A Study on the Influence of Chinese Experience on English Stress Acquisition

Fenting Xu
College of foreign languages, Jiangsu Normal University, Xuzhou 221116, China.

Abstract: On the basis of the framework of Perceptual Assimilation Model connected to speech perception, this paper reports on a study of the relationship between the experience of L1 (Chinese) and L2 (English) production from the point of lexical stress level. Chinese EFL speakers were recruited for this study. All the participants were required to read 20 words in the form of English, of which the lexical stress was recorded so as to make further analysis and comparison. The study indicates that the biggest challenge for Chinese EFL learners is the misplacement of word stress. It often occurs in polysyllabic words, and there is a strong tendency of stress shift on the second syllable. The dominant reason for the misplacement is that the second or the latter syllable is frequently stressed in mandarin dissyllables. This implies that Chinese EFL learners should lay more emphasis on phonological awareness of L2 and sufficient supply of L2 auditory input should also be assured in order to maintain the quality of perception and production in stress acquisition.

Keywords: Speech Perception; Stress Acquisition; Lexical Stress

1. Introduction

The study of speech perception in second language acquisition has generated many unsolved issues concerning several aspects. A considerable amount of research has focused on the transfer from the native language, the intellectual level of the learners in a foreign language or the correlation between perception and production skills, and several models have been developed as well in order to analyze the language-specific tuning issues from the perspective of perception process, mostly at the segmental level. Furthermore, experimental studies on the suprasegmental aspects of speech perception seem to claim a strong impact of native language too.

Acquiring suprasegmental speech involving lexical stress in L2 is a daunting task for most non-native speakers of English, who often confuse the lexical stress of L2 speech sounds due to the experience of L1. Previous research has proposed that the perceived similarity between L1 and L2 phonology may influence the acquisition of segmental speech, and this concept of 'similarity' may also be applicable to suprasegmental speech (So & Best, 2010; Wu, Munro, & Wang, 2014).

2. Literature Review

Humans are capable of acquiring the language of their environment with innate capacity, and they can quickly become 'tuned in' to the specific phonetic categories employed in their native language. However, study on adult cross-language speech perception indicates that in the process of second language acquisition (L2), adults are faced with the challenge of not only acquiring the segmental aspects of speech, i.e. vowels and consonants, but also the suprasegmental aspects at the word level, such as lexical stress and lexical tone. Various studies on segmental acquisition have shown that similarity between L1 and L2 phonology can affect the extent of perception of non-native sounds (MacKain, Best, & Strange, 1981; Pallier, Bosch, & Sebastián-Gallés, 1997). Perceptual Assimilation Model (PAM) (Best, 1995), a theoretical framework concerned with category perception, notes that this type of categorical assimilation occur in both segmental and suprasegmental speech acquisition, and the latter study hasn't been lucubrated until recent years.

PAM, one of the most commonly applicable models of cross-language perception, predicts that learners' ability of discrimination on non-native contrasts will vary from excellent to poor, largely depending on the degree of assimilation between non-native phones and native phonological categories. To put it in a nutshell, the PAM claims that learners have more difficulty identifying the two phones when both are assimilated to the same phonological category.

Following these PAM principles, a large amount of research studies concentrating on segmental speech acquisition have been made. Based on the studies, many empirical observations show that native language has an effect on the phonetic perception of a second language learner. In recent years, the application of PAM to suprasegmental speech acquisition is involved as well. Much of the research on the phonetic acquisition of second language among Chinese EFL learners has converted from segmental phonemes to suprasegmental levels, and especially to intonation (Bi & Chen, 2013; Chen, 2008; Gao etal.,2015; Meng & Wang, 2011).

As described above, based on the model of PAM, this study aims to analyze the influence of L1 experience on the perception and production of L2 speech acquisition at suprasegmental level.

3. Methods

3.1 Participants

The participants were 10 students in the class of 2021 at a college in Jiangsu Province, 6 girls and 4 boys. Most of them have learned English for more than 10 years. They come from different regions of China, including northern and southern parts. Problems caused by their regional accents are ignored here.

3.2 Materials

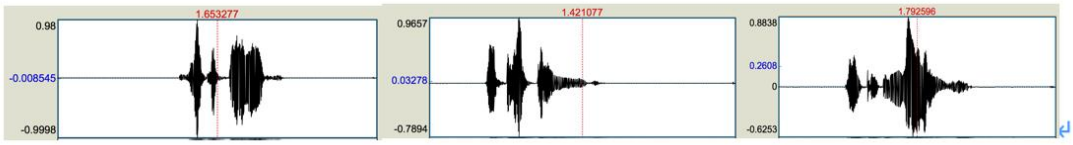
Data were taken from the participants' speaking test designed by the author. 20 English words were included.

3.3 Instruments

In this study, Audacity V2.4.2 was used to record speech. Praat V6.2.08 (Boersma & Weenink, 2022) was also used for annotating files, extracting acoustic data, and visualizing acoustic information.

4. Results and discussion

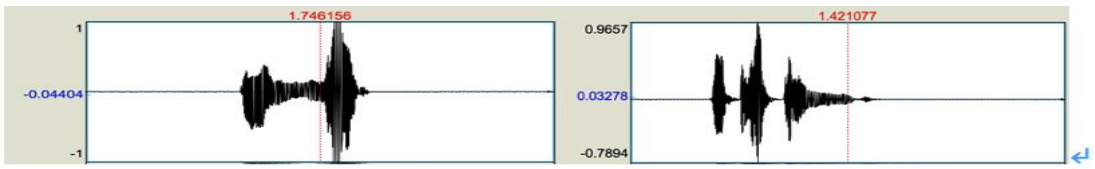
According to the analysis of recorded data, Chinese EFL learners had difficulty with stress placement of English polysyllabic and disyllabic words. Contours of sound waves will vary greatly if the lexical stress is assigned differently. Take Recognize as an example.



(a) 'recognize (b) re'cognize (c) recog'nize

Fig. 1 Different stress assignment in Recognize

Recognize is composed of three syllables, namely, re-cog-nize. In the Figure 1, it shows the pitch in every syllable. When a speaker places the stress on one of the syllables, the pitch will reach the highest point consequently. The correct stress placement of recognize is to put the stress to the first syllable "re", as shown in Figure 1 (a). Figure 1 (b) and (c) represent two types of ways of wrong assignment. Statistics of the speaking test indicates that 50% of the subjects (5 subjects) tend to assign the lexical stress on the second syllable, as in the case of Figure 1 (b). 20% (2 subjects), by contrast, place the stress on the third syllable, as in the case of Figure 1 (c).



(a) 辨认 (b) re'cognize

Fig. 2 Stress assignment between Chinese and English

Figure 2 (a) shows that the stress of Chinese word "辨认" (biàn rèn) falls on the second syllable "认" (rèn). In Figure 2 (b), it indicates that the subjects also assign the stress to the second syllable of the corresponding English word and it turns out to be a misplacement.

In Chinese characters, most words are characterized by two syllables. Primary and secondary stress between them are not distinctly revealed as in English syllables. Many experimental studies have proved that the latter syllable in Chinese words are with a greater loudness than the former one (Yang, 2008). Theoretically speaking, within the PAM framework, old and similar sounds can be obtained more difficultly than new ones. It is less likely for a new L2 category to be formed when the shared similarity is large. Moreover, it is more difficult for L2 learners to perceive a more similar word. Therefore, based on the study which indicates that stress on the latter syllable is the main characteristic of Chinese words, Chinese EFL learners may be influenced to a great extent and thus they assign the stress to the second syllable in English words inappropriately. The negative result can be shown in our study, as in the case of the word recognize. Apart from that, the table below summarizes the frequency of wrong assignment of lexical stress and the rate of it as well.

Table 1 Different locations of misplaced lexical stress

On the second syllable (incorrect %)			On the third and other syllables (incorrect %)		
recognize	5	50%	agriculture	8	80%
fertile	6	60%	recognize	2	20%
substitute	8	80%	vegetable	2	20%
infamous	10	100%	marmalade	8	80%
triangle	10	100%	democrat	5	50%
imagination	4	40%			
interview	4	40%			
relative	5	50%			
politics	5	50%			
promise	5	50%			
Total	63	63%		25	25%

According to the statistics, 63% of the subjects shifted the lexical stress to the second syllable and 25% of them placed the stress to the third and other syllables. Among the words with incorrect stress placement, 70% of which are polysyllabic words. It is obvious that Chinese EFL learners have been greatly influenced by their native language experience and they tend to place the stress on the latter syllable, mostly in polysyllabic words.

5. Conclusion

Lexical stress is a significant feature at the suprasegmental level. It plays an important part in grammar, discourse comprehension and rhythm as well. The purpose of this paper is to reveal the relationship between the experience of L1 (Chinese) and L2 (English) production at the suprasegmental level. The test result of this study is consistent with the hypotheses of the theoretical framework, and shows that the incorrect assignment of lexical stress often occurs in polysyllabic words, and there is a strong tendency of stress shift on the second syllable. The main reason is that native Chinese speakers often assign stress on the second syllable in disyllabic words, and therefore they perceptually assimilate the similarity to English lexical stress. The present results suggest that PAM can be applied to analyze the suprasegmental features and with respect to pedagogical implications, it is essential that Chinese EFL learners should be equipped with adequate phonological awareness with sufficient L2 auditory input. Moreover, they need to be trained systematically in order to make the production of English lexical stress more precisely.

References

[1] Best, C.T. (1995). A direct realist view of cross-language speech perception. In W. Strange (Ed.), Speech Perception and

Linguistic Experience. Theoretical and Methodological Issues (pp. 171-203). Baltimore: York Press.

[2] Boersma, P., & Weenink, D. (2022). Praat: Doing phonetics by computer Version 6.2.08.

[3] Chao, Y.R. (1980). Chinese tone and English stress. In L. R. Waugh & C. H. VanSchooneveld (Eds.), The Melody of Language (pp. 41-44). Baltimore, MD: University Park Press.

[4] Chen, Y., and Xu, Y. (2006). “Production of weak elements in speech—evidence from f0 patterns of neutral tone in standard Chinese,” Phonetica 63, 47–75.

[5] Guo, YB. (2007). The Influence of L2 Experience on L1 at the Suprasegmental Level-Evidence from Minnan Dialect Tone Production. Doctor Dissertation. Fu Jian University.

[6] Li, RB. (2007). Phonological Perceptual Assimilation and the Bilinguals Phonological Awareness. Foreign Languages Research, 5, 1-7.

[7] So, C. K., & Best, C. (2014). Phonetic influences on English and French listeners’

assimilation of mandarin tones to native prosodic categories. Studies in Second Language Acquisition, 36(2), 195–221.

[8] Sun YH. (2009). An Experimental Study on English major’s Perception of English Tense/Lax Vowels. Journal of Luoyang University, 8, 35-38.

[9] Xu Y. (1998). “Consistency of tone-syllable alignment across different syllable structures and speaking rates,” Phonetica 55, 179–203.

[10] Xu Y. (1999). “Effects of tone and focus on the formation and alignment of F0 contours,” J. Phonetics 27, 55–105.

[11] Xu Y., and Liu, F. (2006). “Tonal alignment, syllable structure and coarticulation: Toward an integrated model,” Italian J. Ling. 18, 125–159.

[12] ZHANG, Jiaxiu (2007). The Influence of L1 Experience on the Perception of L2 Tones-Evidence from Xianyou Dialect Speaking Children. Fu Jian University.

About Author: Fenting Xu (1994.03—), female, Han nationality, Nanjing, Jiangsu Province, postgraduate student, School of Foreign Languages, Jiangsu Normal University, Research direction: Linguistics

Fund: Research results of the university-level project “Analysis and Intervention Research on the Production of English Polysyllabic Words by Chinese EFL Learners” (Project number: 2022XKT1120) of Jiangsu Normal University Graduate Research and Practice Innovation Plan in 2022