How Dialects of Chinese Language Influence L1-Speakers' Phonological and Phonetic Acquisition of English

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Abstract: There have been many studies concerning Chinese dialects' influence on the learning of English sounds. However, it is widely believed that Chinese dialect speakers always face greater difficulties when learning English than Mandarin speakers, which is rebutted through this research, to some degree. The study tests the English repeating ability of speakers native to Wenzhou Wu, a dialect with a significant difference, and native to Tianjin Mandarin, which is very similar to Putonghua. The study compares the phonology of these two dialects and English and assumes that both of these dialects influence the acquisition of certain sounds of English. L1 speakers of these two dialects, who have not been exposed to English before, are asked to repeat the recording of English words, and through phonetic analysis of the material, we can find the difference in these candidates' ability to acquire these sounds. The results show that the two branches of the Chinese language are found to both facilitate and obstacle native speakers' SLA in different aspects.

Keywords: Phonetics, Phonology, Chinese Dialect, English Learning, Second Language Acquisition

1.   Introduction

It is widely believed that an English learner speaking a Chinese accent of Chinese is facing more difficulties than English learners speaking standard Mandarin, or Putonghua. However, the phonology of Putonghua is very different from that of English, which influences the way Chinese people learn English [1], and vice versa [2]. People speaking a certain dialect of Mandarin may be superior to someone who only speaks standard Mandarin to some degree, for the phonology of this dialect may contain a sound in English phonology that Putonghua lacks.

   Previous studies have proved that different dialects like Cantonese [3], Southwestern Mandarin [4], and Northeastern Mandarin in Liaoning Province [5] promote or encumber their native speakers during second language acquisition to different degrees. The innovation of this study is to compare the ways of two Chinese dialects with great differences in promoting or encumbering their native speaker's English acquisition. Candidates, who have never been exposed to English before, are asked to repeat the English words they heard to test their ability to acquire pronunciation of different phonemes that are familiar or strange to them.

2.   Theoretical Comparison of English and the Dialects Studied in the Case

2.1.   The Phonology of Tianjin Mandarin and Putonghua and its Potential Influence on English Acquisition

The Phonology of Tianjin Mandarin is very similar to that of Putonghua, or the standard Mandarin. The most important difference between this Dialect and Putonghua is the tonal system, which is not experimented with in this study, and the vowels and consonants of the dialect are almost the same as those of Putonghua.

According to Duanmu San [6], there are 21 consonants in standard Mandarin, including three sets of affricates and fricatives: the dental set, the retroflex set, and the alveolo-palatal set, all with an aspirated voiceless affricate, an unaspirated voiceless affricate, and a fricative. The retroflex set can also be pronounced as post alveolar sounds as in English. Only dental and velar nasals can be found at the end of a syllable and the velar nasal can only be found as a coda. The distribution of the retroflex set in the Tianjin dialect is not the same as in Putonghua, but these consonants have been proven to exist in the phonology of the Tianjin accent of all speakers. In some transcription, [i] and [u] at the beginning of syllable are regarded as [j] and [w] instead [7].

There are only 5 monophthongs as phonemes in Standard Mandarin, transcript as [a], [i], [u], [ə], and [y] in Duanmu San's transcription. However, these phonemes can be pronounced as different kinds of variation depending on the environment. There are also 13 diphthongs in this language. No significant difference between the vowel system of Tianjin and that of Standard Mandarin except for some allophones in Tianjin.

L1 speakers of this language may face difficulties pronouncing sounds that are absent in their native phonology like [θ], [ð], [æ], [ɒ], or [ɵ] when learning English as a second language. They cannot even pronounce [e] unless in a certain environment for this vowel is only a variant of [ə]. Also, they may find some sequences that are prohibited in their phonology difficult to pronounce. For example, high-front vowels never occur after velar or alveolar consonants, so native Mandarin speakers are usually found speaking words like "key", "cheese" or "see" with an accent. Mandarin speakers also face difficulties pronouncing syllables with codas except [n] and [ŋ].

2.2.   The Phonology of Wenzhou Wu and its Potential Influence on English Acquisition

Wenzhou Wu, also known as Wenzhounese, is a branch of the Wu Dialect, with significant differences from Mandarin, and also forms other kinds of Wu Dialect, which have been noticed by many linguists. The phonology of this language includes a larger number of consonants and vowels than Standard Mandarin or Tianjin Dialect.

Voiced stops and affricates are listed as phonemes of this language, which form a triple contradiction among voiced stops or affricates, aspirated voiceless stops or affricates, and unaspirated voiceless stops or affricates. Besides those fricatives in Standard Mandarin, there are also voiced fricatives [z], [ɦ], and [v]. However, the retroflex or post-alveolar set is absent in this language, and only the velar nasal can be a legal coda. There are a total of 28 consonant phonemes in the phonology of Wenzhou. There are 10 monophthongs and 7 diphthongs in Wenzhou as recorded in Shen and Shen's material, including a [e] sound [8].

They are also assumed to pronounce some sequences that are legal in their Speaker's language like high-front vowels after velar consonants. However, they may confuse the post alveolar consonants in English with some other consonants, and also feel even more difficult to pronounce those words end with nasal codas than Putonghua or Tianjin Dialect speakers, for the only coda in Wenzhou is [ŋ].

3.   Methodology

3.1.   Questions and Assumptions

The research question is whether L1 speakers of one dialect always perform better than L1 speakers of the other when asked to repeat English words, under the condition that they have never been exposed to English before, or whether both of these languages bring pros and cons for the imitation of English words to their native speakers.

It is assumed that Tianjin Mandarin L1 speakers can tell the difference between alveolar and post-alveolar fricatives in English, and pronounce both [n] and [ŋ] codas in a relatively clear way, which is a difficulty for those Wenzhou L1 speakers. However, it is also assumed that Wenzhou facilitates native speakers to pronounce sequences with a high front vowel after a velar consonant [k], and [e] in common environments, when compared to Tianjin Mandarin. In conclusion, the basic assumption of this experiment is that both two dialects examined in the research facilitate L1 speakers in some aspects while bringing some difficulties to them in others, during the acquisition of English as a second language.

3.2.   Data Collection

The candidates for this experiment are 5 elderly citizens from Tianjin and 5 from Wenzhou (ages: 65-80). All of these candidates have not been exposed to English before.

The word list of this experiment includes five words starting with each of these consonants: [s], [ʃ], and [θ], (All of these consonants are not followed by [+high, +front], forming minimal pairs like "saw", "shore" and "thaw", five words with high front vowels after [k] like "kit" or "keep" (these words are all regarded as containing an [kɪ] in the transcription of CuBE), Five words with [ɵ] but without any other sounds difficult for Chinese people to pronounce around it, like "poo", five words with a [n] codas, and five with [ŋ] codas, all after [ɪ] and forming minimal pairs like "inn" and "ing". Only the consonants at the beginning of the words are examined in the experiment. All the words in the list are monosyllable to relieve the memorizing burden, for the task is already quite difficult for those who have not been exposed to English before.

The transcription of these words is by the website of Current British English Pronunciation. The audio of the pronunciation is downloaded from the Oxford English Dictionary. (British English)

During the experiment, audio of each word is played to the candidate three times, with at least a gap of 1 second between each two words. Then the candidates are asked to repeat the word as clearly as possible. Then the next word in the word list is tested. The words are played according to the sequence of the alphabet. The pronunciation of the candidates is collected through the program Audacity, and exported in the form of wave.

3.3.   Data Analysis

Audio collected in the experiment is analyzed by the phonetic analytical program Praat. Candidates' pronunciation is divided into different phones, transcript by observing the spectrogram and then labeled on Praat. The description and transcription of these sounds are based on the contour and frequency of the first, second, and third formants shown on the spectrogram [9].

The analysis is concerned with five key points: whether the candidates can differentiate [s], [θ] and [ʃ]; whether the candidates can pronounce [n] and [ŋ] as codas; how the candidates pronounce the sequence of [kɪ]; whether the candidates can pronounce [e] correctly; whether the candidates can pronounce the vowel [ɵ].

4.   Findings

4.1.   Result of Tianjin Mandarin Speakers

Table 1: Pronunciation of Candidates Native to Tianjin Mandarin

	Candidate 1	Candidate 2	Candidate 3	Candidate 4	Candidate 5
[ɵ]	[ye](3), [ju], [uj]	[ju](2), [ɵ], [yə],	[ɵ], [u], [ju], [ew], [ej]	[ju](2), [u], [əw], [ew]	[əw](3), [ɵ], [uj]
[s]	[s](3), [ɕ](2)	[s](4), no onset	[s](4), [ʃ]	[s]	[ʃ](4), [s]
[θ]	[s](4), [t]	[s](3), [t], [f]	[θ](4), [l]	[f](3), [k], [s]	[ʃ](3), [s], [c]
[ʃ]	[s](4), [ɕ]	[ʃ](4), [ɕ]	[ʃ]	[ʃ](4), [ɕ]	[ʃ]
[n]	[n]	[n] (4), [ntə]	[n](3), [ntə](2)	[n](2), [ŋ](2), [m]	[n](4), [m](1),
[ŋ]	[ŋ]	[ŋ]	[ŋ](4), [ŋkə]	[ŋ](3), [n], [l]	[ŋ](2), [m](3),
[kɪ]	[kej]	[ɪ], [e]	[kej]	[ti](4), [kej]	[ti](4), [kaj]
[e]	[ei]	[e]	[ae]	[e](3), [ae](2)	[ai]

Most Tianjin L1 candidates can pronounce [s] and [ʃ] correctly in most minimal pairs, except before [ɪ], where they merge into [s], [ʃ], or [ɕ]. Only Candidate 1 confuses almost all the minimal pairs. The phoneme [θ], however, is harder for them. It is pronounced as [s], [t], [f], [ʃ], and [c] randomly in different environments; but candidate 4 achieve to imitate the sound correctly in most of the cases.

The first three candidates managed to pronounce [n] and [ŋ] sounds in most of the cases, only with some mistakes of adding a stop after the nasal. Candidate 5 can differentiate the two sounds in some of the minimal pairs but pronounces these two sounds as [m] frequently. Candidate 4 seems to fail to pronounce these nasal codas correctly.

All the candidates face difficulties pronouncing [kɪ], which is strange to their native phonology. Some of them drop the initial, some substitute the initial with a [t], and some add an extra vowel to form a diphthong.

Only candidate 3 pronounced the monophthong [e] correctly all the time. Other candidates substitute the sound with some diphthongs. The vowel [ɵ] is even more difficult for them, for none of them can pronounce it correctly all the time, substituting it with different types of monophthongs, diphthongs, or combinations of consonants and vowels.

4.2.   Result of Wenzhou Wu Speakers

Table 2: Pronunciation of Candidates Native to Wenzhou Wu

	Candidate 1	Candidate 2	Candidate 3	Candidate 4	Candidate 5
[ɵ]	[ɵ](2), [elə], [y], [u]	[ɵ], [ɹ], [u], [ə], [y]	[ɵ]	[ɵ](2), [u](2)，[y]	[ju](2), [u], [o],[y]
[s]	[s](4), [ɕ]	[s](4), [ɕ]	[s]	[s]	[s]

Table 2: (continued).

[θ]	[s](3), [f], [t]	[s](2), [f](2), no onset	[s](4), [t]	[θ](2), [s](2), [f]	[s](4), [f]
[ʃ]	[s](4), [ɕ]	[s](3), [ʃ], [ɕ]	[s](4), [ɕ]	[s](4), [ɕ]	[s](4), [ɕ]
[n]	[n]	[ŋ](3), [tə], [ŋkə]	[ŋ]	[n]	[nə](2), [n](3)
[ŋ]	[n]	[m], [ŋ], [ŋkə](2), [tə]	[ŋ]	[n]	[ŋ](2), [n](3)
[kɪ]	[ki](4), [ti]	[ki](4), [ti]	[ki](3), [pi], [ti]	[ki](4), [ti], [ke]	[ki](3), [ti](2)
[e]	[e]	[ə](2), [e](3)	[e]	[e]	[e](3), [aj], [əw]

All of the candidates tested cannot differentiate the five minimal pairs of [s] and [ʃ], and the five minimal pairs of [n] and [ŋ]. Only one of them pronounce [ʃ] correctly for one time, and some of them pronounce [ʃ] in front of [ɵ] as [ɕ]. Some candidates pronounce all the nasal codas as [n], while others as [ŋ]; the candidate seems to repeat the words with the two sounds randomly. Candidate 2 even faces difficulties in identifying these nasal codas as nasal consonants. [θ] sound is commonly substituted with [s], confusing the minimal pairs, but also frequently substituted with [f] or [t].

Nevertheless, all the candidates can pronounce [e] correctly, and only candidates 2 and 5 substitute it with some other sounds occasionally. The vowel [ɵ] is significantly more difficult for them. Only one of them can repeat it in the right way continuously, and other candidates make many errors substituting it with different types of sounds.

Native speakers of Wenzhou Wu seem to be able to pronounce the sequence of [k] and high front vowel, which makes their pronunciation very similar to the English native speaker's pronunciation. But sometimes they make mistakes by producing sequences of [ti] or [pi].

5. Discussion

Although all of the candidates are elderly and have never learned English before, they performed differently during the research when repeating the English words they heard. It can be concluded speakers' background of first language influences the way they identify a new series of sounds and repeat them. The assumption of this study is therefore basically proved.

Candidates are more likely to pronounce the sounds or the sequences of sounds they are familiar with and differentiate the phonemes that are different in their native phonology. It is wrong to conclude that native speakers of other Chinese dialects face greater difficulties when learning English than Mandarin speakers.

Tianjin Mandarin speakers are more likely to differentiate [s] and [ʃ], but they can't differentiate them before [ɪ], for the sequences of [sɪ] and [ʃɪ] are illegal in Mandarin. While Wenzhou speakers confuse these consonants in most of the cases but differentiate them before [ɪ]. Perhaps it is because there is [ɕ] similar to [ʃ] in Wenzhou's phonology that only occurs before [ɪ], and that [s ɪ] is also legal in this phonology. Similarly, Wenzhou native speakers pronounce [e] and sequence of [k] and

high front vowel more frequently, while Tianjin native speakers make fewer mistakes when repeating the [n] and [ŋ] codas.

There are also some unexpected findings in this experiment, like both Mandarin and Wenzhou speakers identify the nasal codas as stops sometimes, and Wenzhou speakers seem to perform better in the acquisition of [ɵ]. What's more, due to the limitation of several participants and the amount of material, the result of this project is not persuasive enough to conclude this topic. These may be the direction of future research.

6.   Conclusion

The study can be deemed as an experimental rebuttal to the widely spread misconception that speakers native to some other Chinese dialects always show poorer performance, than Mandarin speakers, when acquiring phones and phonemes of English. By examining the phonology of two dialects, Tianjin Mandarin, and Wenzhou Wu, and comparing them with English phonology, the assumption that Tianjin Mandarin faces greater difficulties pronouncing [e] and sequence of [k] and high front vowel, and that Wenzhou Wu native speakers cannot differentiate [ʃ] and [s], or [n], and [ŋ] correctly. A word list containing both words difficult for one group and words difficult for another is deliberately designed, to test the difference of phonological learning ability of people native to different dialects.

During the experiment, the assumptions are proved, which may inspire future education workers to abandon the misconception that Chinese dialect speakers should learn Mandarin first before learning English. Some sounds are difficult for both groups like the vowel [ɵ], but it is unexpectedly found that Wenzhou Wu speakers seem to make fewer mistakes on the vowel. There are also some other unexpected findings in this experiment like both Mandarin and Wenzhou speakers identify the nasal codas as stops sometimes. What's more, due to the limitation of several participants and the amount of material, the result of this project is not persuasive enough to conclude this topic. These may be the direction of future research.

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