Distribution of Mandarin Mingled by Cantonese:
Survey Based on Pearl River Delta in China[*]

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Mandarin Mingled by Cantonese is common in Guangdong dialect area. Its main manifestation is the heterogeneous pronunciation and vocabulary, and its performance degree can measure speakers' Mandarin level. In the summer of 2019, this paper conducted a survey on the Pearl River Delta area and found that: (1) the rank of Mandarin of each city is from high to low: Shenzhen, Dongguan, Guangzhou, Zhuhai, Foshan, Huizhou, Zhongshan, Jiangmen, Zhaoqing; (2) The degree index of Mandarin Mingled by Cantonese in the Pearl River Delta is calculated. It's wise to strengthen the promotion of Mandarin in Guangdong, to promote the balanced development of regional economic integration.

Keywords: Cantonese, Mandarin mingled by Cantonese, heterogeneous words, Mandarin level

Introduction

"The Law of the People's Republic of China on the General Language" (2000) has raised the "national promotion of Mandarin" to the legal level. With the development of science and technology, economy and education, great achievements have been made in the promotion and popularization of Mandarin. This effect has promoted the integration of Mandarin rapidly. Meanwhile, there has been fierce competition between Mandarin and Chinese dialects, and two linguistic phenomena have been formed: one is "Mandarin mingled by dialect", and the other is "dialect mingled by Mandarin" (Li, 2019a). Mandarin mingled by dialect has been formed in various places, such as "Mandarin with Southern Fujian dialect", "Mandarin with Shanghai dialect", and "Mandarin in Hong Kong" or "Mandarin mingled by Cantonese" produced by the influence of Yue dialect in Hong Kong. It can be seen that this phenomenon is an objective reality, and it is an inevitable language phenomenon in the process of language contact.

When two or more languages come into contact with each other, the interaction and long-term effects of different languages may result in the borrowing of language components. This may make the new, fused languages with traces of the original language (Thomason & Terrence, 1988; Thomason, 2001). Then, language transfer may occur when their structural elements affect each other (Odlin, 1989). Language contact can lead to

language variation (Thomson, 2001; 2008; 2009). 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, department store salesmen of New York City, Norwich City dialect (Turdisll, 1974), the pronunciation of [r] after the vowel in Detroit Black English (Turdisll, 1983) and the pronunciation of [ŋ], [t] and [h] in Norwich (Trudisll, 1983).

For this kind of nonstandard Mandarin with dialect color, there are different names in academic circles: "local Mandarin", "regional Mandarin", etc. These all belong to "Mandarin mingled by dialect". Mandarin mingled by dialect refers to the nonstandard Mandarin which is influenced by the phonetics, vocabulary, grammar and other elements of dialect in the process of using Mandarin. Mandarin mingled by dialect is a regional variant of standard Mandarin. It has both dialectal and Mandarin elements, but its essence is Mandarin. In terms of phonetics, vocabulary, grammar and other variations, the phonetic subsystem can best explain the problem. For example, the pronunciation of the three groups of initials z, c, s；j, q, x；zh, ch, sh in Mandarin is different, but Cantonese only has similar initials of j, q and x. therefore, people in Cantonese dialect areas often pronounce the two groups of initials as j, q and x when speaking Mandarin. For example, "zīshì" is said to be "jīxì", "qíshí" is said to be "qíxí", and "chīfàn" is said to be "qīfàn".

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 on the spatial distribution of the phenomenon from the macro level. Language variation is the result of both internal and external factors (Labov, 1994; 2001; Cheshire, 1978; Anttila, 2002). The academic circles have discussed the influence factors of language variation from various angles. The internal factors of language are mainly language contact, and the external factors of language are divided into internal factors and external factors. The internal factors involve the language attitude of the speaker (Mac, 2000; Nwagbo & Osita, 2015; Patrick, 2017), the speaker's personal attributes, such as gender, age, occupation, education level and so on. External factors mainly include economic (Dauenhauer & Dauenhauer, 1998), social and policy factors (Patrick, 2017)

Taking the Guangdong dialect area of Pearl River Delta as an example, this paper investigates the Mandarin mingled by Cantonese in this area, and shows the spatial distribution of Mandarin mingled by Cantonese phenomenon in different cities and groups, so as to observe the differences of Mandarin level under the influence of different dimensions of Cantonese in the Pearl River Delta region for promoting the popularization of Mandarin.

Concept Definition and Data Sources

Definition of Concept

The Pearl River Delta belongs to Guangdong dialect area. For most of the Cantonese people, Cantonese is Mandarin. It plays as the most important communication tool and the main competitor of Mandarin (Snow, 2008). In a way, it hinders the promotion of Mandarin (Liang, 2015).

The phenomenon of Mandarin mingled by Cantonese is the result of long-term contact and mutual transfer between Mandarin and Cantonese, which is a non-standard Mandarin produced by the negative transfer of Cantonese structural elements when using Mandarin (Li, 2020). Mandarin mingled by Cantonese is manifested in the form of heterogeneous words in pronunciation, vocabulary and grammar (Li, 2019b). According to Li

(2020), 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, and 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 can reflect the changing process of Mandarin level well.

Data Sources

In this paper, stratified sampling method is used to obtain first-hand data. As the population of nine cities in the Pearl River Delta region is different, this paper calculates the proportion of the number of registered permanent residents of each city in the total number of registered residents in the Pearl River Delta region based on the number of registered population at the end of 2018 of each city in the 2019 "Statistical Yearbook of Guangdong Province", and roughly allocates investigators and sets sample shares according to this proportion, so as to avoid the problem of large sample size allocation.

A total of 1000 respondents are planned to be investigated, with 100 investigators. The survey team consists of 100 undergraduates from Guangzhou and Zhaoqing universities. All the students speak Cantonese and have obtained the Second grade certificate of Mandarin Proficiency or reached the standard. Each member surveyed about 10 respondents on average, mainly in the form of interview and wechat. The survey was conducted in July and August of 2019. The interviewees are required to meet three requirements: (1) registered permanent residence in Guangdong Province; (2) aged between 7 and 60 years old; (3) can communicate in Mandarin. After obtaining the consent of the interviewees, the investigators record the interview content, and the conversation time with each interviewee is generally no more than 5 minutes.

The data were sorted out at the end of October, and 975 valid samples were obtained, and the effective ratio was 97.5%. In the statistical process of heterogeneous words, many native Cantonese are invited to help identify the attributes of heterogeneous words of Mandarin mingled by Cantonese.

Discourse Analysis

One sample is randomly selected, and the main part of the interview is converted into written form according to phonetic markers. The international phonetic alphabet in brackets is the speaker's pronunciation, as shown below.

Interviewee (M) information: gender, male; age: 17; Occupation: senior high school student; permanent address: Haizhu District, Guangzhou; time: August 25, 2019. Topic: introduce a place you have been to.

当时[tɑŋ⁵⁵ɕi³⁵]是[ɕi⁵¹]高一暑假[su²¹⁴ tɕiA⁵¹]得闲[tə³⁵ ɕian³⁵]的时候[ɕi³⁵ xəu⁵¹]，我表哥他们一家就想去北京玩，然后刚好我和爸妈也要回河北，就顺带一起坐飞机，然后去北京，然后在北京呆了两天，就第一天就直接去逛了逛故宫。然后拍了个照，然后顺便看了景山公园，随后再和我表哥他们就一起去，观赏了鸟巢和水立方的外部建筑。第三天，我们就启程回河北了。然后回河北的时候就带我表哥、姨丈姨妈他们一起去了江北，就是[ɕi⁵¹]一个大草原一样的地方。我们一起去骑了越野车，然后骑了马，骑了骆驼。随后就点了一份烤全羊。当然，烤全羊是[ɕi⁵¹]很好吃的。看见的其实[tɕʰi³⁵ɕi³⁵]也不是[ɕi⁵¹]很多吧，有广阔的平原，蔚蓝的天空……

It was the summer vacation of high school when I was free, my cousin's family wanted to go to Beijing, and then my parents and I were going to go back to Hebei, so we took a plane and went to Beijing. Then we stayed in Beijing for two days, and on the first day, we went directly to visit the Imperial Palace. Then I took a picture, and then I visited Jingshan Park by the way. Then I went with my cousins and watched the outside buildings of the Bird's Nest and Water Cube. On the third day, we left for Hebei. Then when I went back to Hebei, I took my cousins, uncles and aunts together to Jiangbei, a place like the prairie. We rode the SUV together, then a horse, a camel. Then we ordered a roasted whole lamb. Of course, the roasted whole lamb is very delicious. Factually, we didn't see a lot of scenery either, there are vast plains and blue sky and so on.

From the conversation segment, we can see that M's Mandarin is relatively standard, with a little Cantonese color. According to statistics, there are 153 words in this segment, including 9 heterogeneous words, accounting for 5.88%. Among them, eight are heterogeneous sounds, which are "当时$[tɑŋ^{55}ɕi^{35}]$, 是$[ɕi^{51}]$, $[su^{214}ʨiA^{51}]$, 时候$[ɕi^{35}xəu^{51}]$, 其实$[ʨʰi^{35}ɕi^{35}]$". The corresponding standard pronunciation of Mandarin is "$[tɑŋ^{55}tʂɿ^{35}]$、$[tʂɿ^{51}]$、$[tʂu^{214}ʨiA^{51}]$、$[tʂɿ^{35}xəu^{51}]$、$[ʨʰi^{35}tʂɿ^{35}]$". The word "得闲$[tə^{35}ɕian^{35}]$" is a heterogeneous word.

Descriptive Statistical Analysis

Average Ratio of Heterogeneous Words in Mandarin Mingled by Cantonese

1. Mean value (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. Among them, HW_j is the number of heterogeneous words of interviewee j and N is the total number of words spoken by interviewee j. 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, we can get the average proportion of heterogeneous words in Mandarin mingled by Cantonese. The calculation method is shown in formula (1)

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

Among them, $m(m=975)$ is the number of sample. Q is the total number of words spoken by the interviewees. $Q = \sum_{i=j}^{m} N_j$, then, $\mu \in (0,1)$.

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 7-8 Mandarin mingled by Cantonese words. The largest proportion of heterogeneous words was 42.20%, and the minimum was 0%. Furthermore, 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 Figure 1.
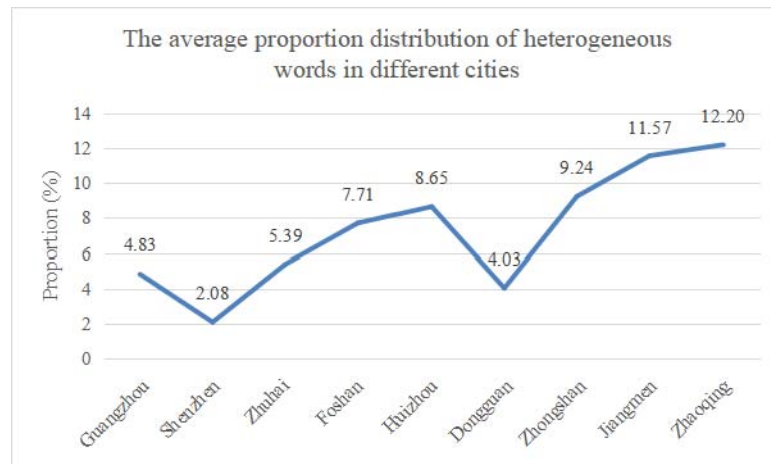

Figure 1. The Average Proportion of Heterogeneous Words in Mandarin Mingled by Cantonese.

It can be seen from Figure 1 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 the proportion of Zhaoqing is 12.20%, ranking first in the Pearl River Delta region.

Overall, the higher the level of regional economic development, the higher the Mandarin level. Additionally, the cities with relatively closed geographical location have less communication with the outside world, and the impact on Cantonese is less. The Mandarin mingled by Cantonese is more obvious in the process of using Mandarin.

Degree Index of Mandarin Mingled by Cantonese

The degree of Mandarin mingled by Cantonese reflects the Mandarin level or ability of the speaker. There are many studies on the measurement of language proficiency in academic circles, but few on the measurement of language proficiency index. In this paper, the simple weighted average method is introduced, and based on the average ratio of heterogeneous words in Mandarin mingled by Cantonese of different cities as mentioned above, the degree index of Mandarin mingled by Cantonese is tried to be worked out

$$L = \sum_{i=1}^{n} \alpha_i \mu_i \Big/ n \qquad\qquad\qquad （2）$$

In formula (2), μ_i i.e. i $(i = 1, 2, \cdots, 9)$, is the Average ratio of heterogeneous words in Mandarin mingled by Cantonese of city, $\mu_i \in (0,1)$. n ($n = 9$) is the number of cities in the area. L represents the degree index of Mandarin mingled by Cantonese, and its value range is $L \in (0,1)$: when $L = 0$, the degree index of Mandarin mingled by Cantonese is 0, that is, the Mandarin of residents in this area is very standard; when $L = 1$, the index of Mandarin mingled by Cantonese is 1, that is, the Mandarin of residents in this area was completely with Cantonese flavor. Factually, neither of these extremes exists.

What should be paid attention to is α_i ($\sum_{i=1}^{n} \alpha_i = 1$), which is called the dialect inertia weight of city i or the average ratio coefficient of heterogeneous words in Mandarin mingled by Cantonese, which refers to the use atmosphere of the city's dialect and will not be affected by Mandarin and other languages for a long time in the future, so as to maintain the inertia level of people using the dialect. However, it is difficult to employ an objective method to measure the coefficient. Therefore, this paper invites two experts in the field of sociolinguistics of universities in Guangzhou to make a judgment according to the current situation and future change trend of Cantonese in each city. The expert scoring method is applied to subjectively assign the dialect inertia weight of each city, as shown in Table 1.

Table 1

Assignment of Dialect Inertia Weight of Each City

City	Guangzhou	Shenzhen	Zhuhai	Foshan	Huizhou	Dongguan	Zhongshan	Jiangmen	Zhaoqing
Weight	0.06	0.05	0.07	0.10	0.12	0.08	0.16	0.16	0.20

By substituting the weight in Table 1 into formula (2), we can get $L = 0.0096$, namely, the current degree index of Mandarin mingled by Cantonese in the Pearl River Delta region. The smaller the index, the less the influence of Cantonese on Mandarin in the region, and the higher the average level of Mandarin. From the value range, the value is obviously closer to 0, indicating that the current degree of Mandarin mingled by Cantonese in the Pearl River Delta is weak, or the average level of Mandarin is relatively high.

Distribution of Cities in Different Dimensions

In order to deeply understand the distribution of Mandarin mingled by Cantonese phenomenon, the following is based on the city dimension, and is subdivided according to the urban or rural areas, age, gender, occupation, education level and other dimensions of the respondents' permanent address. The statistical heterogeneity words are shown in Table 2.

(1) Urban and rural areas. As there is no rural area in Shenzhen, it does not participate in the comparison. In the other eight cities, the number of heterogeneous words in urban area is higher than that in rural area, and the former is about twice as much as the latter. Rural residents are relatively less educated and have less communication with the outside world. The dialect in vernacular layer is better preserved, and there are more original dialects when using Mandarin.

(2) Age. The proportion of heterogeneous words of the respondents over 50 years old was significantly higher than that of those under 50 years old. Among them, the proportion of heterogeneous words in Zhaoqing reached 16.11%, which was the highest in the Pearl River Delta region. On the one hand, the older people have not yet caught up with the era of economic integration in the Pearl River Delta in the early stage of language learning; on the other hand, the opportunities for the elderly to receive education are relatively less. As a result, most of them can't use Mandarin as skillfully as young people. In contrast, the level of Mandarin of those under 30 is much higher.

(3) Gender. Among the nine cities, the proportion of heterogeneous words of men is higher than women only in Dongguan, while other cities have a lower ratio of male than female. It shows that the average level of Mandarin of women is weaker than that of men, and the effect of Cantonese is stronger and men's Mandarin is more standard. This is because there is little difference between adult men and women in their ability to learn and use language, which is related to acquired learning (Hyde & Linn, 1988). Women have less chance to learn Mandarin and contact with the outside world than men.

(4) Occupation. The survey demonstrates that students' Mandarin level is very high, and the ratio of heterogeneous words is about 1%-2%, that is, only a few heterogeneous words appear in every 100 words, which is far lower than that of other professions. Meanwhile, the proportion of heterogeneous words in the wage earners is significantly lower than that in other unstable occupations.

(5) Education level. With the improvement of education level, the average ratio of heterogeneous words decreased gradually, especially in junior high school and below, which was significantly higher than the other two levels. According to the calculation, the average ratio of the three education levels is 10.13%, 6.38% and 4.67%, respectively. This means that the education is an important factor affecting Mandarin proficiency.

Table 2

Distribution of Cities in Different Dimensions of Heterogeneous Words (Unit:%)

		Guangzhou	Shenmzhen	Zhuhai	Foshan	Huizhou	Dongguan	Zhongshan	Jiangmen	Zhaoqing
Urban/ rural area	rural area	5.77	/	6.63	7.86	9.10	8.34	10.11	12.93	13.88
	urban area	2.19	2.08	3.17	4.98	5.54	2.81	6.60	6.55	7.92
Age	≤30	2.25	0.68	0.95	1.49	2.70	1.34	2.81	2.34	2.77
	30-50	5.06	1.87	2.11	7.20	9.55	6.23	7.89	10.67	9.85
	≥50	9.20	6.19	7.74	11.58	11.88	10.43	12.96	12.57	16.11
Gender	male	4.02	1.60	4.33	5.76	5.94	5.49	7.73	11.34	11.19
	female	5.85	2.37	6.17	8.98	9.93	2.67	13.01	13.88	15.46
Occupation	student	0.86	0.50	0.67	0.94	1.85	1.98	1.92	2.08	2.05
	wage earners	2.87	0.99	2.72	3.53	3.67	2.48	4.79	4.58	5.45
	others	8.75	4.66	9.10	9.24	9.18	9.51	12.07	12.34	14.19
Education level	Junior high school and below	8.17	4.99	6.45	9.17	10.02	12.45	10.19	12.85	16.87
	Senior high school, higher vocational school, technical	3.88	1.83	6.12	7.78	8.76	2.19	7.10	8.42	10.33

secondary school								
College or above	2.16	1.04	4.51	6.65	7.22	2.25	5.23	5.84	7.10

Conclusion and Discussion

Conclusion

This paper investigates the use of Mandarin in the Pearl River Delta region to understand the differences of Mandarin level in different cities and different dimensions of each city, including urban and rural areas, age, gender, occupation and education level, and to compare the balanced level of Mandarin mingled by Cantonese in different cities.

The main conclusions are as follows: (1) according to the ratio of the heterogeneous words of Mandarin mingled by Cantonese to reflect the level of Mandarin, the ranking of the degree of Mandarin mingled by Cantonese of the nine cities from less to more or the average level of Mandarin from high to low is Shenzhen, Dongguan, Guangzhou, Zhuhai, Foshan, Huizhou, Zhongshan, Jiangmen and Zhaoqing. (2) Further statistical analysis of each city manifests that: the ratio of heterogeneous words of Mandarin mingled by Cantonese of urban residents is lower than that of rural residents. Moreover, except for Dongguan, the ratio of heterogeneous words of male in other cities is lower than that of female; the older the age, the higher the ratio of heterogeneous words of Mandarin mingled by Cantonese is; the ratio of heterogeneous words of students is significantly lower than that of other occupation respondents; the higher the education level, the lower the average ratio of heterogeneous words of Mandarin mingled by Cantonese is. (3) The degree index of Mandarin mingled by Cantonese in the Pearl River Delta is 0.0096.

Discussion

It proves that there is a similar distribution trend between the degree of Mandarin mingled by Cantonese of urban and the local GDP level. As shown in Table 3:

Table 3

Ranking Difference of the Degree of Mandarin Mingled by Cantonese and GDP

	Guangzhou	Shenzhen	Zhuhai	Foshan	Huizhou	Dongguan	Zhongshan	Jiangmen	Zhaoqing
Degree of Mandarin mingled by Cantonese	3	1	4	5	6	2	7	8	9
GDP	2	1	9	3	5	4	6	7	8
Ranking difference	1	0	5	2	1	2	1	1	1

Note: GDP data is from Guangdong Statistical Yearbook (2019).

As can be seen from Table 3, except for Zhuhai, the differences between GDP ranking (from high to low) and the balance degree of Mandarin mingled by Cantonese (from low to high) of other cities are between 0-2, which qualitatively reflects that there is a certain correlation between them. Economic development is an important factor in language development (Dauenhauer & Dauenhauer, 1998). Generally speaking, the higher the

level of regional economic development, the better the promotion effect of Mandarin. From the per capita GDP, per capita disposable income, urbanization level, urban competitiveness and other indicators, there are great differences among the cities in the Pearl River Delta, which is also related to the effectiveness of popularizing Mandarin. The imbalance of Mandarin mingled by Cantonese caused by this deserves attention.

Therefore, 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, focusing on rural areas, the elderly and people with lower education level. On the other hand, the phenomenon of Mandarin mingled by Cantonese is an inevitable phenomenon in the process of economic development and cultural integration. With the promotion of popularizing Mandarin, 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 dialects.

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