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**A Study on the Differences of Mandarin Mingled by Cantonese
in the Pearl River Delta of China**

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ABSTRACT

The phenomenon of Mandarin Mingled by Cantonese is widespread in Guangdong dialect area. It is mainly reflected in the heterogeneous pronunciation and vocabulary, and its performance degree reflects speakers' Mandarin level. In the summer of 2019, this paper investigated the Pearl River Delta area and found that: The development of Mandarin level is unbalanced. According to variance analysis and expert scoring, the equilibrium degree can be divided into four gradients from good to bad. The first gradient: Shenzhen; the second gradient: Zhuhai, Guangzhou, Dongguan; the third gradient: Foshan, Huizhou; the fourth gradient: Zhongshan, Jiangmen, Zhaoqing. It's wise to strengthen the promotion of Mandarin in Guangdong, to promote the balanced development of regional economic integration.

INTRODUCTION

With the development of science and technology, economy and education, the integration of Mandarin in China has been greatly accelerated, which has intensified the integration of Mandarin and dialects, and fierce competition has been launched between them. According to Thomason and Terrence (1988) and Thomason (2001), when two or more languages come into contact with each other, the interaction and long-term effects of different languages may result in new fused languages with traces of the original language. In this process, language transfer may occur when their structural elements affect each other after language contact (Lado, 1957; Odlin, 1989). Language contact can lead to language variation (Thomson, 2001). As a result, Mandarin with regional dialect color has been formed, such as "Mandarin with Minnan accent", "Mandarin with Shanghai style", "Mandarin with Hong Kong Style" or "Mandarin with Cantonese style".

This kind of nonstandard Mandarin is called "Mandarin mingled by dialect" in this paper. Mandarin mingled by dialect refers to the nonstandard Mandarin mixed with dialect flavor under the influence of dialect pronunciation, vocabulary, grammar and other elements in the process of using Mandarin (Li, 2019a). It is a regional variant of standard Mandarin. It has both dialectal and Mandarin elements, but its essence is Mandarin. According to Labov (1963), language variation includes phonetic variation, lexical variation and grammatical variation. Among them, the research cases of phonetic variation have attracted the most attention, such as the Vineyard Island of Massachusetts (Labov, 1963), department store salesmen of New York City (Labov, 1966). Mandarin mingled by dialect is reflected in the variation of pronunciation, vocabulary and grammar, which can be reflected in the phonetic subsystem.

As for the phenomenon of Mandarin mingled by dialect, the existing literature almost analyzes the performance of language variation from the perspective of language ontology, and lacks the research

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on the spatial distribution of the phenomenon from the macro level. In other words, in a certain dialect area, what is the overall situation of people in different cities or regions using Mandarin mingled by dialect? This can reflect the overall level of Mandarin of people in this area. If the problem is known, then the promotion countermeasures of Mandarin in this area are more targeted. Based on this, this paper takes the Guangdong dialect area of the Pearl River Delta as an example to investigate the "Mandarin mingled by Cantonese" in this area, and show the spatial distribution and development balance of Mandarin mingled by Cantonese phenomenon in different cities, so as to provide reference for promoting the popularization of Mandarin.

CONCEPT DEFINITION AND DATA SOURCES

Definition of Concept

The Pearl River Delta belongs to Guangdong dialect area. In the eyes of Cantonese, Cantonese is Mandarin, the most important communication tool of Cantonese and the main competitor of Mandarin (Snow, 2008), which hinders the promotion of Mandarin to a certain extent (Liang, 2015).

The phenomenon of Mandarin mingled by Cantonese is the result of long-term contact and mutual transfer between Mandarin and Cantonese. It is a non-standard Mandarin produced by the negative transfer of Cantonese structural elements when using Mandarin. It is manifested in the form of heterogeneous words in pronunciation, vocabulary and grammar. Heterogeneous pronunciation refers to the substitution of Cantonese accent for Mandarin pronunciation. Heterogeneous vocabulary refers to the Cantonese way of expression because they can't use Mandarin. Heterogeneous grammar refers to the idiomatic usage of Cantonese grammar directly incorporated into Mandarin. The phenomenon of Mandarin mingled by Cantonese is unlikely to die out in a short period of time. It will be retained for a long time and will gradually approach the standard Chinese (Li, 2019b). The description and measurement of the heterogeneous words in Mandarin mingled by Cantonese can dynamically reflect the process of Mandarin level change, so it is necessary to record it.

There are three possibilities for the use of Mandarin: First, Mandarin is very standard and is not affected by "Cantonese flavor", which is called "completely non Cantonese flavor" in this paper. Second, the level of Mandarin is average, and it is influenced by "Cantonese flavor" to varying degrees, but it is called "partial Cantonese flavor" for being able to communicate. Third, they can only use Cantonese, and can't use Mandarin. This kind of situation exists objectively, but this paper requires that the interviewees can use Mandarin for basic communication, so this situation is not considered.

Data Sources

According to the needs of the research, this paper uses stratified sampling method to obtain data, and plans to survey 1000 respondents. The data are from nine cities in the Pearl River Delta region of Guangdong Province, China. Due to the large difference of population among different cities in this region, this paper allocates the investigators according to the proportion of population in order to reasonably configure the sample structure. The specific method is as follows: Based on the "number of registered population at the end of each city (2018)" in the Statistical Yearbook of Guangdong Province in 2019, the proportion of the number of registered residents in each city in the total household registration number in the Pearl River Delta region is calculated, and then the number of investigators in each city is allocated according to the proportion on the basis of 100 investigators. The details are shown in Table 1.

Table 1: Sample Distribution

City	Guangzhou	Shenzhen	Zhuhai	Foshan	Huizhou	Dongguan	Zhongshan	Jiangmen	Zhaoqing
Proportion of population	25.57	13.71	3.51	12.04	10.50	6.38	4.88	11.00	12.41
Sample size	256	137	35	120	105	64	49	110	124
Number of investigators	26	14	4	12	10	6	5	11	12

The survey team is from Guangdong University of Finance and Economics in Guangzhou and Zhaoqing University in Zhaoqing, China. All of them are proficient in Cantonese and have obtained the certificate of Mandarin level II (Grade A or above) or reach the level of Mandarin. As can be seen from table 1, each investigator surveyed about 10 respondents, mainly in the form of interview and Wechat.

For the interviewees, they need to meet three conditions: First, they belong to the household registration of Guangdong Province; Second, they should be aged between 7 and 60; Third, they should be able to communicate in Mandarin. After obtaining the consent of the interviewees, the investigators record the interview content, and the conversation time with each interviewee shall not exceed 5 minutes. If the interviewee requests to destroy the employment, it will be cleared after processing the data.

The survey was conducted in the summer of 2019, and the data was sorted out at the end of October. A total of 975 valid samples were obtained. In the process of sorting out the heterogeneous words of Mandarin mingled by Cantonese, many pure Cantonese natives were invited to help identify the properties of heterogeneous words.

DISCOURSE ANALYSIS

A sample is randomly selected from the sample, and the main part of the interview is converted into written form according to phonetic markers. The International Phonetic Alphabet in Chinese brackets is the speaker's pronunciation, as shown below.

The information of interviewee (W): Gender: female; Age: 56; Occupation: liberal profession, bringing grandson at home; Household registration: Gaoyao District, Zhaoqing City; Time: August 1, 2019; Scene: the gate of the community.

——哇，你家宝宝可以坐得好稳啦。

——Wow, your baby can sit well.

W : 坐[tso⁵¹]都坐[tso⁵¹]得好稳·站都站得好一阵[tcin³²]。

W : Sit well, stand for a long time

——穿这个袜子冷不冷啊？

——Is it cold to wear these socks?

W : 这个袜子不冷的。你的嘞[lei²³]？一岁啦哇？长得那么[IA³²mə]大。

W : This sock is not cold. What about you? One year old, wow? So big.

——没有，才七个月呢。

——No, he's only over seven months.

W : 七个月会[uœ⁵¹]坐啦？

W : Can the baby of more than seven months sit?

——嗯，还不太稳。她是吃奶粉长大的吗？

——Well, it's not very stable. Did she grow up on milk powder?

W : **吃**[tɕʰi⁵⁵]奶粉、饭、馒头。

W : Eat milk powder, rice, steamed bread.

——哇，真好，还会自己拿着吃。

——Wow, that's great. He'll take it for himself.

W : **是**[ci⁵¹]啊，看见你**买东西**[st⁵⁵]呀，就要。哭哭哭。你买菜买**什么**[miɛ⁵¹]的，她以为有得吃。

W : Yes, When he sees what you buy, he wants it too. And cry, cry. You buy vegetables, and he thinks he has them.

——这个椅子好啊，这个椅子坐得很稳啊。哪里买的？

——This chair is good, it's very stable. Where did you get it?

W : **这个**[tɕiɛ⁵¹][ko⁵¹]？**商场**[ɕian⁵⁵ tɕʰaŋ²¹⁴]**太**[tai²³]**多的啦**[tei⁵⁵ la⁵⁵]，好多车[tɕʰei⁵⁵]哇。

W : This one? There are a lot of them in the mall. But there are a lot of cars.

——走啦，回家做饭啦。拜拜。

——Come on, I will go home and cook. bye-bye.

W : 回家啦？**你走先**，**冇**[məu²³]七点都**冇**[məu²³]饭吃[tɕʰi⁵⁵]啦。

W : Home? You go first. I don't have a meal until seven o'clock.

(Note: those with bold wavy lines are heterogeneous sounds, those with bold horizontal lines are heterogeneous words, and those with bold italics are heterogeneous grammar.)

From the communication segment, we can see that W's Mandarin has a strong Cantonese color, which is a typical Mandarin mingled by Cantonese. According to statistics, there are 82 words in this segment, including 19 heterogeneous words, accounting for 23.17%. By comparing with the international phonetic alphabet of standard Mandarin, these heterogeneous words can be distinguished.

Among them, there are 14 heterogeneous phonetics in Cantonese, accounting for 17.07%; there are 4 Cantonese words used, accounting for 4.88%; “嘞” and “的啦” are Cantonese modal particles, and “冇” means “no”; Cantonese grammar is “你走先”, which is inverted form, and in Mandarin it is “你先走”, accounting for 1.22%.

DESCRIPTIVE STATISTICAL ANALYSIS

Average Ratio of Heterogeneous Words in Mandarin mingled by Cantonese

Mean (μ)

This paper selects the proportion of heterogeneous words in Mandarin mingled by Cantonese (HW_Rate) to quantify the degree of Mandarin mingled by Cantonese or Mandarin level of a single speaker. The proportion of heterogeneous words in a single interviewee was $HW_Rate_j = HW_j / N$.

Among them, HW_j is the number of heterogeneous words in interview j , and N is the total number

of words spoken by interviewee j . According to the meaning of "totally non Cantonese flavor" and "partial Cantonese flavor" above, we can see that the range of the proportion of heterogeneous words in Mandarin mingled by Cantonese for a single speaker is $HW_Rate_j \in [0,1)$.

Then, the average ratio of heterogeneous words in Mandarin mingled by Cantonese can be obtained. The calculation method is shown in formula (1).

$$\mu = \sum_{j=1}^m HW_j / Q \quad (1)$$

Where: $m(m=975)$ is the sample size. Q is the total number of words spoken by the interviewees,

$$Q = \sum_{i=1}^m N_j. \text{ So, } \mu \in (0,1).$$

City Distribution of Mandarin Mingled by Cantonese Phenomenon

According to the above statistical methods, the survey team found that the total number of words in the whole sample was 101712, and the number of heterogeneous words was 7357, which means that the average ratio of heterogeneous words in the whole sample was about 7.23%. The number of heterogeneous words per capita is about 7.54, that is to say, among the 100 Chinese words, there are about 7 to 8 words with "Cantonese flavor". The largest proportion of heterogeneous words is 42.20%, and the minimum is 0%. Further, the whole sample is divided into cities, and the average ratio of Mandarin mingled by Cantonese words in each city is calculated, as shown in Table 2.

Table 2 Average Proportion of Heterogeneous Words in Mandarin mingled by Cantonese (unit: %)

City	Guangzhou	Shenzhen	Zhuhai	Foshan	Huizhou	Dongguan	Zhongshan	Jiangmen	Zhaoqing
Average ratio	4.83	2.08	5.39	7.71	8.65	4.03	9.24	11.57	12.20

It can be seen from table 2 that: (1) Shenzhen is the city with the lowest ratio of heterogeneous words, which is 2.08%, far below the average level. Shenzhen is one of the first tier cities and special economic zones in China, with developed economy and high degree of population integration. The proportion of migrant population in the total population exceeds 63%. The popularization of Mandarin has achieved remarkable results, and Cantonese has been seriously impacted by Mandarin. The other cities below the average of the whole sample are Dongguan, Guangzhou and Zhuhai. Among them, the proportion of migrant population in Dongguan is more than 75%, which is higher than that of Shenzhen, but the overall level of Mandarin is inferior to that of Shenzhen, which may be related to the level of economic development, urbanization level, popularization and other factors. (2) In contrast, Zhaoqing, Jiangmen and Zhongshan have about 10% of the heterogeneous words in Mandarin mingled by Cantonese, and Zhaoqing City is 12.20%, ranking first in the Pearl River Delta region.

In general, the higher the level of Mandarin, the better the level of economic development of the city. In addition, the cities with relatively closed geographical location have less communication with the outside world, and the impact on Cantonese is less. The "Cantonese flavor" is more obvious in the process of using Mandarin.

Analysis of Variance

According to the relevant variables and symbols of formula (1) and formula (2), the calculation formula of variance is given, and the calculation formula of variance is improved according to the research needs.

Variance reflects the degree to which an individual deviates from the sample mean. According to formula (2), the formula for calculating the mean square deviation (σ^2) of Mandarin mingled by Cantonese heterogeneous words can be expressed by formula (3).

$$\sigma_i^2 = \frac{\sum_{i=1}^n (HW_Rate_j - \mu_i)^2}{n} \quad (3)$$

It refers to the extent to which the proportion of Mandarin mingled by Cantonese heterogeneous words deviates from the average ratio of Mandarin mingled by Cantonese words in the city sample. If the degree is greater, the greater the difference of Mandarin mingled by Cantonese among the respondents in the sample, or the more uneven.

In fact, it is more valuable to take standard Mandarin as the reference object when investigating the degree of Mandarin mingled by Cantonese, because all the respondents deviated from the standard Mandarin level in varying degrees (the special case is that the Mandarin level of the interviewee is standard Mandarin, then the deviation degree is 0. Therefore, we improve formula (3) to formula (4).

$$\sigma_i'^2 = \frac{\sum_{i=1}^n (HW_Rate_j - 1)^2}{n} \quad (4)$$

Then, the variance of the two series are calculated according to the city dimension. Due to too many decimal places of variance, the following is converted into standard deviation form, as shown in Table 3:

Table 3 Standard Deviation Distribution of the Datio of Heterogeneous Words in Mandarin Mingled by Cantonese

City	Guangzhou	Shenzhen	Zhuhai	Foshan	Huizhou	Dongguan	Zhongshan	Jiangmen	Zhaoqing
σ_i	0.0334	0.0195	0.0307	0.0511	0.0723	0.0503	0.0969	0.0910	0.1187
σ_i'	0.0682	0.0227	0.0390	0.0951	0.1003	0.0793	0.1233	0.0919	0.1421

Table 3 shows that the standard deviations of the two series are different, but the distribution law is basically the same. If the variance is calculated on the basis of the ratio of heterogeneous words in Mandarin mingled by Cantonese of different cities, the maximum and minimum of standard deviation σ_i is Zhaoqing and Shenzhen respectively. That is to say, the degree of the influence of Cantonese on the Mandarin of Zhaoqing City is quite different, the degree of Mandarin mingled by Cantonese is the most uneven, and the difference of Mandarin mingled by Cantonese among the respondents in Shenzhen is the smallest, and the development is more balanced. If the variance is calculated based on standard Mandarin, the maximum and minimum of standard deviation σ_i' are still Zhaoqing and Shenzhen respectively. The two series are sorted according to the standard deviation from small to large, as shown in Table 4:

Table 4 Order of the Ratio Standard Deviation of two kinds of Mandarin Mingled by Cantonese Words

	1	2	3	4	5	6	7	8	9
Sort of σ_i	Shenzhen	Zhuhai	Guangzhou	Dongguan	Foshan	Huizhou	Jiangmen	Zhongshan	Zhaoqing
Sort of σ_i'	Shenzhen	Zhuhai	Guangzhou	Dongguan	Jiangmen	Foshan	Huizhou	Zhongshan	Zhaoqing

Table 4 shows that the standard deviations calculated by the two methods are slightly different, that is, Foshan, Huizhou and Jiangmen is different in the fifth, sixth and seventh place respectively. Shenzhen, Zhuhai, Guangzhou, Dongguan, Zhongshan and Zhaoqing ranks No.1, No.2, No.3, No.4, No.8 and No.9 respectively.

Gradient Division

Based on the uneven development of Mandarin in different cities, this paper divides the degree of Mandarin mingled by Cantonese or the average level of Mandarin in nine cities in the Pearl River Delta region into gradients. As the standard deviations calculated by the above two formulas are in dispute on the ranking of the 5th, 6th and 7th digits, we have continued to consult the above two experts on the issue of gradient division and made the following treatment.

First of all, the above-mentioned method of judging the balance of Mandarin level in each city through variance is desirable. Based on this, combined with the current situation and effectiveness of popularizing Mandarin in different cities, the balanced degree of Mandarin mingled by Cantonese was scored. As shown in Figure 1:

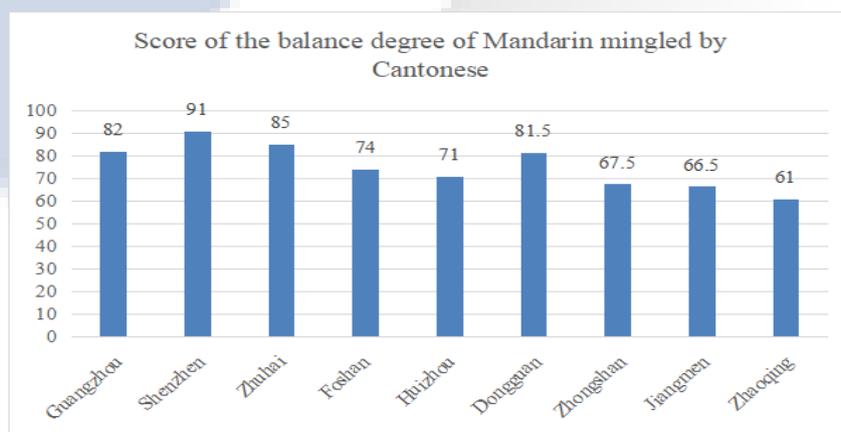


Figure 1 Average scores of experts on the balance degree of Mandarin mingled by Cantonese

According to the average scores of the two experts, Shenzhen is the only city with more than 90 points, Zhuhai, Guangzhou and Dongguan are between 80 and 89 points, Foshan and Huizhou are between 70 and 79 points, Zhongshan, Jiangmen and Zhaoqing are 60-69 points.

Then, the balance degree of Mandarin mingled by Cantonese corresponding to the four score intervals is defined as: excellent, good, medium and poor. The first gradient is Shenzhen; the second is Zhuhai, Guangzhou and Dongguan; the third is Foshan and Huizhou; the fourth is Zhongshan, Jiangmen and Zhaoqing.

CONCLUSION

This paper investigates the use of Mandarin in the Pearl River Delta region, focusing on the comparison of the balanced level of Mandarin mingled by Cantonese in different cities. The average

variance of Mandarin mingled by Cantonese is used to reflect the balance of Mandarin level of residents in different cities.

The results show that the differences of Mandarin mingled by Cantonese in nine cities are ranked from small to large as follows: (1) Shenzhen, Zhuhai, Guangzhou, Dongguan, Fushan, Huizhou, Jiangmen, Zhongshan, Zhaoqing; (2) Shenzhen, Zhuhai, Guangzhou, Dongguan, Jiangmen, Foshan, Huizhou, Zhongshan and Zhaoqing.

On the basis of the two results, combined with the expert scoring method, the Mandarin level of nine cities is divided into four gradients to show the difference of popularizing effect in the Pearl River Delta region. According to the balance degree of Mandarin mingled by Cantonese from good to poor, it can be divided into: the first gradient: Shenzhen; the second gradient: Zhuhai, Guangzhou, Dongguan; the third gradient: Foshan and Huizhou; the fourth gradient: Zhongshan, Jiangmen and Zhaoqing.

In view of the differences in the overall level of Mandarin among different cities, on the one hand, under the premise of firmly promoting the policy of Mandarin, we should carry out the work differently for different regions and groups. Language work should be integrated with regional economic integration and coordinated economic development. On the other hand, Mandarin mingled by Cantonese is an inevitable phenomenon in the process of economic development and cultural integration. With the promotion of popularization, Cantonese has vitality, but it is impacted and shows signs of decline. We should strengthen the protection of dialect resources and promote the harmonious coexistence of Mandarin and dialect.

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