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Study on the Transfer Effect of Wu Dialect on the Acquisition of English Vowels by Primary School Students and Countermeasures

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Abstract: Second-language learners tend to confuse English with the dialect they used when learning English. This leads to difficulties for second language learners in the Wu dialect area when learning English. So the purpose of this paper is to compare the differences in English vowel pronunciation between Shanghai dialect speakers and Received Pronunciation English speakers, and to summarize the errors and causes of the errors in English vowel pronunciation of second language learners experience an offset in tongue position. Secondly, Shanghai dialect speakers speak English for a longer period of time than the standard pronunciation. Thirdly, there is an error in the degree of opening of Shanghai dialect speakers compared to the Received Pronunciation pronouncers. Eventually, Shanghai dialect speakers confuse monophthongs with diphthongs. In response to the above issues, the following countermeasures are proposed from both students and teachers. It is hoped that it will provide an experimental model and pedagogical reference for the transfer effects and countermeasures of other local dialects in Wu Di on the acquisition of English vowels by primary school students.

Keywords: second language learners, Shanghai dialect speakers, English vowel pronunciation, transfer effect, primary school students

1. Introduction

As the most widely used language in the world, English has a crucial position in the process of global integration due to economic prosperity and technological development, and phonology is one of the most direct outward forms of language, phonological acquisition is also a crucial part of second language acquisition. Vowels are the core of the English phonological system, not only as the center of syllables, but also as the direct bearer of suprasegmental features. Therefore, the acquisition of vowels has a direct impact on the acquisition of English phonology as a whole. In this paper, the author will study and compare the pronunciation of vowels.

In the process of second language acquisition, learners are subject to the transfer of their native languages in many ways, especially in phonological acquisition. The term “transfer” has its origins in psychology, and in linguistics, it is generally accepted that transfer is the effect of the learner’s native language or other acquired language on the target language, both as a positive facilitator and as a negative hindrance [1]. Most Chinese English learners’ native language is not Mandarin Chinese,

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but a local dialect commonly used in daily life. In addition, primary school is a critical stage for English learning, and it is also the stage when the native language changes from dialect to Mandarin Chinese, which means that primary school students English learning is more influenced by dialects [2].

The Wu dialect is one of the seven major dialects in China, and according to a conservative estimate at the beginning of the 21st century, it was spoken by about 77 million people, accounting for 72.2% of the total Han Chinese population. According to Yuan et al., the Wu dialect was spoken in eastern Jiangsu Province, the north of the Yangtze River area, and most of Zhejiang Province [3]. This shows that the Wu dialect covers a wide area. Shanghai is not only a Wu dialect region, but also a cosmopolitan city with a high level of English popularity and a large number of samples available [4]. However, the literature shows that teachers in Shanghai focus more on modules such as reading and writing, which account for a large proportion of the test, and neglect phonics teaching. As a city at the forefront of China's development, Shanghai needs to examine the shortcomings of phonics teaching and improve measures to enhance the quality of phonics teaching.

The disadvantage of learning English in China is that listening and speaking are given short shrift. In addition, there are significant differences between the Shanghai dialect and the RP English phonology, making it easy for primary school students to subconsciously apply the Shanghai dialect to their English pronunciation, and for teachers to identify and correct students' phonological problems due to a lack of systematic knowledge of English phonology. In this paper, 25 students from Shanghai primary schools were selected to read English materials, recorded with audio recording equipment, and compared with RP speakers using Praat software to identify the differences between their vowel resonance peaks and to summarise the types of vowel pronunciation errors and the reasons for them. This will help Shanghai students to be more aware of and avoid pronunciation errors caused by negative dialectal transfer, and it will help teachers to identify and correct their students' pronunciation errors in a timely manner.

2. Comparison of the Vowel Systems of RP English and Shanghai Dialects

2.1. The Vowel Systems of RP English

Received Pronunciation (hereinafter referred to as RP) was first proposed by Alexander Ellis in 1869 as the standard pronunciation of English in the British Isles, which is the result of the general agreement of society rather than the official regulation [5]. The BBC generally uses RP for its announcers to broadcast, so RP is also known as "BBC English" by the public.

There are 20 vowels in RP English, which usually divided into two categories, pure vowels and diphthongs, according to the stability of the sound. Pure vowels have only one phonemic position, and the tongue position, lip shape, and airflow remain unchanged during pronunciation without the process of sliding. They are also known as simple vowels or monophthongs. RP English includes 12 monophthongs /i:/,/ɪ/,/e/,/æ/,/ɑ:/,/ɒ/,/ɔ:/,/ʊ/,/u:/,/ʌ/,/ɜ:/,/ə/, as shown in the figure below:

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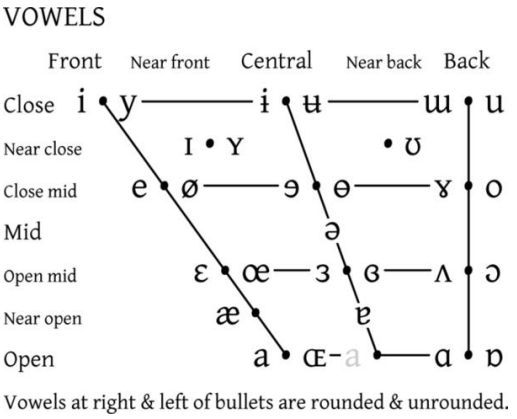

Figure 1: The Vowel Systems of RP English [6].

The diphthongs consist of two vowel parts that slide rapidly from the first vowel to the second vowel, also known as complex or gliding vowels, where the tongue position and lip shape change during the process of sliding between the two vowel parts. RP English includes 8 diphthongs /eɪ/,/əʊ/,/aɪ/,/aʊ/,/ɔɪ/,/ɪə/,/eə/,/ʊə/ [7].

2.2. The Vowel System of the Shanghai Dialect

The phonological system of Chinese can be divided into three parts: vowel, rhyme, and tone. The vowel is used as the beginning of the syllable, the rest of the syllable is rhymed, and the tone determines the pitch of the syllable. Rhymes include vowels and the consonants that follow them. Although the main component of rhyme is the vowel, it is not the same as a vowel. The Shanghai phonetic system has 10 basic vowels: /i/, /u/, /y/, /ɳ/, /a/, /o/, /e/, /ɔ/, /ɤ/ and /ø/. Of these, /ɤ/ has two phonemic variants [ɤ] and [ə], /a/ has two phonemic variants [A] and [ɐ], /i/ has two variants [i] and [ɪ], and /e/ has two variants [E] and [e] [8]. Also, the Shanghai dialect includes eight diphthongs: /iA/, /iɔ/, /i E/, /iɤ/, /u A/, /u E/, /uø/, /yø/.

Monophthongs						
	Apical vowels		dorsal vowel			
	Front	Back	Front		Central	Back
Close	ɿ		i	y		u
Close mid				ø		ɤ o
Mid					ə	
Open mid						ɔ
Open			a			
Diphthongs						
iA, is, iE,ix,uA, uE,uo, yo						

Figure 2: The vowel system of the Shanghai dialect [9].

2.3. Comparison

The RP English vowel system differs from the Shanghai dialect vowel system in the types of vowel sounds it contains. All vowels in RP English are dorsal, whereas the Shanghai dialect includes a special apical vowel. From the perspective of vowel distribution, the distribution of RP English vowels is relatively balanced, evenly distributed in the front, center, and back positions, as well as high, middle, and low heights. However, the vowels in Shanghai dialect are mostly high vowels,

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while there are only two low vowels. The distribution of vowels is extremely uneven, presenting a phenomenon of heightening. In RP English, there are only unrounded vowels, but no rounded vowels in the front vowels. All but one of the back vowels are rounded, and the unrounded vowel /ɑː/ is not in opposition to the rounded vowel /ɒ/, which is the general rule in most of the world's languages [10]. In the Shanghai dialect vowels, the front high rounded vowel /y/ is opposed to the front high unrounded vowel /i/, and the half high rounded vowel /o/ is opposed to the half high unrounded vowel /ɤ/. The RP English vowels contain contrasting short and long vowels as well as tense and lax vowels, whereas the Shanghai dialect and even the Chinese phonology system do not distinguish between short and long vowels, as almost all vowels are pronounced long and tense.

Apart from the central vowel /ə/, neither RP English nor the Shanghai dialect have exactly the same vowel, but they still have many similar vowels that are close in pronunciation and can be confusing to second language learners. A comparison of the RP English and Shanghai dialect vowel lingual charts shows the differences between the two straightforwardly. As we can see from the diagram, the vowels in RP English tend to radiate outwards from the centre, with all vowels showing a tendency to move towards the central vowels. As a result, Shanghai dialect speakers will replace the front or back vowels in RP English with more forward or backward vowels, especially when pronouncing /iː/, /ɪ/, /uː/, /ʊ/, /ɑː/.

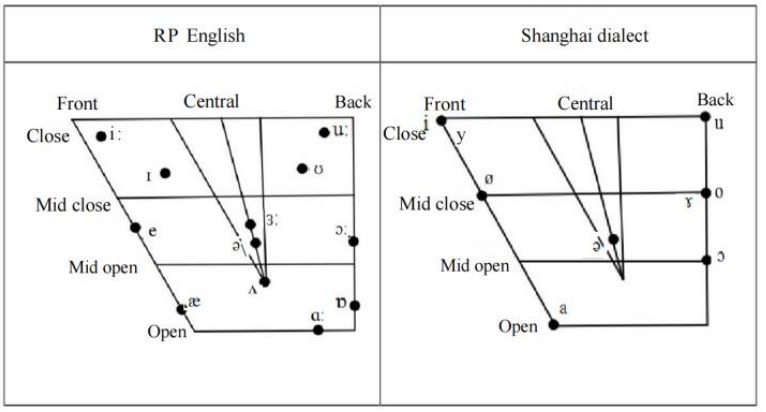

Figure 3: A comparison of the RP English and Shanghai dialect vowel lingual [9].

3. Problems

3.1. Deviation of the Tongue Position

The acoustic vowel comparison diagram provides a clear visualisation of the position and degree of deviation of the tongue position of the subject and the RP pronouncer. Taking F1 as the ordinate of the figure, the Formant frequency increases from top to bottom; F2 is the abscissa of the figure, and the Formant frequency increases from right to left. Based on the values measured by F1 and F2, the pronunciation positions of each vowel can be located in coordinates, and the points of these vowels can be connected into lines to observe the changes in tongue position during the pronunciation of each vowel. As can be seen from the graph, for the first formant (F1), subjects had smaller F1 values for the vowels /iː/, /ɪ/, /ɒ/, /ɔː/, /ɜː/ than RP speakers, indicating that Shanghai dialect speakers repronounced these vowels with a higher tongue position and thus with less opening-closing degree of the mouth. The F1 values for vowels such as /e/, /æ/, /ɑː/ and /ʌ/ were higher in Shanghai dialect compared to RP speakers, which indicates that Shanghai dialect speakers have a lower tongue placement when pronouncing these vowels. The value of the second formant (F2) were significantly larger than RP speakers when subjects pronounced the vowels /ɑː/, /ɒ/, /ɔː/, /ʊ/, /uː/, /ʌ/, demonstrating that Shanghai dialect speakers pronounced these vowels with a markedly more forward tongue

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placement, and the tongue even reached a central position when pronouncing some of the back vowels.

Table 1: Comparison Table of F1 and F2 Values between RP Pronunciation and Subjects.

vowel	F1 value of RP speakers	F1 value of subjects	F2 value of RP speakers	F2 value of subjects
/i:/	386	301	2487	2311
/ɪ/	506	323	2198	2306
/e/	621	838	2142	1798
/ae/	755	866	1994	1870
/ʌ/	730	962	1328	1584
/ɑ:/	803	870	1154	1485
/ɒ/	800	683	1099	1431
/ɔ:/	580	694	1074	1188
/ʊ/	468	384	1081	1428
/u:/	384	404	1054	1435
/ɜ:/	618	597	1468	1446

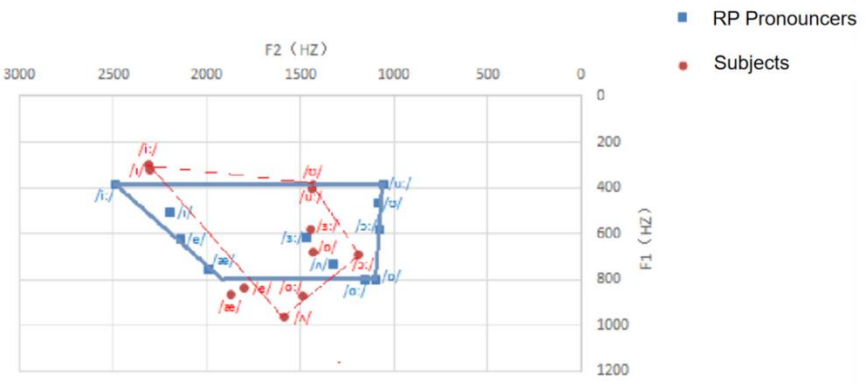

Figure 4: Deviation of the tongue position [10].

3.2. Change in Time of Pronunciation

As can be seen from the graph, the data from both the auditory perception and those obtained in Praat showed that the subjects had problems in controlling the duration of vowel articulation. There is a distinction between long and short vowels in RP English, with /i:/, /ɔ:/, /ɜ:/, /u:/, /ɑ:/ as long vowels and /ɪ/, /ɒ/, /e/, /æ/, /ʌ/, /ʊ/, /ə/ as short vowels, there is also a clear distinction between the articulation times of the long and short vowels. Yet, the results on the times of subjects' vowel articulation showed that the subjects' articulation times for long vowels such as /i:/, /ɔ:/, /ɜ:/, /u:/, /ɑ:/, etc. were all more than 50msec shorter than those of the RP speakers, indicating that the Shanghai dialect speakers were significantly under-articulated when pronouncing long vowels. In contrast, subjects pronounced the short vowels /ɪ/, /ɒ/, /e/, /æ/, /ʌ/ and /ʊ/ longer than RP pronouncers, and even the short vowel /ɪ/ was pronounced longer than the long vowel /i:/, which was seen to be confused with /ɪ/ and /i:/ [11].

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Although the majority of the subjects had the awareness to distinguish between long and short vowels, the absence of contrasting long and short vowels in the Shanghai dialect phonological system meant that Shanghai speakers had problems pronouncing long vowels that were not long enough and short vowels that were not short enough.

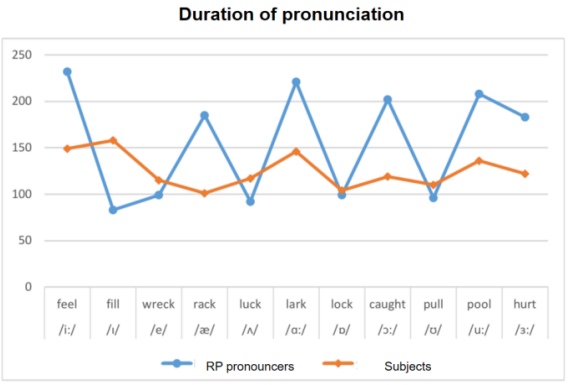

Figure 5: The duration of pronunciation of subjects [12].

3.3. Error in the Degree of Opening

The phonetic study reveals that there is a correspondence between the level of tongue placement and the degree of aperture. The more open the mouth, the lower the tongue placement, and the more closed the mouth, the higher the tongue placement. Through the first resonance peak F1 and the tongue position diagram, we can see that the F1 values of the subjects are smaller than those of the RP pronouncers when pronouncing /iː/, /ɪ/, /ʊ/, /ɔː/, which means that the mouth opening is small while pronouncing these sounds and the mouth fails to open. In contrast, when pronouncing vowels such as /e/, /æ/ and /ʌ/, the subject's oral opening is too wide, and the /e/ sound, which lies between half-open and half-closed, is pronounced as an open sound, confusing it with the other open vowels /æ/ and /ʌ/ and making it difficult to distinguish between them in terms of hearing. In diphthongs, when pronouncing /eɪ/, subjects pronounced the first vowel phoneme /e/ lower, implying greater degree of openness, and pronounced the second vowel phoneme with insufficient closure, thus sounding similar to /aɪ/ or the monophthong /æ/.

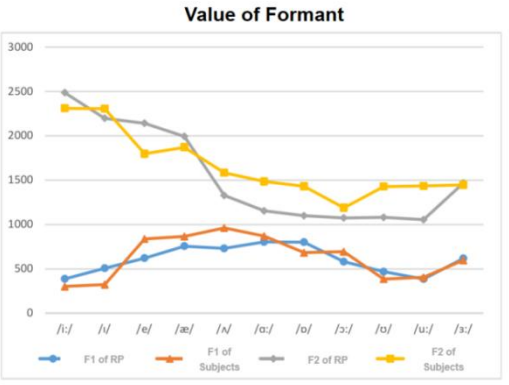

Figure 6: The value of formant [13].

3.4. Subjects Confuse Monophthongs with Diphthongs

Combined with the spectrogram and the auditory analysis, it is found that the subjects are prone to pronounce the monophthong /ɪ/ as a diphthong. A number of subjects pronounced the word /fɪl/ (fill)

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with a change and slippage in the process of articulation of the /ɪ/ sound, so that the monophthong /ɪ/ sounded like the diphthong /eɪ/. In addition, some subjects may pronounce diphthongs as monophthongs. For example, when pronouncing /eə/ and /ʊə/, subjects tend to ignore the central vowel /ə/ at the end and pronounce them as monophthong. This is probably due to the fast and incomplete transition of the diphthongs in the Shanghai dialect, as well as the small change in tongue position and lip shape, leading to what often sounds like a single vowel [14].

There are two main reasons for the above problems: firstly, Shanghai dialect is lack of phonemes or rules that are exactly the same as those in English.For example, there is no such thing as a long or short vowel in the Shanghai dialect, which makes it difficult for Shanghai speakers to notice the difference between long and short vowels and thus pronounce them according to the accustomed vowel length. Secondly, there are phonemes in the Shanghai dialect that are similar but not identical to those in English.

4. Measures

4.1. Understand the Status of Phonetics in English Earning

To start with, students should recognize that learning phonetics is as important as memorizing words and practicing reading skills, raising their own awareness of the importance of what they are learning [15]. Learning English phonetics is not easy and requires repeated practice, so students should realize that phonetics is very important and develop a strong interest in it in order to have the motivation to push themselves to keep learning and improving. Besides, it's necessary for young English learners to start Imitation practice from phonetic symbols. Students need to correct their pronunciation through constant imitation practice. Only by mastering the correct pronunciation of each phoneme can they superimpose more phonemes in sequence and read words and sentences correctly. For the imitation practice, students can listen to the standard materials, imitate the standard pronunciation, and record the part they follow, so that they can compare with the standard pronunciation, find out the mistakes, and avoid the fossilization caused by the unclear mistakes.

4.2. Use Diagrams and Visualization Techniques to Teach Vividly

Currently, phonetic symbols are the most common way to teach vowel sounds in English, but they cannot show students how these sounds are produced and how they differ from each other. For example, when teaching the vowel /e/, the teacher can use the following tongue diagram to show students the specific position of the tongue height, front and back, when pronouncing /e/. The teacher can demonstrate the correct oral shape of the vowel /e/ while students imitate and observe each other's correct oral shape. The teacher demonstrates the correct oral shape of the vowel /e/, while students imitate and observe each other's correct pronunciation. Besides, they should also focus on language differences, conduct comparative teaching between English and dialect systems, and create a positive learning atmosphere, and cultivate students' interest in learning English phonetics.

5. Conclusion

To sum up, this paper explores the impact of Shanghai dialect on primary school students' English learning and finds that dialects have a negative impact on primary school students' English vowel pronunciation in the following aspects. Firstly, there is a deviation in the tongue position of pupils. Secondly, there is a change in the duration of primary school students' pronunciation. Thirdly, there is an error in the opening degree of primary school students. Finally, pupils are prone to pronouncing diphthongs into single vowels. Consequently, in order to attack these problems, students should properly understand the status of phonetics in English learning and cultivate interest in English

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phonetics learning, while teachers should use diagrams and visualization techniques to teach vividly and intuitively. In the future, the author will continue to conduct research on various aspects of second language learning for primary school students.

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