A Study of Chinese EFL Learners’ Acquisition of English Fricatives

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Abstract
This study attempts to examine the Chinese EFL learner’s acquisition of English fricatives by involving 32 non-English major and 26 English major freshmen of Wuhan University as participants. The data were collected through a listening discrimination test and a reading discrimination test. The results show that (1) all subjects’ performance in both tests is unsatisfactory. (2) With regard to listening discrimination test, both groups of participants have difficulty in making distinctions between /ð/ vs. /z/ and /w/ vs. /v/. As to reading exercise, all participants cannot discriminate between /ʃ/ and /ʒ/, /θ/ and /ð/ quite well. (3) English major participants have better performance than non-English major participants, both in recognition and production of sounds. This is probably ascribed to the course on English pronunciation and intonation they attend in their first term in university.

Keywords
English fricatives, acquisition, pronunciation, listening

2 Literature Review
As a clear and comprehensible pronunciation is the basis for successful communication, it is important to examine how Chinese learners acquire English sounds. Being the largest group of consonants in English, fricatives may pose various learning problems for our learners. Cheng and He (2008) is one of the few papers discussing the problems Chinese EFL learners’ meet in the acquisition of English fricatives. In their analysis of oral segmental errors of advanced English learners, they found that substitution errors are of the highest frequency in learners’ segmental pronunciation errors, among which the fricatives /v/, /ð/, /z/ greatly outcome the other consonants. According to their research, learners are likely to replace /ð/ with /d/, /z/ with /s/, /v/ with /w/ in mandarin Chinese respectively. And they hold that as there are no such sounds in Chinese, learners tend to substitute the new sounds in English with the similar sounds in mandarin Chinese.

The similar conclusion can be drawn from other studies, such as Chen Hua and Bi Ran’s (2008), Sui Zhenhua and Li Chuanbin’s (1998) study. Much the same as Cheng Chunmei and He Anping (2008), the studies mentioned above found that substitution of consonants, including fricatives, is the major problem for Chinese learners. In addition, their research shows that Chinese learners have difficulty telling the difference between /v/ and /w/. And they have ascribed these mistakes to principle of least effort. That is to say, when confronted with new sounds which are not familiar to learners, they are liable to use the most similar ones to avoid the difficulty in pronunciation.

Addition is another major problem found in learners’ acquisition of fricatives. Using optimality theory to analyze epenthesis in the English complex codes produced by native speakers of Beijing dialect, Fan (2008) points out that it is common for
Chinese learners to add /u/ in pronouncing /θ/ which results from negative influence of mandarin Chinese. For example, subjects tend to pronounce self as /sɛlu/ which is inaccurate because of an additional /ɔ/ and /u/.

More mistakes have been found in fricatives production. Feng (2005) carried out a study to investigate the phenomenon of Chinese learners’ swallowing sounds. And the result demonstrates that swallowing sounds occurs in consonants most frequently, among which fricatives being the second largest group posing obstacles for learners. And he also ascribes this kind of faulty acquisition mainly to the difference between English and mandarin Chinese system.

Except for the analysis of the problems Chinese EFL learners meet when acquiring English fricatives, researchers have also made effort to find ways to solve the problems.

To tackle the problem that Chinese learners have in distinguishing /v/ and /w/, Xie Mi (2009) conducted an experiment to examine the effect of frequency on pronunciation correction by means of microgenetic method. The results of the experiment shows that (1) task frequency brings great advantages to pronunciation correction; (2) while input frequency and output frequency both contribute a lot to pronunciation correction, input frequency outweighs much more. Rau and Chang (2009) examined Chinese EFL learner production of English interdental fricative /θ/ by using a variationist framework. The results demonstrated that the accurate production of /θ/ is mainly ascribed to immediate phonetic environment and speech style. And this study has, to some extent, drawn the same conclusion with Xiemi’s (2009). This is, frequency can facilitate learners’ accurate production of /θ/.

In her investigation on how to pronounce fricatives correctly, Gao Haiping (2002) held the same opinion with Sui Zhenhua and Li Chuanbin(1998), ascribing Chinese learners’ difficulty of acquiring English fricatives /ʃ/, /ʒ/, /θ/, /ð/ to the lack of equivalents in mandarin Chinese. And she also suggested that teachers are supposed to make comparison between the two language systems so as to make the students clear about the pronunciation of these sounds.

By comparing English fricatives and Chinese ones, Wu Jianxiao (2008) analyzed the errors in Chinese students’ pronunciation of English fricatives and attributed the main reasons for these mistakes to the lack of equivalents in mandarin Chinese and negative transfer of learners’ mother tongue.

To summarize, the previous research suggests that Chinese EFL learners have various of problems in acquiring English fricatives, and the main reason is the lack of real equivalents for the English fricatives in Mandarin Chinese and the negative transfer of the mother tongue. It is generally accepted that without clear and comprehensible pronunciation, we cannot have successful communication with others. And inadequate pronunciation may lead to poor communication even with the result of disorienting the listener. Therefore, it is of great importance to examine Chinese EFL learners’ acquisition of English fricatives.

3 Methodology

3.1 Subjects

This study involves 26 English major and 32 non-English major freshmen at Wuhan University as participants. As almost all of them are at the same age, the educational systems in China they have been involved in have little difference. In addition, different majors have different English classes with respective focuses. Those English majors have special English pronunciation training class with pronunciation correction as the focus, whereas those non-English majors only have comprehensive English class without special emphasis on English pronunciation. Therefore subjects of two majors are chosen to make comparison to find out whether English pronunciation teaching has helped learners make any improvement in their acquisition of English sounds.

3.2 Instruments

As learners’ acquisition of sounds need to be measured from two aspects, namely, listening (comprehension) and speaking (production), two instruments are designed for this study accordingly, that is, a listening discrimination test and a reading exercise (see Appendices 1 and 2). The listening discrimination test is prepared for examining the subjects’ discrimination of pairs of sounds in listening comprehension, and the reading exercise is designed to test subjects’ actual oral production of English fricatives. And the detailed information of the two tests is listed as follows.

(1) Listening Discrimination Test

The listening discrimination test mainly consists of two sections.

In order to get familiar with their background, the subjects are required to fill in their personal information in the first section of the test paper, covering the topics about their main languages communicating with their parents at home; impact by surroundings, (such as the middle schools they
graduated from), whether or not their middle school attach importance to their English pronunciation training, their own attitude towards English pronunciation training.

The main body of the test paper lies in the second section which is designed to examine the subjects’ discrimination of sounds. Seven pairs of sounds, namely /θ/ and /s/, /w/ and /v/, /s/ and /z/, /θ/ and /s/, /θ/ and /s/, /θ/ and /δ/, are designed to be included in words for learners to make distinction so as to examine subjects’ acquisition of fricatives. Subjects are required to listen to the recording and choose the word they hear from each pair of words in the test paper. To make sure that subjects’ choices are based on their recognition of the specific sound, these pairs of sounds are designed to appear in pairs of words which are different only in minimal pairs. And as there are no sufficient minimal pairs for sounds which are different only in minimal pairs. And as sounds are designed to appear in pairs of words for subjects to make distinction so as to examine subjects’ acquisition of fricatives. Subjects are required to listen to the recording and choose the word they hear from each pair of words in the test paper. To avoid the subjects’ consciousness of the difference between each two words in the pair, all the words in the reading exercise are mixed and listed randomly, as shown in appendix 2. To check the learners’ oral production, all the students are required to read all the words in the list.

3.3 Procedures

The study was carried out during regular English teaching class. Firstly, the subjects were asked to fill in the personal information in Section One in listening test paper as honestly as possible. After that they were required to listen to the recording in Section Two and tick the words or sounds they had heard. All of their papers were submitted to the researchers after they finished the listening test. Secondly, they were invited to another quiet classroom one by one to read each word in the reading test paper. And their oral productions were recorded by the researchers. All 26 English major participants and 32 non-English major participants handed in both listening discrimination test papers and oral production recordings. Hence, all their papers and recordings are regarded to be valid for this study.

With regard to the listening discrimination test, every 1 point will be given to the subject when he or she has chosen the word or sound actually read by the speaker in each pair. As there are altogether 42 pairs of words, the full mark for the listening discrimination test is 42 points.

As to the reading test, subjects’ recordings were submitted to two professional teachers who are experienced in teaching English pronunciation. RP is used as the reference in this study to judge the learner’s pronunciation of English fricatives, and evaluation of subjects’ pronunciation is based on their actual oral production of target sounds only
regardless of the other sounds in the words. The inter-rater consistency for these two teachers’ scoring of every subject is higher than 90%, with the disagreement being solved by their discussion. Every 1 point will be given to one word produced comprehensibly by the subjects. And as there are 42 words in all, the full mark for reading exercise is 42 points.

4 Results and discussion

All of the subjects’ scores for the two categories are input into the computer, and the Descriptive Statistics are made using computer software SPSS 13.0 and Microsoft office excel.

4.1 Results of the listening discrimination test

Table 1: Results of the Listening discrimination test for English major participants

<table>
<thead>
<tr>
<th>Listening</th>
<th>N</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>72.55%</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>88.5%</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>

Table 2: Results of the Listening discrimination test for non-English major participants

<table>
<thead>
<tr>
<th>Listening</th>
<th>N</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>81.33%</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>89.17%</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>

It can be seen from Table 1 and Table 2 that:

(1) Generally speaking, all subjects’ performance in the listening test is unsatisfactory. While the English major participants achieve an average accuracy rate of 84.33%, the correctness percentage for non-English major participants is 72.55%.

(2) Both groups have the lowest scores for group /θ/ vs. /s/, with accuracy rates for English major participants and non-English major participants being 63.5% (SD 1.357) and 44.83% (1.289) respectively.

(3) Their performance for group /w/ vs. /v/ rank the last but one among all groups for both participants. Their accuracy rates for this pair are 80.83% (1.19) for English major participants and 63% (1.289) for non-English major participants respectively.

(4) Both groups of participants have comparatively better performance for groups /θ/ vs. /s/, /θ/ vs. /s/, /s/ vs. /z/, with scores for English major participants and non-English major participants being 89.67%, 90.33%, 89.17% and 88.5%, 87.5%, 81.33% respectively.

(5) It can be found that English major participants have better performance than non-English major participants as they have a higher accuracy rate for each pair of sounds.

4.2 Results of the reading test

Table 3: Results of the reading test for English major participants

<table>
<thead>
<tr>
<th>Reading</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>88.5%</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>91.67%</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>

Table 4: Results of the reading test for non-English major participants

<table>
<thead>
<tr>
<th>Reading</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>80.07%</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>81.83%</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>

(1) All subjects’ achievements in reading test are quite low. Only 86.45% of English major participants and 80.07% of non-English major participants can produce fricatives comprehensibly.

(2) All subjects’ oral production of pair /θ/ vs. /s/ is the most difficult among all the groups, with accuracy rate being 98.67% and 91.67% for English major participants and non-English major participants separately. In addition, English major participants’ oral production of pair /θ/ vs. /v/ arrives at an accuracy rate of 96.17%.

(3) Both groups of participants have the worst performance in producing the pair /θ/ vs. /s/ orally. While 68.67% of English major participants’ oral production is regarded to be comprehensible, the accuracy rate of this pair for non-English major participants is 61%.

(4) Despite their different majors, all participants have similar advantages in English pronunciation. More specifically, their performance on pairs /θ/ vs. /s/ vs. /z/ are better than pairs /θ/ vs. /s/ and /θ/ vs. /θ/.

(5) On the whole, English major participants have better performance in the reading test than non-English major participants as they have a higher mean for each pair of sounds.

To summarize, The major findings of the study are as follows.

1. Generally speaking, all subjects’
performance in both tests are unsatisfactory.

2. With regard to listening discrimination test, both groups of participants have difficulty in making distinctions between /ð/ vs. /z/ and /w/ vs. /v/. As to reading exercise, all participants cannot discriminate between /ʃ/ and /ʒ/, /θ/ and /ð/ quite well.

3. While all the subjects have a good performance in groups /ʃ/ vs. /ʒ/ and /s/ vs. /z/, their scores concerning groups /θ/ vs. /ð/ and /w/ vs. /v/ are comparatively low.

There are some possible explanations for learners’ performance concerning English fricatives.

(1) Relatively good performance concerning /ʃ/, /s/, /z/.

Subjects’ relatively good performance of the sounds /ʃ/, /s/, /z/ may be owing to the positive transfer of their first language. To be specific, there are fricatives /ʃ/, /s/, and affricate /ts/ in mandarin Chinese which sound much the same as English fricatives /ʃ/, /s/, /z/. This seeming similarity between English and Chinese are assumed to be beneficial for learners to master these three English sounds faster and better. When they learn English sounds, they have already been familiar with the actual way of articulation of Chinese sounds /ʃ/, /s/, /ts/ and very sensitive to them when they catch these sounds. With the innate knowledge in their minds, they can transfer the knowledge of these Chinese sounds into English and therefore speed up their acquisition of these English sounds. Hence, they can make the right choice without too much difficulty in listening discrimination and produce much more comprehensible sounds orally. This is the positive transfer of their mother tongue.

(2) Subjects’ difficulty in making distinctions between /w/ and /v/.

Negative transfer seems to account for many errors learners make in perceiving and producing the pair /v/ vs. /w/. Negative transfer, which is also known as interference, is the negative influence or hindrance of L1 on L2. That is to say, learners’ use of a pattern or rule of L1 will lead to an error or mistake in L2.

With the inspection of subjects’ oral production in recordings, it can be found that many subjects are liable to replace /v/ with /w/ when they produce these two sounds themselves. Perhaps the main reason for this substitution is the lack of voiced fricative as /v/ in mandarin Chinese. Because of no equivalents or semi-equivalent for /v/ in mandarin Chinese, subjects are unfamiliar with the accurate way of articulation, in other words, they have no idea of how to pronounce the sound /v/ and therefore replace it with /w/ to save effort. This is the negative transfer of their mother tongue.

(3) Learners’ poor performance of /θ/ /ð/ and /ʃ/ /ʒ/

As is shown in the previous tables, subjects have the worst performance as to pairs /ʃ/ vs. /ʒ/ and /θ/ vs. /ð/. The grades for both groups, in particular those in pronunciation, are evidently lower than other groups. This can also be accounted, to some extent, to the negative transfer of their mother tongue. Same as the sound /v/, there are no dental fricatives /θ/ /ð/ or palato-alveolar /ʃ/ /ʒ/ in Mandarin Chinese. In other words, there is no equivalency four these four sounds and subjects are not familiar with the correct patterns of articulation. Therefore, when confronted with these sounds which are new to them, they tend to search for a more familiar sound to save effort, leading to different kinds of production. This is also a demonstration of negative transfer of native language.

5 Conclusion

The results of the study, on the whole, provide some suggestions for our English teaching and learning.

Firstly, the study reveals both strengths and weaknesses of Chinese EFL learners’ acquisition of English fricatives, which could help learners and teachers to be clear about the directions in English learning and teaching. On the whole, learners have encountered many difficulties in English fricative acquisition, as they have accuracy rates over 90% for only few groups of sounds. As weakness has been figured out to exist in pairs /w/ vs. /v/, /θ/ vs. /s/, /ð/ vs. /z/, /ʃ/ vs. /ʒ/, top priority should be given to these sounds in case that the learners feel confused and therefore make mistakes.

Secondly, as the positive and negative influence of Chinese mandarin has been proven to interfere with learners’ English learning, it is suggested that teachers exploit the positive transfer and avoid negative transfer so as to enhance English teaching efficiently.

Thirdly, it was found that English major participants’ have overall advantages over non-English major participants. This may be owing to the pronunciation training classes they have attended in the first semester. This indicates that pronunciation training class plays an important role in English learning. Therefore, it is suggested that English pronunciation training classes should be involved not only for English majors but also for
non-English majors in colleges.

6 References and appendices

6.1 References


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6.2 Appendices

Appendix 1: Listening Comprehension

Section One

A: (1) a. hat b. pet (2) a. meat b. meet (3) a. save b. safe (4) a. seal b. zeal (5) a. mouth b. mouse (6) a. server b. surfer
B: (1) a. net b. vet (2) a. net b. vet (3) a. net b. vet (4) a. net b. vet (5) a. net b. vet (6) a. net b. vet

Section Two

Part 1

A: (1) a. lie b. lie (2) a. sink b. sink (3) a. vine b. wine (4) a. half b. halve (5) a. lacy b. lazy (6) a. wary b. vary
B: (1) a. leg b. leg (2) a. leg b. leg (3) a. leg b. leg (4) a. leg b. leg (5) a. leg b. leg (6) a. leg b. leg

Part 2

Listen to the recording and choose the sound that has appeared in each word you hear.

Group A
Group B
A: (1) a. leaf b. leave (2) a. verse b. verse (3) a. vein b. vine (4) a. thing b. sing (5) a. lacy b. lazy (6) a. vary b. wary

Appendix 2: Reading Exercise

Appendices
请先报出你的姓名、学号，然后按照序号朗读每个单词。

我的姓名是:____________
我的学号是:____________

1. explosion
2. serving
3. thing
4. veil
5. cause
6. there
7. a
t8. rest
9. face
10. walk
11. breathe
12. vest
13. expression
14. stuck
15. breeze
16. cover
17. occasion
18. starting
19. face
20. theme
21. leaf

22. school
23. then
24. breath
25. a loving
26. pleasure
27. rest
28. walk
29. veil
30. face
31. walk
32. hair
33. rest
34. breathe
35. thick
36. confession
37. love
38. hair
39. faith
40. breath
41. rest
42. mouth

姓名______           专业/班级______________        学号________
姓名______           专业/班级______________        学号________
姓名______           专业/班级______________        学号________
姓名______           专业/班级______________        学号________