The Variation of Monophthong [o] in Taiyuan Southern Suburban Vernacular

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Abstract Taiyuan Basin Dialect is made up of three main vernaculars: Taiyuan Urban Vernacular (TUV), Taiyuan Southern Suburban Vernacular (TSSV) and Taiyuan Northern Suburban Vernacular (TNSV), among which, TSSV has experienced great changes in the past few decades as a result of urbanization and popularizing of Mandarin. The most compelling ones are the place of articulation of monophthong [o] and the nasalization of the monophthong [o]. This paper investigates the variation of the monophthong [o] in TSSV across 3 successive generations. Specifically, nasal sound does not occur following the monophthong [o] in the senior generation when pronouncing words including *ang*. The lowered monophthong [o] is initially visible in the middle generation and more advanced in the young generation.

Keywords TSSV, monophthong [o], apparent time study, *ang*, sociophonetics

1. Introduction

Situated in the middle of Shanxi Province, Taiyuan, the capital city, consists of 6 districts, 3 counties and 1 sub-city. Surrounded by Mandarin Chinese, Taiyuan Basin Dialect is spoken by these 10 areas with a population of 2 million people (*Baidu*). To be more specific, Taiyuan Basin Dialect is made up of three main vernaculars: Taiyuan Urban Vernacular (TUV), Taiyuan Southern Suburban Vernacular (TSSV) and Taiyuan Northern Suburban Vernacular (TNSV), among which, historically, TUV and TNSV share more common features in terms of phonetic characters. In comparison, TSSV shows great discrepancy from that of TUV due to its geographical proximity. The phonology in Nanjiao District [southern district in Taiyuan] is more conservative and evolves more slowly than that of [the rest of] Taiyuan (Wang, 2007).

However, TSSV has experienced great changes in the past few decades as a result of urbanization and popularizing of Mandarin. For instance, 9 original TSSV monophthongs eventually shifted to 6 monophthongs and the missing 3 monophthongs tend to become diphthongs like [o] shifting to [uɣ] (Zhang, 2013). Another criticism leveled at the monophthong [o] has been that in traditional old-style TSSV there is a lack of [õ] compared to TUV and Taiyuan Mandarin (Wang, 2007). With the development of Taiyuan city and more frequent interactions between Taiyuan southern suburb and Taiyuan urban area, people living in Taiyuan southern suburb have more exposure to TUV. In addition, as television programs are aired more in Taiyuan southern villages, residents are more likely to be exposed to standard Mandarin. Thus, the traditional old-style TSSV has undergone changes, of which the

most compelling ones are the place of articulation of monophthong [o] and the nasalization of the monophthong [o].

1.1 Apparent time study

Apparent time study looks at speakers of different ages as a synchronic window into how language variation occurs from generation to generation diachronically. Dodsworth (2012) tracks the shifts in the front vowels across apparent time due to urbanization and the rapid development of economy in Raleigh, North Carolina. Similarly, Jacewicz (2011) sociophonetically investigates vowel changes in apparent time across 3 successive generations of female adults representing western North Carolina, central Ohio and southeastern Wisconsin. Moreover, Kang (2015) compares the vowel change between younger and older speakers in another language rather than English, which is an apparent time study. These studies show the generational changes in languages due to various social factors. Thanks to apparent time method, the data collected in these studies ensure the consistency of the study.

1.2 Acoustic technique

The application of Praat is commonly seen in the sociophonetic domain. Specifically, when vowel variations are involved, the analysis of first and second formants (F1 and F2) is necessary. As is known, F1 is closely associated with the height of tongue position and F2 is inextricably linked up with the front/back dimension.

For example, the acoustic techniques applied in Bekker (2007) study are instrumentally prominent, although it lacks discussions of the socio-cultural contributors to those phonetic changes. Using Praat to quantitatively analyze F1 and F2 of the lowered and retracted TRAP vowels (in words like trap, cat, bath, etc.) provides the researcher with convenience and accuracy.

When Mandarin data considered, Tseng (2016) tracks the 3 variants of /kwo/ and /y/ in Taiwan Mandarin (standard, /w_o/ merger, /y/ delabialization) also by comparing their F1 and F2 via Praat. The paper takes different social factors into account such as gender, age, education, the use of Internet as well as the place of origin, which is a good reminder of the complexity of sociophonological phenomenon where not only generational factor occurs.

2. Methodology

2.1 Participants

The participants were 9 native speakers (see figure 1) who grew up in one of the villages in Jinyuan (one of the districts in Taiyuan Nanjiao), called Xiyu Village. The 9 informants are chosen from 3 generations: the senior, the middle and the young. The

senior generation speakers were born between 1940 and 1959, who are still living in the village. The middle generation participants were born from 1960 to 1980, who are working in Taiyuan urban areas for several years after graduating from local high schools. The young generation, between 1981 and 2000, completed all or most of their school years in urban areas and are living near downtown.

Speakers	Sex	Year of birth	Age	Generation
1	female	1947	70	senior
2	male	1948	69	senior
3	male	1950	67	senior
4	male	1964	53	middle
5	male	1975	42	middle
6	female	1979	38	middle
7	female	1989	28	young
8	male	1990	27	young
9	female	1993	24	young

Figure 1: Basic information of 9 informants
with sex, year of birth, age and generation they belong to.

2.2 Reading task

The reading task involves a wordlist reading of 5 Mandarin lexicons (帮忙，开张，窗台，当然，方向). In order to test the variation in the target monophthong [o] in TSSV, all these 5 words include the pronunciation of [o], i.e. there are 21 tokens of [o] (See figure 2). It is obvious that *ang* in TUV is pronounced as [õ] and in Standard Mandarin, it is more like [aŋ]. 9 speakers were asked to read all the words one by one.

NO.	Words	TSSV	TUV	Standard Mandarin
1	bang mang	[po mo]	[põ mõ]	[paŋ maŋ]
2	kai zhang	[kai tso]	[kai tsõ]	[kai tʂaŋ]
3	chuang tai	[tsʰuo tai]	[tsuõ tʰai]	[tʂʰuaŋ tʰai]
4	dang ran	[to zæ]	[tõ zæ̃]	[taŋ ʐan]
5	fang xiang	[fo ɕio]	[fõ ɕiõ]	[faŋ ɕiaŋ]

Figure 2: Wordlist with transcriptions in TSSV, TUV and Standard Mandarin.

2.3 Procedures

The experiment was conducted in Wei Yongkai's (one of the local residents) house in Xiyu Village. The 9 participants listened to an introduction on the entire procedure and they were instructed to perform their natural sounds during the experiment.

Prior to the reading task, I talked with the speaker about his or her daily life, like "What do you do everyday?", "How many kids do you have?", "Where are they now?", "What is your hobby?", " How do you think the development of the village?", "Any suggestions?", "What is your future plan?". The purpose of these casual conversations is to engage the candidates into a natural and relaxing condition.

After which, the wordlist was given directly to the informant. The participant then read the 16 words in TSSV. This was repeated for each speaker. During the entire procedure, I used iPhone 7 plus to record the conversations and wordlist reading. To ensure participants did not alter their speech particularly for the tokens, the purpose of the study was not disclosed until all data were collected.

3. Predictions

Based on Wang (2007) and Zhang (2013) previous TSSV characteristics and its development, I made 2 main predictions:

3.1 Prediction 1: Nasal sounds will not occur following the monophthong [o] in the senior generation.

The senior generation speakers grew up in Xiyu Village and they are still residing in the village without any living or working experience outside that area. Thus, they may have little influence by TUV or even standard Mandarin. They attended the same schools and lived in the same neighborhoods and get married with the local people within the same village. Therefore, we would expect to see a completely traditional old-style TSSV, where the monophthong [o] appears without preceding nasal [n] or [ŋ].

3.2 Prediction 2: The lowered monophthong [o] will initially be visible in the middle generation and more advanced in the young generation.

Ranging from 37 years old to 57 years old, particularly at the age of roughly 40 to 45, people in Xiyu Village have a higher tendency to work in Taiyuan urban area, namely the city centre. Most of the male villagers used to be drivers transporting coals to other parts of Taiyuan or even other cities within the province. Some of them hence moved to Taiyuan urban area in order to provide a better living and education environment for their children. Therefore, the middle generation is the first generation living in the contact setting and I predict a mixed (TSSV and TUV) dialect. Since their children (the young generation) have longer and stronger contact with TUV and standard Mandarin where [õ] exists, I expect a more nasalized variant of [o].

4. Results

4.1 Completely traditional old-style TSSV monophthong [o] only occurs in the senior generation.

Figure 3 shows the distribution of traditional old-style TSSV monophthong [o] in 3 successive generations.

It clearly indicates that only the 3 speakers in senior generation hold completely traditional old-style TSSV monophthong [o], without shifting it to either TUV ([ɒ̃]) or Standard Mandarin ([aŋ]).

In the 2nd generation, all 3 informants voiced the nasal [ŋ] following [o] in the word *dang*, and 1 participant nasalized the monophthong [o] when pronouncing *chuang*. They have the tendency to pronounce the *ang* in TUV ([ɒ̃]).

The young generation has witnessed a dramatic change in pronouncing *ang*. All 3 speakers pronounce the 21 tokens in a way of either TUV (2 speakers) or Standard Mandarin (1 speaker). They have a higher tendency to pronounce the *ang* in a way of Standard Mandarin ([aŋ]).

The data are consistent with the 1st prediction that the nasal sounds neither shift into [aŋ] nor changes into [ɒ̃].

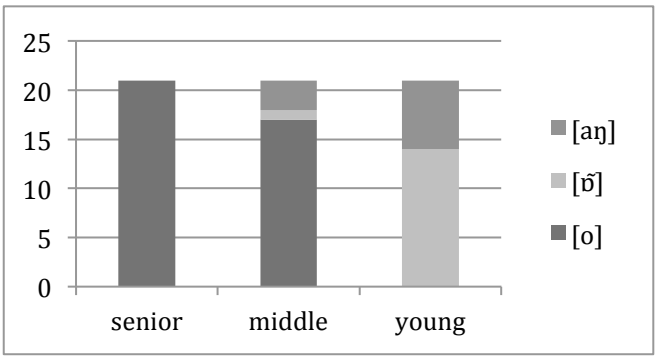

Figure 3: Distribution of [o], [ɒ̃] and [aŋ].

4.2 The lowered monophthong [o] is first seen in the middle generation and more commonly witnessed in the young generation.

Initially, an independent-samples t-test was conducted to compare the variation of the place of articulation of monophthong [o] between the senior and the middle generations. In terms of F1, there was a significant difference in the scores for the senior generation (M=484.966729533, SD=85.362344584) and the middle generation (M=609.304989938, SD=165.612084837) conditions; t(40)= 3.0582, p = 0.0040. These results suggest that the middle generation produces a higher F1 of monophthong [o] when pronouncing *ang* compared to the senior generation. Specifically, our results suggest that people in the middle generation in Xiyu Village

tend to have a lowered monophthong [o] (a tendency to [ɒ̃]) because of the influence of TUV.

Consistent with the prediction 2, a more significant difference can be seen between the senior generation and the young generation. Compared to the scores for the senior generation (M=484.966729533, SD=85.362344584), the scores of the young generation (M= 753.571710214, SD= 85.783591467) indicate a much higher F1 in the sound of *ang*; t(40)= 10.1712, p=0.0001. These results suggest that individuals in the young generation in Xiyu Village tend to have a more lowered monophthong [o] (a tendency to [aŋ]) due to more exposure to Standard Mandarin.

In addition, the comparison between the middle generation and the young generation also shows the variation of the monophthong [o] in TSSV. The scores for the middle generation (M=609.304989938, SD=165.612084837) were significantly different from the scores for the young generation (M= 753.571710214, SD= 85.783591467) conditions; t(40)= 3.5446, p = 0.0010. These results suggest that there is a difference between TUV and Standard Mandarin in the pronunciation of *ang* ([ɒ̃] and [aŋ] respectively), where a more lowered monophthong [a] can be found in Standard Mandarin.

Figure 4 shows the tendency of the variation of the monophthong [o] across all 3 generations. It is worth noting that the monophthong [o] in TSSV undergoes significant changes, moving from traditional [o] to lowered diphthong [aŋ]. Furthermore, its F1 is higher and F2 is lower, which means the tongue position of traditional monophthong [o] becomes lower and more back.

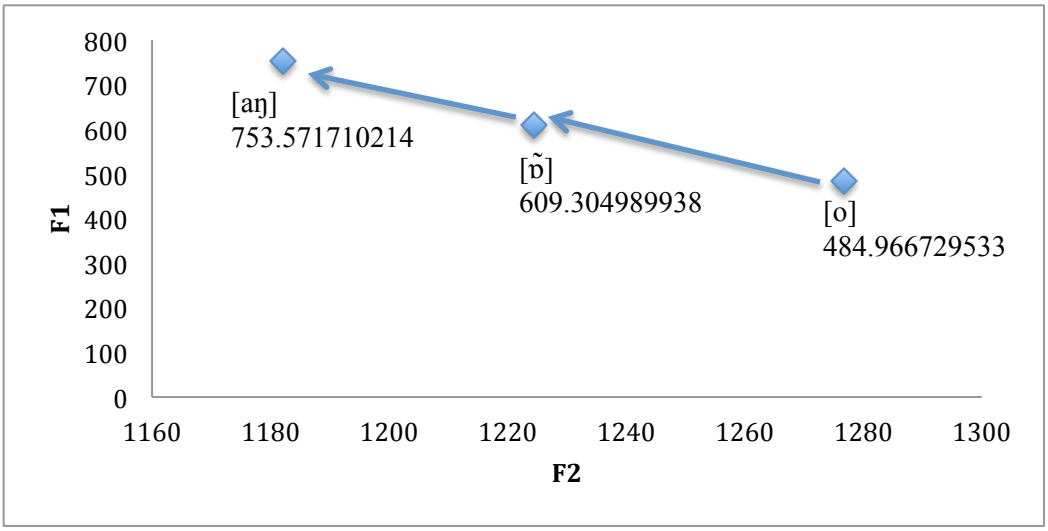

Figure 4: variation of the monophthong [o]

5. Discussion and conclusion

The main goal of this study was to investigate the variation of the monophthong [o] in TSSV across 3 successive generations. My findings provide support for the 1st

prediction. Nasal sound does not occur following the monophthong [o] in the senior generation when pronouncing words including *ang*. This major finding is compatible with that of Wang's (2007) who found that the pure monophthong [o] was one of the most significant features of TSSV, which she called the traditional old-style TSSV.

My findings also largely support the 2nd prediction in that the lowered monophthong [o] is initially visible in the middle generation and more advanced in the young generation. The mean rate of the F1 of the monophthong [o] in the middle generation was significantly higher than that in the senior generation, and more importantly the mean rate of the F1 of the monophthong [o] in the young generation was even higher than that in the middle generation. The tongue position of the monophthong [o] moves from high position to low position, from front position to back position, which tends to become [ɒ̃] in TUV and [aŋ] in Standard Mandarin. Therefore, the monophthong [o] in TSSV has undergone changes overtime.

Both the middle generation and the young generation are more exposed to TUV and Standard Mandarin. Since the middle generation worked in Taiyuan urban areas, surrounded by TUV, their pronunciation of *an*g is affected by TUV, leading to the shift from [o] to [ɒ̃]. Furthermore, the young generation received primary-level and secondary-level education in Taiyuan urban areas, they have the most exposure to Standard Mandarin. Hence, their pronunciation of *ang* is mainly influenced by Standard Mandarin [aŋ].

I acknowledge that the sample size of the present study was small but given to its significant findings I suggest that the future research investigate the variation of the monophthong [o] in TSSV in a larger scale. Another limitation is that the tokens in the reading task were inadequate; only 5 words with 7 tokens of [o] were involved.

Despite these limitations, this study gives a close look at the variation of the monophthong [o] in TSSV across apparent time, which contributes to the existing literature and allows researchers to probe areas of TSSV sociophonetic changes.

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