A study of voiceless inter-dental fricative [θ], [ð] sounds and alveolar liquid [r] sound among Chinese learners of English at a higher educational institution in Malaysia

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Abstract - This study aims to investigate the pronunciation mistakes in English in accordance with the phonetic study of voiceless and voiced inter-dental fricatives [θ], [ð] and alveolar liquid [r] sounds among Chinese learners of English at University Utara Malaysia (UUM). In order to find out non-native English learner pronunciation errors that reflect the interference of different sound systems on English pronunciation, speech samples of the subjects' pronunciation were taken through words in terms of [θ], [ð] and [r] sounds. Data was collected by contracting survey through structure; six Chinese students were selected by using non-probability convenient sampling technique. Using a reading 30 wordlist worksheets as the instrument of this research, the respondents' pronunciation was observed and assessed by using native/phonetics expert speaker and also ensured by the evaluation form. In addition, data of this study was analysed by SPSS (22 version) software package. Data was collected and analysed with the guidance of phonemic transcription of Cambridge English Pronouncing Dictionary. Using different pronunciation analysis, potential difficulties of English pronunciation for the three subjects were listed by comparing the sound systems of English among Chinese learners. Moreover, the pronunciation errors of subjects were diagnosed into categories based on Error Analysis. The findings would help to provide a clear understanding of the common characteristics of pronunciation errors made by the subjects. Finally, some recommendations have been proposed to overcome the pronunciation difficulties of non-native English learners.

Keywords: pronunciation, Chinese learners, dental and liquid sound, second language learner

1. Introduction

The students of Chinese language background face problem pronouncing English sounds. It is predicted that the interference category of languages will be convoluted due to the association of more than two languages. Yiing (2011) argues that phonetically, it is certainly difficult for Chinese English learners to utter a few English sounds as those sounds do not exist in their local dialects. For example, the inter-dental fricatives [θ] and [ð] sounds and alveolar liquid [r] sound of English do not exist in Chinese (Yiing, 2011). Moreover, Zhang (2009b) unequivocally express "the spot and way of explanation capacity are diverse in English and Chinese."(p. 142).

There are various ways of pronouncing a particular English word among the non-native speakers, and the way of pronouncing depends on learners' background. Generally, most of the non-native English speakers' pronunciation is affected by their first language. According to Gao (2005), many scholars believe that the native language interference plays a big role in most of the mistakes made by English learners at the time of learning the language. Similarly, Zhang and Yin (2009) also suggest that the pronunciation of second language learners gets influenced by their "first language interference, learner's age, learner's attitude and psychology, prior pronunciation instruction, and insufficient language knowledge of English phonology and phonetics.'' (p. 142).

Non-native English speakers around the world usually have their own way of pronouncing English sounds. The own way of pronouncing English sounds happens due to the interference of their native language. According to Lott (1983), interference refers to "the errors made by learners in using the target language, and it can be traced back to the learners' native language." (p. 256)). The interference of native language also happens among Chinese learners of English. Both Chinese and English languages have distinctively different language system. Focusing solely on the production of sounds, the different segmental features of these two languages can still be clearly observed.

As it has been mentioned previously, Yiing (2011) claims that phonetically, it is definitely difficult for Chinese English learners to produce some English sounds as those sounds do not exist in their native language. For instance, the voiceless inter-dental fricatives [θ] and [ð] sound of English do not exist in Chinese (Yiing, 2011). Additionally, Zhang and Yin (2009) strongly state "the place and manner of articulation function are different in English and Chinese," (p. 142). As an example, native speakers of Mandarin view the [r] sound as a voiced pair to their voiceless [ʃ] sound (Zhang & Yin, 2009). Keeping the above-mentioned background, the present study aimed at delving into the ways and the extent of pronouncing the mentioned inter-dental fricatives by Chinese speakers at the time of their speaking English.

The purpose for this study is to investigate different pronunciation of English sounds, such as inter-dental fricatives [θ], [ð] and alveolar liquid [r] sounds by Chinese undergraduates at University Utara Malaysia. The study aimed at researching normal qualities in pronunciation mistakes experienced by the six undergraduates, taking into account the idea of flawless English sound. It is believed that the found results of the present research will contribute to English language educators/mentors/teachers for comprehending the qualities of articulation mistakes and enhancing the undergraduates' mindfulness and comprehension of the impedance of distinctive sound frameworks on English elocution or pronunciation.

Research Questions:
The following research questions are formulated to address the issues related to this study.

1. How do Chinese learners pronounce inter-dental fricatives sounds [θ], [ð] and alveolar liquid [r] sound?
2. And to what extent do the changes of pronunciation happen?

The research questions expect to inquire the normal attributes of pronunciation errors made by Chinese undergraduates and look into the impact of their local dialect on English articulation.

Most researchers agree that the learners' first language influences the pronunciation of the target language and is a significant factor in accounting for foreign accents. So called interference or interference from the first language is likely to cause errors in aspiration, stress, and intonation in the target language. Some Chinese students tend to have difficulty with English sounds because they are deeply influenced by similar Chinese sounds. However, they are very different from each other. A particular sound which does not exist in the native language can, therefore, pose difficulty for the second language learners to produce or sometimes the learners try to substitute those sounds with similar ones in their mother tongue. These sounds include both vowels and consonants. For example, there are no vowels like /æ/, /ɚu/, and /Ĭɳ/, etc. or no such consonants as /ð/, /ş/. Therefore, first of all learners have trouble perceiving these sounds; consequently, they try to find the nearest equivalents to substitute those new sounds. A typical example will be the substitution of /s/ or /z/ for the English /ð/, /ai/ or /e/ for the English /æ/ as in the word 'that' (Chen, 1983).

A sound does exist in the native language, but the place of articulation and the manner of articulation of the sound in two languages are quite different. The erroneous substitution takes place here as well. For instance, the English /r/ and /ɖ/ are very different from the Chinese /sh/ and /r/. Therefore, it is not surprising when the words 'English', 'pronunciation', 'rose' and 'rise' are uncomfortably heard when they are produced by English as a Second Language (ESL) learners.

Definitions of Language Transfer
The notion of transfer is one of the key concepts in the behaviourist school. Language transfer refers to speakers or writers applying knowledge from their native language to a second language (Wikipedia, 2013). In practice, transfer has attracted people of different academic backgrounds and led researchers to different interpretations and definitions of the term. Sharwood-Smith and Kellerman (1986) have argued that a superordinate term that is theory-neutral is needed and suggested cross-linguistic influence. For instance, English consonants /b/, /p/, /d/, /t/, /g/, /k/ are similar to Chinese /b/, /p/, /d/, /t/, /g/, /k/, and Chinese learners of English can acquire them with ease. However, some English phonemes, such as /i/, /ʌ/, /θ/, /ɔ/, /ð/ do not exist in Chinese, so it is more difficult for Chinese learners of English to acquire them. Sometimes, influenced by their native language, the Chinese learners will probably replace them with their similar counterparts of /i/, /a/, /s/, /o/, /z/ in Chinese. Hence, the negative transfer or interference occurs and results in errors.

The Impact of L1 Negative Phonological Transfer on L2 Word Identification and Production

When acquiring the L1 (first language), children identify phonemes and extract phonetics regularities from the speech signals they are exposed to. To L2 (second language) learners, the learning of the L2 sounds is likely to be influenced by the L1 phonetic system, and this occurs especially when some L2 phonemes do not exist in learners' L1. The L1 phonological system would function like a sieve subjecting to the L2 phonemes for adapting to its structure (Sebastian-Galles et al, 2005). Therefore, L2 learners tend to assimilate those L2 phonemes into their L1 phonemic categories (Pallier et al, 2001). For example, it is well documented that Japanese English learners substitute the English /r/ and /l/ with the Japanese /l/ (Hattori & Iverson, 2009). This phenomenon, termed as negative phonological transfer, may not only cause L2 learners to have difficulties in L2 word identification and production but also result in foreign accent as well. In addition, a study related to the field by Gao (2005) associates that pronunciation difficulties analysis which relates a case study that employs the use of native language linguistic background for understanding a Chinese English learner's pronunciation problem.

Concerning L2 learners, or even to those who have sufficient exposure to the L2, correct identification and production of L2 phonemes constantly prove to be a problem (Flege et al, 1999). For example, the English phonemes /θ/ and /ð/ do not exist in many languages. Consequently, they pose a great difficulty for L2 English learners. The two sounds are usually replaced by different phonemes by L2 learners with distinctive L1 backgrounds. For instance, German and French English learners usually replace /θ/ with /s/ (Brannen, 2002). Lambacher et al. (1997) found that Japanese learners of English had considerable difficulty distinguishing /θ/ and /s/, and they constantly assimilate /θ/ into the phonetic category of /s/. Brown (2000) has compared the acquisition of /θ/ and /ð/ by Chinese and Korean learners of English and found that they both substitute /θ/ and /ð/ with their L1 phonemes (s)2 and (d). Other studies also provide support for this finding (e.g. Rau et al., 2009).

2. Method

This research intends to investigate the ways and extent of English pronunciation of voiceless and voiced inter-dental fricative [θ] and [ð] sounds and alveolar liquid [r] sound among Chinese learners of English at University Utara Malaysia. Based on many past researches, most Chinese learners of English face difficulties in learning and pronouncing English words due to the different structure and system of English language and their mother tongue, Chinese. This paper has concentrated on a relative investigation of international language articulation (English pronunciation), and it is better to lead it, utilizing qualitative and quantitative research approach.

Research Design
Observation analysis was chosen concerning the illustration of the research design on separate pronunciation, including three particular English sounds [θ], [ð] and [r] that were picked toward specialists similarly as those centred for perception. Using a reading 30 wordlist worksheets as the instrument of this research, the respondents'

pronunciation was observed and assessed using by native/phonetics expert speaker and also ensured by the evaluation form.

Sample and Population

The sample of this research was included six Chinese students (three males and three females) from University Utara Malaysia. These undergraduates spoke the similar local dialect. All of them had similar background, and they studied in China where Chinese language was the medium of instruction. English was taught as an extra subject under the school curriculum.

Instruments and Procedure

A list of words was given. An audio tape recorder and symphony hand set were used for recording. The list comprised 30 words in terms of inter-dental fricatives [θ] and [ð] sounds and also alveolar liquid [r] sounds. The words prepared in the word list were mostly common words in order to make the respondents feel more relaxed and unaware what words were being analysed.

Analysis Plan

A list of 30 words were given in terms of three sounds [θ], [ð] and [r]. Those words were designed to diagnose pronunciation difficulties of the three subjects. The individuals' words were pronunciation challenges of the respondents. With respect to the respondents' local dialect (Mandarin Chinese), their pronunciation errors were diagnosed. In the same time, some words which might be under the influence of Chinese Language were also included to examine the errors. After collecting data by recording the selected wordlist, the analysis process was done in three steps, firstly by data entry, and secondly by processing and analysis where statistical pie charts and tables were used to compare and analyse the data in this research. Thirdly, this study had also been tested by using SPSS software.

3. Results and Discussion

Gender total mistakes: Respondents' mistakes regarding 'inter-dental fricatives [θ] and [ð] sounds'

Table 1 depicts the number of total mistakes according to the age factor, and it shows that one male respondent percentage of total mistakes was 15 % out of 100 percent of mistakes, 16% of mistakes done by the second male respondent while the third respondent's percentage was 17%. Concerning male respondents who took part in this study, 16.00 % percent of mistakes was done by two respondents; 18.00% percentage out of 100 percentage was done by female respondents who took part in this study.

Table 1 Gender Total Mistakes

		Total				Total
		15.00	16.00	17.00	18.00	
Gender	Male	1	1	1	0	3
	Female	0	2	0	1	3
	Total	1	3	1	1	6

Graph 1 shows the total percentage of mistakes done by male and female respondents. The male percentage had 51.2% of mistakes in the production of the targeted words while the female respondents' percentage was 48.98% of mistakes in the production of the targeted words.
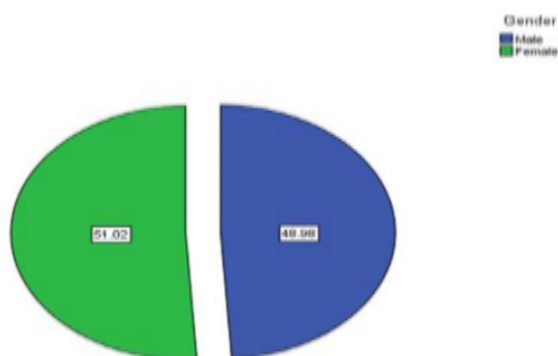

Figure 1 Graph of total mistakes

Substitution of [θ] by /t/
Table 2 shows that respondents pronounced differently, and the number of total substitutions of [θ] by /t/ was done by the male respondent one who had 1 substitution, and respondent two had four (4) substitutions of [θ] by /t/ while the third respondent made 6 substitutions of [θ] by /t/. Regarding the female respondents' substitutions of [θ] by /t/, respondent one made six (6) substitutions of [θ] by /t/; the second female respondent made nine (9) substitutions of [θ] by /t/ while the third respondent made twelve (12) substitutions of [θ] by /t/.

Table 2 Substitution of [θ] by /t/

		[t] sound				
		1	4	6	9	12
		Count	Count	Count	Count	Count
Gender	Male	1	1	1	0	0
	Female	0	0	1	1	1

The pie chart of figure 2 depicts the percentage of 71 % of the total percentage of the respondents who took part in this study. This percentage shows that the female

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respondents had the first rate of the substitution of the [θ] by /t/ sound. As this sound is considered a challenging sound to them.
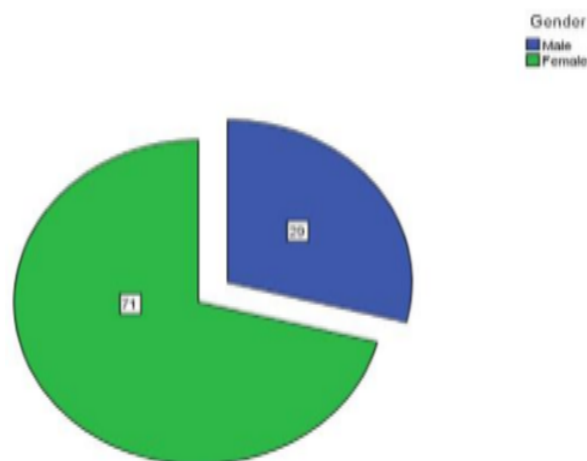

Figure 2 Substitution [θ] by /t/

Substitution of [ð] by /d/

Table 3 showcases the number of total substitutions; the substitution of [ð] by /d/ was done by the male and female respondents who had the same number and the same rate. Table 3 showed that two substitutions of [ð] by /d/ were done by one male and one female. In addition, Table 3 showed that three substitutions of [ð] by /d/ were done by one male and one female. Furthermore, the table showed that four substitutions of [ð] by /d/ were done by one male and one female.

Table 3 Substitution of [ð] by /d/

		[d] sound		
		2	3	4
		Count	Count	Count
Gender	Male	1	1	1
	Female	1	1	1

The pie chart of figure 3 depicts the percentage of 50% of the total percentage of the respondents who took part in this study. This percentage shows that the male respondents as well as female respondents had the same rate of the substitution of the [ð] by /d/sound. As this sound is considered a challenging sound to them.
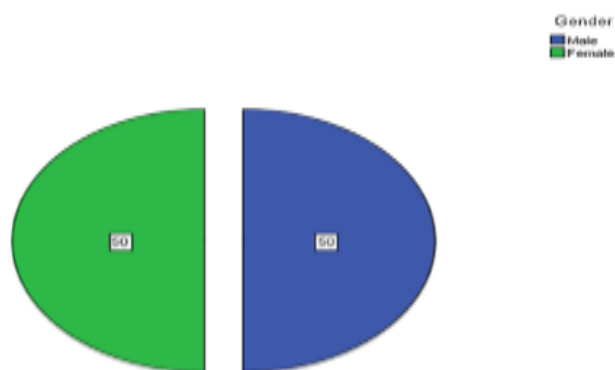
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Figure 3 Substitution of [ð] by /d/

Alveolar liquid [r] sound
Demographic Profile of Respondents
From the demographic profile of respondents, it was found that out of six (6) respondents, three (3) were male and three (3) were female respondents. All the respondents were undergraduate students at Universiti Utara Malaysia. This study found that respondents pronounced/used the substitution of [l] in position of [r] sound. They showed different pronunciation/mistakes by respondents.

Substitution of [r] by /l/
Respondents pronounced differently regarding alveolar liquid [r] sound: In this variable/ question, the respondents pronounced differently regarding the substitutions of /l/ in terms of [r] sound i.e. three male respondents pronounced [r] sound incorrectly by substitution /l/. Though, a female pronounced correctly out of three respondents.

Table 4 Substitution of [r] by /l/

		Gender	
		Male	Female
		Count	Count
Really	Correct	0	1
	Incorrect	3	2

As it is shown in Table 5, respondents pronounced alveolar liquid [r] sound differently. In this variable/question, respondents pronounced differently regarding the substitutions /l/ in terms of [r] sound i.e. two male respondents pronounced [r] sound incorrectly by substitution of /l/, and only one pronounced correctly though two female students out of three respondents pronounced correctly.

Table Substitution of [l] by /r/

		Gender	
		Male	Female
		Count	Count
Problems	Correct	1	2
	Incorrect	2	1

As shown in Table 6**,** all respondents pronounced differently regarding alveolar liquid [r] sound. Concerning this variable/question, respondents pronounced differently regarding the substitutions of /l/ in terms of [r] sound i.e. three male respondents pronounced [r] sound incorrectly by substitution of /l/. In addition, three female students out of three respondents pronounced incorrectly.

Table 6 Substitution of [r] by /l/

		Gender	
		Male	Female
		Count	Count
Eraser	Correct	0	0
	Incorrect	3	3

Error Description of Alveolar liquid [r] sound
Since the English /r/ does not exist in most Chinese dialects, and most of the respondents of English often replaced it with /l/ in the position of [r] sound. About 50 percentage respondents pronounced [l] sound in the position of [r].The reason is that /r/ is very important in the beginning, and it could change the meaning when it is changed to /l/. For example, [rice] will become [lice] and [rust] [lust]. And also it is pronounced in different positions, e.g. [r] (beginning and middle): right; race; really; problem; traffic; frog etc. [r] (end): car; meter;

4. Conclusion

There are several reasons that influence the pronunciation of English inter-dental fricative [θ] and [ð] and alveolar liquid [r] sounds among Chinese learners of English from China. That is, their mother tongue language interfere with English language which is the target language, learner's age, and the insufficient language knowledge of English phonology and phonetics. However, a particular sound which does not exist in the native language can, therefore, pose difficulty for the second language learners to produce or some times to try to substitute those sounds with similar ones in their mother tongue. These sounds include consonants, such as [θ], [ð] and [r]. Therefore, first of all learners have trouble with perceiving these sounds; consequently, they try to find the nearest equivalents to substitute those new sounds.

There were several limitations to the study. The first limitation was the size of population. The size of population was small, so the findings could not be generalized to all populations at the same level (under-graduates level). Another limitation is very specific subject/sounds. This study's data were limited to some sounds appeared in only **[θ], [ð] and [r] sounds.** From the studies, we observed many mispronunciations from the respondents in terms of field of phonetics though we had to focus only three sounds in the whole passage. There is no way to know how the participants pronounce other sounds with deeper analysis. However, this study was still able to identify the participants' mispronunciation in specific sounds. It is believed that the findings of the present research will contribute to English language educators/mentors/teachers to comprehend the qualities of articulation mistakes and enhance their mindfulness and

comprehension of the impedance of distinctive sound frameworks on English elocution or pronunciation.

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