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From the Allophones of the Final "i" of the Chinese Phonetics to the Proposition of "Zero Final With Tone" Method and Its Related Experiments

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The allophone often shows some special paradigmatic relations of phonemes, and reasonable methods which can help to prevent the happening of pronunciation errors caused by it. This paper does some analysis and investigation about the reasons of the problems caused by the pronunciation of the allophones of the final "i" in Chinese phonetics. Because of traditional teaching perspective and also because of the characteristics of the Chinese phonetic system, the teaching of the difference of the the three allophones of the final "i" has not been seriously noticed, as a result, the learners, especially those whose mother languages are not Chinese always show some difficulty in pronouncing two of those three allophones. The method of "zero final with tones" is particularly conceived and designed for solving these problems. Some continuous experiments provide the proof that by applying this method, the learners can easily overcome the diffilulty in mastering this part of Chinese phonetics.

Keywords: the Chinese phonetic alphabet, the allophones of the final "i", "zero final with tone" method

Introduction

The problems the second language learners have have always been one of the important research areas of the applied linguistics, because:

> The applied linguistics not only concentrates on the researches of both the roles of the language application and the basic theory, it pays more attention to the research of the practical use of the language; it emphysizes the critical investigation, but it lays more stress on natural observe, social investigation and scientific experiments. (CHEN & YU, 2003)

The difficult points the learners have in their second language learning process demonstrate to the linguistic researchers where the research value exist. But sometimes, the problems may be too tiny that they escape the researchers' attention. Anyhow, no matter how small the problem is, if the investigation, and the experiments can finally find some way of solving it, the research still values itself. The problem caused by the pronounciation of the allophones of the final "i" in Chinese phonetics has not been carefully noticed for a relatively long time just because it is only some kind of small problem of allophones of a final of the language's phonetic system. But the allophones do have their importance in the learning of language, and the

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problem connected with them do have the value to be investigated and researched. That is why the famous Chinese linguist MA Xue-liang put it in a very special position:

> Just functioned as the classifications of phonemes, allophones are not in leveled-structure of relations with phonemes, they are invented to mean the different properties of the latter. The allophones are often a group of certain leveled phonetic units which are composed of phonemes with the function of paradigmatic relations. Therefore, the allophones are the summarizations and abstractions of the properties of the phonemes. (MA, 1996, p. 64)

The final "i" of the Chinese phonetics has three allophones: The first one is when it is functioned as a vowel behind the front initials "j", "q", and "x"; the second one is when it is behind the dental initials of "z", "c", and "s"; the third one is when it is behind the blade-palatals "zh", "ch", "sh", and "r".

The three allophones of the final "i" obviously not only show the phonemes' polymerizing power of the allophones, but also the phonetic efficiency of the Chinese phonetics under certain conditions. Though the pronunciations of the second and third allophones of "i" have their special phonetic demands, they all appear in the teaching and learning materials in only one form of "i", which causes some common problems in teaching and learning.

For example, in the Chinese language training class for learners of the Eritrean college teachers who were to go to China for their master degree under the program of Chinese scholarship in 2011, the learners showed no difficulty in learning the pronunciations of "zh", "ch", "sh", and "r", and "z", "c", and "s", but in their oral expressions, they kept on pronouncing the teacher "老师lǎoshī" as "lǎoxī", and the Chinese link verb "是shì" as "xì". At first, the teacher guessed that they might be under the influence of negative transference of pronunciations of their mother tongue Tigrigna's "ሽ" sound or their relative language of Arabic's "ش" sound, for in Tigrigna phonetics "ሽ" is pronounced nearly the same as "shi", and in Arabic pronunciation, the first sound of "ش" is pronounced nearly as "sh". As Tigrigna belongs to the South Semitic language branch which came into being later than Arabic which belongs to the North Semitic language branch, the earlier language Arabic has deep and broad influence upon Tigrigna in pronunciation, vocabulary, and grammar. For most of the language learners in the class are bilingual language users of Tigrigna and English, some of them are trilingual with Arabic ability, the teacher considered that these multi-lingual language learners might not grasp the exact method of pronouncing this Chinese phonetic "sh" by laying the front part of their tongue not high enough, so the learners were directed to raise their tongue a bit higher when they were asked to pronounce this sound. Unfortunately, there were no good results; all the learners repeated the errors again and again after they were directed by the teacher. Later, the learners made some other errors when they pronounced the Chinese "字zì" as "jì", the Chinese "吃chī" as "qī", and "试试shìshi" as "xìxi". The teacher thought about the reasons for this over and over again and tried even harder to correct the learners' errors, but no complete good results.

One day before the training class was to be finished, some answer occurred in the teacher's mind that all the problems were not because of the learners, but because of the Chinese phonetics themselves, the point was the different pronunciation demands of the three allophones of the Chinese final "i".

The Analysis of the Reasons of the Problems in Pronouncing These Allophones

Though the three allophones of the Chinese final "i" are printed in all the teaching and learning materials in only one form, they have totally different pronunciation demands, which seemed to be a unavoidable trap for the

learners. They have mastered the skills of pronouncing “z”, “c”, and “s” and “zh”, “ch”, “sh”, and “r”, and they could correctly make each sound singularly, but every time when they came across all of these seven finals each with “i”, they would be puzzled and unconsciously they made the decision of pronouncing it with the original pronunciation of “i” when they had learned the finals “a”, “o”, “e”, “i”, “u”, and “ü”. So the errors repeated again and again, and it did seem to be a challenging problem. Though the teacher had taught the learners the allophones, and also on the page of phonetics in the textbooks there are clear explanations that “i” needs to be pronounced “ɿ” when it is after“zh”, “ch”, “sh”, and “r”, and “ʅ” when it is after “z”, “c”, and “s”, its single form of “i” in words and sentences kept puzzling the learners.

In fact, such problems were noticed decades ago by some experts, but the pity was that no methods were constructed to deal with it. For example, the famous Chinese teacher and also the well-respected expert of teaching Chinese to foreign students, LU Jian-ji, said in one of his articles that:

> The foreign students who learn Chinese language intend to pronounce the Chinese final “i” in the syllable “shi” as “e” “ir” or “ei”, where it needs to be a “ɿ”; and also they pronounce the final “i” after the initial “s” as “e” or “ei”, where it needs to be “ʅ”. (LU, 1984; ZHAO, 2010)

In order to solve this problem, the author conceived a very simple proposition with a special name “zero final with tone” method.

Then what kind of method is this “zero final with tone”? How can it be applied into the learning and the problem solving practice?

The “zero final with tone” method functions in such a way: Anytime when “i” is after “zh”, “ch”, “sh”, and “r” and “z”, “c”, and “s”, just omit the letter of “i”, and leave the room only for tones of the certain characters, so, there is now zero final in these positions. This never means the sound of the related allophones also omitted, it only means that after the initials “zh”, “ch”, “sh”, and “r”, you make the sound of the allophone of “ɿ”, and after that of “z”, “c”, and “s”, you make the sound the allophone of “ʅ”. For the light tones, or the unstressed syllables, only the forms of the finals like “zh”, “ch”, “sh”, and “r” and “z”, “c”, and “s” would be enough, one example is the Chinese character “字zi” in “名字míngzi” can just be expressed as “míngz”. For the normal characters with different tones, just give the tones after the finals, such as: “sh¯, sh ˊ, shˇ, sh ˋ” can be used to pronounce the Chinese characters like “师, 石, 使, 是”, ect., and “z¯, z ˊ, zˇ, z ˋ” can be used to pronounce the Chinese characters like “资, 兹, 子, 字”,etc., and so on and so forth.

Now, if the learners are able to make the correct sounds of the related initials, they would not make the mistakes they have made before, which means they would no longer pronounce “师shī” as “xī”, “是shì” as “xì”, “字zì” as “jì”, and “四sì” as “sèi”.

The specific reasons for applying “zero final with tone” method can be explained as follows:

The reason why the final “i” cannot make its “i” sound after blade-palatals “zh”, “ch”, “sh”, and “r” which have the feature of up-rolling the front part of the tongue, is while this group of initials are being pronounced, the front part or the tip of the tongue is raised and rolled upward the anterior palatine, at this moment, the tip of the tongue has no chance of moving from the higher position to get to the back of the lower teeth to pronounce the sound of “i” for which the two lips need to be nearly closed. The final “i” can also not make its sound of “i” when it is put after the dental initials of “z”, “c”, and “s”, for in pronouncing these dental initials the tip of the tongue

needs to be raised to touch the back of the upper teeth, it cannot immediately move down to touch the back of the lower teeth to pronounce "i". These three different tongue positions mean three allophones of "i", apart from the sound of "i" itself, "ɿ" sound is pronounced when the tongue positions are at the anterior palatine for the initials "zh", "ch", "sh", and "r", and "ʅ" sound when the tongue positions are at the back of the upper teeth for the dentals "z", "c", and "s". In this case, if the learners have the ability of pronouncing these two groups of initials correctly, they will not make the sounds of "知识zhīshī" as "jīxi", "日子rìzǐ" as "yìji", and of course they will not pronounce "老师lǎoshī" as "lǎoxī", "是shì" as "xì"; and also they will not pronounce "字zì" as "zì", "四sì" as "sèi".

And at this moment, what we can judge is that, the learners have been trapped in making the allophones of "i" under impractical pronouncing conditions, they not only made the wrong sounds for the finals, what is even worse is that, they were forced to change most of the intended initials into other ones. What is serious about this is, the learners' choices show some common features of the changes of the phonetics. For "in the changes of the phonetics there exist some common characteristics, the vowels would become either higher in position or lower, the voiceless consonants would become those with voice" (Sapir, 1921, p. 164). Here, because the original pronunciation of the final "i" is easy in lower position, the learners tried very hard to pronounce it at the wrong positions. And because the dentals "z", "c", and the blade-palatals "zh", "ch", "sh", and "r" are comparatively voiceless compared with the frontals "j", "q", and "x", they unconsciously choose the group of the latter to replace the former ones.

The Advantages of Using "Zero Final With Tone" Method

First, if the "zero final with tone" method is formally applied into the teaching and learning of the two groups of initials "zh", "ch", "sh", and "r", and "z", "c", and "s", the hard point and troublesome using of both "ɿ" and "ʅ" can possibly be eliminated. For if the teacher is qualified in phonetics teaching, he/she will surely teach the learners with correct pronunciations of "zh" "ch" "sh", and "r" which have that allophone "ɿ" at their ends as "zhɿ", "chɿ", "shɿ", and "rɿ" , but not the old ones as "zhi", "chi", "shi", and "ri"; and also "z", "c", and "s" which have the other allophone "ʅ" at their ends as "zʅ", "cʅ", and "sʅ", but not the old ones as "zi", "ci", and "si".

Second, the application of the "zero final with tone" method can help to make the pronunciation of "i" and its two allophones simple and easy both for the teachers' teaching and the students' learning, so the teaching of the whole system of Chinese phonetics can become more efficient.

Third, the application of "zero final with tone" method can possibly improve the teaching proficiency of the language, which will do some help not only for the teaching and learning in China but also benefit the teaching and learning of Chinese outside of the country. For, we can see that, the allophones of the initial "i" appear simple and small, but it does have brought long-lasting troubles at least for some number of learners.

In order to provide some proof and evidence for the "zero final with tone" method, series of experiments have been carried out among three groups of the learners, the first one acted as the controlled group, the second and third as the experimental groups. The experiments have been divided into three stages, with the first one for preparation and investigation, the second one for reflections, and the third one for improvements.

Three Stages of the Experiments

Stage One: Preparation and Investigation

Time period. June 6, 2011-July, 2011.

Learners of the controlled group. All the members of the Chinese language training class for the college teachers who got their scholarships to study in China. The total number is 26.

Controlled teaching material. Book One of *Experiencing Chinese* (with the arrangements of "i" and its allophones all in the traditional way).

Conditions. The most obvious problems of the Chinese phonetics learning happened in the pronunciations of "i" and its allophone as in "zhi", "chi", "shi", and "ri", and "zi", "ci", and "si". Both the examples and related data are shown in Table 1 (data collected from the examination record). As to the relationship between Stage One and the following Stages, see Figure 1.

Table 1

Data of the Pronunciation Problems in Stage One of the Experiment

Character /Pronunciation	Wrong pronunciation*	Number	Percentage (%)	Reason analysis
知 zhī	jī	20	76	Tongue position of "zh" was changed into that of "j" because of "i"
吃 chī	qī	21	80	Tongue position of "ch" was changed into that of "q" because of "i"
师 shī, 是 shì	xī, xì	25, 26	96, 100	Tongue position of "sh" was changed into that of "x" because of "i"
日 rì	yì	18	69	Tongue position of "r" was changed into that of "y" because of "i"
字 zì,	jì,	22	84	Tongue position of "z" was changed into that of "j" because of "i"
次 cì	qì	16	61	Tongue position of "c" was changed into that of "q" because of "i"
四 sì	sèi	20	76	Take the option of the easy double final "ei" to avoid the difficult "i"

Note. * Wrong pronunciations refer to the related but incorrect pronunciations.

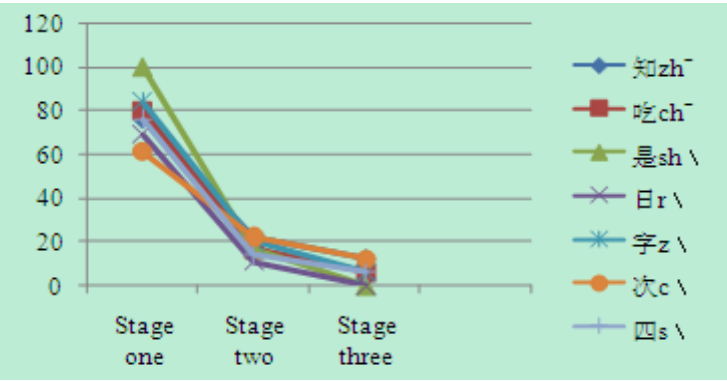

Figure 1. The stages and the results of the experiments of "zero final with tone" method.

Explanations. (1) In this stage, the teaching material showed the final "i" in every place in the traditional forms when it is after the blade-palatals "zh", "ch", "sh", and "r" and the dentals "z", "c", and "s".

(2) As the pronunciation of the final "i" becomes difficult after these two groups of initials, here comes the necessity to use its allophones. But for the learners, they liked to try simply to pronounce "i" when they saw it in

the textbooks or other materials, and their trying of making "ㄭ" and "ㄱ" sound like "i" changed nearly all the blade-palatal and the dental initials into other initials.

(3)The reason why in Table 1 there is an exception that "四sì" was changed with its final "i" into another double final "ei" but not its initial "s" is, first, because "s" is a very common phonetic sound in nearly all languages, the Eritrean learners also felt it easier to change the final rather than "s" itself. Second, the allophone of the final "i" here is "ㄱ", but when they saw "i" they forgot "ㄱ", and they gave up the difficult "i" and made an easy double final of "ei".

Stage Two: Reflections

Time period. October 12, 2011-March 18, 2012.

Experimental group one. The first class for primary Chinese language for learners from all social groups, including college students, middle school and primary school students, teachers, and office clerks, with total number of 35.

Experimental teaching material. Self-designed textbook *Learn to Speak Chinese*, with all the allophones of the final "i" written according to "zero final with tone" method.

Experimental conditions. On Stage One, the learners came across some different problems with the learning of the new language of Chinese, among which the pronouncing problems with the allophones of the final "i" had been the most collectively obvious, and it was under the stimulation of these problems that the decision of solving them made the author design and write a textbook with all the allophones written according to the "zero final with tone" method.

So the new method was particularly designed for solving this kind of problems.

The experimental group now start their learning of the Chinese language with not only the oral directions of using the new method in pronouncing the allophones of the final "i" , but also they have been provided with the especially written textbook with all the allophones in the form of zero forms.

As the problems have been prevented nearly completely from the beginning, most of the learners could not only easily pronounce the "zh", "ch", "sh", and "r", and "z", "c", and "s", they could also recognize the writings written with the "zero final with tone" method, like "sh¯, sh ˊ, shˇ, sh ˋ" for the pronunciations of Chinese characters like "师, 石, 使, 是", and "z¯, z ˊ, zˇ, z ˋ" for the pronunciations of the Chinese characters like "资, 兹, 子, 字".

Something needs to be mentioned is that some few learners were absent for some important classes of the new method and they tried to catch up with some materials in the traditional style in this special area, so they in fact fell behind in using the new method. Anyhow, the experiment seemed quite successful. The specific data can be seen in Table 2 for this stage (For the changing position of Stage Two, see Figure 1).

Table 2

Data of the "Zero Final With Tone" Method in Stage Two

Character/Pronunciation	知 zh¯	吃 ch¯	是 sh ˋ	日 r ˋ	字 z ˋ	次 c ˋ	四 s ˋ
Wrong pronunciations*	jī	qí	xì	yì	jì	qǐ	sèi
Numbers	8	6	6	4	7	8	5
Percentage (%)	22	17	17	11	20	22	14

Note. * Wrong pronunciations refer to the related but incorrect pronunciations.

Explanations. (1) As all the allophones of the final "i", "zhi", "chi", "shi", and "ri", and "zi", "ci", and "si" have now become bare in the forms of zero finals, the learners did not have to force themselves to pronounce that "i".

(2) Comparing with Stage One during which no new method was introduced, Stage Two showed that the application of the new method "zero final with tone" functioned quite well in solving such kind of problems.

(3) Some problems still existed because some few learners missed the important classes and they would overcome the difficulty in the coming stage.

Stage Three: Improvements

Time period. (1) April 28, 2012-now (Class and experiment still go on); and (2) May 16, 2012-July 23, 2012.

Experimental group two. The second class for primary Chinese language for learners from all social groups, including college students, middle school and primary school students, teachers, office clerks, with total number of 29.

Experiment group three. The Chinese language training class for college teachers who got Chinese scholarship to study in China, the number is 16.

Experimental teaching materials. (1) *Learn to Speak Chinese* (self-designed); and (2) *Happy Chinese Language* (Book One).

Experimental conditions. The purposes of this stage of experiment are: first, to teach and improve the learners skills in using "zero final with tone" method on the bases of the experiences accumulated from Stage One and Two in coping with the pronouncing of the allophones of the final "i"; second, to try to eliminate the existing problems in using the method.

By having skillfully applied the self-designed textbook *Learn to Speak Chinese* and using the "zero final with tone" method, nearly everyone in the group mastered the ways to pronounce the allophones of the final "i" correctly (see Figure 1). The book of *Happy Chinese Language* was just used as some supplementary learning material and requirements were given that for all the allophones of the final "i" in the book be pronounced and practiced according to the new method.

As the experimental group two is still going on with the class and the experiment, the data collected at this stage came from the experimental group three for which the examination and evaluation were given and some videos were recorded (see Table 3).

Table 3

Data of the "Zero Final With Tone" Method in Stage Three

Character/Pronunciation	知 zh⁻	吃 ch⁻	是 sh˪	日 r˪	字 z˪	次 c˪	四 s˪
Wrong pronunciations*	jī	qī	xì	yì	jì	qǐ	sèi
Number	2	1	0	0	1	2	1
Percentage (%)	12	6	0	0	6	12	6

Note. * Wrong pronunciations refer to the related but incorrect pronunciations.

Explanation. (1) Because the link verb "是 sh˪" is a very popular one that appears in many sentences, the learners learned the correct skill after the teachers' repeated directions and practical application of the method of

"zero final with tone". The problem of "日 r\" being pronounced as "yì" was completely eliminated as the learners learned to pronounce it correctly with the new method. So these two items were 100% correct this time.

(2) There are two reasons why there still existed some problems after the application of the method of "zero final with tone". First, for the Eritrean learners, they have difficulty in pronouncing the six of the seven Chinese initials "zh", "ch", "sh", and "r", and "z", "c" (only "s" is easy for them), so if there were some small problems at the beginning, the correct sounds would be affected. Second, the application of the "zero final with tone" method needs some pure environment at the beginning, in which all the allophones of the final "i" need to be written with zero form with tones only. During this period, if some learners used other learning materials to help, the new method would be spoiled (the fact was that such things happened sometimes).

Conclusions

From the comparison between the performance of the controlled group and the experimental groups, "zero final with tone" method shows excellence in eliminating the errors the learners have in pronouncing the allophones of the final "i" of the Chinese phonetics.

"In any time, a speech includes both a system and some changes, which is the product of both the system and its own past" (de Saussure, 1959, p. 13). The pronunciations of the different allophones of the Chinese final "i" are some kind of speeches which came from the system of the Chinese phonetics, and they were also the results of some changes. But this kind of changes needs to be directed. Only when the changes are on the right way, can the system go towards perfect. So, though the proposition of the "zero final with tone" method is only a very small way for improving the efficiency in teaching the Chinese phonetics, it has some good significance. First, it can surely help the learners who have problems in learning the allophones of the final "i". Second, this tiny proposition has the function to improve the system of the Chinese phonetics to become perfect.

Therefore, for all the problems the learners have in their learning of the Chinese phonetics, the teachers need to be both sensitive and active in locating the causes of them, and in fulfilling this task, "both the teachers and the students are expected to be clear about the problems, then to seek the methods to solve the problems, and above all, to verify them though practice" (CHEN, 2008, pp. 111-114). The method of "zero final with tone" comes from the teaching practice, and what is significant is that the students' problem-solving experiments verified that this kind of method can possibly solve some tiny but troublesome problems.

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