)以及句法较为简单的无主句(命令句)是学习者较为容易正确产出凸显的句子,而中长句(如陈述句、感叹句和一般疑问句)是学习者习得凸显词分布的难点。附加疑问句虽为短句,因句中只出现一个实义词,为学习者确定凸显词位置增加了困难。又次,高组在各种句型凸显词的分布模式上的表现均高于低组,也更接近母语者的凸显分布模式。

调核做为语调短语中最重要的凸显,通常位于最后一个凸显词的重读音节上,它的曲拱变化决定着说话人的态度,以及听话人对该句的理解和句式的判断。经卡方检验,学习者在附加疑问句和陈述疑问句跟母语者没有显著差异,但在其他五种句型的调核模式上却与母语者有着非常明显的差异。由此可以看出,句型对学习者调核模式的影响远远大于句长。其次,在四个疑问句式,学习者(尤其是高组)比母语者使用了更多的升调,而母语者则能根据情节要求灵活使用升降调,利用语调的变化表达说话者的交际意图。另外,与凸显模式的研究结果不同,

高组在调核曲拱上的表现并未如预期的那样高于低组,相反,低组在附加疑问句和一般疑问句的表现比高组更接近母语者。

本研究以大量语音实验数据为依据,客观描述和分析了英语学习者在凸显分布和调核模式上的表现,针对英语语调教学问题提出一些改进的建议。IViE 语调标注系统是在 ToBI 语调标注系统的基础上提出来的,这一系统刚刚问世,在国内尚无系统应用之先例。本研究在国内率先把这一语调标注系统与 AM 语调音系理论相结合,针对中国学生语调学习中的一些问题进行分析,然后同英语母语者的语调模式进行语音和音系上的对比,力求通过比较分析来阐释中国学生在语调学习方面所存在的问题以及问题背后的触发因素,并尝试应用优选论解释学习者在习得英语语调凸显和调核曲拱方面的特点。应该说,本研究拓展了 IViE 语调标注系统和 AM 语调音系理论的应用范围,为中国学生外语学习方面的研究开辟了一个新的视角,在一定程度上为二语习得的实证与理论研究做出了贡献。

## Abstract

Language transfer is a common phenomenon in the process of second language acquisition. Chinese EFL learners are frequently reported to reveal certain foreign accent in oral communication. Based on the teaching experience and intuition, most of the Chinese previous researches adopted the empirical and qualitative method to probe into the problems in Chinese learners' English intonation without theoretical and statistical support. Especially in the area of prominence distribution and nuclear contour patterns at sentence level, few systematic and detailed researches could be found at home.

Combining the data from the IViE labeling system, the present research adopts the AM approach to observe and analyze the similarities and the differences in the area of prominence distribution and nuclear contour patterns between the six British speakers and the thirty-eight Chinese learners (divided into the high group and the low group) in seven different sentence types (altogether 308 sentences labeled). The Optimality Theory is applied to describe and explain the prominence performance distinction among the native speakers and the Chinese high and low learners with the architecture of constraint ranking. The application of Constraint Demotion Algorithm (CDA) in the acquisition of

prominence distribution is also studied. A finite-state nuclear contour grammar is set up to ensure the position of nuclear tone in English nuclear contour structure.

In the read speech experiment, all the subjects are required to read the vivid story "Cinderella", which is familiar to all the subjects in order to avoid different intonation patterns caused by reading comprehension. The high and low group learners are divided for the sake of observing the intonation performance of different-level learners.

Through data observation and fitness test, it is found that the Chinese learners demonstrate some typical features in the area of prominence patterns: firstly, the native speakers mainly stress the content words in utterance with a clear isochronic rhythm, the function words are made prominent only when specific context and semantic conditions are added, while the learners mainly depend on the syntactic signals for prominence, the subject, predicate and object could easily attract prominence, and function words are also likely to be made prominent in an utterance; learners seldom consider the significant role of factors such as the isochrony and context in producing English prominence, and therefore, learners (especially the low group learners) usually create more prominence than the British native speakers in the read speech. Secondly, the native speakers and the learners share the prominence pattern in the imperative sentence, declarative question, and wh-question, but they hold different prominence pattern in exclamatory sentence, declarative sentence, yes/no-question and tag question. It is implied that the short sentence (e. g. declarative question and wh-

question) and the syntactically simple sentence (e. g. imperative sentence) are easier for learners to produce the native-like pattern of prominence, while the middle or long sentences (e. g. declarative sentence, exclamatory sentence and yes-no question) are more difficult for the learners to produce the native-like prominence patterns. The tag-question with fewer content words adds difficulty for the learners to locate the prominence even though it is short and simple. Thirdly, the high group shows a comprehensive better performance than the low group in the seven sentences, the high group learners are much closer to the native speakers.

Nuclear accent is the most important prominence in the intonational phrase with its location on the stressed syllable of the last prominent word. The location and contour change of the nuclear accent would decide the speakers' intention, provide auditory cues to the beginning and the end of major syntactic constituents, and highlight the features of sentence types. Firstly, through Chi-square test, significant difference between the native speakers and the learners could be seen in all the sentences except the tag-question and the declarative question, it is inferred that the sentence type exerts more influence on the learners' nuclear contour performance than the sentence length. Secondly, the learners (especially the high group learners) apply more rising tones than the native speakers in the four interrogative sentences, the native speakers are more flexible in applying the default nuclear accent combined with the context to achieve the intended communicative purpose. Thirdly, different from the result of prominence analysis, the high

group does not reveal the expected better performance in nuclear contour pattern than the low group, on the contrary, the low group's performance is closer to the native speakers than the high group in the tag question and the yes/no question.

Based on the data from the phonetic experiment corpus, the present research has described and analyzed objectively the performance of the learners' prominence distribution and nuclear contour patterns with an attempt to improve the classroom teaching and learning of English intonation. IViE labeling system, which is developed from ToBI, has not been applied systematically in China since its appearance. The application of the AM approach in describing intonation combined with the IViE labeling system in the present research is first adopted in China to analyze the Chinese learners intonation problem. Through the comparison of the intonation patterns between the British native speakers and the Chinese learners in phonetics and phonology, the dissertation aims at illustrating the intonation problems of Chinese learners and the related resulting factors, attempting to explain the intonation features of the Chinese learners in prominence distribution and nuclear contour with OT analysis. It would be concluded that the present study has enlarged the application area of the IViE labeling system and the AM approach, provided a new angle for the research of EFL learning in China, and contributed to the study of second language acquisition empirically and theoretically to some extent.



## Abbreviations

- AM approach: autosegmental metrical approach  
CDA: constraint demotion algorithm  
CON: constraint  
EVAL: evaluator  
GEN: generator  
Dec: declarative sentence  
Dec-Q: declarative question  
EFL: English as a foreign language  
ESL: English as a second language  
Excl: exclamatory sentence  
GLA: gradual learning algorithm  
HG: highintonation-level group of Chinese learners  
ID: implementation domain  
Imp: imperative sentence  
IP: intonational phrase  
IPO: Instituut voor Perceptie Onderzoek in Holland  
IULC: Indiana University Linguistics Club  
IViE: intonational variation in English  
LG: lowintonation-level group of Chinese learners  
MIT: Massachusetts Institute of Technology  
NS: native speakers (refers to the six British speakers here)