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Experiment Study on Influence of Chinese Experience on English Phonetic Acquisition at the Perspective of Word Stress

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Abstract

In line with Perceptual Assimilation Model that is concerned with speech perception in second language acquisition, the present study seeks to reveal the relationship between the experience of L1 (Chinese) and L2 (English) production at suprasegmental level. The participants in the experiment are English native speakers and Chinese EFL learners. All the subjects are required to read English words, of which the stresses are recorded for comparison and analysis. The study finds that the occurrences of misplacement of word stress are always in polysyllabic words and there is a strong tendency of stress shift on the second syllable. The major reason for that is as follows: the second or the latter syllable is always stressed in Chinese double-syllable words. As a result, the second syllable of English words is often analogically stressed by Chinese EFL learners. Considering that, it is necessary to provide the EFL learners with sufficient L2 auditory input to develop phonological awareness.

Key words: Language experience; Speech perception; Suprasegmental

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INTRODUCTION

Perceptual Assimilation Mode is concerned with the way which category perception. It claims that language experiences influence the formation and production of speech perception. Nonnative speech will be reconstructed during the process of L2 acquisition. Listeners who have become familiar with the phonological system of a specific language tend to perceptually assimilate unfamiliar nonnative contrasts to their own phonological categories based on the degree of similarity to their native phonological system.

In the domain of second language (L2) acquisition, a great deal of research which are based on the PAM have been made. Most of the research focuses on segmental structures. They ranged differently from phonological perceptual assimilation and the bilinguals phonological awareness (LI, 2007), vowel perception of Chinese students by Sun Yu-hong, the relation between L2 tonal perception (Guo, 2008) and language experiments and language acquisition (Lin, 2009). The present study indicates that phonetic perception of a second language learner is effected by the first language. First language (L1) experiences limit the phonetic perception and production as well (Li, 2007).

Influence of L1 on L2 speech perception at the suprasegmetal level is also involved, and the comparative study of tone perception between intonation language such as Spanish (Xia, 2007), German (Wen, 2009), French and tone language such as Chinese is the main focus (Zhang, 2007).

Although great progresses have been made, there still exist many unsolved issues. First, study object is limited. Many research take the oversea students who are nonnative speakers of Chinese as objects, few study focuses on Chinese EFL learners. Secondly, content of the research is not extensive. Although the present study probes that PAM models can be extended to the phonetic perception at the suprasegmetal level, the

emphasis throughout is on tone perception. Study on stress and intonation are ignored. Thirdly, the combination of theoretical research and application is insufficient. Though many research well testified hypotheses on phonological perception, something should be done with the combination of theoretical result and the phonetic teaching strategies.

THEORY FOUNDATION

Perceptual Assimilation Mode (PAM)

Perceptual Assimilation Mode is the theory which is concerned with category perception. It claims that language experiences influence the formation and production of speech perception. Nonnative speech will be reconstructed during the process of L2 acquisition. Listeners who have become familiar with the phonological system of a specific language tend to perceptually assimilate unfamiliar nonnative contrasts to their own phonological categories based on the degree of similarity to their native phonological system. The sounds of nonnative language fall outside the native phonological space: therefore, they are heard as non-speech sounds.

According to the degree of similarity to their native phonological system, assimilation can exist in different forms. Research on both vowel and consonant contrast prove that it is easier to distinguish the "dissimilar" speech sound of nonnative speech than the familiar ones (Wen, 2009).

Speech Learning Model (SLM)

Flege's Speech Learning Model was assumed in the basic of PAM. According to SLM, L2 sounds can be classified in to identical, similar and new by L2 learners based on their native phonological system. This prediction shares the same idea with PAM. SLM is a typical system which is not only interested in the interaction between LI and L2, but also the relationship between perception and production. A lot of researches have been made which were concerned about the domain of "cross-language". It is the extension of "Transfer".

PROCEDURE

Native language influences L2 speech acquisition. PAM points out that the new sounds can be acquired while old and similar sounds are very difficult or almost impossible to learn at a native-like level. The newer the speech sounds are the easier acquisition will be had. Based on PAM, some hypotheses are probed:

In the process of L2 phonological acquisition, Chinese experience will affect English stress perception and make the misplacement of word stress possible. The ways which Chinese word stress experience influence the output of English word stress can be anticipated.

Tone is categorically perceived by native speakers of tone language and psychophysically processed by speakers of non-tone language. In view of this, the categorical perception of tone language will influence the output of English intonation of Chinese native speakers.

METHODOLOGY

Thirty subjects who are the students majored in English participated in this experiment. Most of them have learned English for more than 8 years. Great influence of Chinese can been found in their English pronunciations. In order to make the contrast, 3 English native speakers are also involved in this experiment.

In order to testify the hypotheses about the word stress, 30 two-syllable Chinese words, such as in.dus.try, 工业 (gōng yè) are selected. According to Chao's view on Chinese words stress, the latter syllable with tone 4 are mainly selected.

These corpuses were read by these subjects and were digitally recorded. The recordings were copied onto the computer and analyzed by Speech Analyzer. The results gained by Speech Analyzer were compared with the native speakers. By means of this experiment, we can testify whether PAM can also apply to the phonological perception of L2 at the suprasegmetal level.

RESULTS AND DISCUSSION

1. Influence of Chinese Experience on English Word stress

Recorded sound signals were turned into figures of sound waves by means of Speech Analyzer. Figures of sound waves differ greatly according to the different placement of word stress. Take "hospital" as example:

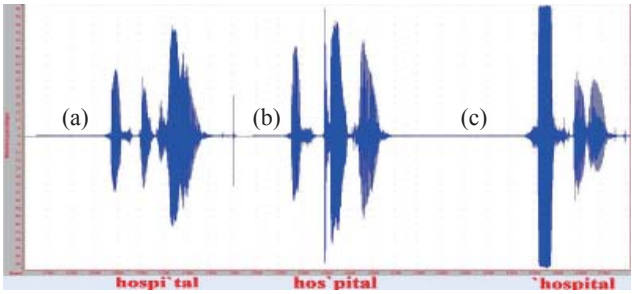

Figure 1

"Hospital" is composed of three syllables hos-pi-tal. Each syllable forms a peach, and the highest one represents the stress of "hospital". The correct stress of "hospital" falls on the first syllable "hos" (Figure 1 (c)). Obvious differences can be found in (b) and (a) which are due to the wrong placements of word stress. According to the statistics, 73% of the subjects (22 subjects) misplace the word stress on the second syllable

(hos`pital) while 6% (2 subjects) misplace the word stress on the third syllable (hopi`tal).

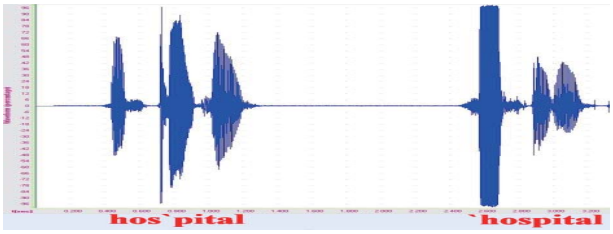

Figure 2

Figure 2 indicates that the images between the English native speaker and the misplacement of word stress "hos`pital" differ greatly. The former one reaches at the second syllable (96-98 percentage, the average of the subjects is 91-95 percentage), the later reaches at the first syllable (96-98 percentage, the average of the native subjects is 94-98 percentage).

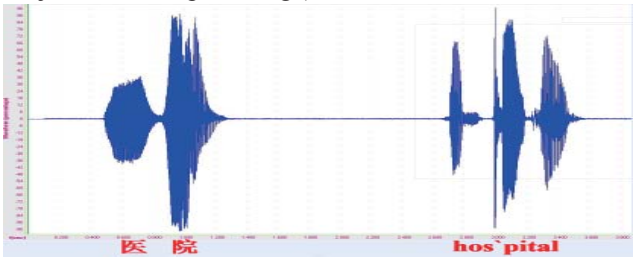

Figure 3

Figure 3 indicates that both Chinese word "医院(yī yuàn)" and the misplacement of word stress "hos`pital" (second syllable) reach at the second syllable yuàn"(院) and"pi"samelly (94-96 percentage).

Word stress in English refers to the syllable which has higher pitch, longer length and stronger intensity comparing with other syllables in a word. It is tone that distinguishes meanings of Chinese words. Most Chinese words are characterized by two syllables. Primary stress and secondary stress in Chinese words are not as clear as English words. Several experimental studies were made to testify Chao's view on Chinese words, namely, the latter character within a Chinese word seems stronger than the former one (Yang, 2008).

According to PAM, new sounds can be acquired while old and similar sounds are very difficult to learn. It is easier for L2 learners to make mistakes during the process of speech acquisition. Influenced by Chinese words which are featured as the latter character is stronger than the former one, EFL always shift the word stress to the second syllable of an English word. That explains the misplacement of the stress "hospital".

Table 1-3 summarize the misplacements of word stress which are influenced by Chinese word stress experience. Table 4 indicates the rate for each.

Table 1
Misplacement on the Second Syllable

	Correct English word pronunciation		Misplacement of word stress		Corresponding Chinese word stress and tone
	Syllable division	Stressed syllable	Stressed syllable		
1	`hos.pi.tal	1	hos`pital	2	医院 (yī yuàn)
2	`in.te.res.ting	1	in`teresting	2	有趣 (yoǔ qù)
3	`ex.ce.llent	1	ex`cellent	2	优秀 (yoū xiù)
4	`per.fect	1	per`fect	2	优秀 (yoū xiù)
5	`in.dus.try	1	in`dustry	2	工业 (gōng yè)
6	`com.for.table	1	com`fortable	2	舒服 (shū fù)
7	`re.la.tive	1	rela`tive	2	关系 (guān xì)
8	`di.li.gent	1	di`ligent	2	努力 (nǔ lì)
9	`po.pu.lar	1	po`pular	2	大众 (dà zhòng)
10	`wa.te.rfall	1	water`fall	2	瀑布 (pùbù)
11	`ob.vi.ous	1	ob`vious	2	显著 (xiǎn zhù)
12	`principle	1	prin`ciple	2	纪律 (jì lǜ)
13	`dead.line	1	dead`line	2	底线 (dǐ xiàn)
14	`ac.ci.dent	1	ac`cident	2	事故 (shì gù)
15	`tech.nic	1	tech`nic	2	技术 (jì shù)
16	`sim.pli.fy	1	sim`plify	2	简化 (jiǎn huà)
17	`con.tact	1	con`tact	2	接触 (jiē chù)

Table 2
Misplacement on the Third and Other Syllables

	Correct English word pronunciation		Misplacement of word stress		Corresponding Chinese Word stress and tone
	Syllable division	Stressed syllable	Stressed syllable		
1	`fer.ti.li.zer	1	ferti`lizer	3	肥料 (féi liào)
2	` in.ter.net	1	inter`net	3	网络 (wǎng luò)
3	`su.per.mar.ket	1	super`market	3	超市 (chāo shì)
4	`at.mos.phere	1	atmos`phere	3	环境 (huán jìng)
5	`em.pha.size	1	empha`size	3	强调 (qiáng diào)
6	`be.ne.fit	1	bene`fit	3	收获 (shōu huò)
7	`ter.ri.fy	1	terri`fy	3	恐吓 (kǒng hè)
8	`ag.ri.cul.ture	1	agri`culture	3	农业 (nóng yè)

Table 3
Words with Correct Stress

	Correct English word pronunciation	Stressed syllable	Corresponding Chinese words stress and tone
1	`ge.ne.rous	1	大方 (dà fāng)
2	`trans.plant	1	移植 (yí zhí)
3	`glo.rious	1	光荣 (guāng róng)
4	`pro.mise	1	许诺 (xǔ nuò)
5	`har.mo.ny	1	和谐 (hé xié)

Table 4
Rate Analysis

Correct word stress	1	1	1	1
Corresponding Chinese word and the tone on the second syllable	4	4	1, 2	4
Misplacement of word stress	2	3	No misplacement	No misplacement
Corpus	17	8t	4	1
Rate	57%	27%	13%	3%
Time of mistakes	384	176	16	4

According to the statistics, 57% of the subjects shift the stress to the second syllable which the second syllable of the corresponding Chinese word has tone 4 (\); 27% of the subjects shift the stress to the third syllable which the second syllable of the corresponding Chinese word has tone 4 (\); Few mistakes are made for the word stress which the second syllable of the corresponding Chinese word does not has tone 4 (\).The numbers for each kind of mistake are 384, 176 and 20. It obviously shows that EFL learners are greatly influenced by language experience of Chinese word stress, and the words stress are misplaced on the latter syllable.

CONCLUSION

Word stress is an important phonetic feature at the suprasegmental level. It plays an important role in grammar, discourse comprehension and rhythm of English. This paper seeks to reveal the relationship between the experience of L1 (Chinese) and L2 (English) production at suprasegmental level. Two main points are found:

First, the pattern of L2 acquisition might be analogous at the segmental and suprasegmental levels, and PAM and SLM might be applicable to the perception of suprasegments. Second, in line with Perceptual Assimilation Model that is concerned with speech perception in second language acquisition, this paper finds that the occurrences of misplacement of word stress are always in polysyllabic words and there is a strong tendency of stress shift on the second syllable. The major reason for that is as follows: the second or the latter syllable is always stressed in Chinese double-syllable words. As a result, the second syllable of English words is often analogically stressed by Chinese EFL learners. Considering that, it is necessary to provide the EFL learners with sufficient L2 auditory input to develop phonological awareness.

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