Proceedings of the 29th North American Conference on Chinese Linguistics (NACCL-29). 2017. Volume 2. Edited by Lan Zhang. University of Memphis, Memphis, TN. Pages 545-557.

Xin [ʋen] *Lianbo?* Language Attitudes to V-type Phonetic Variation in *Putonghua*[1]

Qian Wang
The Ohio State University

In *Putonghua*, /w/-initial syllables such as *wen* have two phonetic variations: labial-velar approximant [w] and labiodental approximant [ʋ], known as W-type and V-type variation, respectively (Shen 1987, Zhou 2003). This study uses matched guise tasks and a survey to explore native speakers' perceptions of phonetic variations in /w/-initial syllables in *Putonghua*. This study shows that W/V-type variation in /w/-initial syllables affects native speakers' perceptions of a talker's friendliness but does not affect native speakers' perception of a talker's education level, accent, or urban background.

1. Introduction

Putonghua is the official language in China. Continuous efforts have been made to promote *Putonghua* nationwide. Speech in news programs from China Central Television (CCTV) and national broadcasting stations are considered to represent the standard *Putonghua* pronunciation in China. Using news programs and weather forecasts from CCTV, Zhou (2003) conducted a quantitative study of the phonetic variation among /w/-initial syllables in 15 broadcasters' speech. Both labial-velar approximant [w] and labiodental fricative [v][2] were observed from the news broadcasters' speech. It was found that [v] were more often articulated than [w] in /w/-initial syllables.

According to *Hanyu Pingyin Fang'an* "Scheme of the Chinese Phonetic Alphabet", [w] is the standard pronunciation and [v] is reserved to describe foreign and minority languages. Given such regulations, [v] could potentially be treated as a type of mispronunciation of /w/ in /w/-initial syllables. However, the mispronunciation hypothesis was refuted by Zhou 2003 and many other studies (e.g., Lin 1982, Shen 1987, Ying 2011, etc.). The consensus in the literature is that phonetic variation in /w/-initial

[1] The author would like to thank Professor Marjorie K.M. Chan, Seth Wiener**,** Qingyang Yan, Yuhan Lin, and NACCL-29 attendees for helpful discussions.

[2] The research did not have access to the research material Zhou used in his 2003 study. But the researcher, a native Mandarin speaker, speculates that [ʋ], the labiodental approximant might be the more proper way to describe the phonetic variation. See also Hu (1991) and Wiener and Shih (2011, 2012, 2013).

syllables is a widespread phenomenon and should not simply be considered as a type of mispronunciation. The shared language ideology is that language, as a dynamic system, should be used according to well-established rules but at the same time remains sensitive to many other factors, such as individual differences.

There have been speech production and/or recognition studies devoted to examining the phonetic variation in /w/-initial syllables in *Putonghua*. But there is no study examining native Chinese[3] speakers' language attitudes towards such phonetic variation. To fill this gap, this study used matched guise tasks to examine native Chinese speakers' attitudes to speech samples involving phonetic variation in /w/-initial syllables.

2. Literature review

This section reviewed previous studies on speech production and/or speech recognition of the phonetic variation in Chinese /w/-initial syllables. In addition, this section justified this study by pointing out the gap in literature, i.e., the lack of studies addressing native speakers' language attitudes to the phonetic variation in /w/-initial syllables in *Putonghua*.

2.1 The V-type/W-type production studies

This subsection reviewed studies that shared the common interests in speech production involving phonetic variation in syllables with /w/ as the initial consonant. Lin's (1982) study was the first study pointing out the phonetic variation in /w/-initial syllables in *Putonghua* as well as in Beijing dialect. Lin suggested that different degrees of lip-rounding led to phonetic variation and Shen (1987) spelled out the variation, i.e., [u w β ʋ v] using IPA. Shen further grouped those five phones into three major categories: W-type (including bilabial phones), V-type (including labiodental phones), and L-type (including phones that could not be categorized to W-type or V-type). Shen's (1987) sociolinguistic study of over 400 participants' production of /w/-initial disyllabic words in Beijing dialect reported that V-type production was more likely to be observed among young female participants and among syllables with less rounded vowel nucleus. Shen's study tested eight eligible /w/-initial syllables, i.e., *wa* /wa/, *wang* /wɑŋ/, *wan* /wɑn/, *wai* wai/, *wei* /wei/, *wen* /wən/, *wo* /wo/, *wu* /wu/, leaving out the ninth possible /w/-initial syllable, i.e., weng /wəŋ/ because of its rare use in Beijing dialect.

Shen's (1987) observation was confirmed and expanded in Wiener and Shih's (2011, 2013) sociophonetic studies of [ʋ]/ [w] phonetic variation in *Putonghua*. Wiener and Shih (2011, 2013) reported that [ʋ]/ [w] phonetic variation extended beyond Beijing and the surrounding areas and such variation was observed in participants from both northern and southern part of China (also see Chen 2010). Same with Shen (1987), Wiener and Shih (2011, 2013) reported that [ʋ] tended to co-occur with less rounded vowels and [w] tended to be coarticulated with rounded vowels.

[3] In this study, "Chinese" was used as the cover term for languages/dialects spoken in China.

The practice of using only labiodental approximant [ʋ] and labial-velar approximant [w] to describe the phonetic variation in Chinese /w/-initial syllables can be traced back to Hu's (1991) study. Hu suggested that there were only two kinds of phonetic variation in Beijing dialect, i.e., labiodental approximant [ʋ] and labial-velar approximant [w]. Hu also summarized the coarticulation conditions of [ʋ] and [w] in Beijing dialect as reported in (1). Hu suggested that the phoneme /w/ would be phonetically realized as [w] if coarticulated with low vowels and [ʋ] will be triggered if the syllable nucleus is a high vowel. In addition, Hu also pointed out that the openness in pronouncing *a* [ɑ] as in *wan* [wɑn] was subject to individual variation and stress alternation. [w] was more likely to co-occur with [ɑ] with wider openness and [ʋ] was more likely to be companied with [ɑ] with narrower openness.

(1) Coarticulation conditions for [ʋ] and [w] in Beijing dialect (Hu, 1991, p. 244)
[w][4]: *wa* 瓦, *wai* 喂, *wang* 王, *wo* 我
[ʋ]: *wei* 为, *wen* 文, *weng* 翁
[w]/ [ʋ]: *wan* 晚

Other studies such as J. Wang's (2011) study on initial consonant [ʋ] variation in Harbin dialect, a northern speech, emphasized social factors' influence on [ʋ] production. J. Wang reported that family prestige, growth areas, professional prestige, and age were the factors that had the greatest impact on [ʋ] production.

In summary, this subsection reviewed several studies about /w/-initial syllable production. The consensus was reported as follows: first, there were two major types of phonetic variation in /w/-initial syllables, i.e., involving lips (bilabial) or lip and teeth (labiodental); second, W-type phonetic variation such as [w] tended to co-occur with rounded vowels and V-type variation such as [ʋ] tended to be coarticulated with less rounded vowels; last, W-type and V-type variation could be observed in native Chinese speakers from both southern and northern part of China.

2.2 The V-type/W-type recognition studies

Besides production studies, there were also speech recognition studies addressing V-type/W-type variation in /w/-initial syllables in *Putonghua*. Wiener and Shih's (2012) study reported that there was a significant difference in participants' accuracy in recognizing the female [ʋ] production than male [ʋ] production in /w/-initial syllables. Participants were better at recognizing the former than the latter. Wiener and Shih used 48 target syllables from five speakers' (2 male, 3 female) recordings to form AXB discrimination tasks. The results indicated that participants were better at perceiving

[4] Hu (1991) used the vowel [u] to describe the approximant [w]. The author changes [u] into [w] to be consistent with the phonetic representation used in the rest of this paper.

female [ʋ] production, regardless of whether the female speakers were originally from the north part of China or not.

2.3 The V-type/W-type production + recognition studies

Chen's study in 2010 investigated both V-type/W-type speech production and recognition among native Chinese speakers from various dialect groups. In Chen's study, participants were first asked to read a word list containing 69 disyllabic words with /w/-initials. Participants then listened to 18 words chosen from the word list, twice (one in W-type reading, one in V-type), and reported whether they thought the pronunciations were acceptable in *Putonghua* speech. The results indicated that participants from the northern group (including speakers of various northern Mandarin[5] dialects), the central group (including *Xiang* and *Wu* dialect speakers), and the southern group (including Cantonese and *Min* dialect speakers) differed significantly in [v] usage frequency, but did not differ significantly in the tendency of accepting [v] in *Putonghua*.

To be specific, in terms of usage frequency, the northern group differed significantly from both the central and southern group, but there was no significant difference found between the central and southern group. Such results indicated that V-type production was primarily associated with northern speech, though the feature had been gradually adopted by speakers from the central and southern dialect groups. In addition, the fact that speakers from all three dialect groups showed no significant difference in accepting V-type pronunciation demonstrated that [v] had become an acceptable acoustic feature associated with *Putonghua*.

As discussed above, previous studies either examined V-type production and/or V-type recognition in /w/-initial syllables. No study has been conducted to specifically address native Chinese speakers' language attitudes towards W-type/V-type phonetic variation in /w/-initial syllables. This study used matched guise tasks and structured interview questions to explore participants' language attitudes to W-type/V-type variation in spoken Chinese. This study aimed to examine the relationship between W-type/V-type variation and the resulting influence on people's judgment of talkers' traits.

3. Methodology

3.1 Participants

This study had 14 subjects, aged from 22 to 35. All of them were adult native Chinese speakers though their dialectal background varied. They were all undergraduate or graduate students enrolled in two major Mid-west universities. The informant pool included one *Yue* dialect speaker, five *Wu* dialect speakers, and eight Mandarin speakers. 13 of them finished undergraduate study in mainland China before coming to the U.S.

[5] "Mandarin" in this study was used to refer to one of the ten major dialect groups in China, i.e., *guan hua* (Li 1989).

One informant left China after finishing high school. Their length of staying in the U.S. varied from four months to five and a half years. All participants volunteered for this study.

3.2 Instrument

An online Google form survey was used to collect data in this study. It included a background information questionnaire, followed by matched guise tasks based on six pre-prepared recordings, and four interview questions. To be specific, the language background questionnaire was used to collect participants' dialectal background and self-evaluation of their *Putonghua* speech. See Appendix A for details. In addition, recordings of an excerpt of the written passage in Wiener and Shih's (2011, 2013) sociophonetic study of [ʊ] were used as the audio stimuli. The original passage was about ***W****eilian* ***W****angzi* "Prince William" written in news report style. The entire passage included 41 tokens of /w/-initial syllables.[6] The excerpt used in this study contained 21 target syllables. See Appendix B for details.

In this study, two native Mandarin speakers (one male and one female) were recruited by the researcher to read the excerpt. V-type/W-type variation in /w/-initial syllables existed in both speakers' natural speech.[7] They tended to use W-type pronunciation of /w/ when /w/ was followed by rounded vowels and to use V-type pronunciation in other cases. Therefore, in the two speakers' natural speech, both W-type and V-type pronunciations of /w/-initial syllables existed. This pattern was categorized as W/V-mixed type in this study.

In total, six recordings were contributed by the two speakers. They were asked to read the excerpt three times. On the first reading, the two speakers were asked to read in their natural speech to yield the W/V-mixed type recording. Then they were asked to read every /w/-initial syllable in standard *Putonghua* pronunciation, i.e., as [w], the labial-velar approximant to generate the W-type recording. The last time, the two speakers were asked to phonetically "replace" /w/ in every target syllable with [ʊ], the labiodental

[6] If the target syllable was at the second syllable position in a disyllabic word, it would still be counted as a /w/-initial syllable since /w/ was at the initial position of the second syllable. In addition, the original passage in Wiener and Shih's (2013) was designed in a way that the possible influences of the preceding syllable were controlled. In the original passage, all /w/-initial syllables were preceded by either a vowel or an /n/-coda. Therefore, Wiener and Shih's short passage remained a valid research instrument for examining syllables with /w/-initial.

[7] The researcher used a question in a friendly environment to determine whether [ʊ]/[w] variation was present or not. The researcher asked the two speakers the name of the news program on air at 7:00 p.m. on CCTV-1. If their reply was *xin* [v]*en lianbo* instead of *xin* [w]*en lianbo*, the researcher would then draw the speakers' attention to the character 文 *wen*'s *pinyin* romanization and asked them to pronounce it again. If they reply with *xin* [w]*en lianbo*, then the researcher concluded that the [ʊ]/[w] variation was present in the speakers' natural speech and [ʊ] would be the more "natural" way to pronounce certain /w/-initial syllables.

approximant to yield the V-type recording. In the meantime, the two speakers were directed to retain as much natural speech features as they could. The researcher audio-recorded the process and later edited the recordings. In total, six recordings were used as phonetic input for the matched guise tasks.

Another questionnaire designed as matched guise tasks was used to collect data on participants' language attitudes on W/V-mixed type variation, W-type speech, and V-type speech in *Putonghua*. It asked participant to rate the speaker in each recording on the following aspects: the speaker's education level, friendliness, accent, urbanization level of the speaker's hometown, and resemblance to *Putonghua* pronunciation. The six recordings were placed in the questionnaire in the following order: W-type recording (first female, then male), then V-type recording (first female, then male), and last W/V-mixed type recording (first female, then male). See Appendix C for details.

Last, four interview questions were also included to elicit participants' understandings of V-type/W-type phonetic variation in /w/-initial syllables, and their attitudes towards language standards and dynamic changes. See Appendix D for details.

3.3 Procedure

First, participants were asked to fill out the language background questionnaire. Then they were asked to do the matched guise tasks based on six pre-prepared recordings. Last, participants were asked to respond to four pre-structured interview questions about V-type/ W-type phonetic variations in /w/-initial syllables in *Putonghua*.

4. Results and Analyses

This section reported and analyzed results of the matched guise tasks and the follow-up interview questions using quantitative and qualitative methods, respectively. The results indicated that female recordings of all three types, i.e., W-type, V-type, and W/V-mixed type were consistently rated as friendlier than the corresponding male recording. In addition, the female and male recordings of each type were not perceived significantly different in education, accentedness, urbanness, and resemblance to *Putonghua* pronunciation as rated by the 14 participants in this study.

4.1 The matched guise tasks

This subsection reported and analyzed results of the matched guise tasks. In the matched guises tasks, all 14 participants rated their judgment towards each pre-prepared recording along five traits on a 5-point scale. Quantitative analyses of W-type, V-type, and W/V-mixed type recordings were given in this subsection.

W-type recording: Paired t-tests reported the following results. First, there was no significant difference among the 14 participants' judgment of female and male W-type recordings in terms of education level, accent, urbanization of the speaker's hometown, and resemblance to *Putonghua* pronunciation. But there was a significant difference in friendliness, $t(13) = 2.69$, $p < .05$, with female W-type recording ($M = 4.0$, $SD = 0.78$)

receiving a higher score than the corresponding male W-type recording (*M* = 3.6, *SD* = 0.84). It indicated that female W-type recording was consistently rated as friendlier than male W-type recording, and such difference was statistically reliable.

V-type reading: Paired t-tests were conducted to compare whether the 14 participants made significantly different choices in the five traits pertaining to language attitudes towards both female and male V-type recordings. The results indicated the same conclusion as found in participants' language attitudes to female and male W-type recordings. The result suggested that "friendliness" was the only trait which led participants to give significantly different ratings on the female (*M* = 4.5, *SD* = 0.52) and male V-type recording (*M* = 3.9, *SD* = 0.92), $t(13) = 3.80$, $p < .05$.

W/V-mixed type reading: Paired t-tests were conducted on participants' ratings of speakers' education level, friendliness, accent, urbanization of the speaker's hometown, and the degree of resemblance to standard *Putonghua* pronunciation. The results reported the same conclusion as the results derived from quantitative analyses of female and male W and V-type recordings. The 14 participants made similar choices in grading the female and male W/V-mixed type recordings in terms of all four traits, except in friendliness, $t(13) = 2.83$, $p < .05$. Female W/V-mixed type recording (*M* = 4.5, *SD* = 0.52) was rated friendlier than the corresponding male recording (*M* = 3.9, *SD* = 0.92).

In summary, quantitative analysis of the 14 participants' judgment of female and male recordings of all three types reported that participants did not perceive female and male recordings of each type significantly different in education level, accentedness, urbanization of the speaker's hometown, and resemblance to *Putonghua* pronunciation. The only significant difference lied in the guise "friendliness". All 14 participants judged the female recording of each type as friendlier than the corresponding male recording. The above results indicated that native Chinese speakers tended to associate a female voice with friendly personal characteristics.

4.2 Qualitative analysis of the interview questions

The four interview questions asked participants to reflect on their own language practice in pronouncing /w/-initial syllables, whether they had noticed phonetic variation in syllables with /w/-initial consonant before, and their attitudes towards W-type/V-type variation in pronouncing /w/-initial syllables in *Putonghua*.

Qualitative analyses of the interview questions reported the following results. First, V-type variation existed in speech of participants from both northern and southern China, and was observed in both male and female informants. Such results lent support to Wiener and Shih 2013 and Chen 2010. Second, all 14 participants agreed that W-type pronunciation in /w/-initial syllables represented the standard pronunciation in *Putonghua*. Third, informants differed in the sensitivity of perceiving W-type/V-type variation in previous linguistic experiences. The result reported that half of participants (seven out of 14) had noticed W-type/V-type variation before, five participants reported that they did not notice such phenomenon until they participated in this study, and two participants did

not clearly answer the interview question. Fourth, there might be a regional denotation associated with labiodental approximant [ʋ]. [ʋ] was specifically noted as a feature of northern speech by two southern participants, while no participant from northern China expressed such opinion. Such a result echoed with Chen's (2010) conclusion that V-type variation was primarily associated with northern speech.

Last, informants differed in their tolerance of W-type/V-type variation in /w/-initial syllables. Most participants (eight out of 14), regardless of whether they were from the northern or southern part of China or whether they used W-type or V-type pronunciation in their own speech, insisted that W-type/V-type phonetic variation should be tolerated in daily life if such variation did not impact on understanding. Only two participants expressed strong opinion of enforcing strict regulations on pronouncing /w/-initial syllables in *Putonghua*, since both participants reported that *Putonghua* was the language they primarily used (besides English) and dialects were reserved for families and/or friends who were originally from the same region. Therefore, the two informants' insistence on standard pronunciation in *Putonghua* indicated their idea of the proper language practice in daily life. Interestingly, the two participants (one from south, one from north China) used V-type variation in their own speech, while all participants who used W-type, regardless of the regional differences, voted for the more tolerate language attitudes to W-type/V-type variation in daily conversation. Such a result indicated that native speakers' language attitudes did not necessarily correlate with their language practice.

5. Conclusion

This study used matched guise tasks and interview questions to explore native Chinese speakers' language attitudes towards W-type/V-type phonetic variation in /w/-initial syllables in *Putonghua*. The result indicated that participants did not judge female and male recordings of each type, i.e., W-type, V-type, W/V-mixed type, significantly different in terms of the speakers' education level, accent, urbanization of the speakers' hometown, and resemblance to *Putonghua* pronunciation. The only significant difference in the 14 participants' ratings lied in the "friendliness" trait. Participants systematically rated the female recording of each type as friendlier than the corresponding male recording. In addition, the qualitative analysis of the interview questions reported that native Chinese speakers generally tended to accept both W-type and V-type pronunciation in /w/-initial syllables in *Putonghua*.

REFERENCES

CHEN, FANFAN (陈凡凡). 2010. Han minzu gongtongyu zhong [v] de shiyong qingxiang he jieshoudu diaocha (汉民族共同语中[v]的使用倾向和接受度调查)

[[v] usage frequency in *Putonghua* and tendency of accepting [v] among Chinese speakers]. *Shantou daxue xuebao* (汕头大学学报) 26.67-70.

HU, MINGYANG (胡明扬). 1991. Beijinghua shengmu W de yinzhi (北京话声母 W 的音值) [Phonetic value of W initial in Beijing speech]. In *Yuyanxue Lunwen Xuan* (语言学论文选) (Selected Writings in Linguistics). Beijing: Zhongguo Renmin Daxue Chubanshe.244-245.

LI, RONG (李荣). 1989. Hanyu fangyande fenqu (汉语方言的分区) [Classification of the Chinese dialects]. *Fangyan* (方言) 4.241-259.

LIN, TAO (林焘). (1982). Lun Putonghua li de V (论普通话里的 V) [On V in Putonghua]. Republished in *Lintao yuyanxue lunwenji* (林焘语言学论文集), 2001.76-80.

SHEN, JIONG (沈炯). 1987. Beijinghua hekouhu ling shengmude yuyin fenqi. (北京话合口呼零声母的语音分歧) [Phonetic differences of zero initial before finals beginning with u in the Beijing dialect]. *Zhongguo Yuwen* (中国语文) 5.352-362.

WANG, JIALIN. (王佳琳). 2011. Haerbinhua hekouhu lingshengmu [ʋ] hua de shehui yuyanxue yanjiu (哈尔滨话合口呼零声母[ʋ]化的社会语言学研究). M.A. thesis, Heilongjian University.

WIENER, SETH. & YA-TING SHIH. 2011. Divergent places of articulation: [w] and [ʋ] in modern spoken Mandarin. Proceedings of the 23rd North American Conference on Chinese Linguistics (NACCL-23), volume 1, edited by Zhuo Jing-Schmidt, 173-190. University of Oregon, Eugene, OR.

WIENER, SETH. & YA-TING SHIH. 2012. [ʋɑn.ʂɑŋ.xɑʊ]:The growing exposure of /w/ as [ʋ] in spoken Mandarin. Poster presented at *41st New Ways of Analyzing Variation (NWAV)*, University of Indiana, Bloomington, IN.

WIENER, SETH. & YA-TING SHIH. 2013. Evaluating the emergence of [ʋ] in modern spoken Mandarin. Toward Increased Empiricism: Studies in Chinese Linguistics, edited by Zhuo Jing-Schmidt, 171-187. Amsterdam & Philadelphia: John Benjamins Publishing.

YING, JUN (英君). 2011. Putonghua yuyin de guifan yu bianyi. (普通话语音的规范与变异) [Standards and variation in Putonghua pronunciation]. *Changjiang daxue xueba*o (长江大学学报学报) 34.76-77.

ZHOU, JINGUO (周锦国). 2003. Xiandai Hanyu Putonghua yuyinzhong de yizhong yinbian xianxiang-cong “xinwen 30 fen” zhong de “xinwen (xinwen) tanqi” (现代汉语普通话语音中的一种音变现象-从“新闻 30 分”中的“新闻 (xinven)”谈起) [A phenomenon of phonetic change in Putonghua: Xinven vs. xinwen (news) in the TV show of “New’ 30”]. *Yuyan wenzi yingyong* (语言文字应用) 1.116-119.

Appendix A

Language background questionnaire (the Chinese version)

姓名：　　出生地：
年龄：　　受教育水平：
旅美时间：
你的普通话发音的标准程度：
你的家乡话：
你平时都和谁说家乡话：
你父亲所说的方言：
你母亲所说的方言：

Language background questionnaire (the English version)

Gender:　　Birth place:
Age:　　Education level:
Length of staying in the U.S.:
The degree of your speech resembling standard *Putonghua* pronunciation:
Your dialect:
People do you speak dialect with:
Dialect spoken by your father:
Dialect spoken by your mother:
Any speech or hearing disorders:

Appendix B

An excerpt from the research instrument in Wiener and Shih (2011, 2013)

The recorded excerpt (the Chinese version)

英国的威廉王子今年五月到北欧的瑞典进行访问。瑞典因为纬度较高，因此即使是五月，天气还是很冷，不仅屋子里需要开暖气，早上外面的雾气也很浓。威廉王子魅力无穷，他穿上正式服装，看起来相当威风。沿途上很多民众争相跟他握手，他还顽皮地抱起路旁在玩挖土游戏的娃娃，他亲切的态度与他已故的母亲黛安娜王妃一样使人感觉很温暖，我们都很喜欢他。

The recorded excerpt (the English version)

Prince William of the United Kingdom visited Sweden this May. Because of the high latitude of Sweden, even though it was already May, it was still cold. People there still needed a heater in the house and there was also a heavy fog outside. Prince William looks very charming, especially when he dresses up in formal attire. Many Swedes like him and they all wanted to shake hands with him. Prince William also mischievously picked up a child playing and digging on the playground. Prince William is very down-to-earth and nice. His warm attitude is just like his mother, Princess Diana. We all like him a lot.

Appendix C

Matched guise tasks (the Chinese version)

说话者（X）					
	低 ⟷ **高**				
	1	**2**	**3**	**4**	**5**
受教育程度	1	2	3	4	5
友善程度	1	2	3	4	5
口音轻重 （1=没有口音;5=口音很重）	1	2	3	4	5
说话者所在地域的城市化程度	1	2	3	4	5
发音的标准性（与普通话相比）	1	2	3	4	5

Speaker（X）					
	low ⟷ **high**				
	1	**2**	**3**	**4**	**5**
education level	1	2	3	4	5
friendliness	1	2	3	4	5
accent (1=accent-free; 5=heavy accent)	1	2	3	4	5
urbanization of the speaker's hometown	1	2	3	4	5
resemblance of *Putonghua* pronunciation	1	2	3	4	5

Appendix D

Interview questions (the Chinese version)

1. 请您先回答一个问题：中央一套晚上 7 点钟播放的节目叫什么名字？是新 wen 联播还是新 ven 联播？您是发的唇齿音还是双唇音？
2. 您认为哪一种发音是标准普通话发音？您使用的是哪一种发音？
3. 在所有 w 开头的汉语音节中，您的发音习惯是怎样的？您之前注意到 w 开头的汉语音节有唇齿还有双唇的区别了吗？是怎么注意到的？
4. 关于 w 开头的汉语音节在实际发音中的异读现象，您作为汉语母语使用者持什么态度？

Interview questions (the English version)

1. What is the name of the news program that is on air at 7:00 p.m. on CCTV-1? Is it *XinWen LianBo* or *XinVen LianBo*? Are you pronouncing a labiodental sound or bilabial sound?
2. Which way do you think is the standard pronunciation in *Putonghua*? Which sound do you use?
3. What is your way of pronouncing syllables that begins with "w" in Chinese? Did you notice the bilabial V.S. labiodental variation in /w/-initial syllables before this study? How did you notice it?
4. What is your attitude towards the [w]/ [ʋ] phonetic variation in native Chinese speakers' natural speech?